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Pesticide residues in food 2015

Joint FAO/WHO Meeting on Pesticide Residues

REPORT 2015

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Joint FAO/WHO Meeting on Pesticide Residues

Report of the Joint Meeting of the FAO Panel of Experts on Pesticide Residues in Food and the Environment and the WHO Core Assessment Group on Pesticide Residues
Geneva, Switzerland, 15-24 September 2015

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GENEVA, 15–24 SEPTEMBER 2015

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ABBREVIATIONS

ABCB	ATP-binding cassette subfamily B
AChE	acetylcholinesterase
AD	administered dose
ADI	acceptable daily intake
ae	acid equivalent
ai	active ingredient
AMPA	aminomethylphosphonic acid
AR	applied radioactivity
ARfD	acute reference dose
asp gr fn	aspirated grain fraction
ATP	adenosine triphosphate
AU	Australia
AUC	area under the plasma concentration–time curve
BBCH	**B**iologischen Bundesanstalt, **B**undessortenamt und **CH**emische Industrie
$BMDL_{10}$	95% lower confidence limit of the benchmark dose for a 10% response
BuChE	butyrylcholinesterase
bw	body weight
CAC	Codex Alimentarius Commission
CAS	Chemical Abstracts Service
CCBA	4-(4-chloro-2-cyanoimidazole-5-yl) benzoic acid
CCIM	4-chloro-5-*p*-tolylimidazole-2-carbonitrile
CCN	Codex classification number (for compounds or commodities)
CCPR	Codex Committee on Pesticide Residues
*c*GAP	Critical GAP
CS	capsule suspension
CXL	Codex MRL
CYP	cytochrome P450
DABQI	dialkylbenzoquinoneimine
DALA	days after last application
DAT	days after treatment
DFA	difluoroacetic acid
DM	dry matter
DMSO	dimethyl sulfoxide
DNA	deoxyribonucleic acid
DT_{50}	time required for 50% dissipation of the initial concentration

dw	dry weight
ECD	electron capture detector
EFSA	European Food Safety Authority
EHC	Environmental Health Criteria monograph
EMRL	extraneous maximum residue limit
EU	European Union
F_0	parental generation
F_1	first filial generation
F_2	second filial generation
FAO	Food and Agriculture Organization of the United Nations
fw	fresh weight
GABA	gamma-aminobutyric acid
GAP	good agricultural practice
GC	gas chromatography
GC-ECD	gas chromatography with electron capture detection
GC-FID	gas chromatography with flame ionization detection
GC-FPD	gas chromatography with flame photometric detection
GC/MS	gas chromatography/mass spectrometry
GC-NPD	gas chromatography coupled with nitrogen-phosphorus detector
GD	gestation day
GEMS/Food	Global Environment Monitoring System – Food Contamination Monitoring and Assessment Programme
GI	gastrointestinal
GLP	good laboratory practice
HCD	historical control data
HEPA	2-hydroxyethyl phosphonic acid; 2-hydroxyethephon
HPLC	high performance liquid chromatography
HR	highest residue in the edible portion of a commodity found in trials used to estimate a maximum residue level in the commodity
HR-P	highest residue in a processed commodity calculated by multiplying the HR of the raw commodity by the corresponding processing factor
IARC	International Agency for Research on Cancer
IEDI	international estimated daily intake
IESTI	international estimate of short-term dietary intake
ISO	International Organization for Standardization
IUPAC	International Union of Pure and Applied Chemistry
JECFA	Joint FAO/WHO Expert Committee on Food Additives
JMPR	Joint FAO/WHO Meeting on Pesticide Residues

JP	Japan
LC_{50}	median lethal concentration
LC-MS/MS	Liquid chromatography–tandem mass spectrometry
LD_{50}	median lethal dose
LOAEL	lowest-observed-adverse-effect level
LOD	limit of detection
log P_{ow}	octanol-water partition coefficient
LOQ	limit of quantification
MDR1	multidrug resistance protein 1
MRL	maximum residue limit
MTD	maximum tolerated dose
ND	non-detect - below limit of detection
NOAEC	no-observed-adverse-effect concentration
NOAEL	no-observed-adverse-effect level
OECD	Organisation for Economic Co-operation and Development
P	parental generation
PBI	plant back interval
Pf	processing factor
PHI	pre-harvest interval
PMRA	Pest Management Regulatory Agency, Health Canada
PND	postnatal day
ppm	parts per million
PPO	protoporphyrinogen oxidase
PRE	pre-emergence
POST	post-emergent
QuEChERS	Quick, Easy, Cheap, Effective, Rugged, and Safe–Multiresidue pesticide analysis
RAC	raw agricultural commodity
RSD	relative standard deviation
SC	suspension concentrate
SL	soluble liquid
SPE	solid phase extraction
STMR	supervised trials median residue
STMR-P	supervised trials median residue in a processed commodity calculated by multiplying the STMR of the raw commodity by the corresponding processing factor
SUA	Supply Utilisation Account
TAR	total administered radioactivity
TFNA	4-trifluoromethylnicotinic acid

TFNA-AM	4-trifluoromethylnicotinamide
TFNA-OH	6-hydroxy-4-trifluoromethylnicotinic acid
TFNG	*N*-(4-trifluoromethylnicotinoyl) glycine
TFNG-AM	*N*-(4-trifluoromethylnicotinoyl) glycinamide
TLC	thin-layer chromatography
T_{max}	time to reach the maximum concentration in plasma/blood
TRR	total radioactive residues
TSH	thyroid stimulating hormone
TTC	threshold of toxicological concern
UDPGT	uridine diphosphate-glucuronosyltransferase
UDS	unscheduled DNA synthesis
UK	United Kingdom
USA	United States of America
US/CAN	United States and Canada
USEPA	United States Environmental Protection Agency
US-FDA	USA – Food and Drug Administration
WG	wettable granule
WHO	World Health Organization
WP	wettable powder

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Most of the summaries and evaluations contained in this report are based on unpublished proprietary data submitted for use by JMPR in making its assessments. A registration authority should not grant a registration on the basis of an evaluation unless it has first received authorization for such use from the owner of the data submitted for the JMPR review or has received the data on which the summaries are based, either from the owner of the data or from a second party that has obtained permission from the owner of the data for this purpose.

PESTICIDE RESIDUES IN FOOD

REPORT OF THE 2015 JOINT FAO/WHO MEETING OF EXPERTS

1. INTRODUCTION

A Joint Meeting of the Food and Agriculture Organization of the United Nations (FAO) Panel of Experts on Pesticide Residues in Food and the Environment and the World Health Organization (WHO) Core Assessment Group on Pesticide Residues (JMPR) was held at WHO Headquarters, Geneva (Switzerland), from 15 to 24 September 2015. The FAO Panel Members met in preparatory sessions on 10–14 September.

The meeting was opened by Dr Angelika Tritscher, Coordinator, Risk Assessment and Management, Department of Food Safety and Zoonoses, WHO. On behalf of WHO and FAO, Dr Tritscher welcomed and thanked the participants for providing their expertise and for devoting significant time and effort to the work of JMPR. She noted that the work of JMPR is of great importance, as it provides the scientific basis for international food safety standards as recommended by the Codex Alimentarius Commission. She emphasized that the programme is also important for other programmes within the Organizations; for example, the WHO Guidelines for Drinking-water Quality use the scientific advice provided by JMPR as the basis for the derivation of drinking-water guidelines for pesticides.

Dr Tritscher noted that further important considerations at the meeting related to methodological aspects, such as discussing the outcome of the recent workshop to review the international estimate of short-term dietary intake (IESTI) equations, in an effort to further improve and harmonize risk assessment methodology for pesticide residues. The Meeting was also asked to consider the outcome of the WHO Expert Task Force on Carcinogenicity of Diazinon, Glyphosate and Malathion, to provide recommendations to the Organizations on necessary actions in light of recent International Agency for Research on Cancer (IARC) hazard classifications. Dr Tritscher reminded the Meeting of the importance of food safety in public health; in order to raise awareness of this issue, WHO dedicated the 2015 World Health Day to food safety, with important advocacy and information material being available from the WHO website. Lastly, she reminded participants that they were invited as independent experts and not as representatives of their countries or organizations. She also reminded them of the confidential nature of the meeting, in order to allow experts to freely express their opinions.

During the meeting, the FAO Panel of Experts was responsible for reviewing residue and analytical aspects of the pesticides under consideration, including data on their metabolism, fate in the environment and use patterns, and for estimating the maximum levels of residues that might occur as a result of use of the pesticides according to good agricultural practice (GAP). Maximum residue levels, supervised trials median residue (STMR) levels and highest residue (HR) levels were estimated for commodities of plant and animal origin. The WHO Core Assessment Group was responsible for reviewing toxicological and related data in order to establish acceptable daily intakes (ADIs) and acute reference doses (ARfDs), where necessary.

The Meeting evaluated 29 pesticides, including eight new compounds and four compounds that were re-evaluated within the periodic review programme of the Codex Committee on Pesticide Residues (CCPR), for toxicity or residues, or both. The original schedule of compounds to be evaluated was amended, with dicamba and methoxyfenozide not considered for residues and fluazifop-*p*-butyl not considered for toxicity or residues owing to the submission of incomplete data sets.

The Meeting established ADIs and ARfDs, estimated maximum residue levels and recommended them for use by CCPR, and estimated STMR and HR levels as a basis for estimating dietary intake.

The Meeting also estimated the dietary intakes (both short-term and long-term) of the pesticides reviewed and, on this basis, performed dietary risk assessments in relation to their ADIs or ARfDs. Cases in which ADIs or ARfDs may be exceeded were clearly indicated in order to facilitate the decision-making process of CCPR. The rationale for methodologies for long- and short-term dietary risk assessment are described in detail in the FAO manual on the *Submission and evaluation of pesticide residues data for the estimation of maximum residue levels in food and feed* (2009).

The Meeting considered a number of current issues related to the risk assessment of chemicals, the evaluation of pesticide residues and the procedures used to recommend maximum residue levels.

1.1 DECLARATION OF INTERESTS

The Secretariat informed the Meeting that all experts participating in the 2015 JMPR had completed declaration-of-interest forms and that no conflicts had been identified.

2. GENERAL CONSIDERATIONS

2.1 EFSA WORKSHOP, COSPONSORED BY WHO AND FAO, REVISITING THE IESTI EQUATIONS

An EFSA Scientific Workshop was held in Geneva on the 8th and 9th of September 2015, concerning the Revisiting of the International Estimate of Short-Term Intake (IESTI equations) used to estimate the short-term dietary exposure to pesticide residues. The workshop was co-sponsored by WHO and FAO. The EFSA event report will be published in December 2015. A near final draft was available to the JMPR 2015 for discussion.

The overall goal of the Scientific Workshop was to evaluate the parameters within the IESTI equations as well as the equations themselves, with the aim of harmonizing the parameters and equations between different dietary risk assessment programmes. In addition, the appropriateness of the IESTI methodology in assessing residues from monitoring and enforcement programmes was considered.

Recommendations from the Scientific Workshop to EU and Codex members were:

- Replace the STMR and HR with the MRL in all cases
- Use a variability factor of 3
- Remove the unit weight from the equation
- Use conversion factors (CF) to account for differences in residue definitions and processing factors (PF) to account for residue changes during processing,
- Derive the P97.5 large-portion value from the distribution of consumption values of dietary surveys on the basis of g/kg bw (LP_{bw}), and
- Change the IESTI equations as follows
- Replace case 1 and case 3 of the current IESTI equation by

$$IESTI = LP_{bw} \times MRL \times CF \times PF$$

Replace case 2a and case 2b of the current IESTI equation by

$$IESTI = LP_{bw} \times MRL \times v \times CF \times PF$$

Food inspection services could use the IESTI equations, by replacing the MRL with the actual residue measured in a sampling lot.

In addition, it was recommended that a list of commodities be developed for which a variability factor is not needed. Furthermore, the participants of the Scientific Workshop were aware that large portion data on a per kg body weight basis are currently not available and will need to be compiled before the recommended changes could be implemented. Furthermore, conversion factors and processing factors should be compiled in a database, for use by food inspection services and other parties.

The JMPR 2015 discussed the draft EFSA event report and acknowledged that the short-term exposure estimates derived from the two IESTI equations as a whole need to be assessed. JMPR recommends that a WHO/FAO working group be established to compare the use of current and proposed equations and to present the outcome to the CCPR in due course.

2.2 SHORTER THAN LIFETIME EXPOSURES

As a follow-up of the 2014 report item 2.5, "Characterization of risk of less-than-lifetime high exposures to pesticide residues", the Meeting discussed the current JMPR practice regarding dietary risk assessment of pesticide residues.

The current long-term dietary risk assessment of pesticides consists of a comparison of the estimated chronic exposure to residues in food (international estimated daily intake, or IEDI) with the ADI. The exposure model is based on multi-annual consumption data averaged over the whole population to capture the per capita dietary pattern over a lifetime. However, no-observed-adverse-effect levels (NOAELs) derived from rodent and dog studies with exposure durations ranging from 4 to 104 weeks are often similar. This suggests that over a wide exposure duration range, the manifestation of adverse effects generally is not related to the duration of the exposure. However, the IEDI calculation does not provide information on short-term (weeks/months) or consumer-only exposures. Therefore, it is not known whether the ADI is exceeded in these situations and whether this would result in health concerns.

The development of dietary exposure assessment methods that take into account short-term toxicity (4 weeks) after less than lifetime exposures should be investigated. Special emphasis should be given to commodities for which exposures at a frequency of two or more times per week are likely. This estimate is based on the fact that most modern pesticides show little tendency to accumulate.

The Meeting recommends that the Secretariat convene an expert working group in order to develop models to cover exposures longer than 1 day but shorter than lifetime, as needed. The Meeting also recommends that the applicability of these considerations to other categories of chemicals, such as veterinary drugs and contaminants, should be investigated.

2.3 UPDATE ON THE REVISION OF PRINCIPLES AND METHODS FOR RISK ASSESSMENT OF CHEMICALS IN FOOD (EHC 240)

The Meeting discussed the implications of shorter than lifetime (more than 1 day) exposures on the risk characterization of residues of pesticides in food. It was concluded that there were occasions, such as frequent, seasonal consumers of specific commodities, where the toxicological profile of the pesticide was such that the current exposure model might not be adequately protective. The Meeting recommended that a group be convened to investigate possible exposure models to address this issue (see section 2.2). Depending on the outcome of this exercise, it might be necessary to update the relevant section of Environmental Health Criteria monograph (EHC) 240.

The Meeting discussed the report of the WHO Expert Task Force on Carcinogenicity of Diazinon, Glyphosate and Malathion (see section 3.2.2). Among the recommendations was the need to make transparent the criteria and approaches used to determine the quality, relevance and utility of all published and proprietary studies in any evaluation of the compounds. The Meeting recommended that general principles arising from this assessment should be incorporated into the relevant section of EHC 240.

The Meeting noted the published guidance by WHO on evaluating and expressing uncertainty in hazard characterization, together with related activities – for example, by the European Food Safety Authority (EFSA). The Meeting recommended that the relevant sections of EHC 240 should be reviewed and revised as necessary.

WHO and EFSA will publish their review of the threshold of toxicological concern (TTC) approach for compounds with limited or no toxicological data in the near future. The relevant section(s) of EHC 240 should be revised to reflect the outcome of this review.

The Meeting noted that the WHO Risk Assessment Network is reviewing the current status of chemical-specific adjustment factors. When complete, the relevant sections of EHC 240 should be updated.

The Meeting recommended that consideration be given to the need to include a section or revision of EHC 240 to take account of recent developments on adverse outcome pathways and their use in hazard characterization.

2.4 A REPORT ON THE JOINT FAO/WHO EXPERT MEETING ON HAZARDS ASSOCIATED WITH ANIMAL FEED CONDUCTED FROM 12 TO 15 MAY IN ROME, ITALY

An expert meeting was jointly organised by the FAO and WHO, in line with their overall aims of securing feed and food safety and ensuring fair practices in the trade of food and feed. The objective of the meeting was to provide an updated overview of the current state of knowledge on hazards associated with feed (including use of insects, former food, food processing by-products and biofuel by-products as feed). A number of recommendations were made, including some of relevance to the work of the JMPR. In particular, it was suggested that"

The Codex Committee on Pesticide Residues (CCPR) and Member Countries should establish MRLs for pesticides of concern in feed;

Member Countries, the FAO and WHO should encourage regulators to require relevant data packages from industry to support the risk assessment of pesticide residues in feed. Consider pesticide residues in feed especially as they pertain to feed ingredients, including by-products from biofuel production such as dried distillers grain soluble (DDGS).

The JMPR has been elaborating maximum residue levels for pesticides in various animal feeds relevant to international trade for many years and will continue to do so.

The Meeting welcomed the work of the expert meeting on feed and agreed that additional processing studies would be needed to estimate maximum residue levels for those by-products used as feed ingredients that are not currently considered. However, additional processing studies will only be developed if required by regulators. CCPR may wish to consider adding additional feed items to the relevant Codex Commodity Classification to facilitate establishing maximum residue levels for relevant biofuel by-products used as animal feed

2.5 MINIMUM NUMBER OF SUPERVISED FIELD TRIALS FOR MRL SETTING FOR MINOR CROPS

The Meeting noted that with the Report of the 47th Session of the CCRP (REP15/PR) an information document was introduced to be used in conjunction with guidance to facilitate the establishment of MRLs for pesticides for minor crops (APPENDIX XI to the Report). Based on their importance in consumption within the GEMS Food Cluster data three categories were proposed to classify minor crops and the minimum number of trials necessary to support the establishment of MRLs for commodities obtained thereof:

Category 1 - No data in FAO Stat and No GEMS Food Cluster data: to be considered on a case by case basis

Category 2 - < 0.5% worldwide and < 0.5% in all of the clusters: minimum of 4 trials

Category 3 - < 0.5% worldwide and > 0.5% in one or more clusters: minimum of 5 trials

The Meeting welcomed the approach to harmonise the criteria on minor crops trial data needed for MRL setting. Beginning with the 2016 JMPR Meeting, a minimum number of four independent supervised field trials reflecting the respective GAPs for Category 1 and 2 crops and five trials according to Category 3 crops will be used as the basis for recommending maximum residue levels. On a case by case basis, fewer trials may be acceptable when additional circumstances can be taken into account, e.g., undetected residues following treatment at exaggerated rates.

2.6 REVISION OF THE FAO MANUAL ON THE SUBMISSION AND EVALUATION OF PESTICIDE RESIDUES DATA FOR THE ESTIMATION OF MAXIMUM RESIDUE LEVELS IN FOOD AND FEED

The FAO Manual provides a unique source of information on the data requirements and the complex procedures applied by the JMPR in the evaluation of the information made available to the Meeting.

The JMPR continuouly develops the working principles used for the evaluation of pesticide residue data, based on its practical experience and scientific developments, so as to make best use of the available information. Since the publication of the 2nd Edition of the Manual (2009) a number of important concepts have been developed, such as the application of proportionality for adjusting pesticide use conditions to match critical GAP; the estimation of maximum residue levels based on “global GAP”; and the recommending maximum residue levels for commodity groups.

Further, the OECD Working Group on Pesticides elaborated a number of guidance documents which were adopted or considered by the JMPR. Necessitating a revision of the Manual, to ensure ist currency.

The revised FAO manual planned to be published in 2016 and will incorporate these new principles in the current working procedures to assist in their systematic application and making their applcation transparent.

3. RESPONSES TO SPECIFIC ISSUES

3.1 CONCERNS RAISED BY THE CODEX COMMITTEE ON PESTICIDE RESIDUES (CCPR)

3.1.1 BUPROFEZIN (173)

In 2015, the Forty-seventh Session of CCPR adopted the maximum residue limit (MRL) for buprofezin in coffee beans as recommended by the 2014 JMPR, noting the reservation of the Delegation of the European Union (EU) concerning the potential formation of aniline during coffee processing. This concern was due to the classification of aniline by the European Chemicals Agency as potentially mutagenic and carcinogenic.

In the 2010 JMPR monograph on buprofezin, aniline was identified as a processing metabolite, but was not found as an animal metabolite. Aniline was considered to be toxicologically relevant; however, as it can occur naturally in some foods and may also originate from many chemicals, including buprofezin, this process metabolite could not be included in the residue definition for risk assessment.

As there are different sources of exposure to aniline, aniline should be considered as a contaminant. Therefore, the Meeting recommended that the JECFA Secretariat place aniline on the agenda for an evaluation to both characterize hazard and estimate exposure from the diet, including exposure from the use of pesticides.

3.1.2 FENPROPATHRIN (185)

Fenpropathrin was evaluated by the 2014 JMPR. The Meeting could not make recommendations for raspberry because no trial matched the US GAP for caneberries (0.34 kg ai/ha with total seasonal rate of 0.67 kg/ha and a PHI of 3 days).

At the Forty-seventh Session of the CCPR the USA submitted concern in relation to the decision of the 2014 JMPR for not recommending residue levels for fenpropathrin in raspberries.

The 2015 Meeting noted that there was no decline study submitted for raspberry. However, steady declines of resides were observed in case of strawberry from day 0 to day 3, and at longer intervals (7-21 days) after last application in case of pear and peach.

The Meeting concluded that under those conditions, when two parameters (dose rate and sampling after last application) are different from GAP, the principles of proportionality cannot be applied. Consequently, recommendations cannot be made for maximum residue levels based on the residue data provided. The Meeting confirms its previous decision.

3.1.3 IMAZAMOX (276)

Concern

JMPR evaluated imazamox at the 2014 meeting. An ARfD of 3 mg/kg body weight (bw) was established based on malformations (lungs, absent intermediate lobe; cervical hemivertebra; thoracic hemivertebra) reported in a developmental toxicity study in rabbits. A concern form indicating a request for clarification was submitted by the delegation from the United States of America (USA), questioning the need for an ARfD for imazamox.

To support the concern, the following reports were submitted by the United States delegation:

- “Human-Health Assessment Scoping Document in Support of Registration Review”, dated 5 June 2014;

- "Imazamox; Exemption from the Requirement of a Tolerance", Federal Register, Vol. 68, No. 31, pp. 7428–7433, dated 14 February 2003; and
- "Report of the Hazard Identification Assessment Review Committee", dated 11 July 2001.

The last report includes a summary of the developmental toxicity study in rabbits (pp. 8–9), which states, regarding the developmental findings: "There were no treatment-related effects in developmental parameters. A developmental LOAEL [lowest-observed-adverse-effect level] was not observed. The developmental NOAEL was 900 mg/kg/day." Similar conclusions are also included in the other two documents. It is possible that the increased incidence of absent intermediate lung lobe was considered not to be treatment related because it was within the range of historical control data (HCD) on a fetal basis.

Evaluation by JMPR

When the developmental toxicity study in rabbits by Hoberman (1995)[1] was evaluated by JMPR, increases in incidences of certain malformations in the groups dosed with 600 and 900 mg/kg bw per day were noted (lungs, absent intermediate lobe; cervical hemivertebra; thoracic hemivertebra) and discussed. The detailed incidences and the available HCD are given in the 2014 JMPR monograph. This is the same study that was available to the United States Environmental Protection Agency (USEPA).

Dose-dependent absence of intermediate lung lobe was reported in the 600 and 900 mg/kg bw per day dose groups at higher incidences than in the concurrent control group. It should be noted that the HCD on "lungs, one or more lobes partially or complete agenesis" also include findings in addition to the specific finding observed in fetuses in this study; hence, they may be less applicable to assessing the relevance of these findings.

Cervical hemivertebra and thoracic hemivertebra were reported in the 900 mg/kg bw per day dose group at higher incidences than in the concurrent control group and in historical controls. The same tendency was also noted for the 600 mg/kg bw per day dose group. The available HCD confirm that these malformations occur only very rarely under the conditions of the performing laboratory. Although the incidences of thoracic hemivertebra in the 600 mg/kg bw per day group reached the maximum of the HCD range, a possible dose-related increase could not be excluded.

Response to concern

In summary, the Meeting confirms that the findings at 600 and 900 mg/kg bw per day are considered to be treatment-related increases in malformations, taking into account the low background incidences reported in the HCD.

Based on current knowledge, a malformation is considered a finding that may be induced by a single dose in the absence of information to the contrary. It is consistent practice in JMPR to establish an ARfD based on malformations. Additionally, this is in line with international guidance documents on establishing ARfDs (e.g., by the OECD).

Considering that malformations were seen in the developmental toxicity study in rabbits, the 2014 Meeting established an ARfD of 3 mg/kg bw for imazamox based on these findings. This ARfD is reaffirmed by the present Meeting.

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[1] Hoberman AM (1995). An oral developmental toxicity (embryo-fetal toxicity/teratogenicity) definitive study with AC 299, 263 in rabbits. Unpublished report no. ID-432-002 from Argus Research Laboratories Inc., Horsham, PA, USA. Submitted to WHO by BASF Agro SAS, Levallois-Perret, France.

3.1.4 METHIDATHION (051)

On the basis of public health concerns raised by the EU regarding possible short-term dietary exposure above the ARfD, methidathion was moved up from the 2018 to the 2016 schedule for re-evaluation under the periodic review programme of CCPR. Methidathion was first evaluated in 1972 and evaluated for residues in subsequent years, the last being in 1994. In 1997, JMPR established an ARfD of 0.01 mg/kg bw for methidathion, on the basis of a NOAEL of 0.11 mg/kg bw (the highest dose tested) for inhibition of erythrocyte acetylcholinesterase (AChE) activity in humans and a safety factor of 10. Refinement of the current ARfD is unlikely to be possible based on available data.

The procedure for estimating short-term dietary intake was implemented by JMPR in 2001. The preliminary estimates of short-term intakes performed by the present Meeting using Codex MRLs established in a variety of crop food commodities and foods of animal origin indicate a potential exceedance of the ARfD for the general population and for children by more than an order of magnitude.

On this basis, the Meeting agreed that the inclusion of methidathion in the next JMPR call for data was appropriate. The Meeting noted that this compound is no longer supported by the manufacturer and that, at the moment, no commitment was forthcoming from Codex Member States to submit data.

3.1.5 PROPICONAZOLE (160)

Propiconazole was last evaluated by the JMPR in 2014. The residue definition for plant and animal commodities is *propiconazole* for compliance with the MRL and *propiconazole plus all metabolites convertible to 2,4-dichlorobenzoic acid, expressed as propiconazole* for the estimation of dietary intakes.

The current Meeting received a concern form from the USA regarding the lack of a maximum residue level recommendation for propiconazole for wheat, oats and barley. The Meeting re-evaluated the trials submitted in 2014 and reconsidered its previous recommendation.

In the USA, GAP for propiconazole in barley, oats and wheat, is for 2 applications at 0.125 kg ai/ha, the second being at least 14 days after an early season application and should not be performed after full head emergence, i.e., after Feekes 10.54, which corresponds to BBCH 71. Trials submitted to the 2014 JMPR and considered at GAP (last application done up to BBCH 73) are shown in Table 1.

Table 1 Residues from trials conducted with propiconazole in barely, oats and wheat in the USA following 2 applications of propiconazole (JMPR, 2014)

Region	Variety	Application		DAT (days)	Residues (mg/kg)		
		kg ai/ha	BBCH growth state		Propiconazole	Total propiconazole	Trial Ref.
Barley							
Minnesota	Spring Rawson	0.15	41 and 71	44	0.011, < 0.01 (0.01)	0.188, 0.57 (0.38)	C09-9063
N. Dakota, Northwood	Pinnacle	0.15	39 and 71	33	< 0.01	< 0.05	C13-9062
				40	< 0.01	0.0555	
				47	< 0.01 (2)	0.053, 0.066 (0.06)	
				54	< 0.01	0.0585	
N. Dakota, Carrington	Pinnacle	0.15	37 and 69	48	< 0.01 (2)	0.060, 0.072 (0.07)	C13-9065
S. Dakota,	Lacey	0.15	43-49 and 71-73	33	< 0.01 (2)	0.13 (2)	C16-9064
Nebraska	Spring, Baronesse	0.15	43 and 59	29	< 0.01 (2)	< 0.05 (2)	C33-9066
Colorado	Moravian 37	0.15	55 and 71	25	0.175, 0.21 (0.98)	0.425, 0.516 (0.47)	W12-9067

Region	Variety	Application		DAT (days)	Residues (mg/kg)		
		kg ai/ha	BBCH growth state		Propiconazole	Total propiconazole	Trial Ref.
Virginia	Nomini	0.15	55 and 71	30	0.144, 0.137 (0.14)	0.589, 0.765 (0.68)	E07-9061
California	UC937	0.15	69 and 71	49	1.3, 0.933 (1.1)	2.22, 2.02 (2.1)	W32-9068
Oat							
Minnesota	Morton	0.15	41 and 71	48	0.035, 0.044 (0.04)	0.117, 0.31 (0.11)	C09-9084
N. Dakota, Ayr	Morton	0.15	52 and 70	44	0.054, 0.067 (0.06)	0.269, 0.173 (0.22)	C12-9086
N. Dakota, Gardner	Morton	0.15	72 and 70	11	0.117	0.337	C12-9087
				18	0.252	0.688	
				25	0.311, 0.355 (0.33)	0.862, 0.968 (0.92)	
				32	0.225	0.642	
N. Dakota, Northwood	Jerry	0.15	39 and 71	33	0.017, 0.022 (0.02)	0.086, 0.089 (0.09)	C13-9083 2009
N. Dakota, Carrrington	Jerry	0.15	37 and 69	39	0.03 (2)	0.163, 0.143 (0.15)	C13-9091
S. Dakota	Stallion	0.15	43 and 71	36	0.024, 0.023 (0.02)	0.155, 0.208 (0.18)	C16-9090
Iowa	Reeves	0.15	71	32	0.086, 0.078 (0.08)	0.774, 0.91 (0.84)	C30-9085
Pensilvania	Armor	0.15	59 and 71-75	28	0.35, 0.386 (0.37)	1.32, 1.61 (1.5)	E04-9081
Colorado	Jerry	0.15	73 and 71	28	0.05 (2)	0.184, 0.206 (0.20)	W12-9092
S. Caroline	Horizon 270	0.15	43 and 55	44	< 0.01 (2)	0.26 (2)	E11-9082
Texas	BOB	0.15	60/71	35	0.252, 0.269 (0.26)	1.59, 1.52 (1.6)	W07-9089
Wheat							
N. Dakota, Gardner 2009	Durum Wheat (Maier)	0.15	52 and 55	35	< 0.01 (2)	0.052, 0.060 (0.06)	C12-9035
N. Dakota, Carrington	Spring Glenn	0.15	37 and 69	55	< 0.01 (2)	< 0.05 (2)	C13-9038
S. Dakota, Lake Andes	Spring Oxen	0.15	55 – 59 and 71	34	< 0.01 (2)	0.076, 0.075 (0.08)	C16-9037
Iowa	Hard wheat (Briggs)	0.15	71	25	< 0.01	0.055	C30-9034
				32	< 0.01	< 0.05	
				39	< 0.01 (2)	0.058, 0.053	
				46	< 0.01	0.07	
Texas, Raymondville	Caudillo	0.15	43 and 71	38	< 0.01 (2)	< 0.05, 0.06 (0.06)	W08-9036
Colorado	Winter Jagalene	0.15	53 and 71	29	< 0.01 (2)	0.054, 0.057 (0.06)	W12-9044
N. Dakota, Northwood	Winter wheat (Jerry)	0.15	45 and 71	43	< 0.01 (2)	< 0.05 (2)	C13-9033
N. Dakota, Carrington	Winter wheat (Jerry)	0.15	45 and 71	50	< 0.01 (2)	< 0.05 (2)	C13-9040
S. Dakota, Lake Andes	Winter wheat (Wendy)	0.15	43 and 67 - 69	64	< 0.01 (2)	< 0.05, 0.054 (0.05)	C16-9039
Virginia	Pioneer 26R15	0.15	65 and 75	24	< 0.01 (2)	< 0.05, 0.078 (0.06)	E07-9031
Texas, Groom	Winter Cutter	0.15	61 and 71	10	0.13	0.152	E13-9041
				17	0.0762	0.125	
				24	0.084, 0.072 (0.08)	0.165, 0.125 (0.14)	
				30	0.054	0.155	
Lousiania	Winter Terral LA841	0.15	57-59 and 73	30	< 0.01 (2)	0.063, 0.169 (0.12)	

Region	Variety	Application		DAT (days)	Residues (mg/kg)		
		kg ai/ha	BBCH growth state		Propiconazole	Total propiconazole	Trial Ref.
Idaho	Hard wheat (Klassic)	0.15	55 – 59 and 71	35	< 0.01 (2)	< 0.05 (2)	W15-9046
Texas, Levelland	TAM 112	0.15	51 and 73	35	0.011, < 0.01 (0.01)	0.125, < 0.05 (0.09)	W39-9042
Texas, Littlefield	Weathermaster	0.15	51 and 73	35	0.020, 0.023 (0.02)	0.091, 0.099 (0.10)	W39-9043

In eight trials from the USA in barley, matching US GAP, residues of propiconazole found were: < 0.01 (4), 0.01, 0.14, 0.98, 1.1 mg/kg and for total propiconazole < 0.05, 0.06, 0.07, 0.13, 0.38, 0.47, 0.68 and 2.1 mg/kg.

The Meeting estimated a maximum residue level of 2 mg/kg and a STMR of 0.255 mg/kg for propiconazole in barley. This estimate replaces the previous recommendations for propiconazole in barley.

Eleven trials conducted in the USA in oats, matching GAP, residues of propiconazole were: < 0.01, 0.02 (2), 0.03, 0.04, 0.05, 0.06, 0.08, 0.26, 0.33 and 0.37 mg/kg and of total propiconazole residue of 0.09, 0.11, 0.15, 0.18, 0.20, 0.22, 0.26, 0.84, 0.92, 1.5 and 1.6 mg/kg.

The Meeting estimated a maximum residue level of 0.7 mg/kg and a STMR of 0.22 mg/kg for propiconazole in oats.

Fifteen trials conducted in the USA in wheat, matching GAP, residues of propiconazole were: < 0.01 (12), 0.01, 0.02 and 0.08 mg/kg and a total propiconazole residue of: < 0.05 (4), 0.05, 0.06 (4), 0.07, 0.08, 0.09, 0.10, 0.12 and 0.155 mg/kg.

The Meeting estimated a maximum residue level of 0.09 mg/kg and a STMR of 0.06 mg/kg for propiconazole in wheat. The Meeting extended these estimates to rye and triticale and replaced the previous recommendations for propiconazole in wheat, rye and triticale.

Residues in animal commodities

The estimates made for barley, oat, wheat, rye and triticale did not have any significant impact on the livestock dietary burden estimated in 2014 for propiconazole, consequently no revision of the previous recommendations for animal commodities was made.

DIETARY RISK ASSESSMENT

Long-term intake

The current ADI for propiconazole is 0–0.07 mg/kg bw. The 2014 JMPR Meeting concluded that the long-term dietary intake for the 17 GEMS/Food Cluster diets of propiconazole is unlikely to present a public health concern (up to 10% of the maximum ADI). The estimations made on barley, oat, rye, triticale and wheat grain by the present Meeting does not significantly change the intake estimates or the previous conclusions made for propiconazole. As a result a new assessment was not conducted.

Short-term intake

An ARfD for propiconazole is 0.3 mg/kg bw. The International Estimated Short-Term Intake (IESTI) of propiconazole was calculated for the commodities for which STMRs and maximum residue levels was estimated by the current Meeting. The results are shown in Annex 4 to the 2015 Report. The IESTI represented a maximum of 3% of the ARfD. The Meeting concluded that the short-term intake of propiconazole residues from uses considered by the current Meeting was unlikely to present a public health concern.

3.2 OTHER MATTERS OF INTEREST

3.2.1 Comments received during review of WHO Guidelines for Drinking-water Quality background documents

3.2.1.1 Bentazone

At the 2012 JMPR, bentazone was reviewed as part of the periodic review programme of CCPR. The Meeting reaffirmed its conclusion that no ARfD was necessary, as it considered that the post-implantation loss seen in the rat developmental toxicity study was not caused by a single dose and that no other effects were observed in repeated-dose studies that could be due to a single dose.

The WHO document *Bentazone in Drinking-water: Background document for development of WHO Guidelines for Drinking-water Quality* was based on the 2012 JMPR evaluation. During the review of this document, two comments were received that pertained to JMPR's conclusion that an ARfD for bentazone was unnecessary. The first comment, received from EFSA, referred to its evaluation of bentazone, published in 2015, which concludes that an ARfD of 1 mg/kg bw is required based on the NOAEL of 100 mg/kg bw per day for increased post-implantation loss, reduced number of live fetuses and retarded fetal development observed in a developmental toxicity study in rats and applying an uncertainty factor of 100. This conclusion derives from the fact that developmental toxicity was observed in the absence of clear maternal toxicity.

The second comment, from Health Canada, noted two new toxicology studies that were identified in the most recent review of bentazone conducted by the USEPA in 2014. These include an acute neurotoxicity study (2012) in rats, which was used by the USEPA to set an ARfD of 0.5 mg/kg bw, and an immunotoxicity study (2012) in rats.

The Meeting recommended that bentazone be re-evaluated specifically to determine whether there is a need to establish an ARfD.

3.2.1.2 Dichlorvos

JMPR received a request from the group that prepares the WHO Guidelines for Drinking-water Quality requesting clarification on JMPR's assessment of dichlorvos and potential differences with assessments undertaken by other bodies. These clarifications related to:

- conclusions on the carcinogenicity and genotoxicity of dichlorvos;
- differences in the ADI and ARfD for dichlorvos established by JMPR compared with the EU and the USA; and
- studies not cited in the 2011 JMPR evaluation of dichlorvos.

JMPR has evaluated the carcinogenicity and genotoxicity of dichlorvos on a number of occasions, most recently in 2011. More than 10 long-term carcinogenicity studies have been evaluated, with the majority of these finding no evidence of carcinogenicity. The occurrence of a small number of forestomach lesions in mice in a United States National Toxicology Program study was attributed to the localized effect of dichlorvos administered in corn oil by gavage. These forestomach lesions were not considered relevant to humans.

JMPR has evaluated an extensive genotoxicity database on dichlorvos, covering both published and unpublished studies. Although dichlorvos tested positive for a number of in vitro genotoxicity end-points, it has consistently tested negative in in vivo studies. The 2011 Meeting concluded that the absence of an in vivo genotoxicity response is due to the rapid metabolism of dichlorvos, which limits systemic exposure to intact dichlorvos at concentrations likely to lead to direct interactions with DNA. In humans, prolonged systemic exposure to unmetabolized dichlorvos is highly unlikely.

The 1993 Meeting noted that dichlorvos methylated DNA at a rate that is 8–9 orders of magnitude lower than the rate of phosphorylation, and therefore DNA alkylation is unlikely to occur at doses lower than those inhibitory to AChE activity.

The 2011 Meeting concluded that in the absence of an in vivo genotoxic response and a carcinogenic response relevant to humans, dichlorvos is unlikely to pose a carcinogenic risk to humans.

No new data have become available since 2011 that could result in any change to previous JMPR conclusions on the carcinogenicity or genotoxicity of dichlorvos.

The toxicological end-point used to establish health-based guidance values for dichlorvos is consistent between JMPR and other risk assessment bodies: namely, the inhibition of AChE activity. Differences in the ADI and ARfD for dichlorvos established by JMPR, the USEPA and the EU (Table 1) are attributable to the use of human studies by JMPR. Whereas JMPR will evaluate and use all scientifically valid data, including those from ethically conducted human studies, other bodies do not use human data to establish ADIs and ARfDs for pesticides. Consequently, the use of NOAELs from laboratory animal studies by these bodies can result in lower reference values because of the application of a 10-fold interspecies safety factor, which is not necessary if a NOAEL from a human study is used. NOAELs for the inhibition of AChE activity from either single or short-term repeated-dose studies in humans, used by JMPR to establish the ARfD and ADI, respectively, are supported by NOAELs from laboratory animal studies. Further, laboratory animal data confirm that the duration of exposure of humans to dichlorvos in the pivotal study used as the basis for the JMPR ADI is appropriate, as no increase in the level of AChE inhibition is likely to occur following longer durations of dietary exposure.

In relation to the absence of particular studies from the 2011 JMPR evaluation, it should be noted that JMPR evaluated the study by Jolley, Stemmer & Pfitzer (1967)[1] as part of its 1993 evaluation of dichlorvos and that the study by Witherup *et al.* (1971)[2] was evaluated by WHO as part of EHC 79[3] (1988) on dichlorvos.

Table 1 Comparison of ADIs and ARfDs for dichlorvos

Jurisdiction	ARfD	Basis	ADI	Basis
JMPR (2011)	0.1 mg/kg bw	NOAEL of 1 mg/kg bw for erythrocyte AChE inhibition in the acute oral study in male volunteers (Gledhill, 1997)[b]	0–0.004 mg/kg bw	NOAEL of 0.04 mg/kg bw per day for inhibition of erythrocyte AChE activity in a 21-day study in male volunteers (Boyer et al., 1977)[d]
USEPA (2006)	0.008 mg/kg bw	$BMDL_{10}$ of 0.8 mg/kg bw in female rats for erythrocyte AChE inhibition using the acute toxicity study by Twomey (2002)[c]	0–0.000 5 mg/kg bw	NOAEL of 0.05 mg/kg bw per day in a 52-week dog study for inhibition of plasma butyrylcholinesterase and erythrocyte AChE (Markiewicz, 1990)[e]
EU[a] (2012)	0.002 mg/kg	NOAEL of 0.25 mg/kg	0.000 08 mg/kg	NOAEL of 0.008 mg/kg bw per

[1] Jolley WP, Stemmer KL, Pfitzer EA (1967). The effects exerted upon Beagle dogs during a period of two years by the introduction of Vapona insecticide into their daily diet. Unpublished report from The Kettering Laboratory, Cincinnati, OH, USA, 19 January. Prepared for Shell Chemical Company. Submitted to WHO by Bayer AG, Ciba-Geigy Ltd, Temana International Ltd.

[2] Witherup S, Jolley WJ, Stemmer K, Pfitzer EA (1971). Chronic toxicity studies with 2,2-dichlorovinyl dimethyl phosphate (DDVP) in dogs and rats including observations on rat reproduction. Toxicol Appl Pharmacol. 19:377.

[3] IPCS (1988). Dichlorvos. Geneva: World Health Organization, International Programme on Chemical Safety (Environmental Criteria Monograph 79; http://www.inchem.org/documents/ehc/ehc/ehc79.htm, accessed 28 September 2015).

Jurisdiction	ARfD	Basis	ADI	Basis
	bw	bw for erythrocyte AChE inhibition from developmental toxicity studies in rat and rabbit	bw	day in a 2-year dog study for inhibition of erythrocyte AChE

$BMDL_{10}$: 95% lower confidence limit of the benchmark dose for a 10% response

[a] Currently, no legally adopted EU toxicological reference values are available for dichlorvos, as the EU assessment considered the toxicological data package insufficient to address the genotoxic and carcinogenic potential of dichlorvos. Considering that the setting of toxicological reference values on the basis of human studies would not be acceptable at the EU level and that the tentative values proposed during the EFSA Peer Review Co-ordination meeting are more conservative, they would be the preferred ones to be used for a provisional risk assessment.

[b] Gledhill AJ (1997). Dichlorvos: a study to investigate the effect of a single dose on erythrocyte cholinesterase inhibition in healthy male volunteers. Central Toxicology Laboratory, Macclesfield, England, United Kingdom. Unpublished report no. CTL/P/5393 (25 March 1997); AMVAC report reference 500-TOX-007.

[c] Twomey K (2002). Dichlorvos (DDVP): third acute cholinesterase inhibition study in rats. Unpublished report submitted by AMVAC Chemical Corporation and conducted by Central Toxicology Laboratory, Cheshire, England, United Kingdom. Report No. CTL/AR7138/Regulatory/Report.

[d] Boyer AC, Brown LJ, Slomka MB, Hine CH (1977). Inhibition of human plasma cholinesterase by ingested dichlorvos: effect of formulation vehicle. Toxicol Appl Pharmacol. 41:389–94.

[e] Markiewicz V (1990). A 52-week chronic toxicity study on DDVP in dogs: Lab Project Number: 2534/102. Unpublished study prepared by Hazleton Laboratories America, Inc. 431 pp. MRID 41593101.

4. DIETARY RISK ASSESSMENT FOR PESTICIDE RESIDUES IN FOODS

Assessment of risk from long-term dietary intake

At the present Meeting, risks associated with long-term dietary intake were assessed for compounds for which MRLs were recommended and STMRs estimated. International estimated daily intakes (IEDIs) were calculated by multiplying the concentrations of residues (STMRs and STMR-Ps) by the average daily per capita consumption estimated for each commodity on the basis of the 17 GEMS/Food Consumption cluster diets[1]. IEDIs are expressed as a percentage of the maximum ADI for a 55 kg or 60 kg person, depending on the cluster diet. The spreadsheet application is available at http://www.who.int/foodsafety/areas_work/chemical-risks/gems-food/en/.

New evaluations

Acetochlor, cyazofamid, flonicamid, flumioxazin, lufenuron and quinclorac were evaluated for toxicology and residues for the first time by the JMPR. The Meeting established ADIs and conducted long-term dietary risk assessments for these compounds.

Flupyradifurone was evaluated for toxicology and an ADI was established. Long-term dietary risk assessment will be conducted when the compound is evaluated for residues in a near future.

A full evaluation of fluazifop-*p*-butyl was postponed until a complete submission of data on the fluazifop compounds and their metabolites are submitted to the Meeting.

Periodic Re-evaluations

Abamectin and ethephon were evaluated for toxicology and residues under the Periodic Re-evaluation Programme. ADIs were established at this Meeting and long-term dietary risk assessments were conducted.

Penconazole was evaluated under the Programme only for toxicological aspects and an ADI was established. Long-term dietary risk assessment will be conducted when the compound is evaluated for residues in a near future.

Evaluations

Acetamiprid, bifenthrin, chlorothalonil, cyantraniliprole, cyprodinil, difenoconazole, fluopyram, flutriafol, fluxapyroxad, imidacloprid, lambda-cyhalothrin, tebuconazole and trifloxystrobin were evaluated for residues and long-term dietary risk assessments were conducted.

The residue recommendations for imazapic, imazapyr, propiconazole, pyrimethanil and spirotetramat did not alter significantly the previous long-term dietary intake estimations and new assessments were not reported.

The residues of lindane, as an environmental contaminant (extraneous residues), in various food commodities were evaluated and a long-term dietary risk assessment was conducted.

Residues data for acetamiprid, cypermethrins, lambda-cyhalothrin, profenofos and triazophos obtained from monitoring studies in spices were evaluated. The contribution of residues of acetamiprid and lambda-cyhalothrin to the long-term-intake was addressed in the evaluation of these compounds. The estimations for cypermethrins, profenofos and triazophos do not alter significantly the previous long-term dietary intake estimations and new assessments were not reported.

The evaluations performed at this Meeting for bentazone, dichlorvos, fenpropathrin and imazamox did not impact on previous assessments.

[1] http://www.who.int/nutrition/landscape_analysis/nlis_gem_food/en/

A summary of the long-term dietary risk assessments conducted by the present meeting is shown on Table 1. The detailed calculations of long-term dietary intakes are given in Annex 3 to the 2015 Report. The percentages are rounded to one whole number up to 9 and to the nearest 10 above. Percentages above 100 should not necessarily be interpreted as giving rise to a health concern because of the conservative assumptions used in the assessments. Calculations of dietary intake can be further refined at the national level by taking into account more detailed information, as described in the Guidelines for predicting intake of pesticide residues[1].

Table 1 Summary of long-term dietary of risk assessments conducted by the 2015 JMPR.

CCPR code	Compound Name	ADI (mg/kg bw)	Range of IEDI, as % of the maximum ADI
177	Abamectin	0–0.001	1–5
246	Acetamiprid	0–0.07	0–4
280	Acetochlor	0–0.01	0–4
178	Bifenthrin	0–0.01	9–30
081	Chlorothalonil	0–0.02	10–50
	2,5,6-trichloro-4-hydroxyisophthalonitrile (SDS-3701)	0–0.008	4–10
263	Cyantraniliprole	0–0.03	2–20
281	Cyazofamid	0–0.2	0–4
207	Cyprodinil	0–0.03	9–70
224	Difenoconazole	0–0.01	7–70
106	Ethephon	0–0.05	0–6
282	Flonicamid	0–0.07	1–10
284	Flumioxazin	0–0.02	0–1
243	Fluopyram	0–0.01	4–30
256	Fluxapyroxad	0–0.02	4–20
248	Flutriafol	0–0.01	3–20
206	Imidacloprid	0–0.06	2–5
146	Lambda-cyhalothrin	0–0.02	2–9
048	Lindane	0–0.005	0–1
286	Lufenuron	0–0.02	0–4
287	Quinclorac	0–0.4	0
189	Tebuconazole	0–0.03	2–9
213	Trifloxystrobin	0–0.04	1–4

Assessment of risk from short-term dietary intake

The procedures used for calculating the International estimated short-term intake (IESTI) are described in detail in Chapter 3 of the 2003 JMPR report. Detailed guidance on setting ARfD is described in Section 2.1 of the 2004 JMPR report[2].

Large portion data were available to GEMS/Food for Australia, Brazil, China, Finland, France, Germany, Japan, Netherlands, South Africa, Thailand, United Kingdom and United States. Large portion data have been provided for general population (all ages), women of childbearing age (14–50 yrs), and children of various ages (6 yrs and under). For each commodity, the highest large portion data from all different population groups was included in the spreadsheet for the calculation of the IESTI. The spreadsheet application is available at http://www.who.int/foodsafety/areas_work/chemical-risks/gems-food/en/

1 WHO (1997) Guidelines for predicting dietary intake of pesticide residues. 2nd Revised Edition, GEMS/Food Document WHO/FSF/FOS/97.7, Geneva

2 Pesticide residues in food—2004 evaluations. Part I. Residues. FAO Plant Production and Protection Paper, 182, 2005.

New evaluations

Acetochlor, flumioxazin and quinclorac were evaluated for toxicology and residues for the first time by the JMPR. The Meeting established ARfDs and conducted short-term dietary risk assessments for these compounds.

The Meeting agreed that an ARfD for flonicamid and lufenuron were unnecessary and short-term dietary intake assessments were not conducted.

An ARfD for cyazofamid was considered unnecessary, but and ARfD was established for its metabolite 4-chloro-5-p-tolymidazole-2-carbonitrile (CCIM) and a short-term dietary intake assessment was conducted.

Flupyradifurone was evaluated for toxicological effects and an ARfD was established. The compound will be evaluated for residue aspects in a near future, when the short-term-dietary assessments will be conducted.

A complete evaluation of fluazifop-*p*-butyl was postponed until a complete submission of data on the fluazifop compounds and their metabolites are submitted to the Meeting.

Periodic re-evaluations

Abamectin and ethephon were evaluated for toxicology and residues under the Periodic Re-evaluation Programme. ARfD were established and short-term dietary intake assessments were performed.

Penconazole was evaluated for toxicological effects and an ARfD was established. The compound will be evaluated for residue aspects in a near future, when the short-term-dietary assessments will be conducted.

Evaluations

Acetamiprid, bifenthrin, chlorothalonil, difenoconazole, fluopyram, fluxapyroxad, flutriafol, imidacloprid, lambda-cyhalothrin, lindane, propiconazole, spirotetramat and tebuconazole were evaluated for residues and short-term dietary risk assessments were conducted for these compounds.

The evaluations of bentazone, dichlorvos, fenpropathrin and imazamox performed at this Meeting did not impact the short-term dietary assessment performed previously.

AS, on the basis of data received by previous Meetings, ARfDs were considered unnecessary for cyantraniliprole, cyprodinil, imazapic, imazapyr, pyrimethanil and trifloxystrobin, no short-term intake assessment was conducted.

Residues of acetamiprid, cypermethrins, lambda-cyhalothrin, profenofos and triazophos obtained from monitoring studies in spices were evaluated. The short-term-intakes for acetamiprid and lambda-cyhalothrin were addressed in the evaluation of these compounds, and were performed for cypermethrins, profenofos and triazophos.

Table 2 shows the maximum percentage of the ARfD found in the short-term dietary risk assessments for each compound. The percentages are rounded to one whole number up to 9 and to nearest 10 above that. Percentages above 100 should not necessarily be interpreted as giving rise to a health concern because of the conservative assumptions used in the assessments. The detailed calculations of short-term dietary intakes are given in Annex 4 to the 2015 Report.

Table 2 Maximum percentage of the ARfD found in the short-term dietary risk assessments conducted by the 2015 JMPR. The crops are specified when the ARfD was exceeded,

CCPR code	Compound Name	ARfD (mg/kg bw)	Max. percentage of ARfD: Commodity (% ARfD)	Max. percentage of ARfD: Population, age in years (country)
177	Abamectin	0.003	Spinach (140)	Child, 1-5 (South Africa)
			Others (60)	All
246	Acetamiprid	0.1	Mustard greens (490)	Child, 1-6 (China)
			Mustard greens (200)	General population, > 1 (China)

CCPR code	Compound Name	ARfD (mg/kg bw)	Max. percentage of ARfD	
			Commodity (% ARfD)	Population, age in years (country)
			Others (10)	All
280	Acetochlor	1	All (0)	All
178	Bifenthrin	0.01	Celery (600)	Child, 1-6 (China)
			Celery (360)	General population, >1 (Netherlands)
			Head lettuce (430)	Child, 2-6 (Netherlands)
			Head lettuce (190)	General population, >1 (Netherlands)
			Others (100)	All
081	Chlorothalonil	0.6	All (30)	All
	2,5,6-trichloro-4-hydroxyisophthalonitrile (SDS-3701)	0.03	All (10)	All
281	Cyazofamid			
	4-chloro-5-p-tolymidazole-2-carbonitrile (CCIM)	0.2	All (90)	All
118	Cypermethrins	0.04	Cardamom seed (0)	All
224	Difenoconazole	0.3	All (3)	All
106	Ethephon	0.05	All (100)	All
284	Flumioxazin	0.03 [a]	All (7)	General population > 2 (Australia) [b]
243	Fluopyram	0.5	All (10)	All
248	Flutriafol	0.05	Leaf lettuce (360)	Child, 1-6 (China)
			Leaf lettuce (120)	General population, > 1 (China)
			Spinach (490)	Child, 1-5 (South Africa)
			Spinach (150)	General population, > 1 (China)
			Mustard greens (350)	Child, 1-6 (China)
			Mustard greens (140)	General population, > 1 (China)
			Others (80)	All
285	Fluxapyroxad	0.3	Spinach (190)	Child, 1-5 (South Africa)
			Others (60)	All
206	Imidacloprid	0.4	All (10)	All
146	Lambda-cyhalothrin	0.02	All (2)	All
048	Lindane	0.06	All (0)	All
112	Phorate	0.007	Fennel, seed (10)	Child, 2-4 (Germany)
171	Profenofos	1	All spices (0)	All
160	Propiconazole	0.07	All (3)	All
287	Quinclorac	2	All (1)	All
234	Spirotetramat	1	All (2)	All
189	Tebuconazole	0.3	All (5)	All
143	Triazophos	0.001	Fennel, seed (7)	Child, 2-4 (Germany)

[a] for women of child-bearing-age only;

[b] Surrogate consumption data in the absence of women of child-bearing-age consumption data.

Possible risk assessment refinement when the IESTI exceeds the ARfD

Abamectin: Spinach may be eaten without any further processing. As no alternative GAP was available to the Meeting to estimate a lower HR value, no refinement of the short-term intake is currently possible for this commodity.

The ARfD of 0.003 mg/kg bw for abamectin established by the present Meeting was based on the overall NOAEL of 0.25 mg/kg bw per day for clinical signs in dogs (mydriasis) observed in the first week of treatment at 0.5 mg/kg bw per day. Since the exact time-point for the occurrence of mydriasis in the first week of treatment was not specified in the study report, the Meeting was not able to preclude whether these effects could be attributed to a single dose. The Meeting recognized that the ARfD for abamectin may be conservative and a refinement might be possible if new data became available.

Acetamiprid: Mustard greens may be eaten without any further processing. As no alternative GAP was available to the Meeting to estimate a lower HR value, no refinement of the short-term intake is currently possible for this commodity.

The ARfD of 0.1 mg/kg bw for acetamiprid was established by the 2011 JMPR on the basis of a NOAEL of 10 mg/kg bw in an acute neurotoxicity study in rats, based on evidence of neurotoxicity, decreased locomotor activity and increased urination frequency. This ARfD was supported by the NOAEL for maternal toxicity in the developmental neurotoxicity study of 10 mg/kg bw per day, based on reduced body weight gain in dams during the first 3 days of dosing (gestation days 6–9). The present Meeting recognised that any refinement of the ARfD for acetamiprid is unlikely to result in an increase of sufficient magnitude that would alter the conclusion that the short-term-intake of acetamiprid from the consumption of mustard greens may represent a public health concern.

Bifenthrin: Celery and head lettuce may be eaten without any further processing. As no alternative GAP was available to the Meeting to estimate a lower HR value, no refinement of the short-term intake is currently possible for this commodity.

The ARfD of 0.01 mg/kg bw for bifenthrin was established in 2009 based on a threshold dose of 1.3 mg/kg bw for motor activity in a study of acute toxicity in rats treated by gavage and using a safety factor of 100. Although this study was conducted with males only, it was considered appropriate, as there was no evidence of sex-specific differences among the data on bifenthrin. This ARfD was supported by the study of developmental toxicity in rats treated by gavage in which the NOAEL of 1.0 mg/kg bw per day was based on the increased fetal and litter incidences of hydroureter without hydronephrosis seen at the LOAEL of 2.0 mg/kg bw per day and which thereby was also protective for developmental effects. Hence, refinement of the ARfD is unlikely since this endpoint is based on the most sensitive compound related effects measured in the study. This is supported by the fact that the LOAEL of 2 mg/kg bw in the developmental toxicity study in rats is only two-fold the NOAEL

Fluxapyroxad: Spinach may be eaten without any further processing. As no alternative GAP was available to the Meeting to estimate a lower HR value, no refinement of the short-term intake is currently possible for this commodity.

The ARfD of 0.3 mg/kg bw for fluxapyroxad was established in 2012 on the basis of the NOAEL of 25 mg/kg bw per day in the developmental toxicity study in rabbits for early resorptions and the rat developmental toxicity study based on a transient decrease in body weight gain from gestation day 6 to gestation day 8. A safety factor of 100 was applied. The present Meeting recognised that the ARfD for fluxapyroxad was conservative and a refinement might be possible if new data became available.

Flutriafol: Leaf lettuce, mustard greens and spinach may be eaten without any further processing. As no alternative GAP was available to the Meeting to estimate a lower HR value, no refinement of the short-term intake is currently possible for this commodity.

The ARfD of 0.05 mg/kg bw for flutriafol was established by the 2011 JMPR on the basis of the NOAEL of 5 mg/kg bw per day in the 90-day and 1-year toxicity studies in dogs based on reduced body weight gain (males) or body weight loss (females) after 1 week (the first time of measurement) and subsequently reduced body weight gain during the early part of the study, although feed consumption was unaffected by treatment. A safety factor of 100 was applied. This provides a margin of greater than 1000 between the ARfD and the LOAEL for cleft palate in rats (75 mg/kg bw per day). The present Meeting recognised that any refinement of the ARfD for flutriafol is unlikely to result in an increase of sufficient magnitude that would alter the conclusion that short-term-intake of flutriafol from the consumption of leaf lettuce, mustard greens and spinach may represent a public health concern.

5. EVALUATION OF DATA FOR ACCEPTABLE DAILY INTAKE AND ACUTE REFERENCE DOSE FOR HUMANS, MAXIMUM RESIDUE LEVELS AND SUPERVISED TRIALS MEDIAN RESIDUE VALUES

5.1 ABAMECTIN (177)

TOXICOLOGY

Abamectin is the International Organization for Standardization (ISO)–approved common name for a mixture of the components avermectin B_{1a} (≥ 80%) [(2a*E*,4*E*,8*E*)-(5′*S*,6*S*,6′*R*,7*S*,11*R*,13*S*,15*S*,17a*R*,20*R*,20a*R*,20b*S*)-6′-[(*S*)-*sec*-butyl]-5′,6,6′,7,10,11,14,15,17a,20,20a,20b-dodecahydro-20,20b-dihydroxy-5′,6,8,19-tetramethyl-17-oxospiro[11,15-methano-2*H*,13*H*,17*H*-furo[4,3,2-pq][2,6]benzodioxacyclooctadecin-13,2′-[2*H*]pyran]-7-yl 2,6-dideoxy-4-*O*-(2,6-dideoxy-3-*O*-methyl-α-L-arabino-hexopyranosyl)-3-*O*-methyl-α-L-arabino-hexopyranoside] and avermectin B_{1b} (≤ 20%) [(2a*E*,4*E*,8*E*)-(5′*S*,6*S*,6′*R*,7*S*,11*R*,13*S*,15*S*,17a*R*,20*R*,20a*R*,20b*S*)-5′,6,6′,7,10,11,14,15,17a,20,20a,20b-dodecahydro-20,20b-dihydroxy-6′-isopropyl-5′,6,8,19-tetramethyl-17-oxospiro[11,15-methano-2*H*,13*H*,17*H*-furo[4,3,2-pq][2,6]benzodioxacyclooctadecin-13,2′-[2*H*]pyran]-7-yl 2,6-dideoxy-4-*O*-(2,6-dideoxy-3-*O*-methyl-α-L-arabino-hexopyranosyl)-3-*O*-methyl-α-L-arabino-hexopyranoside] (International Union of Pure and Applied Chemistry [IUPAC]), which has the Chemical Abstracts Service (CAS) number 71751-41-2. Abamectin is a macrocyclic lactone product derived from the soil microorganism *Streptomyces avermitilis.* Because of the very similar biological and toxicological properties of the B_{1a} and B_{1b} components, they can be considered to be equivalent. Abamectin is used as an insecticide and acaricide.

Abamectin was previously evaluated by JMPR in 1992, 1994, 1995 and 1997. In 1997, an ADI of 0–0.002 mg/kg bw was established based on the NOAEL of 0.12 mg/kg bw per day for offspring toxicity in a two-generation reproductive toxicity study in rats, with the application of a reduced safety factor of 50 to account for the higher sensitivity of neonatal rats to abamectin, and the NOAEL of 0.24 mg/kg bw per day from the 1-year toxicity study in dogs, with the application of a safety factor of 100. The ADI was deemed to be appropriate for the sum of abamectin and its 8,9-*Z* isomer (a photodegraded product of abamectin), as the isomer was not expected to be of higher toxicity than abamectin. An ARfD was not established when abamectin was last evaluated by JMPR, as that evaluation pre-dated current JMPR guidance for the establishment of ARfDs for pesticides.

In 1996, the forty-seventh meeting of the Joint FAO/WHO Expert Committee on Food Additives (JECFA) established an ADI of 0–0.001 mg/kg bw for abamectin used as a veterinary drug, based on the NOAEL of 0.12 mg/kg bw per day in the study on reproductive toxicity in rats and application of a safety factor of 100.

Abamectin was reviewed by the present Meeting as part of the periodic review programme of CCPR.

The majority of the toxicology studies were conducted with abamectin technical, which is a mixture of avermectin B_{1a} and avermectin B_{1b} (approximately 90:10). Some studies (mainly those requiring radiolabel) were conducted with either avermectin B_{1a} or avermectin B_{1b}.

All critical studies were conducted in compliance with good laboratory practice (GLP), unless otherwise specified.

Susceptibility of CF-1 mice and neonatal rats to abamectin

In mammals, abamectin is a substrate for P-glycoprotein, which is a member of the adenosine triphosphate (ATP)–binding cassette subfamily B (ABCB1), also known as multidrug resistance protein 1 (MDR1). P-glycoprotein is extensively expressed in the intestinal epithelium, liver cells, cells of the proximal tubule of the kidney and capillary endothelial cells of the brain (blood–brain barrier), placenta, ovaries and testes. As an efflux transporter, P-glycoprotein acts as a protective barrier to keep xenobiotics out of the body by excreting them into bile, urine and intestinal lumen and prevents the accumulation of these compounds in the brain and gonads, as well as the fetus. Therefore, some test animals (e.g. CF-1 mice) in which genetic polymorphisms compromise P-glycoprotein expression are particularly susceptible to abamectin-induced toxicity. As a result, studies on CF-1 mice were not considered relevant for the human risk assessment.

In rats, P-glycoprotein was undetectable in the embryo and early stages of postnatal development. In the brush border of intestinal epithelial cells, expression of P-glycoprotein was absent to minimal on postnatal day (PND) 8 and was more intense but did not reach adult levels by PND 20. In the brain capillaries, expression of P-glycoprotein was minimal in fetuses on gestation day (GD) 20 and in younger pups until PND 11, with subsequent increases to a plateau at adult levels by PNDs 20–28. In humans, P-glycoprotein expression in fetal intestinal epithelium and brain capillaries is at the adult level at week 28 of gestation, and therefore results of reproductive toxicity studies in neonatal rats should be interpreted accordingly.

Biochemical aspects

In rats, orally administered radiolabelled avermectin B_{1a} was rapidly and almost completely absorbed, based on a comparison with urinary excretion after intravenous administration. Maximum concentrations in blood were achieved within 4–8 hours after administration. Radiolabel was widely distributed. Elimination of radiolabel occurred predominantly by non-biliary excretion into the gastrointestinal tract and excretion in the faeces, whereas urinary excretion accounted for only 0.5–1.4% of the dose. Elimination accounted for 80–101% of the administered dose within 96 hours. Rate of oral absorption, tissue distribution and excretion were independent of the dose level, treatment regimen and/or sex; however, the depletion of tissue residues was approximately 2-fold more rapid in males than in females. There was no evidence for tissue accumulation on repeated administration.

In toxicokinetic studies in genotyped subpopulations of CF-1 mice (i.e. mdr1a P-glycoprotein–deficient mice and mice with normal expression of mdr1a P-glycoprotein), plasma levels of avermectin B_{1a} were higher in mdr1a P-glycoprotein–deficient mice than in mice with normal expression of mdr1a P-glycoprotein. Distribution and elimination appeared to be slower in mdr1a P-glycoprotein–deficient mice, with concentrations in the brain tissue of mdr1a P-glycoprotein–deficient mice up to 150 times higher than in mice with normal expression of mdr1a P-glycoprotein. The primary route of excretion was via faeces.

Metabolism of avermectin B_{1a} in the rat was moderate to extensive and proceeded predominantly via demethylation, hydroxylation, cleavage of the oleandrosyl ring and oxidation reactions. The metabolite pattern in urine, faeces and bile was complex but qualitatively independent of the sex and dose, with some quantitative variations. Eleven metabolites were isolated. Unchanged avermectin B_{1a} and the metabolites 3″-*O*-desmethyl abamectin B_{1a} [3″DM], 24-hydroxymethyl abamectin B_{1a} [24aOH], 27-hydroxymethyl abamectin B_{1a} [27OH], 3″-*O*-desmethyl-24-hydroxymethyl abamectin B_{1a} [3″DM,24aOH] and 3″-*O*-desmethyl-27-hydroxymethyl abamectin B_{1a} [3″DM,27OH] represented the majority of the faecal radioactivity.

Toxicological data

Abamectin was of high acute oral toxicity, with a median lethal dose (LD_{50}) of 8.7 mg/kg bw in rats with sesame oil as the vehicle and an LD_{50} of 214 mg/kg bw in rats with water as the vehicle. The acute inhalation toxicity of abamectin was also high, with a median lethal concentration (LC_{50}) of > 0.034 and < 0.21 mg/L in rats. The dermal LD_{50} in both rats and rabbits was greater than 2000 mg/kg bw. Abamectin was not irritating to the eye or the skin of rabbits. It was not a dermal sensitizer in guinea-pigs.

In short- and long-term toxicity studies performed in rats and dogs, clinical signs observed as a response to treatment were tremors in rats and dogs and mydriasis or absent pupil reflex in dogs. There were no histopathological changes in the tissues of the central and peripheral nervous systems. The clinical signs are considered to be an exaggerated pharmacological response to the interaction of abamectin with the gamma-aminobutyric acid (GABA)–benzodiazepine receptor chloride channel complex. Treatment-related histopathological alterations in dogs were confined to the hepatobiliary system. Based on the severity of clinical signs of neurotoxicity and mydriasis and the doses at which death occurs, the dog was more sensitive than the rat to abamectin.

In an 8-week dietary toxicity study in rats with mean achieved dose levels of 0, 0.5, 1.2, 1.9, 2.2 and 5.0 mg/kg bw per day, death occurred at a dose level of 5.0 mg/kg bw per day. The NOAEL was 1.2 mg/kg bw per day, based on the occurrence of clinical signs and reduced body weight gain at 1.9 mg/kg bw per day and above. No 90-day toxicity study in rats was provided.

In 12-week, 18-week and 53-week toxicity studies in dogs, a very steep dose–response curve for abamectin was noted. In the 12-week feeding study in dogs with dietary concentrations of abamectin adjusted to provide dose levels of 0, 0.25, 0.5, 1.0 and 4.0/2.0 mg/kg bw per day, the NOAEL was 0.5 mg/kg bw per day, based on the occurrence of mydriasis starting in week 1 of treatment at 1.0 mg/kg bw per day. Markedly reduced feed consumption, body weight loss and clinical signs of intoxication were observed at 2.0 mg/kg bw per day and above.

In the 18-week gavage study in dogs administered abamectin at a dose of 0, 0.25, 0.5, 2.0 or 8.0 mg/kg bw per day, the NOAEL was 0.25 mg/kg bw per day, based on mortality, clinical signs of toxicity, reduced body weight gain or body weight loss and histopathological changes in the liver at 0.5 mg/kg bw per day. Signs of toxicity were observed starting on day 7 at 0.5 mg/kg bw per day, on day 3 at 2.0 mg/kg bw per day and on day 1 (within 3 hours after dosing) at 8.0 mg/kg bw per day.

In the 53-week feeding study in dogs with dietary concentrations of abamectin adjusted to provide dose levels of 0, 0.25, 0.5 and 1.0 mg/kg bw per day, the NOAEL was 0.25 mg/kg bw per day, based on mydriasis at 0.5 mg/kg bw per day. Signs of toxicity were observed starting in the first week at 0.5 and 1.0 mg/kg bw per day.

The overall NOAEL for the three dog studies was 0.25 mg/kg bw per day, based on mortality (one animal), clinical signs of toxicity (including mydriasis) and reduced body weight gain or body weight loss at 0.5 mg/kg bw per day.

In a 93-week toxicity and carcinogenicity study in mice, with dietary concentrations of abamectin adjusted to provide dose levels of 0, 2.0, 4.0 and 8.0 mg/kg bw per day, the NOAEL was 4.0 mg/kg bw per day, based on the increased mortality in males and reduced body weight gain in females at 8.0 mg/kg bw per day. There was no increase in tumour incidence.

In a 104-week chronic toxicity and carcinogenicity study in rats, with dietary concentrations of abamectin adjusted to provide dose levels of 0, 0.75, 1.5 and 2.0 mg/kg bw per day, the NOAEL was 1.5 mg/kg bw per day, based on the occurrence of clinical signs of toxicity at 2.0 mg/kg bw per day. There was no increase in tumour incidence.

The Meeting concluded that abamectin is not carcinogenic in mice or rats.

Abamectin has been tested for genotoxicity in an adequate range of assays, both in vitro and in vivo. There was no evidence of genotoxicity.

The Meeting concluded that abamectin is unlikely to be genotoxic.

In view of the lack of genotoxicity and the absence of carcinogenicity in mice and rats, the Meeting concluded that abamectin is unlikely to pose a carcinogenic risk to humans.

In a two-generation reproductive toxicity study in rats, abamectin (in sesame oil) was administered orally by gavage at a dose level of 0, 0.05, 0.12 or 0.40 mg/kg bw per day. The NOAEL for parental toxicity and reproductive toxicity was 0.40 mg/kg bw per day, the highest dose tested. For offspring toxicity, the NOAEL was 0.12 mg/kg bw per day, based on increased pup mortality, retarded weight gain in both F_1 and F_2 generation progeny and increased incidence of transient retinal folds in the eyes of F_2 generation weanlings at 0.40 mg/kg bw per day.

In a developmental toxicity study in rats, abamectin (in sesame oil) was administered orally by gavage at a dose level of 0, 0.4, 0.8 or 1.6 mg/kg bw per day. The NOAEL for maternal toxicity and embryo/fetal toxicity was 1.6 mg/kg bw per day, the highest dose tested.

In a developmental toxicity study in rabbits, abamectin (in sesame oil) was administered orally by gavage at a dose level of 0, 0.5, 1.0 or 2.0 mg/kg bw per day. The NOAEL for maternal toxicity was 1.0 mg/kg bw per day, based on the occurrence of severe maternal toxicity and body weight loss during gestation at 2.0 mg/kg bw per day. The NOAEL for embryo and fetal toxicity was 1.0 mg/kg bw per day, based on increased incidences of external malformations (cleft palate, omphalocele, clubbed forefeet) and incomplete ossification of sternebrae and metacarpals at 2.0 mg/kg bw per day.

The Meeting concluded that abamectin is teratogenic in rabbits, but not in rats.

In an acute neurotoxicity study in rats, abamectin (in sesame oil) was administered orally by gavage at a dose level of 0, 0.5, 1.5 or 6 mg/kg bw. The NOAEL for acute neurotoxicity was 0.5 mg/kg bw, based on a reduced splay reflex at 1.5 mg/kg bw. This change was seen at 6–7 hours after dosing on day 1 and was consistent with the neurotoxic effects observed at higher doses. No neuropathological changes were observed at dose levels up to 6 mg/kg bw.

In a 90-day neurotoxicity study in rats, abamectin (in sesame oil) was administered orally by gavage at a dose level of 0, 0.4, 1.6 or 4.0 mg/kg bw per day. The NOAEL for systemic toxicity and neurotoxicity was 1.6 mg/kg bw per day, based on reduced body weights in females, clinical signs in both sexes (irregular breathing, upward curvature of the spine, reduced righting reflex, reduced splay reflex) and changes in hindlimb grip strength in females at 4.0 mg/kg bw per day.

In a developmental neurotoxicity study in rats, abamectin (in sesame oil) was administered orally by gavage to parent females once daily from day 7 of gestation until day 22 postpartum at a dose level of 0.12, 0.20 or 0.40 mg/kg bw per day. In parental females, body weights and feed consumption were slightly increased at all dose levels. In offspring, lower body weights post-weaning and hence a delay in time of vaginal opening were observed at 0.20 mg/kg bw per day and above. The NOAEL was 0.12 mg/kg bw per day. There was no effect on function or morphology of the nervous system at dose levels up to 0.40 mg/kg bw per day, the highest dose tested.

In a supplementary developmental neurotoxicity study in rats performed to provide brain morphometry data, abamectin (in sesame oil) was administered orally by gavage to parent females once daily from day 7 of gestation until day 22 postpartum at a dose level of 0.12, 0.20 or 0.40 mg/kg bw per day. In parental females, body weights and feed consumption were slightly increased at all dose levels during gestation. In offspring at 0.40 mg/kg bw per day, clinical signs and increased mortality were observed in the pre-weaning period, and therefore all dams and pups in this group were removed from the study on days 15–38 postpartum. At 0.20 mg/kg bw per day, body weights of pups post-weaning were statistically significantly lower and the time of vaginal opening was statistically significantly later compared with the control group. The NOAEL for offspring toxicity was 0.12 mg/kg bw per day. There was no effect on function or morphology of the nervous system at dose levels up to 0.40 mg/kg bw per day, the highest dose tested.

In a gavage study in Rhesus monkeys, the most sensitive indicator of abamectin toxicity was emesis, as clinical signs of toxicity seen in mice and rats (tremors and convulsions) did not occur. The minimum toxic dose of abamectin was 2.0 mg/kg bw, and the NOAEL was 1.0 mg/kg bw.

The Meeting concluded that abamectin is neurotoxic.

Toxicological data on metabolites and/or degradates

The 8,9-*Z* isomer of abamectin (also referred to as the Δ-8,9-isomer, NOA 427011 and L-652,280) is a photodegraded product of abamectin.

An exploratory acute oral toxicity study with the 8,9-*Z* isomer of abamectin B_{1a} in CD-1 mice and CF-1 mice gave LD_{50} values of 217 and 20 mg/kg bw, respectively.

The 8,9-*Z* isomer of abamectin B_{1a} did not induce gene mutations in bacteria, with or without metabolic activation.

In a one-generation reproductive toxicity study with the 8,9-*Z* isomer of abamectin B_{1a} in rats using dose levels of 0, 0.06, 0.12 and 0.40 mg/kg bw per day, the NOAEL for maternal toxicity, reproductive effects and effects on offspring was 0.40 mg/kg bw per day, the highest dose tested.

In a developmental toxicity study with the 8,9-*Z* isomer of abamectin B_{1a} in CD-1 mice using dose levels of 0, 0.75, 1.5 and 3.0 mg/kg bw per day, the NOAEL for maternal effects and embryo/fetal toxicity, including teratogenicity, was 3.0 mg/kg bw per day, the highest dose tested.

In a developmental toxicity study with the 8,9-*Z* isomer of abamectin B_{1a} in rats using dose levels of 0, 0.25, 0.5 and 1.0 mg/kg bw per day, the NOAEL for maternal effects and embryo/fetal toxicity, including teratogenicity, was 1.0 mg/kg bw per day, the highest dose tested.

The Meeting concluded that the 8,9-*Z* isomer of abamectin B_{1a} is of no greater toxicity than the parent abamectin B_{1a}.

A metabolite, 24-hydroxymethyl abamectin, was found in liver and milk in smaller proportions than the parent. The Meeting concluded that 24-hydroxymethyl abamectin is of no greater toxicity than the parent, because it has been found in amounts of more than 10% in excreta and therefore has been tested in studies with the parent.

Human data

From reports on health records of manufacturing plant personnel, no adverse health effects were noted. A number of reports on intentional poisoning in humans available in the literature showed low susceptibility of humans to abamectin, with variable dose-related neurological signs and symptoms.

Although administration of abamectin to mice, rats and dogs at relatively low dose levels was associated with clinical signs of central nervous system toxicity (including mydriasis, tremors, convulsions, ataxia and bradycardia), it was shown that Rhesus monkeys and humans are less sensitive to abamectin, at least following acute exposure.

The Meeting concluded that the existing database on abamectin was adequate to characterize the potential hazards to the general population, including fetuses, infants and children.

Toxicological evaluation

The Meeting established a new ADI of 0–0.001 mg/kg bw, based on the NOAEL of 0.12 mg/kg bw per day for lower body weights and delayed time of vaginal opening observed at 0.20 mg/kg bw per day in post-weaning pups in the two developmental neurotoxicity studies in rats, using a safety factor of 100. The Meeting withdrew the existing ADI of 0–0.002 and also concluded that the additional information available to this Meeting regarding the critical period in development and species differences does not justify the application of a reduced safety factor to the NOAEL.

The ADI also applies to the 8,9-*Z* isomer and the 24-hydroxymethyl metabolite of abamectin.

The Meeting established an ARfD of 0.003 mg/kg bw, based on the overall NOAEL of 0.25 mg/kg bw per day for clinical signs in dogs (mydriasis) observed in the first week of treatment at 0.5 mg/kg bw per day. This ARfD also applies to the 8,9-*Z* isomer and the 24-hydroxymethyl metabolite of abamectin.

A toxicological monograph was prepared.

Levels relevant to risk assessment of abamectin and 8,9-Z isomer of abamectin

Species	Study	Effect	NOAEL	LOAEL
Abamectin				
Mouse	Ninety-three-week study of toxicity and carcinogenicity[a]	Toxicity	4.0 mg/kg bw per day	8.0 mg/kg bw per day
		Carcinogenicity	8.0 mg/kg bw per day[b]	–

Species	Study	Effect	NOAEL	LOAEL
Rat	Two-year study of toxicity and carcinogenicity[a]	Toxicity	1.5 mg/kg bw per day	2.0 mg/kg bw per day
		Carcinogenicity	2.0 mg/kg bw per day[b]	–
	Two-generation reproductive toxicity study[c]	Reproductive toxicity	0.40 mg/kg bw per day[b]	–
		Parental toxicity	0.40 mg/kg bw per day[b]	–
		Offspring toxicity	0.12 mg/kg bw per day	0.40 mg/kg bw per day
	Developmental toxicity study[c]	Maternal toxicity	1.6 mg/kg bw per day[b]	–
		Embryo and fetal toxicity	1.6 mg/kg bw per day[b]	–
	Acute neurotoxicity study[a]	Neurotoxicity	0.5 mg/kg bw	1.5 mg/kg bw
	Developmental neurotoxicity studies[a,d]	Developmental neurotoxicity	0.40 mg/kg bw[b]	–
		Toxicity	0.12 mg/kg bw	0.20 mg/kg bw
Rabbit	Developmental toxicity study[c]	Maternal toxicity	1.0 mg/kg bw per day	2.0 mg/kg bw per day
		Embryo and fetal toxicity	1.0 mg/kg bw per day	2.0 mg/kg bw per day
Dog	Twelve-week,[a] 18-week[c] and 53-week[a] studies of toxicity[d]	Toxicity	0.25 mg/kg bw per day	0.5 mg/kg bw per day
8,9-*Z* isomer of abamectin				
CD-1 mice	Developmental toxicity study[c]	Maternal toxicity	3.0 mg/kg bw per day[b]	–
		Embryo and fetal toxicity	3.0 mg/kg bw per day[b]	–
Rat	One-generation study of reproductive toxicity[a]	Reproductive toxicity	0.40 mg/kg bw per day[b]	–
		Parental toxicity	0.40 mg/kg bw per day[b]	–
		Offspring toxicity	0.40 mg/kg bw per day[b]	–
Rat	Developmental toxicity study[c]	Maternal toxicity	1.0 mg/kg bw per day[b]	–
		Embryo and fetal toxicity	1.0 mg/kg bw per day[b]	–

[a] Dietary administration.
[b] Highest dose tested.
[c] Gavage administration.
[d] Two or more studies combined.

Estimate of acceptable daily intake (ADI)

0–0.001 mg/kg bw

Estimate of acute reference dose (ARfD)

0.003 mg/kg bw

Information that would be useful for the continued evaluation of the compound

Results from epidemiological, occupational health and other such observational studies of human exposure

Critical end-points for setting guidance values for exposure to abamectin

Rate and extent of oral absorption	Rapid, absorption almost complete, T_{max} 4–8 h
Dermal absorption	No data
Distribution	Widely distributed
Potential for accumulation	None
Rate and extent of excretion	> 80% within 96 h, almost exclusively in faeces
Metabolism in animals	Moderate to extensive; by demethylation, hydroxylation, cleavage of the oleandrosyl ring and oxidation reactions
Toxicologically significant compounds in animals and plants	Abamectin, 8,9-*Z* isomer, 24-hydroxymethyl abamectin
Acute toxicity	
Rat, LD_{50}, oral	8.7 mg/kg bw
Rat, LD_{50}, dermal	> 2 000 mg/kg bw
Rat, LC_{50}, inhalation	> 0.034 and < 0.21 mg/L
Rabbit, dermal irritation	Not irritating
Rabbit, ocular irritation	Not irritating
Guinea-pig, dermal sensitization	Not sensitizing (Magnusson and Kligman test)
Short-term studies of toxicity	
Target/critical effect	Nervous system/clinical signs, mortality
Lowest relevant oral NOAEL	0.25 mg/kg bw (dog)
Lowest relevant dermal NOAEL	No data
Lowest relevant inhalation NOAEC	0.5 µg/L (30-day rat study)
Long-term studies of toxicity and carcinogenicity	
Target/critical effect	Increased mortality in males and reduced weight gain (mouse), clinical signs (rat)
Lowest relevant NOAEL	1.5 mg/kg bw per day (rat)
Carcinogenicity	Not carcinogenic in mice or rats[a]
Genotoxicity	
	No evidence of genotoxicity[a]
Reproductive toxicity	
Target/critical effect	No reproductive effects

Lowest relevant parental NOAEL	0.4 mg/kg bw per day (highest dose tested; rat)
Lowest relevant offspring NOAEL	0.12 mg/kg bw per day (rat)
Lowest relevant reproductive NOAEL	0.4 mg/kg bw per day (highest dose tested; rat)
Developmental toxicity	
Target/critical effect	External malformations at maternally toxic dose (rabbit)
Lowest relevant maternal NOAEL	1.0 mg/kg bw per day (rabbit)
Lowest relevant embryo/fetal NOAEL	1.0 mg/kg bw per day (rabbit)
Neurotoxicity	
Acute neurotoxicity NOAEL	0.5 mg/kg bw (rat)
Subchronic neurotoxicity NOAEL	1.6 mg/kg bw per day (rat)
Developmental neurotoxicity NOAEL	0.40 mg/kg bw per day (highest dose tested; rat)
Studies on 8,9-*Z* isomer (photodegraded product)	
Developmental toxicity	
Target/critical effect	No developmental effects
Lowest relevant maternal NOAEL	3.0 mg/kg bw per day (highest dose tested; CD-1 mouse)
Lowest relevant embryo/fetal NOAEL	3.0 mg/kg bw per day (highest dose tested; CD-1 mouse)
Lowest relevant maternal NOAEL	1.0 mg/kg bw per day (highest dose tested; rat)
Lowest relevant embryo/fetal NOAEL	1.0 mg/kg bw per day (highest dose tested; rat)
Reproductive toxicity	
Target/critical effect	No reproductive effects
Lowest relevant parental NOAEL	0.4 mg/kg bw per day (highest dose tested; rat)
Lowest relevant offspring NOAEL	0.4 mg/kg bw per day (highest dose tested; rat)
Lowest relevant reproductive NOAEL	0.4 mg/kg bw per day (highest dose tested; rat)

[a] Unlikely to pose a carcinogenic risk to humans from the diet.

Summary

	Value	Study	Safety factor
ADI	0–0.001 mg/kg bw	Developmental neurotoxicity studies (rat)	100
ARfD	0.003 mg/kg bw	Twelve-, 18- and 53-week toxicity studies (dog)	100

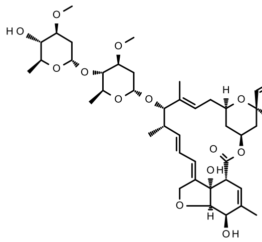
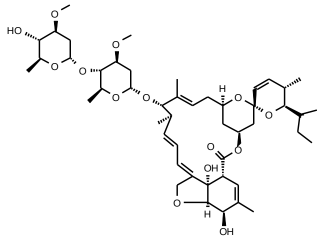
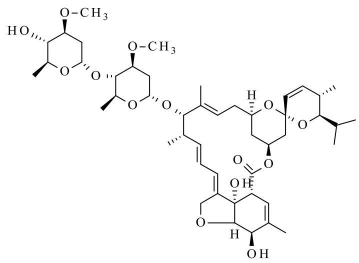
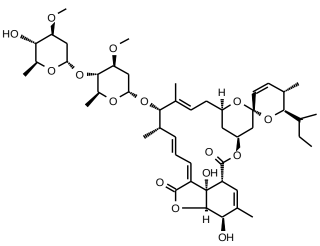
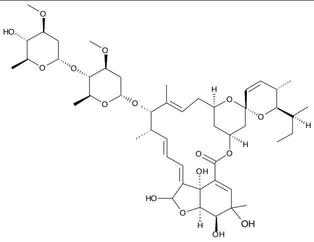
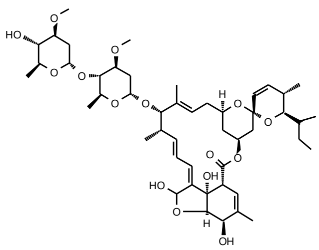
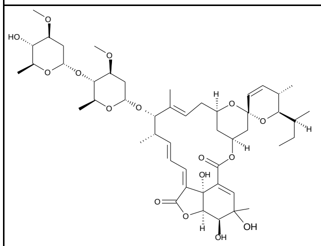
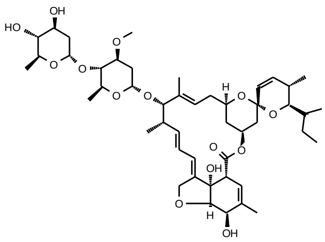
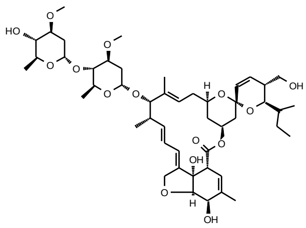
RESIDUE AND ANALYTICAL ASPECTS

Abamectin is a broad-spectrum acaricide with additional insecticidal action on a limited number of insects. Abamectin was firstly evaluated by JMPR in 1992 (T,R), and was scheduled at the Forty-sixth Session of the CCPR (2014) for the periodic re-evaluation of toxicology and residues by the 2015 JMPR. For the residue evaluation, data were submitted on physical and chemical properties, environmental fate, metabolism on plants and lactating goats, analytical methods, GAP, supervised trials on fruits, vegetables, nuts, beans, coffee, cotton and cereals, processing studies and cow feeding studies.

Abamectin is a mixture containing ≥ 80% avermectin B_{1a} and ≤ 20% avermectin B_{1b}. The absolute stereochemistry of both compounds is known and defined at each chiral centre and stereogenic carbon-carbon double bond by their IUPAC nomenclature. Abamectin (> 98% purity) has a low solubility in water (1.2 mg/L at 7.6 pH and 25 °C), is soluble in most organic solvents (23 g/L in toluene up to 470 g/L in ethyl acetate) and has a log K_{ow} of 4.4.

Abamectin is also used as an anthelmintic drug in veterinary medicine. The JECFA residue definition for the compound is avermectin B_{1a}.

The abamectin structures and the main metabolites and degradates found in water, soil, plants and animals are shown below.

 Avermectin B_{1a}	 8,9-Z isomer of avermectin B_{1a}	 Avermectin B_{1b}
 8α-oxo-avermectin B_{1a}	 4,8α-dihydroxy-avermectin B_{1a}	 8α-hydroxy-avermectin B_{1a}
 8α-oxo-4-hydroxy-avermectin B_{1a}	 3"-O-desmethyl-avermectin B_{1a}	 (24-hydoxymethyl) avermectin B_{1a}

Environmental fate

Various studies were conducted to evaluate the aerobic degradation of [^{14}C- an/or ^{3}H-] avermectin B_{1a} in different non-sterile soils in the dark under various conditions (application rate, temperature and water capacity) over a period of up to 196 days. Avermectin B_{1a} degraded in soils with a half-life ranging from 12 to 52 days, and a mean of 29 ± 14 days (n=14). The degradation pathway occurs via hydroxylation or oxidation in the C-8α position, with 8α-hydroxy-avermectin B_{1a} being the major metabolite (up to 18% of the applied radioactivity, AR), present as an equilibrium mixture between the hemiacetal and the ring cleaved aldehyde form. The oxidation product 8α-oxo-avermectin B_{1a} was found at a maximum of 14% AR. Further hydroxylation in the C-4 position resulted in two additional identified metabolites, 4,8α-dihydroxy-avermectin B_{1a} and 8α-oxo-4-hydroxy-avermectin B_{1a}, each at < 10% AR. 4,8α-dihydroxy-avermectin B_{1a} is also present in an equilibrium mixture as the hemiacetal and the aldehyde forms. At least 25 other residues were also formed at low levels, each representing < 10%. The non-extracted residues and volatile fractions (CO_2), reached their maximum at the end of the incubation period (44 and 28% AR, respectively). About 6% AR was released by harsh extraction of non-extracted residues, mostly humic, fulvic and humin acids, with only minor amounts identified as avermectin B_{1a}.

Soil photolysis studies demonstrated a similar degradation pattern, except that under the influence of light, avermectin B_{1a} initially isomerises to the 8,9-Z isomer before degrading, mainly to 8α-hydroxy-avermectin B_{1a} and 8α-oxo-avermectin B_{1a} (up to 4.7% AR). The half-life in these studies were 21–22 days. Photolysis significantly increases the rate of degradation of avermectin B_{1a}, as the dark controls showed a half-life of 119 days.

[^{3}H-avermectin B_{1a}] was stable to hydrolysis at pH 4 to 7 under sterile conditions, minimal hydrolysis was observed at pH 9 (DT_{50} of 380 days at 20 °C), with one major transient non-polar degradate 2-epi-avermectin B_{1a} being observed. At 60 °C, this degradate reached a maximum of 25%AR by Day 11 and then degraded with a DT_{50} of 1.5 days. [23-^{14}C-avermectin B_{1a}] degraded in water under light to 8,9-Z avermectin B_{1a} and 8α-oxo-avermectin B_{1a} (half-lives < 6 days).

In summary, avermectin B_{1a} degrades relatively fast in soils, with half-life < 60 days, and 8α-hydroxy- and 8α-oxo- avermectin B_{1a} being the major products. Light accelerates the degradation in water and soil, and isomerises the compound to its 8,9-Z isomer. Aqueous hydrolysis is not a significant degradation route for avermectin B_{1a} at environmentally relevant pHs and temperatures.

Plant metabolism

The metabolism of [^{14}C]avermectin B_{1a} was investigated in citrus plants kept under an open wooden frame with a fibreglass roof and treated at 18 to 40 µg ai/kg on a whole fruit basis. The [^{14}C]avermectin B_{1a} solutions, prepared in a EC formulation blank, was brushed on each fruit (0.5 mL). After 12 weeks of treatment, residues ranged from 33.3% (grapefruit) to 49.8% (lemons) of the AR. On the day of application, at least 98.4%AR was removed from the surface with methanol, and by week 12, surface residues corresponded to up to 41%TRR in oranges. No residues were detected in the pulp without the peel/pulp interface for all fruits; when the interface was included, residues reached 12–13%TRR after 8 weeks. At day 0, at least 85% TRR of the methanol rinse and acetone peel extract was avermectin B_{1a}, the level then decreased rapidly after one week (to 4.4 to 17.4%TRR) and ≤ 7.7% TRR after 12 weeks, when polar residues accounted for at least 46% TRR. The 8,9-Z isomer of avermectin B_{1a} was present in all sample extracts (0.7–4.7%TRR). Non extracted residues ranged from 40–62% TRR at week 12, but were reduced to < 10%TRR after successive treatments (Bligh-Dyer procedure, soxhlet with methanol and acid or enzyme hydrolysis). Most of the non-extracted residues were polar degradates, with avermectin B_{1a} representing 9–12% TRR, and a fraction identified as a mixture of linoleic fatty esters.

The metabolism of avermectin B_{1a} was investigated in celery in three field experiments:

1) plants treated with ^{3}H-avermectin B_{1a} at 11.2 g ai/ha

2) at 112 g ai/ha, with immature plants harvested from 0 to 43 days after the 4th application and mature plants harvested at 0 to 22 days after the 10th application

3) plants treated with [^{14}C]avermectin B_{1a} at 16.8 g ai/ha, with immature plants harvested at 0 and 14 days after the 4th application and mature plants harvested at 0 to 7 days after the 10th application.

In general, residues in immature or mature leaves and stalks decreased significantly during the study period. For example, after the 4th application at 11.2 g ai/ha, residues in immature leaves were 2.74 mg/kg eq, decreasing to 11.5 µg/kg eq 43 days later. Acetone extracts accounted for over 95% TRR in immature leaves after the 4th application at all rates, with avermectin B_{1a} accounting for 65–75% of the extracted residue. After 14 days, leaf acetone extracts were about 80%TRR, with avermectin B_{1a} accounting for 16–26% of the residues and the 8,9-Z isomer for about 5%. In general, stalks and mature leaves showed similar profiles. The 8-hydroxy avermectin B_{1a} and at least ten other unidentified minor components were also detected in the samples. Residual solids from the leaf acetone extract were mostly extracted with methanol/water and hot DMSO, being mostly polar degradates of avermectin B_{1a}. About 15% of the acetone non-extracted residues in the leaves were incorporated into glucose.

The metabolism of [^{14}C]avermectin B_{1a} was investigated in cotton in four field experiments:

1) individual leaves treated with 100 µg of [^{14}C]avermectin B_{1a} and analysed 8 days after treatment (DAT)

2) cotton plants received two foliar applications at 20 g ai/ha (100 L/ha) and mature bolls harvested at 8 DAT

3) cotton plants were grown in buckets under normal field conditions and treated three times by foliar spray at 22.4 g ai/ha

4) 3× 224 g ai/ha (467 L/ha), and the bolls harvested at 20 DAT.

Over 99.7%AR in the leaves from Experiment 1 were extracted with methanol at day 0, decreasing to 19.3% at Day 8. Avermectin B_{1a} accounted for 99.2%AR at Day 0 and 1.7% AR after 8 days. Non-extracted residues reached 26.1%AR at Day 4. Leaves from Experiments 2 to 4 contained the highest residues (up to 400 µg/kg). Seeds contained up to 85 µg/kg and lint up to 750 µg/kg; this very high level was probably due to the last application in Experiment 4, when approximately 50% of the bolls were open. Avermectin B_{1a} represented most of residues in the leaves methanol rinse from the Experiment 3, accounting for 36% AR at day 1, which decreased to 1% AR by Day 8. The 8,9-Z isomer accounted for 7% AR at 0.25 day, decreasing to 0.1% AR at Day 8. From 26 to 35% TRR in the cotton seed (Experiments 2 to 4) was extracted with hexane, and characterized as triglycerides (linoleic and palmitic acid). Methanol extracts accounted for 50 to 65% TRR and non-extracted material for up to 25% TRR (Experiment 2).

One study was conducted to compare the profile of the residues of [^{14}C]avermectin B_{1a} *in vivo* (citrus, celery and cotton) and *in vitro* photolysis conditions. In this study, a [^{14}C]avermectin B_{1a} methanol solution was dried at room temperature and placed under a 275W Suntanner bulb. Most of the residues in the cotton leaf and citrus fruit surface were of a polar nature, with avermectin B1a accounting for 5–11% TRR after 7–8 days. In stalk and leaf extracts, avermectin B_{1a} accounted for 17 and 10% TRR at 7 DAT, respectively. The *in vitro* study also showed a major decline of avermectin B_{1a} residues with time (from 37% TRR after 19 hours of exposure to light to 7.3% TRR after 30 hours). Re-chromatography of the polar residues from the three treated crops and in the photolysis experiment showed four broad peaks of multiple-oxygenated, hydrated or dehydrated and de-methylated species, which retained little of the macrocyclic characteristics of avermectin B_{1a}.

Metabolism of avermectin B_{1a} was studied in greenhouse-grown tomato plants treated with [^{14}C]avermectin B_{1a} at 5× 26 g ai/ha (sub-study 1) and 3× 281 g ai/ha (sub-study 2). The major metabolite fractions in all of the analysed samples were avermectin B_{1a} and the 8,9-Z isomer of avermectin B_{1a}, in a ratio of approximately 9:1. TRR at 28 DAT in tomato and leaves from sub-study 1 were 0.127 and 6.4 mg/kg eq., respectively, with 51 and 34% as avermectin B_{1a} + its 8,9-Z isomer (9:1), respectively. In sub-study 2, the parent compound and its isomer accounted for 75 and 50% of the residues found in tomato and leaves, respectively. 8α-oxo-avermectin B_{1a}, 8α-hydroxy-avermectin B_{1a}, and 3"-O-desmethyl-avermectin B_{1a} were present at levels < 8% TRR in tomato and leaves samples. The non-extracted radioactivity did not exceed 2% TRR in tomato fruit and 7%TRR in the leaves.

In a field study conducted at 5× 26 g ai/ha or 5× 246 g ai/ha, total residues in tomatoes were 0.017 and 0.108 mg/kg, respectively, with avermectin B_{1a} + its 8,9-Z isomer accounting for 7.1 and 25%TRR, and the 8α-oxo- and 8α-hydroxy- metabolites for less than 3%TRR. In leaves, total residues were 0.71 and 7.8 mg/kg, respectively, with avermectin $B_{1a\ and}$ its isomer accounting for 2.2 and 6.4%TRR and the two metabolites up to 1.2%TRR.

Metabolism of avermectin B_{1a} was investigated in field-grown tomatoes under similar conditions as the greenhouse studies. The major metabolite fraction in all of the analysed samples was avermectin B_{1a} and its 8,9-Z isomer, accounting for about 70–80%TRR at 0 days and decreasing over time (2–6% TRR 28 days after the 5th application). Other identified metabolites were 8α-oxo-avermectin B_{1a}, 8α-hydroxy-avermectin B_{1a}, and 3"-O-desmethyl-avermectin B_{1a}, present at levels < 7% TRR each in tomatoes and leaves at any sampling time in both experiments.

In a confined rotational crop study conducted in the field, sorghum, lettuce and carrots or turnips were planted in sandy, sandy loam and "muck" (high-organic drained swampland) soils. The soils were filled into large tubes and treated at 135 to 155% of the maximum label rate of 21.3 g ai/ha. The sandy soil received 3× 29.1 g ai/ha and sandy loam and muck soils 12× 33.6 g ai/ha. Sorghum and lettuce were planted in all soil types, turnip in the muck soil and carrot in the sand and sandy loam soils. The plant-back intervals (PBI) were 14, 123 and 365 days for the muck soil, 31, 120 and 365 days for the sandy soil and 29, 123 and 365 days for the sandy loam soil. The highest TRR was found in the lettuces samples from the muck soil (6.9 μg/kg eq.), from which extraction with acetone released only 4.4%TRR. Sorghum leaf-stem TRR ranged from 4 to 12 μg/kg eq. No identification of the residues were performed due to the low TRR levels in all samples.

In summary, the plant metabolism studies conducted in citrus, cotton, celery and tomatoes showed that the residues of avermectin B_{1a} are not significantly translocated into the plants, remaining on the surface, where it is photodegraded to its 8,9-Z isomer. The major proportion of the residues remains parent avermectin B_{1a}. The metabolism pathway include the re-arrangement to the 8,9-Z isomer, hydroxylation to 8α-hydroxy-avermectin B_{1a}, further oxidation to 8α-oxo-avermectin B_{1a}, demethylation to 3"-O-desmethyl-avermectin B_{1a}, and oxidation of the 8α-hydroxy- to form the 4"-oxo-avermectin B_{1a} and 4"-,8α-di-oxo-avermectin B_{1a}. The lack of uptake of radioactive material in succeeding crops indicates the non-systemic behaviour of avermectin B_{1a} and its soil degradates.

Animal metabolism

The metabolism of ^{3}H- and ^{14}C-radiolabelled abamectin B_{1a} in rats was evaluated by the WHO group. In summary, the metabolism of avermectin B_{1a} in the rat proceeded predominantly via demethylation, hydroxylation, cleavage of the oleandrosyl ring, and oxidation reactions. Unchanged avermectin B_{1a} and the metabolites 3"-O-desmethyl, 24-hydroxymethyl, 27-hydroxymethyl, 3"-O-desmethyl-24-hydroxymethyl and 3"-O-desmethyl-27-hydroxymethyl abamectin B1a represented the majority of the faecal radioactivity.

One goat metabolism study was submitted to the meeting. Six lactating goats were dosed daily for ten consecutive days with ^{3}H-avermectin B_{1a} at 0.00125 (D1), 0.0125 (D2) and 0.25 ppm (D3) (two animals per dose) and sacrificed after 24 hours. Urine and faeces were collected daily and goats were milked twice daily. The majority of the radioactivity was found in the faeces (79 to 98% AR). Milk residues plateaued by day 4–6 and were dose dependent (0.34 and 2.6 μg/kg eq. at D2 and D3, respectively). In tissues, highest residues were found in liver (mean of 0.4, 2.8 and 57.2 μg/kg eq. at D1, D2 and D3, respectively), fat (< 0.2, 1.8 and 40.9 μg/kg eq.) and kidney (0.3 to 13.8 μg/kg eq.). In muscle, residues were < 0.2, 0.32 and 5.2 μg/kg eq. Avermectin B_{1a} was the major residue in all tissues, comprising from 41–95%TRR in liver, 40–97%TRR in kidney, 73 to 96%TRR in muscle, 86–99% in fat, and 70–95%TRR in milk. Metabolite 24-hydroxymethyl-avermectin B_{1a} was a major residue in liver of the D1 goats (45.5%TRR) and was present at 2–11% TRR in milk from D3. A second metabolite, 3"-desmethyl-avermectin B_{1a}, was only isolated from Goat 5 liver (≤ 5% TRR). Fat tissue was shown to contain 24-hydroxymethyl avermectin B_{1a} in a conjugated form.

Based on the structures identified, the metabolism of avermectin B_{1a} in the goat proceeds via hydroxylation of the methyl group to 24-hydroxymethyl-avermectin B_{1a} and to a lesser extent demethylation at the 3" position. Avermectin B_{1a} is the major residues in all animal matrices. The metabolic pathway in rats showed a similar profile.

Methods of residue analysis

Abamectin residues in plant materials are analysed by two methods, one by HPLC with fluorescent detector (HPLC-FL; Exc.: 365 nm, Em.: 470 nm) and the other, used in more recent supervised trials, by LC-MS/MS. Transition ions for avermectin B1a and its isomer ($[M+Na]^+$) were m/z = 895.5 → 751.5 for quantification and m/z = 895.5 → 449.2 for confirmation.

In the HPLC-FL method, residues are extracted with acetonitrile or methanol and partitioned with hexane, the organic extract is cleaned-up in an aminopropyl solid phase extraction (SPE), and residues eluted with ethyl acetate/methanol. Fluorescent derivatives are formed by reaction with a mixture of triethylamine, trifluoroacetic anhydride and 1-methylimidazole and determined by HPLC-FL. Avermectin B_{1a} and its 8,9-Z isomer results in a single peak, and is determined as the sum of both compounds. It is the same for avermectin B_{1b} and its 8,9-Z isomer. The LOQ for the individual analytes were 0.002 or 0.005 mg/kg for most studies.

The LC-MS/MS methods quantify individually avermectin B_{1a}, avermectin B_{1b} and their 8,9-Z isomers. Residues are extracted with acetonitrile or methanol, partitioned into toluene and cleaned-up using aminopropyl, amino or C8 SPE (LOQ of 0.002 to 0.01 mg/kg), or only extracted with dichloromethane before the analysis (LOQ of 0.02 mg/kg). The method that included the clean-up step was also validated for avermectin B_{1a}, and its 8,9-Z isomer in animal matrices (LOQ of 0.002 mg/kg).

An LC-MS/MS multi-residue QuEChERS method for the determination of residues of avermectin $B_{1a,}$ avermectin B_{1b} and avermectin B_{1a} 8,9-Z isomer in lettuce, sunflower seeds, dried broad beans, wheat grain, oranges and dried hops was validated at the LOQ of 0.002 mg/kg.

Stability of residues during storage

Residues of avermectin B_{1a} in citrus peel samples fortified at levels of 0.005 or 0.025 mg/kg were stable for at least at 52 months when stored at ≤ -10 °C. Residues of avermectin B_{1a} (0.01 or 0.05 mg/kg), avermectin B_{1b} (0.004 mg/kg) and avermectin B_{1a} 8,9-Z isomer (0.009 mg/kg) were shown to be stable in tomato samples for at least 15 months, in celery and strawberry samples for at least 24 months and in pear samples for at least 35 months. Residues of the three analytes at 0.04 mg/kg were shown to be stable for at least 24 months at ≤ -18 °C when present in orange peel, green beans, sunflower seeds and potatoes. Residues of avermectin B_{1a} and its 8,9-Z isomer (0.02 mg/kg) in grapes and processed commodities were shown to be stable for at least one year under frozen conditions, with the exception of raisins, for which only 28% of avermectin B_{1a} residues remained after 12.5 years.

In summary, avermectin B_{1a} and its 8,9-Z isomer and avermectin B_{1b} were shown to be stable for at least 12 months in a variety of crop samples stored under frozen conditions, except raisins. The storage period of the samples in the residue trials guarantee the stability of the residues, unless it is specified otherwise.

Residue definition

Plant metabolism field studies conducted with ^{14}C and/or ^{3}H-avermectin B_{1a} in citrus, cotton, celery and tomatoes (also glasshouse studies) have shown that the major residue is avermectin B_{1a} (over 20% TRR), which remains on the surface of the crop and isomerizes to the 8,9-Z isomer. When present, the hydroxyl, oxo and desmethyl metabolites each accounted for < 10%TRR. Significant residues in rotational crops are not expected.

Abamectin is a mixture of $\geq$ 80% avermectin B_{1a} and $\leq$ 20% avermectin B_{1b}. In most residue trials, avermectin B_{1b} was found at levels < LOQ, and when present, the levels are significantly lower than avermectin B_{1a}. Hence, avermectin B_{1a} is an adequate marker for the use of abamectin products.

Although the HPLC-FL method used to analyse abamectin residues measure avermectin B_{1a} plus its 8,9-Z isomer together, the isomer is not expected to be a significant part of the residue (one study in tomato estimated a 9:1 ratio of both compounds) and was never detected in trials when the LC-MS/MS method was used. The toxicity of 8,9-*Z* isomer of abamectin B_{1a} is of no greater toxicity than the parent abamectin B_{1a}.

The Meeting agreed for the following residue definition for abamectin in plant commodities for enforcement and dietary risk assessment:

Avermectin B_{1a}

The metabolism of avermectin B_{1a} in lactating goats showed the parent compound as the main residue in all matrices (at least 40%TRR), with only one major metabolite (24-hydroxymethyl-avermectin B_{1a}), which accounted for 45.5%TRR in livers of the low dosed goats (0.00125 ppm) and up to 11% TRR in milk. The toxicity of 24-hydroxymethyl-avermectin B_{1a} is of no greater toxicity than the parent abamectin B_{1a}.

The Meeting agreed for the following residue definition for abamectin in animal commodities for enforcement and dietary risk assessment: Avermectin B_{1a}

Residues of avermectin B_{1a} are five times higher in fat than in muscle and the log K_{OW} is 4.4, which indicates fat solubility.

The residues are fat soluble.

Residues resulting from supervised residue trials on crops

As no trials were submitted on summer squash and watermelon, the Meeting withdraws its previous recommendations for these commodities

Citrus fruits

In the USA, GAP for abamectin in citrus is up to three applications at a maximum rate of 26 g ai/ha (max. of 53 g ai/ha per season), and 7 days PHI. Twenty one trials were conducted in the USA in citrus (grapefruit, orange, tangelo and lemon).

In nine trials conducted in oranges at GAP, abamectin residues at 7 days PHI were < 0.005 (6), 0.008, 0.010 and 0.014 mg/kg. The highest residue in a replicate samples was 0.015 mg/kg.

In two trials conducted at GAP in grapefruit, one in tangelos and one in lemons, residues were < 0.005 (4).

The median residues found in the different crops is the same, which allows the consideration of a group estimation. However, the residue populations are not similar, with residues in oranges being significantly higher than in the other crops.

Based on the residues in oranges, the Meeting estimated a maximum residue level of 0.02 mg/kg, a STMR of 0.005 mg/kg and a HR of 0.015 mg/kg for abamectin in citrus.

This estimation replaces the previous recommendation for abamectin in citrus.

Pome fruit

GAP for abamectin in pome fruit in Italy is up to 2× 22 g ai/ha and 28 days PHI. Various trials were conducted in Europe according to this GAP in apples and pears from 1986 to 2012.

In 26 trials conducted on apples in Europe according to Italian GAP, residues of abamectin were < 0.002 (20), 0.003 (2), 0.004 (2), 0.007 (2) mg/kg. The highest residue in a replicate samples was 0.010 mg/kg.

Two trials conducted in pears at GAP gave abamectin residues of < 0.002 mg/kg (2). Five trials using three applications of the GAP rate also found no residues.

Based on the residue data in apples, the Meeting estimated a maximum residue level of 0.01 mg/kg, a STMR of 0.002 mg/kg and a HR of 0.01 mg/kg for abamectin in pome fruit.

The Meeting withdraws its previous recommendations for apple and pears.

Stone fruit

GAP for abamectin in stone fruit in the USA is 2× 26 g ai/ha and 21 days PHI. Fifteen trials were conducted in cherry in USA according to this GAP, giving abamectin residues of 0.003 (2), 0.004, 0.005, 0.006, 0.007, 0.008, 0.009 (2), 0.010, 0.011, 0.015, 0.016, 0.024, 0.047 mg/kg. The highest residue in a replicate samples was 0.058 mg/kg.

Thirteen trials were conducted in peaches in the USA according to GAP, giving abamectin residues of < 0.002, 0.002 (6), 0.003, 0.004 (2), 0.005, 0.006 (2), 0.008 and 0.024 mg/kg.

Fifteen trials were conducted in plums in the USA according to GAP, giving abamectin residues of < 0.002 (7), 0.002, 0.003 and 0.004 (4) mg/kg. The highest residue in a replicate samples was 0.006 mg/kg

In Italy, GAP for abamectin in peaches is 2× 22 g ai/ha and 14 days PHI. In five trials conducted in France, Italy and Spain according to this GAP, abamectin residues in the whole fruit were < 0.002 (3), 0.004 and 0.006 mg/kg. Residues in the pulp were < 0.002 (3), 0.004 and 0.007 mg/kg

The residue populations in cherries, peaches and plums from the USA gave the highest residues and will be considered for the sub-group estimations.

The Meeting estimated a maximum residue level of 0.07 mg/kg, a STMR of 0.009 mg/kg, and a HR of 0.058 mg/kg for abamectin in cherries.

The Meeting estimated a maximum residue level of 0.03 mg/kg, a STMR of 0.002 mg/kg and a HR of 0.024 mg/kg for abamectin in peaches.

The Meeting estimated a maximum residue level of 0.005 mg/kg, a STMR of 0.004 mg/kg and a HR of 0.006 mg/kg for abamectin in plums.

Raspberry

GAP for abamectin in raspberries and blackberries in Italy is one application at 22 g ai/ha and 7 days PHI. In four trials conducted in Italy at GAP, abamectin residues were < 0.02 (2), 0.02 and 0.03 mg/kg

The Meeting estimated a maximum residue level of 0.05 mg/kg, a STMR of 0.02 mg/kg and a HR of 0.03 mg/kg for abamectin in raspberry, red, black.

The Meeting agreed to extend this estimation to blackberries.

Strawberry

In Denmark, GAP for abamectin in strawberries is greenhouse applications at 3× 22 g ai/ha and 3 days PHI. In eight greenhouse trials conducted in France and Spain according to this GAP, abamectin residues were 0.004, 0.006, 0.014, 0.020, 0.034, 0.042, 0.045 and 0.071 mg/kg. The highest residue in duplicate samples was 0.073 mg/kg.

In the USA, GAP is 4× 21 g ai/ha and 3 days PHI. In five protected trials conducted at GAP, residues were 0.005 (2), 0.006, 0.007 and 0.008 mg/kg. In seventeen field trials, residues were < 0.005 (5), 0.006 (4), 0.009 (2), 0.010 (2), 0.016, 0.020, 0.026, and 0.028 mg/kg.

Based on the protected trials conducted in Europe that gave the highest residues, the Meeting estimated a maximum residue level of 0.15 mg/kg, a STMR of 0.027 mg/kg and a HR of 0.071 mg/kg for abamectin in strawberries.

This estimation replaces the previous recommendation for abamectin in strawberries.

Grapes

GAP for abamectin in grapes in the USA is 2× 21 g ai/ha and 28 days PHI. In nineteen trials conducted in the USA at GAP, residues of abamectin were < 0.002 (10), 0.002 (4), 0.004 (3), and 0.006 (2) mg/kg. The highest residue in a replicate samples was 0.010 mg/kg

The Meeting estimated a maximum residue level of 0.01 mg/kg, a STMR of 0.002 mg/kg and a HR of 0.010 mg/kg for abamectin in grapes.

Avocado

In the USA, GAP for abamectin in avocados is 2× 26 g ai/ha and 14 days PHI. In five trials conducted at GAP in the country, residues were < 0.002, 0.003, 0.004 (2), and 0.007 mg/kg. The highest residue in a replicate samples was 0.009 mg/kg

The Meeting estimated a maximum residue level of 0.015 mg/kg, a STMR of 0.004 mg/kg and a HR of 0.009 mg/kg for abamectin in avocados.

Mango

In Brazil, GAP for abamectin in mangoes is 4× 14 g ai/ha and 7 days PHI. In five trials conducted in the country at GAP, abamectin residues were < 0.002 (3), < 0.004 and 0.004 mg/kg.

The Meeting estimated a maximum residue level of 0.01 mg/kg, a STMR of 0.002 and HR of 0.004 mg/kg for abamectin in mangoes.

Papaya

In Brazil, GAP for abamectin in papaya is 3× 22 g ai/ha and 14 days PHI. In eight trials conducted in the country at GAP, abamectin residues in papaya fruit were < 0.002, 0.002, 0.003 (2), 0.004, 0.005 (2) and 0.008 mg/kg. Residues in the pulp were < 0.002 (6) mg/kg. Six trials conducted at double rate did not show any residues in the pulp (< 0.002 mg/kg), confirming a no residue situation in the pulp when the fruit is treated at GAP.

The Meeting estimated a maximum residue level of 0.015 mg/kg, a STMR and HR of 0 mg/kg for abamectin in papaya.

Onion and shallot

GAP for onion, bulbs (include shallots) in the USA is 2× 21 g ai/ha and 30 days PHI. In eight trials conducted in the country using 3–4 applications at the GAP rate gave residues of < 0.002 (7) and 0.002 mg/kg. The highest residue in a replicate samples was 0.003 mg/kg.

Meeting estimated a maximum residue level of 0.005 mg/kg, a STMR of 0.002 and HR of 0.003 mg/kg for abamectin in onion bulbs. This estimation was extrapolated to shallots and garlic.

Leek

GAP for abamectin in leek in Belgium is 3× 9 g ai/ha and 7 days PHI. Twelve trials conducted in France and the Netherlands within this GAP gave abamectin residues of < 0.002 (10) and 0.002 (2) mg/kg. The highest residue in a replicate samples was 0.003 mg/kg.

The Meeting estimated a maximum residue level of 0.005mg/kg, a STMR of 0.002 mg/kg and HR of 0.003 mg/kg for abamectin in leek.

Cucumber/gherkin

In Denmark, GAP for abamectin in cucumbers and gherkins in four greenhouse applications at 22 g ai/ha and 3 days PHI. Twenty-nine protected trials were conducted in Europe from 1989 to 2013. In twenty five trials (3-5 applications) conducted according to the Denmark GAP, abamectin residues were < 0.002 (6), < 0.005 (5), 0.002 (6), 0.003, 0.004 (2), 0.005, 0.006, 0.007 (2) and 0.025 mg/kg. The highest residue in a replicate samples was 0.029 mg/kg.

The Meeting estimated a maximum residue level of 0.03 mg/kg, a STMR of 0.002 and HR of 0.029 mg/kg for abamectin in cucumbers. This estimation was extrapolated to gherkins.

Melon

In Denmark, GAP for abamectin in melons is three greenhouse applications at 22 g ai/ha and 3 days PHI. Twelve greenhouse trials (3-4 applications) were conducted in Europe from 2000 to 2008 according to this GAP, giving abamectin residues the whole fruit of < 0.002 (6), 0.002 (3), 0.003 (2) and 0.005 mg/kg. Residues in the pulp were < 0.002 (10) mg/kg.

The Meeting estimated a maximum residue level of 0.01 mg/kg, a STMR and HR of 0.002 mg/kg for abamectin in melons, except watermelon.

This estimation replaces the previous recommendation for abamectin in melons, except watermelons.

Pepper

In Denmark, GAP for abamectin in sweet or bell peppers is five greenhouse applications at 22 g ai/ha and 3 days PHI. In eighteen greenhouse trials conducted in Europe within this GAP, abamectin residues were < 0.005 (3), 0.002 (2), 0.004, 0.005, 0.006, 0.008, 0.010, 0.012, 0.015, 0.018, 0.019, 0.02, 0.025, 0.027 and 0.051 mg/kg.

In the USA, GAP for fruiting vegetables, except cucurbits, is 2× 21 g ai/ha and 7 days PHI. Four trials were conducted in chilli pepper using six applications, giving residues < 0.005 mg/kg (4).

The Meeting estimated a maximum residue level of 0.09 mg/kg, a STMR of 0.007 mg/kg and HR of 0.051 mg/kg for abamectin in peppers, sweet.

This estimation replaces the previous recommendation for abamectin in peppers, sweet.

The Meeting estimated a maximum residue level of 0.005* mg/kg, a STMR and a HR of 0.005 mg/kg for abamectin in peppers, chilli.

This estimation replaces the previous recommendation for abamectin in chilli pepper.

The Meeting withdraws its previous recommendation for pepper, chilli, dried.

Tomato and eggplant

GAP for abamectin in tomatoes in Denmark is five greenhouse applications at 22 g ai/ha and in Greece, GAP for tomatoes and eggplants is 4× 22 g ai/ha. In both countries, the PHI is 3 days. Metabolism studies have shown that abamectin degrades rapidly and the Meeting agreed that only the last applications will impact the final residues and decided to use the trials with a lower number of applications for the estimations.

In twenty six greenhouse tomato trials using two to five applications at the GAP rate gave residues of < 0.002 (5), 0.002, 0.003, 0.004 (6), 0.005, 0.006 (2), 0.007 (2), 0.010, 0.011, 0.012, 0.014, 0.24, 0.25 and 0.027 (2) mg/kg.

Nine tomato field trials were conducted in France, Italy and Spain using 3–4 applications of the GAP rate, matching the Greek GAP gave residues of < 0.002 (6) and 0.002 (3) mg/kg.

Based on the greenhouse trials, which gave the highest residues, the Meeting estimated a maximum residue level of 0.05 mg/kg, a STMR of 0.004 mg/kg and HR of 0.027 mg/kg for abamectin in tomato.

This estimation replaces the previous recommendation for abamectin in tomatoes.

In two field trials conducted in eggplants in France using six applications, no abamectin residues were detected at 3 days PHI (< 0.010 mg/kg).

As three trials is not enough for the estimations, the Meeting agreed to extend the estimations for tomatoes to eggplants.

Lettuce

Abamectin can be used in lettuce in Greece at 4× 9 g ai/ha and 14 days and in Italy (includes cos lettuce) at 3× 18 g ai/ha and 7 days PHI.

Nine field trials were conducted in Italy and France according to Italian GAP, giving abamectin residues at 7 days PHI of < 0.002, 0.003 (2) and 0.005 mg/kg in head lettuce, 0.004 and 0.007 mg/kg in leafy lettuce and < 0.002, 0.003, 0.006 and 0.008 mg/kg in cos lettuce.

In protected trials conducted in Europe according to GAP in Greece, residues at 14 days PHI in head lettuce were (n=8) 0.007, 0.011, 0.019, 0.020, 0.035, 0.045, 0.047 and 0.097 mg/kg. Residues from protected trials conducted according to GAP with unidentified lettuce type ranged from 0.003 to 0.012 mg/kg.

Protected trials conducted in head lettuce according to GAP in Greece gave the highest residues. The Meeting estimated a maximum residue level of 0.15 mg/kg, a STMR of 0.0275mg/kg and a HR of 0.097 mg/kg for abamectin in head lettuce.

The Meeting agreed that there are not enough trials to estimate a maximum residue level for abamectin in leafy lettuce and cos lettuce.

The Meeting withdraws its previous recommendation on leafy lettuce.

Corn salad (lambs lettuce)

Abamectin can be used in lambs lettuce in Italy at 3× 18 g ai/ha and 7 days PHI. Two trials were conducted in lambs lettuce in France, but they were not according to GAP.

The Meeting agreed not to estimate a maximum residue level for abamectin in lambs lettuce

Spinach

In the USA, GAP for abamectin in spinach is 2× 21 g ai/ha and 7 days PHI. Six declining trials using six application (7 days interval) and metabolism studies showed a rapid declining of the residues, indicating that the contribution of the early applications does not impact the final residue. In eleven trials conducted with 3–6 applications abamectin residues at 7 days PHI were < 0.002 (2), 0.016, 0.020, 0.021, 0.024, 0.028, 0.042, 0.044, 0.048 and 0.085 mg/kg. The highest residue in a replicate samples was 0.091 mg/kg.

The Meeting agreed to recommend a maximum residue level of 0.15 mg/kg, a STMR of 0.024 mg/kg and a HR of 0.091 mg/kg for abamectin in spinach.

The IESTI from the consumption of spinach represented 140% of the ARfD for abamectin (0.003 mg/kg bw). No alternative GAP was available to the Meeting.

Bean, green with pods

The GAP for abamectin in green beans in Spain is 3× 18 g ai/ha and 3 days PHI. In thirteen greenhouse trials conducted in Italy and Spain according to this GAP, residues in green bean with pods were < 0.002 (4), 0.003, 0.004, 0.007, 0.012, 0.014, 0.016, 0.017, 0.023, and 0.049 mg/kg

The meeting estimated a maximum residue level of 0.08 mg/kg, a STMR of 0.012 mg/kg and a HR of 0.049 mg/kg for abamectin in beans, except broad beans and soya beans (green pods and immature seeds).

Beans, dry

GAP for abamectin in beans, dry, in the USA is 2× 21 g ai/ha and 7 days PHI. In seven trials conducted in the USA using three applications, residues were < 0.002 (6) and 0.003 mg/kg.

As it is unlikely that the first application would impact the final residue, the Meeting agreed to use these trials for estimating a maximum residue level of 0.005 mg/kg and a STMR of 0.002 mg/kg for abamectin in beans, dry.

Celeriac

GAP for abamectin in celeriac in the USA is 2× 21 g ai/ha and 7 days PHI. Two trials were conducted in the country using three applications gave no residues in the root (< 0.002 mg/kg)

The Meeting agreed that two trials are not sufficient to estimate a maximum residue level for abamectin in celeriac.

Potato

In the USA, the GAP for abamectin in tuberous and corm vegetables, which include potatoes, sweet potatoes and yams, is 2× 21 g ai/ha and 14 days PHI. In thirteen potato trials conducted in the country from 1992 to 1998 using from 3-6 applicatons at GAP, no abamectin residues were detected in potato tubers (< 0.005 mg/kg). Trials conducted at 6 × 112 g ai/ha gave the same result.

The Meeting estimated a maximum residue level of 0.005* mg/kg, a STMR and a HR of 0 mg/kg for abamectin in potato. The Meeting agreed to extrapolate this recommendation to sweet potato and yams.

This estimation replaces the previous recommendation for abamectin in potatoes.

Radish

GAP for abamectin in radishes in Belgium is 2× 10 g ai/ha and 14 days PHI. In one protected trial conducted in the Netherlands in 1999 within this GAP, abamectin residues in the root were < 0.002 mg/kg.

The Meeting agreed that one trial is not sufficient to estimate a maximum residue level for abamectin in radishes.

Celery

GAP for abamectin in celery in Greece is 4× 9 g ai/ha and 14 days PHI. In seven trials conducted using three applications, samples were collected at 10 DAT.

In the USA, GAP is 2× 21 g ai/ha and 7 days PHI. Six trials conducted in the country using three applications gave residues of 0.003, 0.005 (2), 0.006 0.01 and 0.016 mg/kg

As it is unlikely that the first application would impact significantly the final residue, the Meeting agreed to use these trials to estimate a maximum residue level of 0.03 mg/kg, a STMR of 0.005 mg/kg and a HR of 0.016 for abamectin in celery.

Rice

In China, GAP for abamectin in rice is 2× 14 g ai/ha and 21 days PHI. In six trials conducted in the country according to GAP, abamectin residues in rice husked were < 0.001 mg/kg (6). Six trials conducted at 2× 20 g ai/ha rate gave residues of < 0.001 (4), 0.001 and 0.002 mg/kg. Applying the proportionally principle to this dataset, residues according to GAP are < 0.001 (5) and 0.0015 mg/kg.

Residues on the 12 trials combined are < 0.001 mg/kg (11) and 0.0015 mg/kg.

The Meeting estimated a maximum residue level of 0.002 mg/kg and a STMR of 0.001 mg/kg for abamectin in rice, husked.

Tree nuts

In the USA, GAP for abamectin in tree nuts is 2× 26 g ai/ha and 21 days PHI. In three trials conducted in almonds according to GAP, residues were <0.005 mg/kg. In another 29trials conducted in almond, pecan and walnut using 3 applications of 28 or 56 g ai/ha, residues at 3 to 14 DAT gave the same result.

As trials conducted at higher GAP or shorter DAT do not give rise to residues in nut meat, the Meeting estimated a maximum residue level of 0.005* mg/kg, a STMR and a HR of 0 mg/kg for abamectin in tree nuts.

The Meeting withdraws its previous recommendation for almonds and walnuts.

Cotton

GAP for abamectin in cotton in Spain is 3× 18 g ai/ha and 3 days PHI. Five trials were conducted in Greece and Spain using two applications, giving abamectin residues at 3 days PHI of < 0.002 mg/kg (5).

In the USA, GAP is 2× 21 g ai/ha and 20 days PHI. In eleven trials conducted in the country according to GAP, residues were < 0.002 (9), 0.005 and 0.01 mg/kg.

The Meeting estimated a maximum residue level of 0.015 mg/kg and a STMR of 0.002 mg/kg for abamectin in cotton seed.

This estimation replaces the previous recommendation for abamectin in cotton.

Peanut

Abamectin is registered in Argentina to be used in peanuts at 1× 2 g ai/ha and 30 days PHI. Four trials were conducted in Brazil using 3× 14 g ai/ha, giving residues < 0.005 mg/kg (4).

Based on the Brazilian trials conducted at high rate and metabolism studies that showed no translocation of abamectin residues in the plant, the Meeting estimated a maximum residue level of 0.005* mg/kg, and a STMR of 0 mg/kg for abamectin in peanuts.

Coffee

Critical GAP for abamectin in coffee in Brazil is one application at 27 g ai/ha and 14 days PHI. Five trials were conducted in the country using 7–9 g ai/ha, giving residues < 0.002 mg/kg (5).

As no trials were conducted according to GAP, the Meeting could not estimate a maximum residue level for abamectin in coffee.

Hops

Abamectin is registered in hops in Slovenia and the USA to be used at 2× 21–22 g ai/ha and 28 days PHI. In seven trials conducted in Germany according to this GAP, abamectin residues in dried cones were < 0.005 (2), 0.010, 0.012 0.02, 0.021 and 0.028 mg/kg. In four trials conducted in the USA at GAP, residues were 0.012, 0.020, 0.056 and 0.061 mg/kg.

Trials conducted in the USA gave the highest residues, and the Meeting estimated a maximum residue level of 0.15 mg/kg and a STMR of 0.038 mg/kg for abamectin in hops, dry.

This estimation replaces the previous recommendation for abamectin in hops, dry.

Feed commodities

Rice husks

In six trials conducted with abamectin in rice in China according to GAP (2× 14 g ai/ha), abamectin residues in rice husks (hulls) at 21 days PHI were < 0.001 (5) mg/kg and 0.006 mg/kg.

The Meeting estimated a median residue of 0.001 mg/kg for abamectin in rice hulls.

Residues in paddy rice plant (including grain with husks) in trials according to GAP were < 0.001 mg/kg (6). Trials conducted at 20 g ai/ha gave the same results.

As no residues were found in rice plant, the Meeting estimated a maximum residue level of 0.001 mg/kg, a median and highest residue of 0.001 mg/kg for abamectin in rice straw.

Green beans

In four European trials conducted in green beans according to GAP in Spain (3× 18 g ai/ha, 3 days PHI), abamectin residues in the vines were 0.329, 0.349, 0.354, and 0.581 mg/kg.

The Meeting estimated a median residue of 0.352 mg/kg and highest residue of 0.581 mg/kg for abamectin in green bean vines.

Almond hulls

In six trials conducted in almonds in the USA at the GAP, residues in the hulls at 21 days PHI were < 0.002, 0.012, 0.035, 0.037, 0.102 and 0.11 mg/kg.

The Meeting estimated a maximum residue level of 0.2 mg/kg and a median residue of 0.036 mg/kg for abamectin in almond hulls.

Cotton hulls

As no trials were conducted in cotton according to GAP that analysed the hulls, the Meeting could not make any estimation for abamectin in cotton hulls.

Fate of residues in processing

Three processing studies were conducted in grapes, with abamectin residues in grapes of 0.012, 0.007 and 0.048 mg/kg. Although the stability study on grape processed commodities have shown that abamectin residues were not stable after 12 months in raisins, in the processed study the samples were analysed within a month after being generated, and the results are evaluated. Eleven studies were conducted in cotton, all in the context of the residue trials described before. The estimated processing factors with the respective recommendations of STMR-P, based on the recommended maximum residue level, are shown in the Table.

RAC	Processed product	PF (median or best estimate)	STMR-P, mg/kg	HR-P, mg/kg	MRL, mg/kg
Grapes	Dried grape	1, 2.8, 3.1	0.0056	0.028	0.03
MRL = 0.01 mg/kg	Grape juice	< 0.25, < 0.57, 1.4	0.0028		0.015
STMR = 0.002 mg/kg	Wet pomace	4.75	0.009		
HR = 0.01 mg/kg	dry pomace	15.8	0.0316		
Plums	Prune	0.8 [a]			
Cotton	Meal	< 0.028, < 0.067	0.000		
STMR = 0.002 mg/kg	Refined oil	< 0.028, < 0.67	0.000		

[a] Recommendation for Plums includes prunes

Residues in animal commodities

A feeding study was conducted in dairy cows (n=3) with abamectin dosed at 0.01, 0.03 and 0.10 ppm levels for 28–30 days. Avermectin B1a residues were determined by HPLC-FL, with an LOQ of 0.001 mg/kg in tissues and 0.0005 mg/kg in milk. Residues in muscle at any feeding level were < 0.01 mg/kg (traces at 0.002 mg/kg at all levels), and in kidney (traces at 0.004–0.005 mg/kg at 0.10 ppm). At this highest dose, maximum residues were 0.014 mg/kg (mean of 0.012 mg/kg) in fat and 0.020 mg/kg in liver (mean of 0.019 mg/kg). In milk, residues were only detected after 2 days dosing at 0.10 ppm (0.001 mg/kg), reaching a maximum of 0.004 mg/kg at day 14, and decreasing to the initial levels at the end of the dosing period. Overall mean was < 0.0005 mg/kg.

Farm animal dietary burden

The Meeting estimated the dietary burden of abamectin in farm animals on the basis of the OECD Animal Feed data published in the 2009 FAO Manual, the STMR, STMR-Ps or highest residue levels estimated at the present JMPR Meetings.

The commodities used to estimate the dietary burden were rice, husked, rice straw, rice hulls, grape pomace dried, bean vines, almond husk, bean dry, and cotton meal. As abamectin is not registered in beans and grapes in Australia, and is unlikely that bean vines and grape pomace would be animal feed in the country, as they are not imported commodities, they were excluded in the calculation for the Australian diet.

Livestock dietary burden for abamectin, ppm of dry matter (DM) diet

	US-Canada		EU		Australia		Japan	
Commodity	Max	Mean	Max	Mean	Max	Mean	Max	Mean
Beef cattle	0.0003	0.0003	0.0007	0.0007	0.004	0.004	0.0006	0.0006
Dairy cattle	0.004	0.004	0.333 [a, b]	0.202 [c, d]	0.004	0.004	0.0003	0.0003
Poultry—broiler	0.0007	0.0007	0.0006	0.0006	0.002 [e]	0.002		
Poultry—layer	0.0007	0.0007	0.0007	0.0006	0.002	0.002 [f]		

[a] Highest maximum beef or dairy cattle dietary burden suitable for maximum residue level estimated for mammalian tissues

[b] Highest maximum dairy cattle dietary burden suitable for maximum residue level estimated for mammalian milk

[c] Highest mean beef or dairy cattle dietary burden suitable for STMR estimated for mammalian tissues.

[d] Highest mean dairy cattle dietary burden suitable for STMR estimated for milk.

[e] Highest maximum poultry dietary burden suitable for maximum residue level estimated for poultry tissues and eggs.

[f] Highest mean poultry dietary burden suitable for STMR estimated for poultry tissues and eggs.

Animal commodity maximum residue level

The calculated maximum cattle dietary burden suitable for the estimation of maximum residue level of tissues and milk is 0.333 ppm. For the estimation of STMRs, the cattle dietary burden was 0.202 ppm.

The feeding level in lactating cows was conducted in a much lower dose (up to 0.10 ppm) than the estimated dietary burden. The Meeting agreed not to make any estimation for abamectin in mammalian commodities.

The Meeting withdraws its previous recommendations for cattle fat, cattle kidney, cattle liver, cattle meat, cattle milk, goat meat, goat milk and goat, edible offal.

Currently, the existing Codex MRLs for abamectin as a veterinary drug only intended to be used in beef cattle are 0.1 mg/kg in cattle liver and cattle fat and 0.05 mg/kg in cattle kidney.

The calculated maximum poultry dietary burden suitable for maximum residue level estimated for poultry tissues and eggs was 0.002 ppm. No feeding study on poultry was submitted to the Meeting.

RECOMMENDATIONS

On the basis of the data from supervised trials the Meeting concluded that the residue levels listed in Annex 1 are suitable for establishing maximum residue limits and for IEDI and IESTI assessment.

Residue definition for plant commodities for enforcement and dietary risk assessment: *Avermectin* B_{1a}

Residue definition for animal commodities for enforcement and dietary risk assessment: *Avermectin* B_{1a}

The residues are fat soluble.

DIETARY RISK ASSESSMENT

The intake assessments conducted by the Meeting did not include the uses of abamectin as a veterinary drug.

Long-term intake

The International estimated daily intakes (IEDI) of abamectin based on the STMRs estimated by this Meetings for the 17 GEMS/Food regional diets were 1–5% of the maximum ADI of 0.001 mg/kg bw (see Annex 3 to the 2015 Report). The Meeting concluded that the long-term dietary intake of residues of abamectin is unlikely to present a public health concern.

Short-term intake

The ARfD for abamectin is 0.003 mg/kg bw. The International Estimated Short-Term Intake (IESTI) of abamectin for the commodities for which STMR, HR and maximum residue levels were estimated by the current Meeting. The results are shown in Annex 4 to the 2015 Report.

For spinach, the IESTI represented 140% of the ARfD for children. No alternative GAP was available. On the basis of information provided to the Meeting, it was concluded that the short-term intake of abamectin residues from the consumption of spinach may present a public health concern.

The IESTI for the other commodities considered by the Meeting represented a maximum of 70% of the ARfD, and for these commodities, the Meeting concluded that the short-term-intake of abamectin is unlikely to present a public health concern when abamectin is used in ways considered by the Meeting.

5.2 ACETAMIPRID (246)

RESIDUE AND ANALYTICAL ASPECTS

Acetamiprid was evaluated for the first time by the 2011 JMPR, where an ADI of 0–0.07 mg/kg bw and an ARfD of 0.1 mg/kg bw were established and maximum residue levels were recommended for a range of plant and animal commodities. The compound was re-evaluated by the 2012 JMPR.

At the Forty-sixth Session of the CCPR (2014), acetamiprid was listed for residue evaluation for additional maximum residue levels by the 2015 JMPR. The Meeting received information on supervised residue trials for asparagus, cucumber, mustard greens, sweet corn (corn-on-the-cob) and tomato including cherry tomatoes.

For both compliance with MRL and estimation of dietary intake, the residue is defined as acetamiprid for plant commodities, and the sum of acetamiprid and desmethyl-acetamiprid for animal commodities. The residue is not fat-soluble.

Methods of analysis

Acceptable analytical methods were developed and validated for determination of acetamiprid in asparagus, mustard greens and sweet corn. These methods were based on Method KP-216 which was considered suitable by 2011 JMPR. Other analytical methods used for sweet corn, cucumber and tomato were also fully validated. All methods used analysis by LC-MS/MS and the limits of quantification (LOQs) were 0.01 mg/kg in all matrices.

Stability of residues in stored analytical samples

In 2011, JMPR concluded that acetamiprid is stable for at least 12 months in apple, cabbage, cucumber and 16 months for lettuce.

The present Meeting received acetamiprid stability studies on asparagus, cucumber, mustard greens, sweet corn and tomato, showing that residues were stable under frozen condition for at least 426 days for asparagus, 304 days for cucumber and tomato, 382 days for mustard greens and 384–391 days for sweet corn samples (kernel plus cob with husk removed, forage and stover).

Based on the available storage stability information, the Meeting concluded that acetamiprid was stable for the period of actual storage days associated with the submitted residue trials.

Results of supervised trials on crops

Fruiting vegetables, Cucurbits

Cucumber

Supervised trials were conducted in China in 2013, matching the China GAP on cucumber (3 sprays applications at 0.090 kg ai/ha and a PHI of 2 days). Eight trials were conducted under field conditions. Another six trials were conducted under greenhouse conditions, two trials of which were not independent and another two trials were also not independent. Additionally, two decline studies on field-grown cucumber were conducted with one application at a rate of 0.090 kg ai/ha. The residues decreased with a half-life of 2.1 or 3.9 days.

From residue trials matching the China GAP on cucumber, acetamiprid residue values were as follows:

Field-grown cucumber (n=8): 0.011, 0.020, 0.024, 0.042, 0.059, 0.070, 0.12 and 0.13 mg/kg.

Greenhouse-grown cucumber (n=4): 0.027, 0.055, 0.072 and 0.089 mg/kg.

As the residue distributions of acetamiprid between field-grown and greenhouse-grown cucumber were similar, residue values were combined (n=12): 0.011, 0.020, 0.024, 0.027, 0.042, 0.055, 0.059, 0.070, 0.072, 0.089, 0.12 and 0.13 mg/kg.

The Meeting estimated a maximum residue level of 0.3 mg/kg, an STMR of 0.057 mg/kg and an HR of 0.17 mg/kg (based on a highest single sample) for cucumber.

Further, the Meeting withdrew its previous recommendations for Fruiting vegetables, Cucurbits and estimated a maximum residue level of 0.2 mg/kg, an STMR of 0.05 mg/kg and an HR of 0.11 mg/kg for Fruiting vegetables, Cucurbits (except cucumber).

Fruiting vegetables, other than Cucurbits

Tomato

Supervised trials were conducted in China in 2013, matching the China GAP on tomato (2 sprays at 0.027 kg ai/ha and a PHI of 7 days). Eight trials on tomato were conducted under field conditions and an additional three trials on each of tomato and cherry tomato were conducted under greenhouse conditions. Additionally, two decline studies on field-grown tomato were conducted with one application at a rate of 0.041 kg ai/ha. The residues decreased with an average half-life of 11.6 days.

From residues trials matching the China GAP on tomato, acetamiprid residue values were as follows:

Field-grown tomato (n=8): < 0.01, 0.011, 0.011, 0.012, 0.020, 0.022, 0.022 and 0.025 mg/kg.

Greenhouse-grown tomato (n=3): < 0.01, 0.015 and 0.027 mg/kg.

Greenhouse-grown cherry tomato (n=3): 0.018, 0.021 and 0.050 mg/kg.

The 2011 JMPR recommended a maximum residue level of 0.2 mg/kg, an STMR of 0.04 mg/kg and an HR of 0.14 mg/kg for Fruiting vegetables, other than Cucurbits, based on residues in tomato (outdoor), sweet pepper and chili pepper conducted according to the US GAP (four foliar applications at 0.084 kg ai/ha and a PHI of 7 days). Since the authorization in the US represents the critical GAP, this Meeting confirmed its previous recommendations for Fruiting vegetables, other than Cucurbits (except sweet corn & mushrooms).

Sweet corn

Seven trials were conducted in the USA in 2009, matching a critical US GAP (two foliar sprays at 0.11 kg ai/ha with a 14-day retreatment interval and a PHI of 7 days). Residue concentrations in sweet corn (kernel plus cob with husk removed) from the USA trials were all < 0.01 mg/kg (n=7).

The Meeting estimated a maximum residue level of 0.01* mg/kg, an STMR of 0.01 mg/kg and an HR of 0.01 mg/kg for sweet corn (corn-on-the-cob).

Leafy vegetables (including Brassica leafy vegetables)

Mustard greens

Eight trials on mustard greens were conducted in the USA in 2009, matching the US GAP (four foliar sprays at 0.11 kg ai/ha with a 7-day retreatment interval and a PHI of 3 days).

Acetamiprid residues in mustard greens were (8): 0.30, 1.2, 1.6, 1.7, 2.2, 2.4, 2.7 and 9.2 mg/kg.

The Meeting estimated a maximum residue level of 15 mg/kg, an STMR of 2.0 mg/kg and an HR of 10 mg/kg (based on highest single sample) for mustard greens. However, this would result in an exceedance of the ARfD and an alternative GAP for mustard greens was not identified.

Stalk and stem vegetables

Asparagus

Eight trials on asparagus were conducted in the USA in 2008 and 2009, matching the US GAP (two sprays at 0.11 kg ai/ha with a 10-day retreatment interval and a PHI of 1 day).

Acetamiprid residues in asparagus were (n=8): 0.12, 0.16, 0.21, 0.26 (3), 0.29 and 0.41 mg/kg.

The Meeting estimated a maximum residue level of 0.8 mg/kg, an STMR of 0.26 mg/kg and an HR of 0.43 mg/kg (based on highest single sample) for asparagus.

Primary feed commodities

Sweet corn forage and stover

The trial conditions are described under the food commodity. For feed commodity, sweet corn forage and stover samples were harvested in the seven USA trials. In one trial, the PHI in sampling of stover did not match the US GAP.

Acetamiprid residues in sweet corn forage were (n=7): 0.41, 0.76, 1.4, 1.4, 2.4, 4.7 and 9.1 mg/kg.

Acetamiprid residues in sweet corn stover were (n=6): 0.21, 2.6, 2.8, 2.8, 8.4 and 20 mg/kg.

The Meeting estimated a median residue of 1.4 mg/kg and highest residue of 9.1 mg/kg for sweet corn forage.

The Meeting estimated a maximum residue level of 40 mg/kg, median residue level of 2.8 mg/kg and highest residue of 20 mg/kg on a dry weight basis for sweet corn stover.

Residues in animal commodities

Livestock dietary burden

Dietary burden calculations considered by the current Meeting for beef cattle and dairy cattle, incorporating sweet corn, are presented in Annex 6. Dietary burdens for poultry were not calculated as sweet corn (forage, stover and cannery waste) is not a relevant feed item.

The dietary burdens for beef cattle and dairy cattle were estimated using OECD diets listed in Appendix IX of the 2009 edition of the FAO Manual.

Summary of cattle dietary burdens (ppm of dry matter diet)

	US-Canada		EU		Australia	
	max	mean	max	mean	max	mean
Beef cattle	1.1	0.29	0.83	0.28	18[a]	2.7[b]
Dairy cattle	9.5[c]	1.6	0.84	0.29	9.0	1.7[d]

[a] Highest maximum beef or dairy cattle dietary burden suitable for maximum residue level estimates for mammalian meat and edible offal

[b] Highest mean beef of dairy cattle dietary burden suitable for STMR estimates for mammalian meat and edible offal

[c] Highest maximum dairy cattle dietary burden suitable for maximum residue level estimates for milk

[d] Highest mean dairy cattle dietary burden suitable for STMR estimates for milk

Animal commodity maximum residue levels

Livestock feeding studies involving administration of acetamiprid to dairy cows were reported in the 2011 JMPR Report.

Estimated maximum and mean dietary burdens were 18 ppm and 2.7 ppm for beef cattle and 9.5ppm and 1.7 ppm for dairy cattle, respectively. The calculation to estimate total residues (acetamiprid plus desmethyl-acetamiprid) for maximum residue levels, STMR and HR values are shown below.

	Feed level (ppm) for milk residues	Residues (mg/kg) in milk	Feed level (ppm) for tissue residues	Residues (mg/kg) in			
				Muscle	Liver	Kidney	Fat
Maximum residue level beef or dairy cattle							
Feeding study [a]	5.77	0.063					
	17.4	0.209	17.4	0.289	0.64	0.86	0.153
Dietary burden and residue estimate	9.5	0.11	18	0.30	0.67	0.89	0.16
STMR beef or dairy cattle							
Feeding study [b]	5.77	0.063	5.77	0.048	0.15	0.24	0.037
Dietary burden and residue estimate	1.7	0.019	2.7	0.022	0.070	0.11	0.017

[a] Highest residues for tissues and mean residue for milk

[b] Mean residues for tissues and milk

For beef and dairy cattle, the Meeting estimated HR values for acetamiprid (total residue) of 0.30 mg/kg in muscle, 0.89 mg/kg in edible offal (based on kidney) and 0.16 mg/kg in fat. STMR values were estimated at levels of 0.019 mg/kg for milk, 0.022 mg/kg for muscle, 0.11 mg/kg in edible offal (based on kidney) and 0.017 mg/kg for fat.

The Meeting also estimated the following maximum residue levels to replace its previous recommendatons: 0.2 mg/kg for milk, 0.5 mg/kg for meat (from mammals other than marine mammals), 0.3 mg/kg for mammalian fats (except milk fats) and 1.0 mg/kg for edible offal (mammalian).

The previous recommendations for poultry tissues and eggs are maintained.

RECOMMENDATIONS

On the basis of the data from supervised trials the Meeting concluded that the residue levels listed in Annex I are appropriate for establishing maximum residue limits and for IEDI and IESTI assessment.

Definition of the residue for plant commodities (for compliance with MRL and estimation of dietary intake): *acetamiprid*.

Definition of the residue for animal commodities (for compliance with MRL and estimation of dietary intake): *sum of acetamiprid and desmethyl-acetamiprid, expressed as acetamiprid*.

The residue is not fat-soluble.

DIETARY RISK ASSESSMENT

Long-term intake

The 2011 JMPR established an ADI of 0–0.07 mg/kg bw for acetamiprid. The International Estimated Daily Intakes (IEDIs) for acetamiprid were calculated for the 17 GEMS/Food cluster diets using STMRs and STMR-Ps estimated by the current and previous Meeting. The results are shown in Annex 3 in the 2015 JMPR Report.

The calculated IEDIs represented 0–4% of the maximum ADI. The Meeting concluded that the long-term intake of residues of acetamiprid from used that have been considered by the JMPR is unlikely to present a public health concern.

Short-term intake

The 2011 JMPR established an ARfD of 0.1 mg/kg bw. The International Estimated Short Term Intakes (IESTIs) for acetamiprid was calculated for the food commodities using HR/ STMR estimated by the current Meeting. The results are shown in Annex 4 in the 2015 JMPR Report.

For mustard greens, the IESTI represented 490% and 200% of the ARfD for children and general population, respectively. No alternative GAP was available. On the basis of information provided to the JMPR, the Meeting concluded that the short-term intake of acetamiprid from consumption of mustard greens may present a public health concern.

Estimates of intake for the other commodities considered by the 2015 JMPR were within 0-10% ARfD. The Meeting concluded that the short-term intake of acetamiprid for these other commodities may not present a public health concern when acetamiprid is used in ways that were considered by the Meeting.

5.3 ACETOCHLOR (280)

TOXICOLOGY

Acetochlor is the ISO-approved common name for 2-chloro-*N*-(ethoxymethyl)-*N*-(2-ethyl-6-methylphenyl)acetamide (IUPAC), with CAS number 34256-82-1. It belongs to the group of chloroacetanilide compounds, which are used as herbicides. Acetochlor is a pre-emergence herbicide used against grasses and broadleaf weeds in corn, soya beans, sorghum and peanuts grown in high organic content. It inhibits protein synthesis in shoot meristems and root tips.

Acetochlor has not previously been evaluated by JMPR and was reviewed by the present Meeting at the request of CCPR.

All critical studies contained statements of compliance with GLP.

Biochemical aspects

Following gavage dosing of rats, acetochlor was rapidly and almost completely absorbed and rapidly excreted. Male bile duct–cannulated rats given 10 mg/kg bw excreted on average 85.1% of the dose in bile, 8.0% in urine and 4.2% in faeces over 48 hours. Similar results were obtained with the high dose and following repeated oral dosing. No pronounced sex differences were observed following the administration of single low or high doses or repeated dosing. Radiolabel was widely distributed throughout the body (< 4% of the administered dose in tissues and carcass); highest concentrations were observed in blood (but not in plasma), liver, heart, lung and spleen. There was some accumulation in nasal turbinates in rats, but not in mice. The combined urinary and faecal excretion showed biphasic elimination, with a half-life of 5.4–10 hours for the α phase and 162–286 hours for the β phase.

Acetochlor was extensively metabolized. No parent compound was detected in the urine, and less than 1% was found in faeces. Species differences were observed, particularly with respect to the formation of sulfur-containing precursors to the dialkylbenzoquinoneimine (DABQI) metabolites that are believed to be responsible for the induction of nasal tumours in rats. The primary metabolic pathway in the rat involves O-dealkylation and subsequent glucuronidation or glutathione conjugation, enterohepatic circulation and excretion. The predominant metabolite in rat plasma following oral administration of acetochlor was a secondary amide, *S*-methyl sulfoxide. In contrast, in mice, acetochlor is metabolized primarily to a number of glucuronides, which are excreted in the urine. In Rhesus monkeys, glutathione conjugation and subsequent metabolism via the mercapturic acid pathway occur preferentially. However, as a result of the higher molecular weight threshold for biliary excretion in primates compared with rats, the metabolites appear to be excreted primarily via the urine and not the bile and thus would not be subjected to the formation of *S*-methyl sulfoxide or other *S*-methyl metabolites, as in rats.

Toxicological data

In rats, the acute oral LD_{50} was 1929 mg/kg bw, the acute dermal LD_{50} was 4166 mg/kg bw and the acute inhalation LC_{50} was greater than 2.1 mg/L. Acetochlor was severely irritating to the skin of rabbits and mildly irritating to the eyes of rabbits. It was a skin sensitizer in guinea-pigs, as determined by the Buehler test and Magnusson and Kligman maximization test. It gave a positive response for phototoxicity in an in vitro mouse fibroblast assay.

The finding observed most consistently in short- and long-term toxicity studies in mice, rats and dogs is decreased body weight, with changes in haematology and clinical chemistry in some studies.

In a 91-day toxicity study in mice using dietary acetochlor concentrations of 0, 800, 2000 and 6000 parts per million (ppm) (equivalent to 0, 120, 300 and 900 mg/kg bw per day, respectively), the NOAEL was 2000 ppm (equivalent to 300 mg/kg bw per day), based on decreased body weight observed at 6000 ppm (equivalent to 900 mg/kg bw per day).

In a 29-day toxicity study in rats using dietary acetochlor concentrations of 0, 300, 600, 1200, 2400, 4800 and 9600 ppm (equal to 0, 33.3, 67.7, 132, 267, 519 and 1012 mg/kg bw per day for males and 0, 35.2, 69.3, 139, 279, 539 and 1081 mg/kg bw per day for females, respectively), the NOAEL was 600 ppm (equal to 67.7 mg/kg bw per day), based on slight decreases in body weight gain and prothrombin time observed at 1200 ppm (equal to 132 mg/kg bw per day).

Two 3-month dietary toxicity studies were conducted in rats. In the first study, using dietary acetochlor concentrations of 0, 800, 2000 and 6000 ppm (equal to 0, 53.2, 134 and 460 mg/kg bw per day for males and 0, 69.3, 173 and 530 mg/kg bw per day for females, respectively), marginal decreases in feed consumption and body weight gain were observed at 800 ppm (equal to 53.2 mg/kg bw per day), the lowest dose tested.

In the second study, using dietary acetochlor concentrations of 0, 20, 200 and 2000 ppm (equal to 0, 1.60, 16.1 and 161 mg/kg bw per day for males and 0, 1.92, 18.8 and 191 mg/kg bw per day for females, respectively), the NOAEL was 200 ppm (equal to 16.1 mg/kg bw per day), based on significantly decreased feed consumption and body weight gain seen at 2000 ppm (equal to 161 mg/kg bw per day).

The overall NOAEL for the two 3-month toxicity studies in rats was 200 ppm (equal to 16.1 mg/kg bw per day). The overall LOAEL was 800 ppm (equal to 53.2 mg/kg bw per day).

In a 91-day toxicity study in dogs administered acetochlor by capsule at a dose of 0, 2.0, 10.0 or 60.0 mg/kg bw per day, the NOAEL was 10.0 mg/kg bw per day, based on decreased body weight gain, clinical signs, increased relative liver weights, increased serum alanine aminotransferase activity and increased blood glucose levels observed in both sexes and reduced haemoglobin, haematocrit and erythrocyte counts observed in females at 60.0 mg/kg bw per day.

In a 119-day toxicity study in dogs administered acetochlor by capsule at a dose of 0, 25.0, 75.0 or 200 mg/kg bw per day, a NOAEL could not be identified, as effects were observed at all doses. At the LOAEL of 25.0 mg/kg bw per day, decreased red blood cell counts, decreased haematocrit, increased alkaline phosphatase activity and increased relative adrenal and liver weights occurred in females.

Two 1-year toxicity studies in dogs were conducted. In the first study, in which dogs were administered acetochlor by capsule at a dose of 0, 4.0, 12.0 or 40.0 mg/kg bw per day, the NOAEL was 12.0 mg/kg bw per day, based on decreased body weights and feed consumption, testicular atrophy, increased liver and kidney weights and decreased testis weight observed at 40.0 mg/kg bw per day.

In the second study, in which dogs were administered acetochlor by capsule at a dose of 0, 2.0, 10.0 or 50.0 mg/kg bw per day, the NOAEL was 2.0 mg/kg bw per day, based on decreased feed consumption and body weight gain in females and changes in kidneys (interstitial nephritis) and tubular degeneration in testes in males observed at 10.0 mg/kg bw per day.

The overall NOAEL for the two 1-year toxicity studies in dogs was 2.0 mg/kg bw per day. The overall LOAEL was 10.0 mg/kg bw per day.

Two long-term toxicity and carcinogenicity studies were conducted in mice. In the first study, in which mice were given acetochlor in the diet at a concentration of 0, 500, 1500 or 5000 ppm (equal to 0, 75, 227 and 862 mg/kg bw per day for males and 0, 95, 280 and 1084 mg/kg bw per day for females, respectively) for 23 months, increases in absolute and relative kidney weights (both sexes) and liver weights (males only), a dose-related increase in interstitial nephritis in both sexes and retinal degeneration in females (positive trend) were observed at all dose levels. The high dose of 5000 ppm was considered to be excessive and above the maximum tolerated dose (MTD). Statistically significant increases in the incidence of lung tumours in females of all dose groups were considered not to be related to treatment based on the consideration of HCD. The Meeting noted that the incidence of histiocytic sarcomas in females at 1500 ppm was marginally outside the historical control range for the performing laboratory, that this tumour occurs commonly in aged mice and that this tumour is of unknown relevance to humans.

In the second study, in which mice were administered acetochlor in the diet at a concentration of 0, 10, 100 or 1000 ppm (equal to 0, 1.10, 11.0 and 116 mg/kg bw per day for males and 0, 1.40, 13.0 and 135 mg/kg bw per day for females, respectively) for 78 weeks, the NOAEL was 10 ppm (equal to 1.10 mg/kg bw per day), based on slight anaemia and increased incidences of bronchiolar hyperplasia and interstitial fibrosis in the kidney in males observed at 100 ppm (equal to 11.0 mg/kg bw per day). A significantly increased incidence of renal tubular basophilia was also noted in males at 10 and 100 ppm; however, these increased incidences were not considered to be adverse because they were of minimal severity and because of the lack of a clear dose–response relationship, the lack of associated histopathological findings, the lack of similar effects in females or in either sex at higher dose levels in a study of longer duration and the lack of corroborative renal findings. There was a slight increase in the incidence of adenoma in the lungs of males and females at 1000 ppm; however, the increase was not considered to be treatment related based on the lack of a dose–response relationship, low incidence in concurrent controls, the lack of an increase in tumour multiplicity with increasing dose and the comparable incidence of lung tumours in historical controls.

Three long-term toxicity and carcinogenicity studies have been conducted in rats. In a 27-month study using dietary acetochlor concentrations of 0, 500, 1500 and 5000 ppm (equal to 0, 22.0, 69.0 and 250 mg/kg bw per day for males and 0, 30.0, 93.0 and 343 mg/kg bw per day for females, respectively), decreased body weight in males was observed at 500 ppm, the lowest dose tested. Treatment-related neoplastic findings (liver, thyroid and nasal tumours) occurred at 5000 ppm, but this dose was well above the MTD. An increased incidence of nasal tumours was observed at 1500 ppm (equal to 69.0 mg/kg bw per day).

In the second study, in which rats were administered acetochlor in the diet at a concentration of 0, 40, 200 or 1000 ppm (equal to 0, 1.9, 9.4 and 47.5 mg/kg bw per day for males and 0, 2.4, 11.8 and 60.0 mg/kg bw per day for females, respectively) for 24 months, the NOAEL was 200 ppm (equal to 9.4 mg/kg bw per day), based on decreased body weight in males, elevated total bilirubin in females and elevations of gamma-glutamyltransferase activities and cholesterol levels in males at 1000 ppm (equal to 47.5 mg/kg bw per day). An increased incidence of papillary adenomas of the nasal mucosa was observed at 1000 ppm (equal to 47.5 mg/kg bw per day).

In the third study, in which rats were administered dietary acetochlor at a concentration of 0, 18, 175 or 1750 ppm (equal to 0, 0.67, 6.4 and 66.9 mg/kg bw per day for males and 0, 0.88, 8.5 and 92.1 mg/kg bw per day for females, respectively) for 24 months, the NOAEL was 175 ppm (equal to 6.4 mg/kg bw per day), based on reduced body weight and feed consumption, changes in the eyes (degeneration of outer retinal layer), reduced blood cell parameters and increased incidence of focal hyperplasia in the nasal epithelium at 1750 ppm (equal to 66.9 mg/kg bw per day). Adenomas and carcinomas of nasal epithelium and thyroid adenoma were observed at 1750 ppm (equal to 66.9 mg/kg bw per day).

The overall NOAEL for systemic toxicity in the three long-term toxicity studies in rats was 200 ppm (equal to 9.4 mg/kg bw per day), and the LOAEL was 500 ppm (equal to 22.0 mg/kg bw per day).

A comparative 52-week toxicity study was conducted in rats using a dietary acetochlor concentration of 1750 ppm (equal to 99.6 mg/kg bw per day) and a dietary *sec*-amide methylsulfoxide concentration of 100/150/300 ppm (equal to 14.6 mg/kg bw per day). The results of this study clearly demonstrate that the sulfoxide metabolite of acetochlor is a nasal carcinogen in the rat. The development, morphology and location of the tumours were identical to those seen with acetochlor. The tumorigenic potency of the sulfoxide metabolite is also comparable with that of acetochlor.

A number of mode of action studies are available for acetochlor, indicating that the nasal tumours observed in rats likely result from the site- and species-specific formation of reactive quinoneimine metabolites within the nasal epithelium and the associated formation of adducts with nasal proteins. It is postulated that this results in cytotoxicity, based on the observation of inflammation and metaplasia in vivo, leading to prolonged nasal cell proliferation and eventual development of nasal olfactory tumours. Because of large differences in the in vitro rate of formation of quinoneimines in human and rat nasal tissues and in the rate of formation of quinoneimine adducts in vivo in rats, mice and squirrel monkeys, this mode of action is unlikely to lead to nasal tumours in humans at levels of exposure arising from pesticide residues in food.

Mechanistic studies have shown that the thyroid tumours observed in rats are caused by induction of hepatic uridine diphosphate-glucuronosyltransferase (UDPGT). This, in turn, leads to decreased levels of thyroid hormone and a compensatory increase in thyroid stimulating hormone (TSH), which acts upon the rat thyroid to induce hyperplasia and, ultimately, neoplasia. Therefore, thyroid tumours in rats are not considered relevant to humans because of the well-known differences in thyroid hormone homeostasis between rats and humans.

The Meeting concluded that acetochlor induces tumours in mice of unknown relevance for humans and that the modes of action for the nasal epithelial and thyroid tumours in rats have been established.

Acetochlor has been evaluated in an adequate range of in vitro and in vivo genotoxicity studies. Acetochlor exhibited weak positive responses in some in vitro gene mutation assays conducted with less than pure material. It was clastogenic at cytotoxic concentrations in human lymphocytes; this response is attributable to the metabolism of acetochlor to the chloromethyl group and low glutathione levels. However, no evidence of clastogenicity or other genotoxic effects was observed in a number of in vivo assays, including a rat bone marrow chromosomal aberration assay, two mouse micronucleus assays and several dominant lethal mutation assays in rats and mice. No evidence of DNA damage was noted in an in vitro unscheduled DNA synthesis (UDS) assay in rat hepatocytes. A weakly positive response was noted in an in vivo rat hepatocyte UDS assay, but only at a high dose level (2000 mg/kg bw, which is higher than the LD_{50} value) associated with hepatic glutathione depletion and severe hepatotoxicity.

The Meeting noted the absence of a specific assay for gene mutations in vivo. However, the Meeting concluded that, on the basis of the weight of evidence, acetochlor was unlikely to be genotoxic in vivo.

Acetochlor is unlikely to be genotoxic in vivo, the histiocytic sarcomas in mice are commonly observed as animals age and occur only at high doses and the proposed modes of action for tumours of the thyroid and nasal epithelium in rats involve a threshold and are highly unlikely to occur in humans. Therefore, the Meeting concluded that acetochlor is unlikely to pose a carcinogenic risk to humans from the diet.

Three two-generation reproductive toxicity studies in rats are available. In the first study, in which rats were given diets containing acetochlor at a concentration of 0, 200, 600 or 1750 ppm (equal to 0, 18.6, 57.0 and 160 mg/kg bw per day for F_0 males and 0, 21.5, 64.6 and 199 mg/kg bw per day for F_0 females, respectively), the NOAEL for parental toxicity was 200 ppm (equal to 21.5 mg/kg bw per day), based on decreased body weight in F_1 females at 600 ppm (equal to 64.6 mg/kg bw per day). The NOAEL for offspring toxicity was 200 ppm (equal to 18.6 mg/kg bw per day), based on decreased F_2 litter size at birth, decreased F_1 and F_2 pup body weights during lactation, and decreased absolute and relative spleen weights in F_2 weanlings observed at 600 ppm (equal to 57.0 mg/kg bw per day). The NOAEL for reproductive toxicity was 200 ppm (equal to 18.6 mg/kg bw per day), based on a decreased number of implantations seen at 600 ppm (equal to 57.0 mg/kg bw per day).

In the second study, in which rats were given diets containing acetochlor at a concentration of 0, 18, 175 or 1750 ppm (equal to 0, 1.3, 12.6 and 124 mg/kg bw per day for F_0 males and 0, 1.6, 15.5 and 157 mg/kg bw per day for F_0 females, respectively), the NOAEL for parental toxicity was 175 ppm (equal to 12.6 mg/kg bw per day), based on decreases in body weight, body weight gain and feed consumption and increases in relative weights of brain, kidney, liver and spleen in F_1 females and of testes, seminal vesicles and thymus in F_1 males at 1750 ppm (equal to 124 mg/kg bw per day). The NOAEL for offspring toxicity was 175 ppm (equal to 12.6 mg/kg bw per day), based on decreased pup body weights observed at 1750 ppm (equal to 124 mg/kg bw per day). The NOAEL for reproductive toxicity was 1750 ppm (equal to 124 mg/kg bw per day), the highest dose tested.

In the third study, in which rats were given diets containing acetochlor at a concentration of 0, 500, 1500 or 5000 ppm (equal to 0, 30.8, 90.6 and 316 mg/kg bw per day for F_0 males and 0, 46.2, 130 and 157 mg/kg bw per day for F_0 females), the NOAEL for parental toxicity was 500 ppm (equal to 30.8 mg/kg bw per day), based on decreased body weights and decreased relative liver and kidney weights at 1500 ppm (equal to 90.6 mg/kg bw per day). The NOAEL for offspring toxicity was 1500 ppm (equal to 90.6 mg/kg bw per day), based on decreased body weights of F_{2b} pups at 5000 ppm (equal to 316 mg/kg bw per day). The NOAEL for reproductive toxicity was 5000 ppm (equal to 316 mg/kg bw per day), the highest dose tested.

The overall NOAEL for parental toxicity was 200 ppm (equal to 21.5 mg/kg bw per day), and the overall LOAEL was 600 ppm (equal to 64.6 mg/kg bw per day). The overall NOAELs for reproductive and offspring toxicity were 200 ppm (equal to 18.6 mg/kg bw per day). The overall LOAELs for reproductive and offspring toxicity were 600 ppm (equal to 57.0 mg/kg bw per day).

Two developmental toxicity studies in rats are available. In the first study, which used oral gavage acetochlor doses of 0, 40.0, 150 and 600 mg/kg bw per day, the NOAEL for maternal toxicity was 150 mg/kg bw per day, based on mortality, clinical signs of toxicity, decreased body weight gain and feed consumption and a marked increase in water consumption observed at 600 mg/kg bw per day. The NOAEL for embryo and fetal toxicity was 150 mg/kg bw per day, based on a reduction in mean fetal weight and reduced ossification at 600 mg/kg bw per day.

In the second study, which used oral gavage acetochlor doses of 0, 50.0, 200 and 400 mg/kg bw per day, the NOAEL for maternal toxicity was 200 mg/kg bw per day, based on decreased body weight gains and clinical signs of toxicity seen at 400 mg/kg bw per day. The NOAEL for embryo and fetal toxicity was 400 mg/kg bw per day, the highest dose tested.

The overall NOAEL and LOAEL for maternal toxicity in rats were 200 and 400 mg/kg bw per day, respectively. The overall NOAEL and LOAEL for embryo and fetal toxicity in rats were 400 and 600 mg/kg bw per day, respectively.

Two developmental toxicity studies in rabbits are available. In the first study, which used oral gavage acetochlor doses of 0, 30.0, 100 and 300 mg/kg bw per day, the NOAEL for maternal toxicity was 100 mg/kg bw per day, based on decreased feed consumption and body weight (GDs 6–8) and the death of two dams at 300 mg/kg bw per day. The NOAEL for embryo and fetal toxicity was 300 mg/kg bw per day, the highest dose tested.

In the second study, which used oral gavage acetochlor doses of 0, 15.0, 50.0 and 190 mg/kg bw per day, the NOAEL for maternal toxicity was 50.0 mg/kg bw per day, based on decreased body weight at GD 19 and decreased body weight gain during GDs 7–19 at 190 mg/kg bw per day. The NOAEL for embryo and fetal toxicity was 190 mg/kg bw per day, the highest dose tested.

The overall NOAEL and LOAEL for maternal toxicity in rabbits were 100 and 190 mg/kg bw per day, respectively. The overall NOAEL for embryo and fetal toxicity in rabbits was 300 mg/kg bw per day, the highest dose tested.

The Meeting concluded that acetochlor is not teratogenic in rats or rabbits.

In an acute neurotoxicity study in rats administered a single oral gavage acetochlor dose of 0, 150, 500 or 1500 mg/kg bw, decreased body weights and body weight gain and reduced feed consumption were observed at 1500 mg/kg bw. No neurotoxicity was observed.

In a 90-day study of neurotoxicity in rats given diets containing acetochlor at a concentration of 0, 200, 600 or 1750 ppm (equal to 0, 15.4, 47.6 and 139.0 mg/kg bw per day for males and 0, 18.3, 55.9 and 166.5 mg/kg bw per day for females, respectively), marginal decreases in mean body weight and body weight gain in males and females were observed at 1750 ppm (equal to 139.0 mg/kg bw per day). There was no evidence for neurotoxicity or neuropathological effects up to 1750 ppm (equal to 139.0 mg/kg bw per day), the highest dose tested.

The Meeting concluded that acetochlor is not neurotoxic.

No evidence of immunotoxicity was observed in an immunotoxicity study in female mice administered acetochlor in the diet at a dose level of 0, 500, 1500 or 5000 ppm (equal to 0, 119, 334 and 1536 mg/kg bw per day, respectively) for 28 days.

The Meeting concluded that acetochlor is not immunotoxic by the oral route of exposure.

Biochemical and toxicological data on metabolites and/or degradates

Biochemical and toxicological studies were conducted on plant metabolites, soil degradates and environmental metabolites of acetochlor.[1] The absorption, distribution, metabolism and excretion studies in rats and mice indicate that some of these metabolites were absorbed, minimally metabolized and rapidly excreted. There is no significant accumulation in the body. The acute oral LD_{50} values were greater than 2000 mg/kg bw in rats except for two metabolites, for which LD_{50} values were slightly lower than 2000 mg/kg bw in female rats. The 28-day and 90-day dietary toxicity studies in rats indicate NOAELs of 3000 ppm (equal to 225 mg/kg bw per day) and above, primarily based on decreases in body weight. No evidence of thyroid toxicity or effects on the nasal epithelium was observed in these studies. No evidence of embryo/fetal toxicity was observed at 1000 mg/kg bw per day in rats. No evidence of genotoxicity was observed in various in vivo and in vitro assays, except for a mouse lymphoma assay, which gave a weak positive response for two metabolites; however, these two metabolites were negative in a mouse micronucleus assay.

The Meeting concluded that these plant metabolites, soil degradates and environmental metabolites of acetochlor appear to be less toxic than the parent compound.

Human data

There were no reports of adverse health effects in manufacturing plant personnel. Also, there were no reports of poisonings with acetochlor. A recent epidemiological study reported weak associations between exposure to acetochlor and a number of human cancers. However, the authors stated that a lack of exposure–response trends, the small number of exposed cases and the relatively short time between acetochlor use and cancer development prohibit definitive conclusions.

The Meeting concluded that the existing database for acetochlor was adequate to characterize the potential hazards to the general population, including fetuses, infants and children.

Toxicological evaluation

The Meeting established an ADI of 0–0.01 mg/kg bw on the basis of a NOAEL of 1.10 mg/kg bw per day in the 78-week dietary study in mice, based on slight anaemia and an increased incidence of bronchiolar hyperplasia and interstitial fibrosis in the kidney in males observed at 11.0 mg/kg bw per day. A safety factor of 100 was applied.

The upper bound of the ADI provides a margin of exposure of at least 28 000 relative to the LOAEL for histiocytic sarcomas in mice (280 mg/kg bw per day) and 4700 relative to the LOAEL for nasal tumours in rats (47.5 mg/kg bw per day).

An ARfD of 1 mg/kg bw was established on the basis of a NOAEL of 100 mg/kg bw per day in a study of developmental toxicity in rabbits, based on decreased feed consumption, decreased body weight (GDs 6–8) and the death of two dams observed at 300 mg/kg bw per day. A safety factor of 100 was applied.

A toxicological monograph was prepared.

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[1] *N*-(6-ethyl-3-hydroxy-2-methylphenyl) oxamic acid (68), acetochlor *t*-ethanesulfonic acid (7), acetochlor *t*-oxanilic acid (2), acetochlor *t*-sulfinylacetic acid (3), acetochlor *s*-ethanesulfonic acid (13), *t*-norchloroacetochlor (6) and *t*-hydroxyacetochlor (17). The numbers in parentheses refer to the EU reference number.

Levels relevant to risk assessment of acetochlor

Species	Study	Effect	NOAEL	LOAEL
Mouse	Twenty-three-month study of toxicity and carcinogenicity[a]	Toxicity	–	500 ppm, equal to 75 mg/kg bw per day[b]
		Carcinogenicity	500 ppm, equal to 95 mg/kg bw per day	1 500 ppm, equal to 280 mg/kg bw per day
	Seventy-eight-week study of toxicity and carcinogenicity[a]	Toxicity	10 ppm, equal to 1.10 mg/kg bw per day	100 ppm, equal to 11.0 mg/kg bw per day
		Carcinogenicity	1 000 ppm, equal to 116 mg/kg bw per day[c]	–
Rat	Two-year studies of toxicity and carcinogenicity[a,d]	Toxicity	200 ppm, equal to 9.4 mg/kg bw per day	500 ppm, equal to 22.0 mg/kg bw per day
		Carcinogenicity	500 ppm, equal to 22.0 mg/kg bw per day	1 000 ppm, equal to 47.5 mg/kg bw per day
	Two-generation studies of reproductive toxicity[a,d]	Reproductive toxicity	200 ppm, equal to 18.6 mg/kg bw per day	600 ppm, equal to 57.0 mg/kg bw per day
		Parental toxicity	200 ppm, equal to 21.5 mg/kg bw per day	600 ppm, equal to 64.6 mg/kg bw per day
		Offspring toxicity	200 ppm, equal to 18.6 mg/kg bw per day	600 ppm, equal to 57.0 mg/kg bw per day
	Developmental toxicity studies[d,e]	Maternal toxicity	200 mg/kg bw per day	400 mg/kg bw per day
		Embryo and fetal toxicity	400 mg/kg bw per day	600 mg/kg bw per day
	Acute neurotoxicity study[e]	Neurotoxicity	1 500 mg/kg bw[c]	–
	Ninety-day neurotoxicity study[a]	Neurotoxicity	1 750 ppm, equal to 139 mg/kg bw per day[c]	–
Rabbit	Developmental toxicity study[d,e]	Maternal toxicity	100 mg/kg bw per day	190 mg/kg bw per day
		Embryo and fetal toxicity	300 mg/kg bw per day[c]	–
Dog	Ninety-day and 1-year studies of toxicity[d,e]	Toxicity	2 mg/kg bw per day	10 mg/kg bw per day

[a] Dietary administration.
[b] Lowest dose tested.
[c] Highest dose tested.
[d] Two or more studies combined.
[e] Gavage administration, including capsules.

Estimate of acceptable daily intake (ADI)

0–0.01 mg/kg bw

Estimate of acute reference dose (ARfD)

1 mg/kg bw

Information that would be useful for the continued evaluation of the compound

Results from epidemiological, occupational health and other such observational studies of human exposure

Critical end-points for setting guidance values for exposure to acetochlor

Absorption, distribution, excretion and metabolism in mammals	
Rate and extent of oral absorption	Rapidly and extensively absorbed from gastrointestinal tract (≥ 93% in 48 h)

Dermal absorption	Low; 9.7% in Rhesus monkey
Distribution	Widely distributed; highest concentrations in blood (but not plasma), liver, heart, lung, spleen and nasal turbinates
Potential for accumulation	No evidence of accumulation
Rate and extent of excretion	Rapid; ~77% excreted within first 24 h following a single low dose
Metabolism in animals	Extensive, species differences in metabolism, *sec*-amide mercapturic acid in rats and glucuronides in mice
Toxicologically significant compounds in animals and plants	Acetochlor
Acute toxicity	
Rat, LD_{50}, oral	1 929 mg/kg bw
Rabbit, LD_{50}, dermal	4 166 mg/kg bw
Rat, LC_{50}, inhalation	> 2.1 mg/L (4 h)
Rabbit, dermal irritation	Severely irritating
Rabbit, ocular irritation	Mildly irritating
Guinea-pig, dermal sensitization	Sensitizing (maximization test and Buehler test)
Short-term studies of toxicity	
Target/critical effect	Kidney and testes
Lowest relevant oral NOAEL	2.0 mg/kg bw per day (dog)
Lowest relevant dermal NOAEL	400 mg/kg bw per day (highest dose tested; rabbit)
Lowest relevant inhalation NOAEC	No data
Long-term studies of toxicity and carcinogenicity	
Target/critical effect	Anaemia, kidney and liver (mouse, rat)
Lowest relevant oral NOAEL	1.10 mg/kg bw per day (mouse)
Carcinogenicity	Adenomas in nasal epithelium (rat)[a]
Genotoxicity	
	Unlikely to be genotoxic in vivo[a]
Reproductive toxicity	
Target/critical effect	Decreased body weights in adults and pups, liver and kidney weights in adults, decreased number of implantations per dam
Lowest relevant parental NOAEL	21.5 mg/kg bw per day (rat)
Lowest relevant offspring NOAEL	18.6 mg/kg bw per day (rat)
Lowest relevant reproductive NOAEL	18.6 mg/kg bw per day (rat)
Developmental toxicity	
Target/critical effect	Decreased body weights and mortality (rat, rabbit), decreased fetal weight and reduced ossification (rat)
Lowest relevant maternal NOAEL	100 mg/kg bw per day (rabbit)
Lowest relevant embryo/fetal NOAEL	300 mg/kg bw per day (rabbit)
Neurotoxicity	
Acute neurotoxicity NOAEL	1 500 mg/kg bw per day (highest dose tested; rat)

Subchronic neurotoxicity NOAEL	139 mg/kg bw per day (highest dose tested; rat)
Developmental neurotoxicity NOAEL	No data
Other toxicological studies	
Immunotoxicity NOAEL	1 536 mg/kg bw per day (highest dose tested; mouse)
Mechanistic studies	Nasal tumours: Studies establishing a rat-specific mode of action involving a production of cytotoxic quinoneimine metabolites that result in compensatory hyperplasia leading to tumours
	Thyroid tumours: Studies establishing a rodent-specific mode of action for thyroid tumours
Medical data	
	No adverse effects reported in workers at manufacturing plants and agricultural workers

[a] Unlikely to pose a carcinogenic risk to humans from the diet.

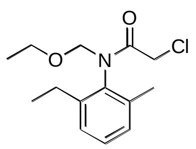
Summary

	Value	Study	Safety factor
ADI	0–0.01 mg/kg bw	Seventy-eight-week toxicity study (mouse)	100
ARfD	1 mg/kg bw	Developmental toxicity study (rabbit)	100

RESIDUE AND ANALYTICAL ASPECTS

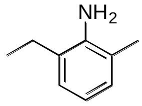
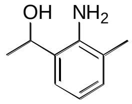
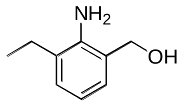
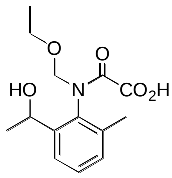
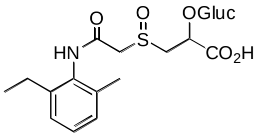
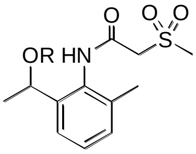
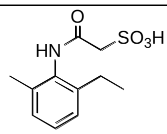
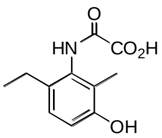
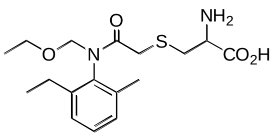
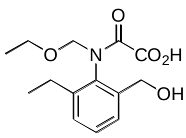
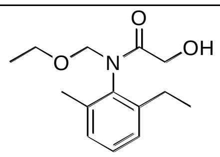
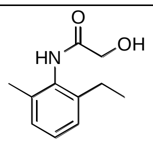
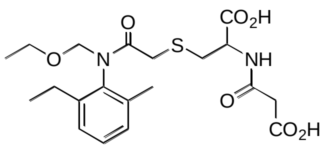
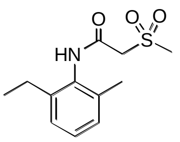
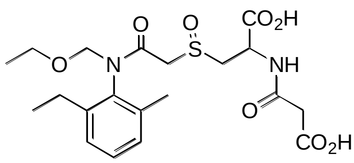
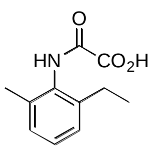
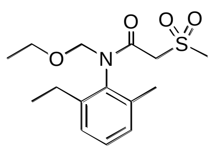
Acetochlor is a selective herbicide which, after application, is absorbed mainly by the shoots of germinating plants, and to some extent, by roots. Acetochlor is used as a pre-emergence or early post-emergence soil-applied herbicide. Acetochlor controls annual grasses and broadleaf weeds, germinating from seeds; however, its action against perennial weeds is very limited. At the Forty-sixth Session of the CCPR (2014), it was scheduled for the evaluation as a new compound by 2015 JMPR.

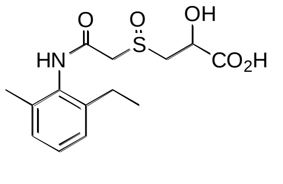
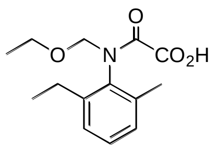
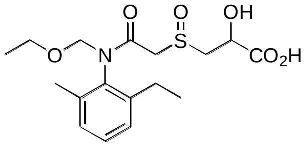
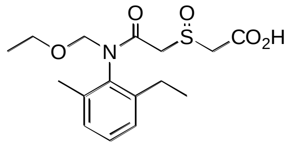
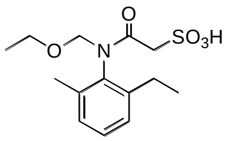
The Meeting received information on the metabolism of acetochlor in maize, soya beans and cotton, lactating goats and cows, laying hens, follow crops, methods of residue analysis, freezer storage stability, GAP information, supervised residue trials on maize (forage, grain, stover and silage), sweet corn (forage, kernels plus cob with husks removed, stover and silage), cotton (gin by-products and seed), sorghum (grain, forage and stover), soya bean (meal and seed), sugar beet (dried pulp, roots, tops, sugar and molasses), peanuts (hay and meal) and livestock transfer studies (lactating cows and laying hens).



Acetochlor is 2-chloro-*N*-(ethoxymethyl)-*N*-(2-ethyl-6-methylphenyl)acetamide

Metabolites referred to in the appraisal were addressed by their common names with the corresponding aniline metabolite class (EMA, HEMA, HMEA or OH) indicated in brackets.

2-ethyl-6-methyl aniline = EMA		2-(1-hydroxyethyl)-6-methyl aniline = HEMA	
2-ethyl-6-hydroxymethyl aniline = HMEA			
1-hydroxyethyl *tert*-oxanilic acid (HEMA class)		*sec*-sulfinyllactic acid glucose conjugate (EMA class)	
1-hydroxyethyl-*sec*-methylsulfone glucosylsulfate conjugate (HEMA class)	 R=glucose sulfate	*sec*-sulfonic acid (EMA class)	
5-hydroxy-*sec*-oxanilic acid (OH class)		*tert*-cysteine (EMA class)	
hydroxymethyl-*tert*-oxanilic acid (HMEA class)		*tert*-hydroxyacetochlor (EMA class)	
sec-hydroxyacetochlor (EMA class)		*tert*-malonylcysteine (EMA class)	
sec-methylsulfone (EMA class)		*tert*-malonylcysteine sulfoxide (EMA class)	
sec-oxanilic acid (EMA class)		*tert*-methylsulfone (EMA class)	

sec-sulfinyllactic acid (EMA class)		*tert*-oxanilic acid (EMA class)	
tert-sulfinyllactic acid (EMA class)		*tert*-sulfinylacetic acid (EMA class)	
tert-sulfonic acid (EMA class)			

Plant metabolism

Acetochlor is typically used for three different situations:

- Incorporation into the soil prior to planting the crop (PP)
- As a broadcast spray to weeds and bare soil after seeding but prior to crop emergence (PE)
- As a broadcast spray to weeds and the growing crop, i.e. post-emergence (PO).

The Meeting received plant metabolism studies with acetochlor following pre-plant, pre- and post-emergent applications to maize (corn), cotton and soya bean.

Maize

The metabolism of [^{14}C-U-phenyl]-acetochlor in maize grown outdoors was studied following either a pre-emergence (PE) application immediately after seeding or post-emergence after allowing the corn plants to grow to a height of 66–71 cm (growth stage V6 to V7, i.e., 6–7 leaves fully emerged) before spraying. The effective treatment rates were 3.6 kg ai/ha for the PE application and 3.5 kg ai/ha for the PO application.

Total radioactive residues in PE forage, grain and stover were 0.67, 0.04 and 1.84 mg equiv/kg while those in PO forage, grain and stover were higher at 3.44, 0.022 and 6.41 mg equiv/kg respectively.

Solvent (CH_3CN/H_2O) extracted ≥ 79% of the TRR present in immature plants, forage and stover samples. Extraction of ^{14}C present in grain was lower at 58–63% TRR. The majority of the ^{14}C present in the solids after extraction were associated with natural products, especially starch, protein, lignin and hemicellulose. A large number of metabolites were detected in the solvent extracts but not unchanged acetochlor. There were notable differences in the pattern of metabolites observed following PE compared to PO application.

The metabolites identified in PO forage and stover primarily resulted from initial glutathione conjugation of acetochlor followed by oxidation to give sulfoxide-type metabolites. Only one compound exceeded 10% of TRR: *tert*-sulfinyllactic acid was observed at 12.6% TRR (0.43 mg equiv/kg) in forage and 11.3% of TRR (0.72 mg equiv/kg) in stover. Two other metabolites exceeded 0.1 mg equiv/kg: *sec*-sulfinyllactic acid and *sec*-sulfinyl lactic acid glucose conjugate.

In contrast, in PE maize the compounds detected resulted largely from the uptake of soil metabolites to give oxanilate-type metabolites. None of the individual components exceeded 10% of TRR in immature plant, forage or stover. The major component was 5-hydroxy *sec*-oxanilic acid present at levels of 8.4% (0.099 mg equiv/kg) 6.2% (0.042 mg equiv/kg) and 4.3% (0.080 mg equiv/kg) TRR in immature plants, forage and stover respectively.

In grain from PE or PO application, no individual compound exceeded 10% of TRR and no discrete component characterized by chromatography exceeded 0.001 mg equiv/kg.

Compounds containing an intact phenyl ring can be classified according to the aniline that would be generated on base hydrolysis. Non-hydroxylated metabolites give EMA, those hydroxylated at the 1-position of the ethyl side-chain give HEMA, those at the hydroxylated at the methyl side-chain HMEA and those hydroxylated at the 3, 4 or 5 positions of the phenyl ring could be classed as “OH” anilines. The major aniline metabolite class observed in maize (PE and PO) is EMA followed by OH.

Soya bean

The metabolism of [^{14}C-U-phenyl]-acetochlor in soya beans grown outdoors following either a pre-plant (PP) or post-emergence (PO) application was studied. The PP application was made to the soil (loamy sand) 45 days before seed planting while the PO application was made to a second group of plants 42 days after planting seed when the plants were approximately at the R1–R2 growth stage (beginning flowering to full flowering). The application rates were 3.5 kg ai/ha for the PP and 3.7 kg ai/ha for the PO application.

Levels of radioactivity were higher in PO treated plants compared to PP application. TRRs were 1.67 and 11.4 mg equiv/kg in PP and PO forage, respectively; 3.48 and 57.7 mg equiv/kg in PP and PO hay; and 0.175 and 0.192 mg equiv/kg in PP and PO seed.

Solvent (CH_3CN/H_2O) extracted ≥ 86% of the TRR present in forage and hay samples. Extraction of ^{14}C present in grain was lower at 59–80% TRR.

As was the case with maize, a large number of metabolites were detected in the solvent extracts but not unchanged acetochlor. There were also notable differences in the patterns of metabolites observed following PP compared to PO application.

Like maize, the metabolites identified in PO soya bean forage and hay primarily resulted from initial glutathione conjugation of acetochlor followed by oxidation to give sulfoxide-type metabolites. Five compounds exceeded 10% of TRR: *tert*-cysteine (forage 39% TRR, 4.45 mg equiv/kg), *tert*-malonylcysteine (forage and hay 18–23%TRR, 2.62–10.6 mg equiv/kg), *tert*-sulfinyllactic acid and *tert*-malonylcysteine sulfoxide (forage and hay; combined 24–30%TRR, 2.72–17.3 mg equiv/kg). A large number of other metabolites were present at levels in excess of 0.1 mg equiv/kg.

In contrast, in PP soya bean forage or hay the compounds detected resulted largely from the uptake of soil metabolites to give oxanilate-type metabolites. None of the individual components exceeded 10% of TRR in immature plant, forage or hay. The major metabolites were *tert*-oxanilic acid (> 9.5% TRR, > 0.158 mg equiv/kg) in forage and *tert*-oxanilic acid combined with *tert*-sulfonic acid present at levels of > 9.7% (0.34 mg equiv/kg) in hay.

Both PP and PO seed extracts contained numerous low-level metabolites (≥ 27), none of which exceeded 0.03 mg equiv/kg. PP seed metabolites were generally more polar than PO seed metabolites.

The major aniline metabolite classes in soya bean commodities are EMA and “other” for PP forage, HEMA and EMA for PP hay and EMA for PO hay.

Cotton

The metabolic fate of [^{14}C-U-phenyl]-acetochlor in cotton maintained outdoors was examined following either a pre-plant (PP) soil (sandy loam) application 30 days before seed planting or as a separate application (PO) made to plants 15 days after the majority of plants had reached their first white flower stage. The application rates were 3.6 kg ai/ha for the PP and for the PO application.

TRR in PO leaves/stems were 63.9 mg equiv/kg whilst the TRR in PP leaves/stems were much lower at 5.7 mg equiv/kg. The TRRs in seed from both treatments were similar at 0.13 mg equiv/kg for the PO treatment and 0.10 mg equiv/kg for the PP treatment.

Solvent (CH_3CN/H_2O) extracted ≥ 88% of the TRR present in leaf/stem samples. Extraction of ^{14}C present in seed was lower at 29–44% TRR.

In contrast to maize and soya bean, the metabolites identified following PP and PO applications were both from initial conjugation of acetochlor with glutathione, followed by subsequent loss of glutamate, then glycine. The resulting cysteinyl product underwent oxidation, deamination, dealkylation, and further conjugation with malonate or glucose to produce numerous metabolites. Only one compound exceeded 10% of TRR in PP leaves/stems: 1 hydroxyethyl-*sec*-methylsulfone glucosylsulfate conjugate (> 15%TRR, > 0.85 mg equiv/kg) and one following PO application: *sec*-sulfinyllactic acid (20% TRR, 12.5 mg equiv/kg). Levels of ^{14}C in cotton seed were too low to allow identification of the numerous metabolites present, none of which individually exceeded 5.3% TRR or 0.007 mg equiv/kg.

The major aniline metabolite classes in cotton leaves and stems are EMA and HEMA.

In summary, the metabolism of acetochlor by plants is well understood. Primary metabolic pathways of acetochlor in plants included:

1) hydrolytic/oxidative dechlorination to form the alcohol (and conjugates) and subsequent oxidation of the alcohol to the oxanilic acid

2) displacement of chlorine by glutathione (or homoglutathione) and further catabolism of the products to cysteine or lactic acid metabolites, and the S-oxides and conjugates, or to sulfonic acids and methyl sulfones

3) ethyl/methyl side-chain or ring hydroxylation; and 4) N dealkylation. Oxanilate, sulfonic acid, and sulfone metabolites were more prevalent in PP and PE matrices. Glutathione/homoglutathione conjugation followed by catabolism to cysteine and lactic acid metabolites, and their oxidized derivatives and conjugates, was the primary metabolic pathway for acetochlor after PO treatment.

Animal metabolism

The plant metabolism studies show that livestock are unlikely to be exposed to parent acetochlor. Rather, animals will be exposed to a range of metabolites, none of which is considered likely to be a major component of the residue. A range of livestock metabolism studies were made available to the meeting including the metabolism of acetochlor in lactating goats and laying hens as well as the metabolism of a range of plant metabolites administered individually or as a combination to lactating animals (goats and cows) or laying hens.

Acetochlor

Lactating goats were orally dosed twice daily for four consecutive days with [^{14}C-U-phenyl]-acetochlor at a dose equivalent to 8.1 to 11 ppm in the feed. The majority of the ^{14}C residues was recovered in the excreta (urine 58–71%AD, faeces 20–29% AD). For tissues, ^{14}C residues were highest in liver, (0.277–0.588 mg equiv/kg), followed by the kidney (0.247–0.479 mg equiv/kg), muscle TRR ranged from (0.012 to 0.024 mg equiv/kg) and fat (0.002–0.003 mg equiv/kg). TRR in milk reached 0.016 mg equiv/kg after two days of dosing. No intact acetochlor was detected in tissues or milk. The majority of the residues were not recovered by mild extraction techniques using organic solvents or water at ambient temperatures. Cell fractionation confirmed the ^{14}C in the solids had been incorporated into natural products, principally proteins.

Laying hens were orally dosed once a day for seven consecutive days with [^{14}C-U-phenyl]-acetochlor at a dose equivalent to 10 ppm in the feed. The majority of the ^{14}C residues was recovered in the excreta (68–72.3%AD). Radioactivity reached its highest level in eggs on Day 7 from the start of dosing, with average concentrations of 0.072 mg equiv/kg for yolk and 0.007 mg equiv/kg for egg whites. Mean levels of TRR were 0.337 mg equiv/kg in liver, 0.054 mg equiv/kg in breast muscle, 0.072 mg equiv/kg in leg muscle, 0.019 mg equiv/kg in peritoneal fat, and 0.041 mg equiv/kg in skin plus subcutaneous fat. No intact acetochlor was detected in tissues or eggs. The majority of the residue was associated with natural products; proteins, glycan, and lipid fractions.

Metabolism of selected acetochlor plant metabolites by livestock

1-hydroxyethyl-tert-sulfonic acid

Groups of lactating goats were dosed orally with ^{14}C-[1-hydroxyethyl-*tert*-sulfonic acid] for five or 28 consecutive days at a dose equivalent to 0.4 to 5.7 ppm in the feed. In an animal dosed at the equivalent of 5.7 ppm for five days, most of the ^{14}C was recovered in the excreta (faeces 68.7%AD, and urine 3.65% AD). TRR in tissues was very low, with 0.007 mg equiv/kg (1-hydroxyethyl-*tert*-sulfonic acid equivalents) in kidney, 0.003 mg equiv/kg in liver, and < 0.0003 mg equiv/kg in muscle and fat. For animals dosed for 28 days, ^{14}C residues in milk and tissues were < 0.001 mg equiv/kg.

Metabolism of four acetochlor plant metabolites co-administered to lactating goat

Two lactating goats were orally dosed with a mixture of metabolites (*tert*-sulfonic acid, *tert*-oxanilic acid, *tert*-hydroxyacetochlor and *tert*-sulfinylacetic acid ratio 25:19:13:1 based on weight) uniformly labelled in the phenyl ring at 13.7 mg acetochlor equivalents/goat twice daily for five days equivalent to 3.2 and 4.3 ppm (acetochlor equivalents) in the feed. Most of the ^{14}C was excreted (63–79% AD) with similar amounts recovered in urine (34–42% AD) and faeces (29–37% AD). Residues in milk reached a plateau by the fourth day of dosing. Levels of ^{14}C were highest in kidney (0.034 mg acetochlor equiv/kg) followed by liver (0.022 mg equiv/kg) with levels in muscle and fat below the limit of detection. Levels of ^{14}C in milk were 0.006 mg equiv/kg. The HPLC profile of urine and faeces was similar to the dosing solution suggesting limited transformation occurs. Due to the low levels of ^{14}C present in tissue, analysis was by high pressure acid hydrolysis to form anilines. The only aniline metabolite class observed was EMA, the same as the dosing compounds.

Laying hens were dosed with the same mixture of metabolites (but in ratios 1:1:1:1 based on weight) for five to six days at doses equivalent to 13 to 88 ppm (acetochlor equivalents) in the feed. Excreta and cage wash accounted for ≥ 96% AD. The highest levels of ^{14}C found in the tissues of the hens dosed with 88 ppm were in liver (0.150–0.266 mg equiv/kg) followed by kidneys (0.106–0.128 mg equiv/kg) with much lower levels found in fat (0.049–0.061 mg equiv/kg) and muscle (0.024–0.032 mg equiv/kg). Egg whites and yolks collected at sacrifice had ^{14}C residue levels that ranged from 0.029 to 0.052 mg equiv/kg and from 0.192 to 0.198 mg equiv/kg, respectively.

The main components of ^{14}C detected in tissues and eggs were unchanged *tert*-hydroxyacetochlor (2.9–26%TRR) and *tert*-oxanilic acid 1.2–20.4% TRR) as well as *sec*-oxanilic acid (6.3% TRR yolk).

Metabolism of 5-hydroxy-sec-oxanilic acid in lactating cow

A metabolite of acetochlor in maize, 5-hydroxy-*sec*-oxanilic acid, uniformly labelled in the phenyl ring was used to dose a lactating cow at a nominal rate of 25 ppm (30 ppm if expressed in acetochlor equivalents) in the diet for seven consecutive days. Most of the administered dose was recovered from the excreta (faeces 82.5% and urine 8.4%).

The residues in all tissues and milk were < 0.01 mg 5-hydroxy-sec-oxanilic acid equiv/kg, except in the kidney which had a residue of 0.015 mg equiv/kg. Extraction of ^{14}C residues in kidney with $CH_3CN{:}H_2O$ released 70% of the TRR. In kidney unchanged 5-hydroxy-*sec*-oxanilic acid accounted for 46.7%TRR with the remainder composed of unextracted material (24.5%TRR) and uncharacterized aqueous soluble residues (15.0%TRR).

The metabolism of acetochlor and selected plant metabolites (*tert*-oxanilic acid, *tert*-sulfonic acid, *tert*-sulfinylacetic acid, *sec*-sulfonic acid, *tert*-norchloroacteochlor, 5-hydroxy-*sec*-oxanilic acid?) in laboratory animals (rats) was summarized and evaluated by the WHO panel of the JMPR in the present meeting.

In summary, the metabolism of acetochlor in goats is similar to metabolism in laboratory animals. Studies on a limited number of plant metabolites suggests, at least for these plant metabolites, that following oral dosing they remain the major component of the ^{14}C residues.

Environmental fate

The Meeting received information on soil aerobic metabolism, aqueous photolysis and aqueous hydrolysis properties of [^{14}C]acetochlor. Studies were also received on the behaviour of [^{14}C]acetochlor in a rotational crop situation.

The degradation of acetochlor in soil maintained under aerobic conditions is rapid with four major degradates identified; *tert*-oxanilic acid, *tert*-hydroxy, *tert*-sulfonic acid and *tert*-sulfinylacetic acid. While parent acetochlor is degraded relatively quickly in soils the degradates formed are moderately persistent. In the laboratory studies, soil DT_{50} values for parent acetochlor ranged from 3.3 to 55 days while for field dissipation studies DT_{50} values ranged from 2.9 to 12.6 days.

Acetochlor was stable to hydrolysis in aqueous solutions at pH 5, 7 and 9 (25 °C) suggesting hydrolysis plays a negligible role in its degradation. Similarly negligible degradation was observed in an aqueous photolysis study suggesting photolysis is not a major route of degradation.

In a confined rotational crop study with lettuce, radish and wheat, a plot of sandy loam soil was treated with [^{14}C-U-phenyl]-acetochlor at the equivalent of 2.24 or 3.36 kg ai/ha and crops sown 30, 120 and 365 days after the soil application. Analysis of soil extracts prior to planting showed that acetochlor was degraded to an array of compounds, many of which were present at very low levels. In addition to acetochlor, four major soil degradates were identified as present in soil throughout the study: *tert*-oxanilic acid, *tert*-sulfonic acid, *tert*-sulfinylacetic acid and *tert*-hydroxyacetochlor.

Five compounds, which were consistently present in plant extracts from all three rotation intervals were: *sec*-oxanilic acid (0–11%TRR; < LOD–0.075 mg equiv/kg; not observed in grain), *tert*-oxanilic acid (0–25%TRR; < LOD–0.17 mg equiv/kg; up to 0.003 mg equiv/kg in grain), *sec*-sulfonic acid (0–27%TRR; < LOD–0.21 mg equiv/kg; not observed in grain), *tert*-sulfonic acid (0–16%TRR; < LOD–0.072 mg equiv/kg; up to 0.0045 mg equiv/kg in grain), and 1-hydroxyethyl *tert*-oxanilic acid (0–15%TRR; < LOD–0.43 mg equiv/kg; up to 0.0017 mg equiv/kg in grain). Unextracted radioactive residues in plant matrices were characterized by cell wall fractionation. The majority of this plant bound material was incorporated into hemicellulose and cellulose and in the case of wheat grain into starch.

The major aniline metabolite class in rotational crop types was EMA except in wheat grain for which it was HMEA and HEMA.

In a separate study [^{14}C-U-phenyl]-acetochlor was applied to the surface of a sandy loam soil at a nominal rate equivalent to 3.08 kg ai/ha. Mustard, turnip and millet were planted approximately 30, 120 and 365 days after [^{14}C]acetochlor application. Soya beans were planted approximately 30 and 365 days after treatment. The radioactive residues dissipated rapidly in soil with only 22% AR remaining 30 days after application. The main identified soil degradates were *tert*-oxanilic acid, *tert*-sulfinylacetic acid and *tert*-sulfonic acid.

Analyses of the plant extracts showed that extensive metabolism occurred in all crops. Acetochlor was not found in any of the RACs analysed, With the exception of Day 30 turnip roots, acetochlor was not found in RACs. The ^{14}C residue levels decreased in crops from the 30 day compared to the 365 days planting. The TRR was partially characterized and found to be comprised of up to nine different compounds, with not one above 0.01 mg equiv/kg in the edible portion of the root or cereal crop (turnip root and millet grain). The major metabolites identified in crops planted 30 DAA were *tert*-oxanilic acid, *sec*-methyl sulfone, *sec*-hydroxyacetochlor, and *tert*-methyl sulfone.

The major aniline class of metabolites was EMA in which no hydroxylation of the alkyl groups of the phenyl ring had occurred with HEMA class metabolites was also significant.

In summary, acetochlor related residues in soil may contribute to residues observed in rotational and primary crops.

Methods of Analysis

The metabolism of acetochlor in crops results in a complex mixture of metabolites, most of which produce EMA or HEMA on base hydrolysis. Any non-metabolised parent acetochlor that might be present would be converted to EMA upon hydrolysis.

Consequently most of the methods developed to quantify acetochlor residues in animal and plant commodities involve hydrolytic conversion of metabolites to the EMA and HEMA chemophores. These analytes are quantified and expressed in acetochlor equivalents and then may be added to give total acetochlor residues. LOQs are typically 0.01 mg/kg each for EMA and HEMA.

The methods all involve initial extraction of samples with an organic/aqueous solvent mixture, typically CH_3CN/H_2O, followed by hydrolysis of residues with aqueous hydroxide solutions. The main differences between methods involve clean-up conditions and instrumentation for quantification, LC-MS/MS in more recent versions.

Representative compounds that generate EMA (*tert*-sulfonic acid) and HEMA (1-hydroxyethyl-*tert*-oxanilic acid) on base hydrolysis are used as reference materials for fortification and method validation.

The methods are suitable for analysis of acetochlor and related metabolites in plant and animal matrices.

Multi-residue methods are currently not validated for acetochlor and its metabolites.

Stability of pesticide residues in stored analytical samples

The Meeting received information on the stability of acetochlor and example metabolites hydrolysable to EMA (*tert*-sulfonic acid) and HEMA (1-hydroxyethyl-*tert*-oxanilic acid) and for some matrices HMEA (hydroxymethyl-*tert*-oxanilic acid) and OH-class (5-hydroxy-*sec*-oxanilic acid) in various matrices on freezer storage (–18 °C).

Residues of parent acetochlor were stable in potato tubers for at least 295 days and sugar beet tops for at least 294 days storage.

Residues of *tert*-sulfonic acid (EMA-class) and 1-hydroxyethyl-*tert*-oxanilic acid (HEMA class) measured using a common moiety method, were stable in alfalfa forage and clover hay for at least 330 days freezer storage, soya bean forage for 390 days, soya bean hay for 391 days, soya bean grain for 382 days, wheat forage for 741 days, wheat straw for 741 days, wheat grain for 734 days, sorghum silage for 739 days, sorghum grain for 732 days, potato tubers for 286 days, sugar beet tops for 286 days, maize grain for 356 days, maize forage for 357 days and maize stover for 351 days.

Residues of hydroxymethyl-*tert*-oxanilic acid (HMEA class) measured using a common moiety method, were stable in sorghum grain, silage for at least 732 days, soya bean grain, forage and hay for at least 380 days and wheat grain, forage and straw for at least 734 days.

Residues of 5-hydroxy-*sec*-oxanilic acid (OH-class) measured using a common moiety method, were stable in maize grain, forage and stover, lettuce, turnip roots and leaves and soya bean seed and hay for at least 730 days.

Residues of a mixture of *tert*-hydroxyacetochlor, *tert*-oxanilic acid, *tert*-sulfonic acid and *tert*-sulfinylacetic acid (EMA-class) in equal proportions measured using a common moiety method, were stable in eggs, milk, chicken liver, pig liver, beef liver, muscle, fat, and kidneys for at least 910 days.

The periods of demonstrated stability cover the frozen storage intervals used in the residue studies.

Definition of the residue

Following application of acetochlor to crops (maize, soya bean and cotton) a large number of metabolites were detected, but not unchanged acetochlor. There were notable differences in the pattern of metabolites observed following applications (PP and PE) to soil prior to crop emergence compared to applications made when the crop is present (PO).

The metabolites identified in forage, stover and hay following PO application to maize and soya beans are mainly sulfoxide-type metabolites. Significant metabolites (> 10%TRR) were *tert*-sulfinyllactic acid (13% TRR 0.43 mg equiv/kg maize forage; 11% TRR 0.72 mg equiv/kg maize stover), *tert*-cysteine (39% TRR soya hay), *tert*-malonylcysteine (18–23%TRR soya bean forage and hay), *tert*-sulfinyllactic acid and *tert*-malonylcysteine sulfoxide (combined 24–30%TRR soya bean forage and hay).

In contrast, in PE maize and PP soya beans the compounds detected resulted largely from the uptake of soil metabolites to give oxanilate-type metabolites. None of the individual components exceeded 10% of TRR in immature plant, forage, stover or hay. The major metabolite in PE maize was 5-hydroxy *sec*-oxanilic acid present at levels of 8.4% (0.099 mg equiv/kg) 6.2% (0.042 mg equiv/kg) and 4.3% (0.080 mg equiv/kg) TRR in immature plants, forage and stover respectively. The major metabolites in soya bean were *tert*-oxanilic acid (> 9.5% TRR) in forage and combined with *tert*-sulfonic acid present at levels of > 9.7% (0.34 mg equiv/kg) in hay.

Metabolism of acetochlor in cotton differed compared to maize and soya bean in that the metabolites identified following both PP and PO applications were from initial conjugation of acetochlor with glutathione, followed by subsequent loss of glutamate, then glycine. Only one compound exceeded 10% of TRR in PP leaves/stems: 1 hydroxyethyl-*sec*-methylsulfone glucosylsulfate conjugate (14.8%TRR) and one following PO application: *sec*-sulfinyllactic acid (20% TRR).

Negligible residues were detected in seeds and grain. Metabolites detected in maize were individually present at < 0.001 mg/kg. Identification of individual metabolites was not achieved in soya bean grain and cotton seed. In both cases extracts contained numerous metabolites, each present at < 0.03 mg equiv/kg (soya bean grain) or < 0.01 mg equiv/kg (cotton seed).

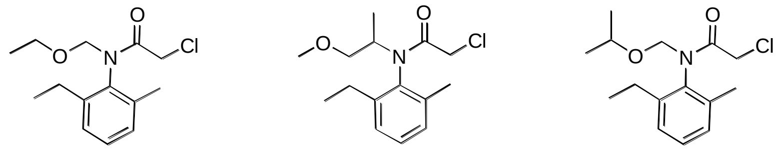
There is no obvious candidate compound for use as a residue definition for compliance, nor is there a small group of compounds that combined could usefully be used to monitor compliance. It is noted that the majority of the residue in crops can be classified according to the aniline class formed on base hydrolysis. As such a common moiety residue definition would allow residues to be monitored in all crops and derived commodities.

The major aniline metabolite class observed in maize (PE and PO) is EMA followed by OH, in soya bean commodities EMA and “other” for PE soya bean forage, HEMA and EMA for PE soya bean hay and EMA for PO soya bean hay and in cotton leaves and stems EMA and HEMA.

Validated analytical methods are available for the determination of compounds hydrolysable with base to EMA and HEMA in crop matrices.

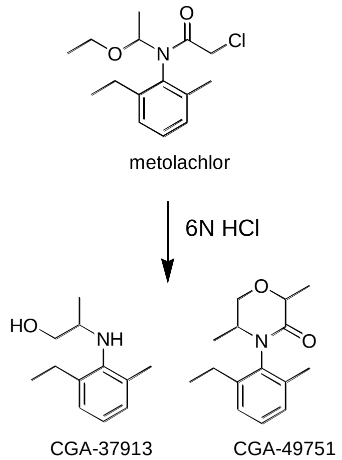
Residues derived from acetochlor may also occur in rotational (follow) crops. Five metabolites, which were consistently present in plant extracts from all rotation intervals studied were: *sec*-oxanilic acid, *tert*-oxanilic acid, *sec*-sulfonic acid, *tert*-sulfonic acid, and 1-hydroxyethyl *tert*-oxanilic acid. The major aniline metabolite class in rotational crop types studied was EMA except wheat grain for which it was HMEA and HEMA.

The Meeting also noted that acetochlor is a member of the chloroacetamide herbicides, a group that also includes metolachlor and propisochlor. The structures of these herbicides are similar to acetochlor and they are expected to share a number of common metabolites on cleavage of the ether side-chain.



Acetochlor Metolachlor Propisochlor

A common moiety method of analysis has been developed for metolachlor that involves hydrolysis in 6N HCl. The resulting compounds differ from those produced by acetochlor and where required re-analysis of samples using the metolachlor method could be used to distinguish acetochlor from metolachlor residues.



No naturally occurring compounds hydrolysable to EMA and HEMA have been identified in crops likely to be treated or grown as follow crops.

The Meeting decided the residue definition for compliance with MRLs and estimation of dietary intake in plants should be the sum of compounds converted to EMA and HEMA, expressed in terms of acetochlor

Livestock may be exposed to acetochlor-derived residues present in feeds. Due to the extensive metabolism of acetochlor in plants, exposure to unchanged parent compound is not expected. Additionally the extensive metabolism combined with metabolite profiles that differ with application type (pre-emergence or post-emergence) and also crops complicate the choice of metabolite mixtures that might usefully typify the metabolite profiles present in feed, and therefore the nature of residues in livestock commodities. Available studies involving a limited number of plant metabolites suggest the major components of the residues in livestock commodities are the dosing compounds. Therefore, as for plant commodities, it is proposed the residue definition for compliance in animals be compounds converted to EMA and HEMA. Analytical methods are available for animal matrices.

Residues hydrolysable to EMA and HEMA and captured by the residue definition are comprised of a range of hydroxylated acetochlor-derived compounds as well as conjugates, all reactions that are expected to increase water solubility. Taken as a whole, the Meeting considered that residues encompassed by the residue definition for acetochlor are not fat soluble.

Based on the above the Meeting decided the residue definition for compliance with MRLs and estimation of dietary intake should be as follows:

Definition of the residue for compliance with MRL and estimation of dietary intake (for animal and plant commodities):

Sum of compounds converted to EMA and HEMA, expressed in terms of acetochlor.

The residue is not fat soluble.

Results of supervised residue trials on crops

Supervised residue trial data for were available for acetochlor on maize, sweet corn, cotton, sorghum, soya bean, sugar beet and peanuts. With the exception of one series of trials on maize where 5-hydroxy *sec*-oxanilic acid was analysed, residues were measured as compounds hydrolysable with base to EMA and HEMA. Residues listed below are for the sum of compounds hydrolysed to EMA and HEMA expressed in acetochlor equivalents.

The following indicates how the residues were combined when residues were reported as < LOQ for one or both of the components.

EMA	HEMA	Total residues (EMA+HEMA)
< 0.05	< 0.05	< 0.1
0.1	< 0.05	< 0.15
0.1	0.06	0.16

Sweet corn

The Meeting received supervised residue trial data for acetochlor on sweet corn from the USA. GAP in the USA is applications pre-plant or pre-emergence at up to 3.0 kg ai/ha with a PHI not required. The maximum rate per year is 3.4 kg ai/ha. In trials approximating critical GAP in the USA residues in sweet corn were (n=14): < 0.04 (14) mg/kg (kernels with husks removed).

The Meeting estimated a maximum residue level, STMR and HR or 0.04 (*), 0.04 and 0.04 mg/kg respectively for sweet corn (corn-on-the-cob).

Soya bean

In the USA acetochlor is approved for use on soya beans. GAP in the USA is applications pre-plant, pre-emergence or post-emergence but before the R2 growth stage (full flowering) at up to 1.7 kg ai/ha with a PHI not required. The maximum rate per year is 3.4 kg ai/ha. None of the trials matched critical GAP (2× 1.7 kg ai/ha post-emergence applications) and none were suitable for applying the proportionality approach.

Sugar beet

Supervised residue trial data for acetochlor on sugar beet were made available. GAP in the USA is applications pre-plant, pre-emergence or post-emergence (2 to 8 leaf stage) at up to 1.7 kg ai/ha with a PHI of 70 days. The maximum rate per year is 3.4 kg ai/ha. In trials approximating critical GAP in the USA residues in sugar beet roots were (n=15): < 0.008, < 0.009, 0.011, 0.011, 0.015, 0.016, 0.017, 0.018, 0.019, 0.021, 0.021, 0.025, 0.045, 0.051 and 0.086 mg/kg.

The Meeting estimated a maximum residue level and STMR of 0.15 and 0.018 mg/kg respectively for sugar beet roots.

Maize

The Meeting received supervised residue trial data for acetochlor on maize. GAP in the USA is applications pre-plant, pre-emergence or post-emergence (28 cm height) at up to 3.0 kg ai/ha with a PHI not specified for the EC formulation and pre-plant, pre-emergence or post-emergence (76 cm height) at up to 2.5 kg ai/ha for the CS formulation. The maximum rate per year is 3.4 kg ai/ha. The Meeting considered trials with the CS formulation where the last application can be made closer to harvest but at a lower rate compared to the EC trials where applications are made earlier but at a higher rate to give rise to higher residues and represent critical GAP. Critical GAP was considered to be pre-emergent application at 0.9 kg ai/ha followed by post-emergence application at 2.5 kg ai/ha. In trials with the CS formulation, maize was treated with a single post-emergence application rate at approximately 3.2 kg ai/ha (1.28× the maximum label rate). The Meeting agreed to utilise the proportionality approach to estimate residues matching *c*GAP noting that residues from pre-emergence applications do not contribute to final residues and that a single post-emergence application at 2.5 kg ai/ha should be targeted for use in estimating maximum residue levels. The following scaled residues (n=21) matched *c*GAP:

Trial application rate (kg ai/ha)	Scaling factor = 2.5/trial application rate	Trial residue (mg/kg)	Scaled residue =scaling factor × trial residue (mg/kg) [a]
3.31	0.755	< 0.002	< 0.002
3.19	0.784	< 0.002	< 0.002
3.19	0.784	< 0.002	< 0.002
3.22	0.776	< 0.002	< 0.002
3.15	0.794	0.003	< 0.002
3.19	0.784	0.003	< 0.002
3.18	0.786	0.003	< 0.002
3.16	0.791	0.003	< 0.002
3.26	0.767	0.003	< 0.002
3.17	0.789	0.003	< 0.002
3.09	0.809	0.003	< 0.002
3.18	0.786	0.004	< 0.003
3.19	0.784	0.004	< 0.003
3.14	0.796	0.006	0.005
3.33	0.751	0.006	0.005
3.33	0.751	0.008	0.006
3.13	0.799	0.008	0.006
3.17	0.789	0.009	0.007
3.27	0.765	0.009	0.007
3.24	0.772	0.009	0.007
3.32	0.753	0.019	0.014

[a] LOQ for combined residues is 0.002 mg/kg.

The Meeting estimated a maximum residue level, STMR and HR of 0.02 and 0.002 mg/kg respectively for maize.

Sorghum

Acetochlor is approved in the USA for use on sorghum. GAP in the USA is applications pre-plant, pre-emergence or post-emergence (28 cm height) at up to 2.5 kg ai/ha with a PHI not specified. The maximum rate per year is 3.4 kg ai/ha. No trials matched cGAP (2× 1.7 kg ai/ha POST) and the data were not suitable for use of the proportionality approach.

Cotton

The Meeting received supervised residue trial data for acetochlor on cotton. GAP in the USA is applications pre-plant, pre-emergence or post-emergence (before 1st bloom) at up to 1.7 kg ai/ha with a PHI not specified. The maximum rate per year is 3.4 kg ai/ha. Two-post-emergence applications made closest to the latest growth stage permitted lead to highest residues. No trials utilising post-emergence application matched critical GAP in the USA.

Peanut

Supervised residue trial data for acetochlor on peanuts were available. GAP in the USA is applications pre-plant, pre-emergence or post-emergence (before flowering) at up to 1.7 kg ai/ha with a PHI not specified. The maximum rate per year is 3.4 kg ai/ha. In trials conducted in the USA plots were treated pre-plant and post-emergence (1.7 PP + 1.7 PO kg ai/ha), pre-emergent and post-emergent (1.7 PE + 1.7 POST kg ai/ha) or post-emergent (3.4 PO kg ai/ha). No trials matched cGAP (2× 1.7 PO kg ai/ha) and the data were not suitable for use of the proportionality approach.

Animal feeds

Peanut fodder

GAP in the USA is applications pre-plant, pre-emergence or post-emergence (before flowering) at up to 1.7 kg ai/ha with a PHI not specified. The maximum rate per year is 3.4 kg ai/ha. GAP in the USA is to allow a minimum of 90 days between last application and grazing or harvest and feeding of peanut hay to livestock. No trials matched *c*GAP (2× 1.7 POST kg ai/ha).

Soya bean forage

In the USA there are restraints on the grazing and feeding of post-emergence treated soya bean forage to livestock.

Soya bean fodder

In the USA acetochlor is approved for use on soya beans. GAP in the USA is applications pre-plant, pre-emergence or post-emergence but before the R2 growth stage (full flowering) at up to 1.7 kg ai/ha with a PHI not required. None of the trials matched *c*GAP and none were suitable for use of the proportionality approach.

Corn and maize forage

GAP in the USA is applications pre-plant, pre-emergence or post-emergence (28 cm height) at up to 3.0 kg ai/ha with a PHI not specified for the EC formulation and pre-plant, pre-emergence or post-emergence (76 cm height) at up to 2.5 kg ai/ha for the CS formulation. The maximum rate per year is 3.4 kg ai/ha. GAP for maize (field corn) in the USA requires that treated areas are not grazed and treated forage not fed to livestock for 40 days following application. No trials matched *c*GAP.

GAP in the USA for sweet corn is applications of an EC formulation pre-plant or pre-emergence at up to 3.0 kg ai/ha with a PHI not required. The maximum rate per year is 3.4 kg ai/ha. Residues in sweet corn forage from field trials performed in the USA approximating cGAP in the USA were (n=13): < 0.04, < 0.06, < 0.08, 0.08, < 0.09, 0.1, < 0.12, 0.14, 0.22, 0.24, 0.29, 0.44 and 0.97 mg/kg (on an as received basis). Sweet corn forage contains approximately 48% DM.

The Meeting estimated median and highest residues of 0.25 and 2.02 mg/kg for sweet corn forage (on a dry matter basis).

Corn and maize fodder

For maize (field corn), GAP in the USA is applications pre-plant, pre-emergence or post-emergence (28 cm height) at up to 3.0 kg ai/ha with a PHI not specified for the EC formulation and pre-plant, pre-emergence or post-emergence (76 cm height) at up to 2.5 kg ai/ha for the CS formulation. The maximum rate per year is 3.36 kg ai/ha. The Meeting considered trials with the CS formulation where the last application can be made closer to harvest but at a lower rate compared to the EC trials where applications are made earlier but at a higher rate to give rise to higher residues and represent critical GAP. Critical GAP was considered to be pre-emergent application at 0.9 kg ai/ha followed by post-emergence application at 2.5 kg ai/ha. No trials matched cGAP.

Residues in sweet corn fodder from field trials performed in the USA approximating cGAP in the USA were (n=14): < 0.04, < 0.04, < 0.04, < 0.04, 0.04, < 0.05, < 0.06, 0.08, 0.09, 0.10, 0.13, 0.13, 0.42 and 0.91 mg/kg (on an as received basis). Sweet corn fodder contains approximately 83% DM.

The Meeting estimated a maximum residue level and median and highest residues of 1.5, 0.07 and 0.91 mg/kg for sweet corn fodder (on as received matter basis) or 1.5, 0.084 and 1.096 mg/kg (dry matter basis) assuming 83% dry matter (DM).

Sorghum forage

GAP in the USA requires that treated areas are not grazed and treated forage not fed to livestock for 60 days following application. In the USA applications are made pre-plant, pre-emergence or post-emergence (28 cm height) at up to 2.5 kg ai/ha. No trials matched *c*GAP.

Sorghum fodder (stover)

GAP in the USA is applications pre-plant, pre-emergence or post-emergence (28 cm height) at up to 2.5 kg ai/ha with a PHI not specified. No trials matched cGAP.

Cotton gin by-products

No trials on cotton matched GAP in the USA.

Sugar beet tops

GAP in the USA is applications pre-plant, pre-emergence or post-emergence (2 to 8 leaf stage) at up to 1.7 kg ai/ha with a 70 day interval between the last application and grazing or harvest of sugar beet tops. The maximum seasonal application is 3.4 kg ai/ha/year. Residues in sugar beet tops from field trials performed in the USA approximating cGAP in the USA were (n=15): 0.009, 0.014, 0.019, 0.028, 0.028, 0.030, 0.035, 0.041, 0.043, 0.050, 0.051, 0.056, 0.063, 0.147 and 0.554 mg/kg (on an as received basis). Sugar beet tops contain approximately 23% DM.

The Meeting estimated a maximum residue level and median residues of 3 and 0.178 mg/kg for sugar beet tops (on dry matter basis).

Rotational crop residues

Soil residues of acetochlor related compounds are moderately persistent. The use-pattern (USA GAP) specifies plant-back intervals for certain follow-crops as well as crops that may be rotated following application:

- Non-grass animal feeds such as alfalfa, clover, kudzu, lespedeza, lupin, sainfoin, trefoil, velvet bean, and Vetch spp. may be planted 9 months (270 days) after application.
- Wheat may be planted 4 months (120 days) after application.
- Rotate the next season to the following crops—soya beans, corn (all types), milo (sorghum), cotton, sugar beets, sunflowers, potatoes, barley, buckwheat, millet (pearl and proso), oats, rye, teosinte, triticale, wild rice, dried shelled bean group Lupinus spp. (including grain lupin, sweet lupin and white lupin), Phaseolus spp. (includes field beans, kidney beans, lima beans (dry), navy beans, pinto bean and tepary beans), bean Vigna spp. (includes adzuki beans, black-eyed peas, catjang, cowpeas, Crowder peas, moth beans, mung beans, rice beans, southern peas and urd beans), broad beans (dry), chickpeas, guar, lab lab beans, lentils, peas (Pisum spp., includes field peas) and pigeon peas.

Field crop rotation residue trials are available for representative crops that may be rotated. In these trials follow crops were planted after harvesting of maize that had been treated with acetochlor as a pre-plant, pre-emergence or seed treatment at 3.4 kg ai/ha equivalent to the maximal seasonal rate in the USA. The Meeting considered these trials reflect likely residues in crops grown in rotation following application at the maximum seasonal rate (3.4 kg ai/ha/year).

Legume animal feed as a follow crop

Residues in follow crops of alfalfa and clover as representative legume feed commodities were made available to the Meeting. Alfalfa was sown 274–355 days after pre-emergent application to maize. Clover was sown 274–355 days after pre-emergent application to maize. Residues are listed below:

Alfalfa forage (n=17): < 0.04, 0.04, 0.06, 0.07, 0.08, 0.08, 0.08, 0.09, 0.11, 0.14, 0.14, 0.16, 0.20, 0.29, 0.35, 0.47 and 0.54 mg/kg (fresh weight basis).

Clover forage (n=18): < 0.03, < 0.04, < 0.04, 0.04, < 0.05, < 0.05, 0.05, 0.06, 0.10, 0.10, 0.10, 0.10, 0.11, 0.16, 0.17, 0.17, 0.35 and 0.57 mg/kg (fresh weight basis).

The Meeting estimated median and highest residues in legume forage of 0.10 and 0.57 mg/kg (as received basis) or 0.333 and 1.9 mg/kg when expressed on a dry matter basis (assuming 35%DM for alfalfa and 30%DM for clover).

Alfalfa hay (n=16): 0.11, 0.14, 0.15, 0.16, 0.18, 0.19, 0.20, 0.24, 0.28, 0.29, 0.33, 0.34, 0.73, 0.82, 0.97, and 1.87 mg/kg (fresh weight basis).

Clover hay (n=17): < 0.02, < 0.02, < 0.04, 0.08, 0.08, 0.08, 0.12, 0.13, 0.13, 0.15, 0.24, 0.30, 0.41, 0.44, 0.48, 0.76 and 1.24 mg/kg (fresh weight basis).

The median residues in the clover and alfalfa hay datasets differed by less than a factor of five and the Meeting decided to recommend a group maximum residue level for legume animal feeds. In deciding which data set to use for the recommendation, as a Mann Whitney U-test indicated that the residue populations were not different it was decided to combine the data sets.

Residues in alfalfa and clover fodder (hay) of follow crops ranged from < 0.02 to 1.87 mg/kg (as received basis). Alfalfa and clover hay contains approximately 89%DM.

The Meeting estimated maximum residue levels, median and highest residues of [2, 0.20 and 1.87 mg/kg fresh weight basis] 3, 0.225, and 2.101 mg/kg (dry matter basis) for legume animal feeds.

Wheat (forage, straw, grain)

Wheat may be planted as a follow crop four months after application. Residues (as received basis) in follow wheat crops planted 90–176 days after pre-emergent application to maize were:

- Forage (n=18): < 0.02, < 0.02, < 0.02, < 0.03, < 0.03, 0.03, 0.04, < 0.05, 0.06, 0.06, 0.11, 0.13, 0.14, 0.18, 0.19, 0.27, 0.41 and 0.47 mg/kg (fresh weight basis).

The Meeting estimated median and highest residues in wheat forage of 0.06 and 0.47 mg/kg (fresh weight basis) or 0.24 and 1.88 mg/kg when expressed on a dry matter basis (assuming 25%DM).

- Straw (n=18): < 0.02, < 0.02, < 0.02, < 0.02, < 0.02, < 0.02, < 0.02, 0.03, 0.03, 0.03, 0.04, 0.07, 0.07, 0.07, 0.07, 0.08, 0.09 and 0.10 mg/kg.

The Meeting estimated maximum residue levels, median and highest residues of 0.2, 0.034, and 0.114 mg/kg for wheat straw and fodder (dry matter basis) assuming wheat straw contains 88% dry matter.

- Grain (n=18): < 0.02 (18) mg/kg.

The Meeting estimated maximum residue levels and median residues of 0.02 (*) and 0.02 mg/kg for wheat grain.

Other cereals (forage, hay, straw, grain)

In the USA, a number of cereal and grass-like crops (other than wheat, maize, sorghum) may be planted approximately one year after last application. Residues (on an as received basis) in follow oat crops planted the next season after pre-emergent application to maize:

- Forage (n=18): < 0.035 (7), < 0.038, < 0.038, < 0.042, 0.048, 0.056, 0.057, 0.063, 0.066, 0.085 and 0.121 mg/kg (fresh weight basis).

The Meeting estimated median and highest residues in oat forage of 0.04 and 0.121 mg/kg (as received basis) or 0.13 and 0.40 mg/kg when expressed on a dry matter basis (assuming 30%DM).

- Hay (n=16): < 0.035 (6), < 0.036, < 0.036, < 0.042, 0.042, 0.060, 0.068, 0.074, 0.091, < 0.098 and 0.156 mg/kg (fresh weight basis).

The Meeting estimated median and highest residues of 0.039, and 0.173 mg/kg for oat hay (dry matter basis).

- Straw (n=17): < 0.035 (11), < 0.036, < 0.036, 0.044, 0.044, 0.070, and 0.254 mg/kg (fresh weight basis).

The Meeting estimated maximum residue levels, median and highest residues of 0.3, 0.039, and 0.282 mg/kg for oat straw (dry matter basis) assuming straw contains 90% dry matter.

- Grain (n=17): < 0.035 (16) and < 0.036 mg/kg.

The Meeting estimated a maximum residue level and STMR of 0.04 (*) and 0.035 mg/kg for oat grain.

The Meeting agreed to extrapolate the results for oats to other cereals that are permitted in the USA as follow crops and not treated directly—barley, buckwheat, millet (pearl and proso), rye, teosinte, triticale and wild rice commodities. The Meeting decided not to extrapolate the results to follow rice crops as the cultivation practices for rice differ from those of other cereal crops and this may impact on residues.

Sunflowers

Sunflowers are a permitted follow crop when planted the following year. Residues in seed of follow sunflower crops planted 350–384 days after pre-emergent application to maize were all < 0.04 (8) mg/kg. The Meeting estimated a maximum residue level and STMR of 0.04 (*) and 0.04 mg/kg for sunflower seed.

Potato

Potatoes are a permitted follow crop when planted the following year. Residues in tubers of follow potato crops (planted 291–380 days after pre-emergent application to maize) were all < 0.04 (10) mg/kg. The Meeting estimated a maximum residue level, STMR and HR of 0.04 (*), 0.04, and 0.04 mg/kg for potatoes.

Beans (dry), Peas (dry)

A number of legume grains are permitted follow crops to be planted the next season (about one year after the last application). Residues in grain of follow bean and pea crops were all < 0.02 mg/kg, nine bean trials and five pea trials. The Meeting estimated maximum residue levels of 0.02 (*) for beans and peas (dry) and STMRs or 0.02 mg/kg. The two maximum residue levels would cover residues in follow *Phaseolus* spp as well as *Vigna* spp and *Pisum* spp.

Rotational crop trials were available for follow soya beans. The observed residues are higher than reported for beans and peas (dry) and residues in follow soya beans could be used as a representative crop for the remaining pulses permitted to be rotated in the USA—*Lupinus* spp., broad beans, chickpeas, Hyacinth beans (lab lab beans), lentils, and pigeon peas.

Residues in seed of follow soya beans were (n=16): < 0.02 (8), 0.02, < 0.03, 0.03, 0.03, 0.04, 0.04, 0.06 and 0.10 mg/kg.

The Meeting agreed to extrapolate to residues in seed of follow soya bean to *Lupinus* spp., broad beans (dry), chickpeas, Hyacinth beans, dry (lab lab beans), lentils, and pigeon peas and estimated maximum residue limits of 0.15 and STMRs of 0.02 mg/kg for these seeds.

Fate of residues during processing

The Meeting received information on the fate of incurred residues of acetochlor during the processing of soya beans, sugar beets, sorghum, cotton, peanuts and sunflower seeds. A study of the nature of the residue of acetochlor under simulated processing conditions (pasteurization, baking/brewing/boiling, sterilization) showed acetochlor, if present, is stable.

Summaries of relevant acetochlor processing factors are provided below.

	Processed Fraction	Processing Factor	Best estimate PF	RAC STMR or median	STMR × PF = STMR-P	RAC HR or highest	HR × PF = HR-P
Sugar beet	Dried pulp	2.3, 0.9	1.6	0.018	0.029	0.086	0.138
	Molasses	4.2, 1.1	2.65		0.048		0.228
	Refined sugar	0.5, < 0.25	0.375		0.0068		0.032
Sunflower	Meal	1.4	1.4	0.04	0.056	0.04	0.056
	Oil	0.22	0.22		0.0088		0.0088

PFs are based on combined EMA and HEMA aniline class metabolites: PFs calculated as EMA + HEMA, expressed as acetochlor in processed commodity divided by EMA + HEMA in the RAC

The Meeting recommended a maximum residue level of 0.3 mg/kg for sugar beet molasses and a median residue of 0.048 mg/kg. For sugar beet pulp (dry) the Meeting recommended a maximum residue level of 0.3 mg/kg and a median residue of 0.029 mg/kg.

Residues in animal commodities

Farm animal feeding studies

The Meeting received information on the residue levels in tissues and milk of dairy cows dosed with a mixture of four EMA class acetochlor plant metabolites (*tert*-hydroxy and the sodium salts of *tert*-sulfonic acid, *tert*-oxanilic acid and *tert*-sulfinylacetic acid and present in equal proportions) at the equivalent of 5, 15 and 50 ppm acetochlor equivalents in the feed for 28 consecutive days. Based on HPLC retention times for extracts in plant metabolism studies, it is concluded that the properties of the dosing compounds encompass the range of polarities of the majority of compounds observed in the plant metabolism studies (log K_{ow} of dosing compounds ranged from –3.2 to 2.2). The studies are considered to cover the likely transfer of acetochlor-related residues, including those from different aniline metabolite classes, from feed to livestock.

Residues in milk were < 0.02 mg/kg (acetochlor equivalents) for the 50 ppm dose group for all sample intervals.

In kidney mean residues were < 0.02, 0.03, and 0.07 mg/kg (acetochlor equivalents) for the 5, 15, and 50 ppm dose groups respectively. Mean residues liver residues were < 0.02 and 0.02 mg/kg for the 15 and 50 ppm dose groups while mean residues in fat and muscle were < 0.02 mg/kg for all samples in the 50 ppm dose group. As no residues were observed at the highest dose level samples muscle and fat from other dose groups were not analysed.

Laying hens dosed at the equivalent of 5, 15 and 50 ppm acetochlor with a mixture of *tert*-hydroxy and the sodium salts of *tert*-sulfonic acid, *tert*-oxanilic acid and *tert*-sulfinylacetic acid for 28 days. No residues above the LOQ were detected in any tissues or eggs, LOQ 0.05 mg/kg for kidney and LOQ 0.02 mg/kg for other tissues and eggs.

Estimation of livestock dietary burdens

Dietary burden calculations for beef cattle, dairy cattle and poultry are provided below. The dietary burdens were estimated using the OECD diets listed in Appendix IX of the 2009 edition of the FAO Manual.

Potential cattle feed items include legume fodder, cereal forage and fodder, sugar beet tops and various grains.

Summary of livestock dietary burden (ppm acetochlor equivalents of dry matter diet)

	US-Canada		EU		Australia		Japan	
	max	mean	Max	mean	max	Mean	max	Mean
Beef cattle	0.4	0.1	2.0	0.3	2.1	0.3	0.2	0.03
Dairy cattle	1.4	0.2	1.6	0.2	2.1 [a, b]	0.3 [c, d]	0.6	0.09
Broilers	0.03	0.02	0.05	0.04	0.02	0.02	0.1	0.03
Layers	0.03	0.02	0.54 [e]	0.10 [f]	0.02	0.02	0.01	0.01

[a] Highest maximum beef or dairy cattle dietary burden suitable for MRL estimates for mammalian meat

[b] Highest maximum dairy cattle dietary burden suitable for MRL estimates for mammalian milk

[c] Highest mean beef or dairy cattle dietary burden suitable for STMR estimates for mammalian meat

[d] Highest mean dairy cattle dietary burden suitable for STMR estimates for milk

[e] Highest maximum poultry dietary burden suitable for MRL estimates for poultry meat and eggs

[f] Highest mean poultry dietary burden suitable for STMR estimates for poultry meat and eggs

Animal commodity maximum residue levels

The calculations used to estimate highest total residues for use in estimating maximum residue levels, STMR and HR values are shown below.

	Feed level	Residues	Feed level	Residues (mg/kg) in			
	(ppm) for milk residues	(mg/kg) in milk	(ppm) for tissue residues	Muscle	Liver	Kidney	Fat
MRL beef or dairy cattle							
Feeding study [a]	5	< 0.02	15	< 0.02	< 0.02	0.04	< 0.02
Dietary burden and high residue	2.1	< 0.008	2.1	< 0.003	< 0.003	0.0056	< 0.003
STMR beef or dairy cattle							
Feeding study [b]	5	< 0.02	15	< 0.02	< 0.02	0.03	< 0.02
Dietary burden and median residue estimate	0.3	< 0.0012	0.3	< 0.0004	< 0.0004	0.0006	< 0.0004

[a] Highest residues for tissues and mean residues for milk

[b] Mean residues for tissues and mean residues for milk

The Meeting estimated the following maximum residue levels: milk 0.02* mg/kg; meat (mammalian except marine mammals) 0.02* mg/kg, mammalian fat (except milk fat) 0.02* mg/kg and edible offal 0.02* mg/kg.

For poultry no residues were observed in eggs and tissues on dosing laying hens at up to 50 ppm in the diet for 28 days. The Meeting estimated the following maximum residue levels for poultry commodities: poultry meat 0.02* mg/kg; poultry edible offal 0.02* mg/kg and eggs 0.02* mg/kg. The Meeting estimated the following STMR and HR values: poultry meat 0 mg/kg; poultry fat 0 mg/kg; poultry edible offal 0 mg/kg and eggs 0 mg/kg.

RECOMMENDATIONS FURTHER WORK OR INFORMATION

On the basis of the data obtained from supervised residue trials the Meeting concluded that the residue levels listed in Annex 1 are suitable for establishing maximum residue limits and for IEDI and IESTI assessment.

Definition of the residue for compliance with MRL and estimation of dietary intake (for animal and plant commodities):

Sum of compounds hydrolysable with base to 2-ethyl-6-methylaniline (EMA) and 2-(1-hydroxyethyl)-6-methylaniline (HEMA), expressed in terms of acetochlor.

The residue is not fat soluble.

DIETARY RISK ASSESSMENT

Long-term intake

The 2015 JMPR established an Acceptable Daily Intake (ADI) of 0–0.01 mg/kg bw for acetochlor.

The evaluation of acetochlor resulted in recommendations for MRLs and STMR values for raw and processed commodities. Where data on consumption were available for the listed food commodities, dietary intakes were calculated for the 17 GEMS/Food Consumption Cluster Diets. The results are shown in Annex 3 to the 2015 Report.

The IEDIs in the seventeen Cluster Diets, based on the estimated STMRs were 0–4% of the maximum ADI (0.01 mg/kg bw). The Meeting concluded that the long-term intake of residues of acetochlor from uses that have been considered by the JMPR is unlikely to present a public health concern.

Short-term intake

The 2015 JMPR established an Acute Reference Dose (ARfD) of 1 mg/kg bw for acetochlor. The IESTI of acetochlor for the commodities for which STMR, HR and maximum residue levels were estimated by the current Meeting are shown in Annex 4 to the 2015 Report. The IESTI represented 0–0% of the ARfD.

The Meeting concluded that the short-term intake of residues of acetochlor resulting from uses that have been considered by the JMPR is unlikely to present a public health concern.

5.4 BIFENTHRIN (178)

RESIDUE AND ANALYTICAL ASPECTS

Bifenthrin is a pyrethroid insecticide and miticide. It was first evaluated for residues and toxicology by the JMPR in 1992 and re-evaluated in 2009 (T) and 2010 (R) under the periodic review programme of the CCPR. The forty-sixth Session of the CCPR (2014) listed bifenthrin for the evaluation of additional maximum residue levels by the 2015 JMPR.

Currently, an ADI of 0–0.01 mg/kg bw and an ARfD of 0.01 mg/kg bw are established. The residue definition for compliance with the MRL and for estimation of dietary intake (for animal and plant commodities) is bifenthrin (sum of isomers). The residue is fat-soluble.

The Meeting received information on supervised residue trials for blueberry, grape, head lettuce, spinach, celery, peas, snap bean and lima bean.

Methods of analysis

Acceptable analytical methods were developed and validated for determination of bifenthrin in residue trial samples. All methods involved an analysis by GC-ECD, except one method using GC-MSD. The limit of quantification (LOQ) of bifenthrin was 0.05 mg/kg in all matrices.

Stability of residues in stored analytical samples

At the 2010 JMPR, bifenthrin was shown to be stable in lettuce under frozen storage condition for at least 36 months. This Meeting received additional storage stability studies on grape, head lettuce, celery, peas, snap bean and lima bean, showing that bifenthrin was stable for the period of storage of the supervised trial samples. Bifenthrin residues in blueberry (81 days) and spinach (4 months) were considered to be stable for the storage period based on all available information.

Results of supervised trials on crops

Berries and Other Small Fruit

Bushberries-Blueberry

Nine trials were conducted in the USA in 2004, matching the US GAP on bushberries (0.11 kg ai/ha with 7-day intervals and a PHI of 1 day; 0.56 kg ai/ha/season). Six independent trials matched the GAP.

Bifenthrin residues in blueberry were (n=6): 0.43, 0.48, <u>0.50, 0.84</u>, 1.2 and 1.4 mg/kg.

The Meeting estimated a maximum residue level of 3 mg/kg, an STMR of 0.67 mg/kg and an HR of 1.6 mg/kg (based on a highest single sample) for blueberries. The Meeting noted that an extrapolation to the group of bushberries was not possible because of a high acute intake resulting from the consumption of currents.

Small fruit vine climbing-Grapes

Seven trials were conducted in the USA from 1994 to 1996 that matched the US GAP on grapes (0.11 kg ai/ha with a PHI of 30 days; 0.11 kg ai/ha/season).

Bifenthrin residues in grapes were (n=7): < 0.05, 0.050, 0.060, <u>0.060</u>, 0.070, 0.12 and 0.13 mg/kg.

The Meeting estimated a maximum residue level of 0.3 mg/kg, an STMR of 0.060 mg/kg and an HR of 0.14 mg/kg (based on a highest single sample) for grapes.

Leafy vegetables

Lettuce, head

Ten trials were conducted in the USA in 1993–1994 (six trials) and 2003 (four trials), matching the US GAP on lettuce, head (0.11 kg ai/ha with 7-day intervals and a PHI of 7 days; 0.56 kg ai/ha/season).

Bifenthrin residues in head lettuce with wrapper leaves were (n=10): < 0.05, 0.14, 0.23, 0.33, 0.45, 0.56, 0.71, 0.81, 1.7 and 1.8 mg/kg.

The Meeting estimated a maximum residue level of 4 mg/kg for lettuce, head, an STMR of 0.51 mg/kg and an HR of 1.9 mg/kg (based on a highest single sample). However, this would result in an exceedance of the ARfD and an alternative GAP for head lettuce was not identified.

Spinach

Eight trials were conducted in the USA in 1999, two trials of which matched the US GAP on spinach (by ground or aerial spray, a rate of 0.11 kg ai/ha with 7-day intervals and a PHI of 40 days; 0.45 kg ai/ha/season).

Bifenthrin residues were 0.05 and 0.15 mg/kg.

The Meeting did not estimate a maximum residue level as the number of trials was not sufficient.

Stalk and stem vegetables

Celery

Eight trials, including one decline trial, were conducted in 1997 (3 trials), 1998 (one trial) and 2004 (four trials) matching the US GAP on leafy petiole vegetables (0.11 kg ai/ha with 7-day intervals and a PHI of 7 days; 0.56 kg ai/ha/season).

Bifenthrin residues were (n=8): 0.13, 0.17, 0.29, 0.68, 0.71, 0.89, 1.1 and 1.5 mg/kg.

The Meeting estimated a maximum residue level of 3 mg/kg, an STMR of 0.70 mg/kg and an HR of 1.8 mg/kg (based on a highest single sample). However, this would result in an exceedance of the ARfD and an alternative GAP for celery was not identified.

Legume vegetables

Peas

Six trials were conducted in the USA from 1992 to 1994 that matched the US GAP on succulent peas and beans (0.11 kg ai/ha with a PHI of 3 days; 0.22 kg ai/ha/season).

Bifenthrin residues in peas with pods were (n=6): 0.17, 0.17, 0.20, 0.25, 0.34 and 0.49 mg/kg.

The Meeting estimated a maximum residue level of 0.9 mg/kg, an STMR of 0.23 mg/kg and an HR of 0.50 mg/kg (based on a highest single sample) for peas (pods and succulent=immature seed).

Bifenthrin residues in peas without pods were (n=6): < 0.05 (6) mg/kg.

The Meeting estimated a maximum residue level of 0.05* mg/kg and an STMR of 0 mg/kg for peas, shelled (succulent seeds).

Beans

Data from six trials on snap bean (beans with pods) were re-submitted. The 2010 JMPR did not estimate a maximum residue level as the trials were not conducted in accordance with the US GAP

(0.11 kg ai/ha with a PHI of 3 days; 0.22 kg ai/ha/season). The trials were conducted in the USA in 1996 and 1997 with three applications 7 days apart, 0.090 kg ai/ha (1st), 0.090 kg ai/ha (2nd) and 0.045 kg ai/ha (3rd) and with a 3-day PHI. Residue values in snap beans with pods were < 0.05, 0.050, 0.050, 0.055, 0.11 and 0.14 mg/kg.

None of the data matched the GAP and the data were not suitable for application of the proportionality approach.

Data from seven trials on lima bean, without pods (conducted in the USA in 1997) were re-submitted. The 2010 JMPR did not estimate a maximum residue level as the trials were not conducted in accordance with the US GAP. The trials were conducted with three applications (approximately 0.090 kg ai/ha at the 1st and 2nd application, and 0.045 kg ai/ha at the 3rd application), 6–7 days apart, and a 2 to 4-day PHI. Residue concentrations in lima bean, shelled (succulent seeds) were all less than 0.05* mg/kg (n=7).

None of the data matched the GAP and the data were not suitable for application of the proportionality approach.

RECOMMENDATIONS

On the basis of the data from supervised trials the Meeting concluded that the residue levels listed in Annex I are appropriate for establishing maximum residue limits and for IEDI and IESTI assessment.

Definition of the residue (for compliance with the MRL and for estimation of dietary intake) for plant and animal commodities: *bifenthrin (sum of isomers)*.

The residue is fat-soluble.

DIETARY RISK ASSESSMENT

Long-term intake

The 2009 JMPR established an ADI of 0–0.01 mg/kg bw for bifenthrin.

The International Estimated Daily Intakes (IEDIs) of bifenthrin were calculated for the 17 GEMS/Food cluster diets using STMRs/STMR-Ps estimated by the current and previous Meeting. The results are shown in Annex 3 to the 2015 JMPR Report.

The calculated IEDIs were 9-30% of the maximum ADI. The Meeting concluded that the long-term intake of residues of bifenthrin from uses that have been considered by the JMPR is unlikely to present a public health concern.

Short-term intake

The 2009 JMPR established an ARfD of 0.01 mg/kg bw for bifenthrin. The International Estimated Short Term Intakes (IESTIs) for bifenthrin were calculated for the food commodities using HRs/STMRs estimated by the current Meeting. The results are shown in Annex 4 to the 2015 JMPR Report.

For celery the IESTI represented 600% and 360% of the ARfD for children and general population, respectively. For head lettuce the IESTI represented 430% and 190% of the ARfD for children and general population, respectively. No alternative GAP for celery and head lettuce was available. On the basis of information provided to the JMPR, the Meeting concluded that the short-term intake of residues of bifenthrin from consumption of celery and head lettuce may present a public health concern.

Estimates of intake for the other commodities considered by the 2015 JMPR were within 0-100% ARfD. The Meeting concluded that the short-term intake of bifenthrin for the other commodities may not(?) present a public health concern when bifenthrin is used in ways that were considered by the Meeting.

5.5 CHLOROTHALONIL (081)

RESIDUE AND ANALYTICAL ASPECTS

Chlorothalonil is a non-systemic fungicide first evaluated by JMPR in 1974 and a number of times subsequently. It was recently reviewed for toxicology by the 2009 and 2010 JMPR within the periodic review program of the CCPR. For the parent substance an ADI of 0–0.02 mg/kg bw and an ARfD of 0.6 mg/kg bw were established. In addition to the parent substance, an ADI of 0–0.008 mg/kg bw and an ARfD of 0.03 mg/kg bw were established for the metabolite SDS-3701.

The 2010 JMPR recommended the following residue definition for chlorothalonil:

Definition of the residue for compliance with MRL for plant commodities: *chlorothalonil*

Definition of the residue for estimation of dietary intake for plant commodities: *chlorothalonil*

SDS-3701 (2,5,6-trichloro-4-hydroxyisophthalonitrile), all considered separately.

Definition of the residue for compliance with MRL and for estimation of dietary intake for animal commodities: *SDS-3701 (2,5,6-trichloro-4-hydroxyisophthalonitrile)*.

In 2012 the JMPR evaluated additional uses for chlorothalonil in banana, chard, chicory, endive, spring onion, spinach, and peas.

The current Meeting received new information on use patterns for chlorothalonil in multiple crops supported by additional analytical methods, storage stability data and supervised field trials.

Methods of analysis

The Meeting received two analytical methods for chlorothalonil not previously evaluated by the Meeting. Both methods were used in the supervised field trials newly submitted and are not intended for monitoring purposes.

Method GRM005.01A is applicable to plant matrices and used homogenisation with acetone and 5M sulphuric acid solution (95:5 v/v). Following solid phase extraction (SPE) clean-up, chlorothalonil was analysed by gas chromatography with mass selective detection (GC-MSD). The metabolite R182281 was quantified by high performance liquid chromatography with triple-quadrupole mass spectrometric detection. The method was successfully validated (70–110% recovery, RSD < 20%) for both analytes for matrices with high water, high acid, high oil and high starch content.

The second method ("Cornell-Method") is an in-house method using acidified acetone and partitioning against petroleum ether. The organic phase contains chlorothalonil and the aqueous, its metabolite SDS-3701. The sample is then methylated with diazomethane and cleaned up on an alumina column, eluting with dichloromethane. The organic and aqueous extracts were analysed by GC/ECD to determine residues of chlorothalonil and SDS-3701 respectively. The method was successfully validated (70–110% recovery, RSD < 20%) for both analytes for matrices with high water and high acid content.

Stability of residues in stored analytical samples

The Meeting received two additional studies on the storage stability to support the newly submitted supervised field trials not previously evaluated.

In the first study chlorothalonil and its metabolite SDS-3701 were proven to be stable for at least 24 months in stored samples of tomato, cucumber, melon, oranges, carrots (roots and tops), barley (grain and straw) and soya bean seeds.

In a second study cranberries fortified with chlorothalonil and SDS-3701 were analysed after 10 months. The stored triplicate samples indicated a significant decline with average recoveries of 63% of chlorothalonil and 38% of SDS-3701 remaining. The Meeting concluded that both analytes may degrade in cranberries. Since no intermediate samples were analysed, no acceptable storage interval above one month could be identified by the Meeting.

Results of supervised residue trials on crops

The Meeting received supervised trial data for applications of chlorothalonil on various fruit and vegetable crops conducted in Brazil, Europe, Rep. of Korea and the USA.

Residues of SDS-3701 may potentially be taken up by succeeding crops after application of chlorothalonil in the previous year. For annual crops considered by this year, JMPR only estimated median and highest residue values following primary treatment, as these are intermediate values in the establishment of the final STMR and HR values which need to take into account the additional contribution by soil uptake; refer to the rotational crop section.

Pear

Chlorothalonil is registered in Rep. of Korea on pears at a rate of 4×0.04 kg ai/hL with a PHI of 14 days. Six supervised field trials from Rep. of Korea matching this GAP were submitted.

In the trials submitted samples were prepared for analysis by removal of the stem and the core, which were discarded before homogenisation. The Meeting concluded the sample preparation did not comply with the Codex Sampling Guideline, and would have had a significant influence on the residue concentration, making these trials unsuitable for the estimation of maximum residue levels or STMR and HR values.

Cherries

Chlorothalonil is registered in Canada on cherries with a rate of 3×4.5 kg ai/ha with a PHI of 40 days. Supervised field trials from the USA matching this GAP were submitted.

In cherries following treatment with chlorothalonil according to Canadian GAP, residues were (n=10): 0.04, 0.073, 0.12, 0.13, <u>0.28</u>, <u>0.5</u>, 0.74, 0.8, 1.2, 1.3 mg/kg.

The corresponding residues of SDS-3701 were (n=10): < <u>0.01</u>(8), 0.011, 0.03 mg/kg

The Meeting estimated a maximum residue level, an STMR and an HR value of 3 mg/kg, 0.39 mg/kg and 1.8 mg/kg (based on a single highest field sample) for chlorothalonil in cherries, respectively.

For dietary intake purposes the Meeting also estimated an STMR of 0.01 mg/kg and an HR of 0.035 mg/kg (based on a single highest field sample) for SDS-3701 in cherries.

Peaches and nectarines (subgroup)

Chlorothalonil is registered in Canada on peaches and nectarins with a rate of 3×4.5 kg ai/ha with a PHI of 60 days. Supervised field trials from the USA matching the GAP were submitted.

In peaches following treatment with chlorothalonil according to Canadian GAP residues were (n=12): < 0.01, < 0.01, 0.01, 0.014, 0.063, <u>0.12</u>, <u>0.12</u>, 0.13, 0.18, 0.24, 0.3, 0.9 mg/kg.

The corresponding residues of SDS-3701 were (n=12): < <u>0.01</u>(11), 0.01 mg/kg

The Meeting estimated a maximum residue level, an STMR and an HR value of 1.5 mg/kg, 0.12 mg/kg and 1.1 mg/kg (based on a single highest field sample) for chlorothalonil in peaches, respectively.

For dietary intake purposes the Meeting also estimated an STMR of 0.01 mg/kg and an HR of 0.011 mg/kg (based on a single highest field sample) for SDS-3701 in peaches (including nectarines and apricots).

Cranberry

Chlorothalonil is registered in Canada on cranberries with a rate of 3×5.5 kg ai/ha with a PHI of 50 days.

Supervised field trials from the USA matching the GAP were submitted; however supportive storage stability data indicated a substantial loss of residues after the seven month storage interval of the field samples. The Meeting concluded that the data could not be used for assessment.

Bulb onions

Chlorothalonil is registered in the USA on dry onions and shallots with a rate of 3×2.5 kg ai/ha with a PHI of 7 days. Supervised field trials from the USA matching this GAP were submitted.

In bulb onions following treatment with chlorothalonil according to USA GAP residues were (n=8): 0.068, 0.083, 0.22, <u>0.4</u>, <u>0.4</u>, 0.48, 0.56, 0.68 mg/kg.

The corresponding residues of SDS-3701 were (n=8): < <u>0.01</u>(7), 0.026 mg/kg.

The Meeting estimated a maximum residue level, and STMR and an HR value of 1.5 mg/kg, 0.4 mg/kg and 0.69 mg/kg (based on a single highest field sample) for chlorothalonil in bulb onions, respectively.

For dietary intake purposes the Meeting also estimated a STMR of 0.01 mg/kg and an HR of 0.028 mg/kg (based on a single highest field sample) for SDS-3701 in bulb onions.

The Meeting agreed to extrapolate the results to shallots.

Green onions

Chlorothalonil is registered in the USA on green onions with a rate of 3×2.5 kg ai/ha with a PHI of 14 days.

Three supervised field trials from the USA matching the GAP application rate and PHI were submitted. However, one of these trials was conducted at a late growth stage of BBCH 49 which showed substantially higher residues (39 mg/kg) than the two other trials treated at BBCH 17–18 (0.29 mg/kg and 0.42 mg/kg).

The Meeting concluded that the total dataset available is inadequate and no recommendation on green onions can be made.

Peppers

Chlorothalonil is registered in Brazil on pepper with a rate of 2×0.2 kg ai/hL with a PHI of 7 days. Supervised field trials from Brazil matching this GAP were submitted to the 2010 Meeting and supported by additional trials this year.

Residues of chlorothalonil in <u>peppers</u> following treatment according to Brazilian GAP based on trials submitted to the 2010 JMPR were (n=4): 1.1, 1.5, 1.7 and 4.4 mg/kg.

Additional trials submitted this year on <u>peppers</u> gave chlorothalonil residues of (n=8): 0.15, 0.16, 0.22, 0.28, 0.44, 0.74, 1.9, 2.9 mg/kg

Total residues (2010+2015 data) in <u>peppers</u> following treatment according to Brazilian GAP were (n=12): 0.15, 0.16, 0.22, 0.28, 0.44, 0.74, 1.1, 1.5, 1.7, 1.9, 2.9 and 4.4 mg/kg.

The corresponding residues of SDS-3701 (when analysed) were (n=5): < <u>0.01</u>(5) mg/kg.

In the USA chlorothalonil is registered on peppers with a rate of 8×1.3 kg ai/ha with a PHI of 3 days. Supervised field trials from the USA matching this GAP were submitted.

In <u>bell peppers</u> following treatment with chlorothalonil according to USA GAP residues were (n=8): 0.5, 0.76, 1.0, <u>1.4</u>, <u>1.6</u>, 1.7, 2.8, 2.9 mg/kg. The corresponding residues of SDS-3701 were (n=8): < <u>0.03</u>(8) mg/kg.

In non-bell peppers following treatment with chlorothalonil according to USA GAP residues were (n=7): 0.26, 0.62, 0.62, 0.7, 1.0, 1.6, 1.6 mg/kg. The corresponding residues of SDS-3701 were (n=7): 0.029, < 0.03(6) mg/kg.

The Meeting recognized that chlorothalonil residues in peppers treated according to Brazilian GAP resulted in the highest residue and estimated a maximum residue level of 7 mg/kg based on this dataset for peppers.

For dietary intake purposes of chlorothalonil the Meeting concluded that the STMR value for bell peppers treated according to US GAP was higher than the STMR according to the Brazilian GAP. Since both GAPs were supported by a sufficient number of trial data, the higher STMR of 1.5 mg/kg was selected for dietary intake purposes. An HR of 4.4 mg/kg was estimated based on the Brazilian GAP.

Residues of SDS-3701 were generally below the LOQs of 0.01 mg/kg to 0.03 mg/kg except for one finite residue at 0.029 mg/kg. The Meeting estimated both an STMR and HR of 0.03 mg/kg for SDS-3701 in peppers based on the more critical US dataset.

For the extrapolation from sweet pepper to dried chili pepper a default processing factor of 10 was taken into account. The Meeting estimated a maximum residue level of 70 mg/kg for chlorothalonil in dried chili pepper as wells as a STMR of 15 mg/kg and a HR of 44 mg/kg. For SDS-3701 both a STMR and HR of 0.3 mg/kg were estimated.

Tomato

Chlorothalonil is registered in Poland on tomatoes under protected conditions with a rate of 2 × 0.1 kg ai/hL (up to 1 kg ai/ha per application) with a PHI of 3 days. Protected supervised field trials on cherry tomatoes from various European countries approximating the GAP but with higher spray concentrations of 0.13 kg ai/hL to 0.2 kg ai/hL were submitted.

Compared to the Polish GAP all supervised field trials involved treatment at exaggerated spray concentrations, however the rates applied approximate the GAP maximum of 1 kg ai/ha and application. Since in the field trials submitted tomatoes were cultivated as high crops, the Meeting concluded that the spray concentration is the most sensitive parameter in terms of residues and decided to use the proportionality approach based on the spray concentration.

In protected tomatoes following treatment with 0.13 kg ai/hL (scaling factor 0.77) chlorothalonil residues were 0.45 mg/kg (0.77×0.59 mg/kg) and SDS-3701 residues were < 0.01 mg/kg (unscaled).

In protected tomatoes following treatment with 0.17 kg ai/hL (scaling factor 0.59) chlorothalonil residues were 0.94, 1.1, 1.8 mg/kg (0.59×1.6, 1.8 and 3.1 mg/kg) and SDS-3701 residues were 0.006, 0.012, 0.024 mg/kg (0.59×0.01, 0.02 and 0.04 mg/kg).

In protected tomatoes following treatment with 0.2 kg ai/hL (scaling factor 0.5) chlorothalonil residues were 0.5, 1.1, 1.7, 2.8 mg/kg (0.5×0.99, 2.2, 3.4 and 5.5 mg/kg) and SDS-3701 residues were 0.005, 0.015, 0.015, 0.035 mg/kg (0.5×0.01, 0.03, 0.03 and 0.07 mg/kg).

Total scaled residues of chlorothalonil were (n=8): 0.45, 0.5, 0.94, 1.1, 1.1, 1.7, 1.8 and 2.8 mg/kg

Total scaled residues of SDS-3701 were (n=8): 0.005, 0.006, < 0.01, 0.012, 0.015, 0.015, 0.024 and 0.035 mg/kg

The Meeting estimated a maximum residue level, an STMR and an HR value of 5 mg/kg, 1.1 mg/kg and 2.8 mg/kg for chlorothalonil in tomatoes, respectively.

For dietary intake purposes the Meeting also estimated a STMR of 0.0135 mg/kg and an HR of 0.035 mg/kg for SDS-3701 in tomatoes.

Mushroom

Chlorothalonil is registered in the USA on mushrooms for soil drench application with a rate of 12.7 kg ai/ha as a first treatment followed by 6.4 kg ai/ha as second treatment with a PHI of 7 days. Supervised field trials from the USA matching the GAP were submitted.

In mushrooms following treatment with chlorothalonil according to USA GAP residues were (n=2): 0.09, 0.43 mg/kg.

The corresponding residues of SDS-3701 were (n=2): < 0.01, 0.16 mg/kg.

The Meeting concluded that the data submitted for mushroom was insufficient upon which to make recommendations.

Ginseng

Chlorothalonil is registered in the USA on ginseng with a rate of 8×1.7 kg ai/ha with a PHI of 14 days. Supervised field trials from the USA matching the GAP were submitted.

In ginseng roots (washed and dried) following treatment with chlorothalonil according to USA GAP residues were (n=3): 0.19, <u>0.35</u>, 0.78 mg/kg.

The corresponding residues of SDS-3701 were (n=3): 0.19, <u>0.3</u>, 0.61 mg/kg.

The Meeting estimated a maximum residue level, and STMR and an HR value of 2 mg/kg, 0.35 mg/kg and 1.0 mg/kg (based on a single highest field sample) for chlorothalonil in dried ginseng (including red ginseng), respectively.

For dietary intake purposes the Meeting also estimated an STMR of 0.3 mg/kg and an HR of 0.61 mg/kg (based on a single highest field sample) for SDS-3701 in dried ginseng (including red ginseng).

Horseradish

Chlorothalonil is registered in the USA on horseradish with a rate of 8×2.5 kg ai/ha with a PHI of 14 days. Supervised field trials from the USA matching this GAP were submitted.

In horseradish roots following treatment with chlorothalonil according to USA GAP residues were (n=3): 0.031, <u>0.25</u>, 0.38 mg/kg.

The corresponding residues of SDS-3701 were (n=3): 0.027, <u>0.14</u>, 0.25 mg/kg.

The Meeting estimated a maximum residue level, an STMR and an HR value of 1 mg/kg, 0.25 mg/kg and 0.48 mg/kg (based on a single highest field sample) for chlorothalonil in horseradish, respectively.

For dietary intake purposes the Meeting also estimated an STMR of 0.14 mg/kg and an HR of 0.28 mg/kg (based on a single highest field sample) for SDS-3701 in horseradish.

Root and tuber vegetables, except horseradish

In 2010 the Meeting recommended a maximum residue level for root and tuber vegetables of 0.3 mg/kg. Due to the higher maximum residue level of 1 mg/kg for chlorothalonil in horseradish, the Meeting decided to exclude horseradish from the group maximum residue level.

The Meeting estimated a maximum residue level of 0.3 mg/kg for root and tuber vegetables, except horseradish. In 2010 the Meeting decided to accommodate for the uncertainty involved with the residue data by basing the dietary risk assessment (chronic and acute) on the maximum residue level also.

The Meeting withdraws its previous recommendation of 0.3 mg/kg for chlorothalonil in root and tuber vegetables.

Asparagus

Chlorothalonil is registered in the USA on asparagus with a rate of 3×3.4 kg ai/ha applied after harvest to the fern with a PHI of 190 days. Supervised field trials from the USA matching the GAP were submitted.

In asparagus spears following treatment with chlorothalonil according to USA GAP residues were (n=8): < 0.01(8) mg/kg.

The corresponding residues of SDS-3701 were (n=8): < 0.01(8) mg/kg.

The Meeting estimated a maximum residue level of 0.01* mg/kg for chlorothalonil in asparagus.

For dietary intake purposes the Meeting concluded that the application of chlorothalonil after harvest to the fern does not lead to significant residues in asparagus spears in the next growing season. Therefore the STMR and HR for both chlorothalonil and SDS-3701 were estimated at 0 mg/kg, although no trials conducted at exaggerated rates were submitted.

Rhubarb

Chlorothalonil is registered in the USA on rhubarb with a rate of 6×2.5 kg ai/ha with a PHI of 30 days. Supervised field trials from the USA matching this GAP were submitted.

In rhubarb stalks following treatment with chlorothalonil according to USA GAP residues were (n=3): 0.39, 0.55, 2.8 mg/kg.

The corresponding residues of SDS-3701 were (n=3): < 0.02(3) mg/kg.

The Meeting estimated a maximum residue level, an STMR and an HR value of 7 mg/kg, 0.55 mg/kg and 3.9 mg/kg (based on a single highest field sample) for chlorothalonil in rhubarb, respectively.

For dietary intake purposes the Meeting also estimated an STMR and an HR of 0.02 mg/kg for SDS-3701 in rhubarb.

Pistachio nut

Chlorothalonil is registered in the USA on pistachio nuts with a rate of 5×5.0 kg ai/ha and a PHI of 14 days. Supervised field trials from the USA matching the GAP were submitted.

In pistachio nutmeat following treatment with chlorothalonil according to USA GAP residues were (n=3): < 0.01, 0.082, 0.11 mg/kg.

The corresponding residues of SDS-3701 were (n=3): < 0.01(3) mg/kg.

The Meeting estimated a maximum residue level, an STMR and an HR value of 0.3 mg/kg, 0.082 mg/kg and 0.14 mg/kg (based on a single highest field sample) for chlorothalonil in pistachios, respectively.

For dietary intake purposes the Meeting also estimated an STMR and an HR of 0.01 mg/kg for SDS-3701 in pistachios.

Residues in rotational crops

Following application of chlorothalonil the major metabolite SDS-3701 has a potential to be taken up by succeeding crops. However, the additional uses evaluated by this JMPR either involve treatment of permanent crops not being subject to crop rotation or their total seasonal rate is lower than the maximum seasonal rate of 20 kg ai/ha used in 2010 to estimate residues in rotational crops. The Meeting concluded that the assessment of SDS-3701 residues in rotational crops, as evaluated in 2010, also covers uses evaluated this year.

For primary uses evaluated this year on crops being subject to crop rotation, the Meeting decided to take into account the soil uptake of SDS-370 on crop residues. STMR and HR values following direct treatment were added to the corresponding values estimated for rotational crops to address the potential use of chlorothalonil in previous years.

For bulb onions and shallots STMR and HR values of 0.01 mg/kg and 0.028 mg/kg were identified after treatment according to current GAP. In 2010 STMR and HR values of 0.01 mg/kg and 0.04 mg/kg were estimated for SDS-3701 in rotated bulb vegetables. For the dietary intake assessment the Meeting estimated overall STMR and HR values of 0.02 mg/kg and 0.068 mg/kg, respectively.

In peppers grown as rotational crop (see fruiting vegetables) the 2010 Meeting estimated an STMR and an HR value of 0.015 mg/kg and 0.06 mg/kg for SDS-3701, respectively. The current Meeting evaluated uses on peppers (STMR and HR: 0.03 mg/kg each) and estimated overall STMR and HR-values of 0.045 mg/kg and 0.09 mg/kg. For dried chili pepper a default processing factor of 10 was applied, resulting in STMR and HR values of 0.45 mg/kg and 0.9 mg/kg for SDS-3701.

Uses on tomatoes evaluated by the current Meeting are only related to protected conditions and therefore not subject to crop rotation.

In horseradish grown as rotational crop (see root and tuber vegetables) the 2010 Meeting estimated an STMR and an HR value of 0.02 mg/kg and 0.03 mg/kg for SDS-3701, respectively. The current Meeting evaluated uses on horseradish (STMR: 0.14 mg/kg and HR: 0.28 mg/kg) and estimated overall STMR and HR-values of 0.16 mg/kg and 0.31 mg/kg for SDS-3701.

Asparagus, cherries, ginseng, peaches, pistachio nuts and protected tomatoes were not considered relevant in terms of residues derived from crop rotation.

Fate of residues during processing

In 2010 the JMPR Meeting concluded that under simulated processing conditions in sterile buffer solutions at pH 4 chlorothalonil residues were relatively stable with > 90% remaining at 90 °C and 73% remaining at 120 °C. At pH 5 and 100 °C a moderate degradation was observed in all samples, leaving approx. 80% of the initial chlorothalonil. The major degradation product was identified as SDS-3701 at 19% of the initial residue. For pH6 at 120 °C chlorothalonil is quickly degraded. Under addition of a sodium acetate buffer, less than 4% of the chlorothalonil remained. Main degradation products were SDS-3701 (48%) and an artefact (28%, identified as 4-amino-2,5,6-trichloroisophthalonitrile). In sterile water without buffer approx. 26% of the chlorothalonil remained. SDS-3701 constituted 59% of the residue while there was no formation of the artefact.

In contrast to the results obtained from sterile buffer solutions processing studies involving background matrices gave much lower levels of SDS-3701 after processing. The 2010 Meeting decided that besides the normal processing factors for chlorothalonil, yield factors for the conversion of parent substance into SDS-3701 should be taken into account for the estimation of the dietary intake. Depending on the outcome, the higher processing factor of SDS-3701 → SDS-3701 or chlorothalonil → SDS-3701 is used for the overall estimation of STMR-P and HR-P for SDS-3701 in the processed product.

Raw commodity	Processed commodity	Chlorothalonil → Chlorothalonil (see 2010 JMPR Evaluation)		
(chlorothalonil)		Individual processing factors	Mean or best estimate processing factor	STMR-P in mg/kg
Tomato (STMR: 1.1 mg/kg)	Juice, raw	0.3	See juice, bottled	See juice, bottled
	Juice, bottled	0.09, 0.1, 0.11, 0.13	0.1	0.11
	Puree	<0.01(4)	0.01	0.011
	Canned/preserve	<0.01(4)	0.01	0.011
	pomace, wet	0.01, 0.32	See pomace, dry	See pomace, dry
	pomace, dry	1.0, 1.3, 1.3, 1.4	1.3	1.4

Raw commodity	Processed commodity	SDS-3701 → SDS-3701 (see 2010 JMPR Evaluation)		
(SDS-3701)		Individual processing factors	Mean or best estimate processing factor	STMR-P in mg/kg

Tomato (STMR: 0.0135 mg/kg)	Juice, raw	0.5	See juice, bottled	See juice, bottled
	Juice, bottled	1.0, 1.0, 1.0, 1.5	1.0	0.0135
	Puree	5.5, 6, 6.5, 7.5	6.3	0.085
	Canned/preserve	1.0, 2.0, 2.0, 2.5	2.0	0.027
	pomace, wet	1.5, 19	See pomace, dry	See pomace, dry
	pomace, dry	13, 14, 16, 18	15	0.2

Raw commodity (chlorothalonil)	Processed commodity	Chlorothalonil → SDS-3701 (see 2010 JMPR Evaluation)		
		Individual processing factors	Mean or best estimate processing factor	STMR-P in mg/kg
Tomato (STMR: 1.1 mg/kg)	Juice, raw	0.001	See juice, bottled	See juice, bottled
	Juice, bottled	0.002(4)	0.002	0.0022
	Puree	0.01(3), 0.02	0.01	0.011
	Canned/preserve	0.002, 0.004, 0.004, 0.005	0.004	0.0044
	pomace, wet	0.003, 0.04	See pomace, dry	See pomace, dry
	pomace, dry	0.03(3), 0.04	0.03	0.033

For chlorothalonil in processed tomato products, based on an STMR value of 1.1 mg/kg, the Meeting estimated STMR-P values of 0.11 mg/kg for tomato juice, 0.011 mg/kg for tomato puree and canned tomatoes and 1.4 mg/kg for tomato dry pomace.

For SDS-3701, based on processing factor from SDS-3701 → SDS-3701 and an STMR value of 0.0135 mg/kg, the Meeting estimated STMR-P values of 0.0135 mg/kg for tomato juice, 0.085 mg/kg for tomato puree, 0.027 mg/kg for canned tomatoes and 0.2 mg/kg for tomato dry pomace.

Residues in animal commodities

For all uses under evaluation in this JMPR for chlorothalonil only tomato pomace was identified as a relevant feed item to livestock animals. Since residues in tomato pomace in the dietary feed burden are superseded by residues of grape pomace being in the same Codex feed item group, no increase in the dietary burden for SDS-3701 by the uses evaluated this year compared to 2010 can be expected.

RECOMMENDATIONS

The Meeting estimated the STMR, HR and MRL values shown in Annex 1.

Definition of the residue for compliance with MRL for plant commodities: *chlorothalonil*

Definition of the residue for estimation of dietary intake for plant commodities: chlorothalonil SDS-3701 (2,5,6-trichloro-4-hydroxyisophthalonitrile), all considered separately.

Definition of the residue for compliance with MRL and for estimation of dietary intake for animal commodities: *SDS-3701 (2,5,6-trichloro-4-hydroxyisophthalonitrile)*.

The residue was considered as not fat-soluble.

DIETARY RISK ASSESSMENT

Long-term intake

The evaluation of chlorothalonil has resulted in recommendations for MRLs and STMRs for raw and processed commodities. The International Estimated Daily Intakes for the 17 GEMS/Food cluster diets, based on this years estimated STMRs and previous STMRs from 2010 and 2012 were in the range 10–50% of the maximum ADI of 0.02 mg/kg bw.

The evaluation of SDS-3701 has resulted in recommendations for STMRs for raw and processed commodities following primary treatment and after uptake from soil as rotational crop. The International Estimated Daily Intakes for the 17 GEMS/Food cluster diets, based on this years estimated STMRs and previous STMRs from 2010 and 2012 were in the range 4–10% of the maximum ADI of 0.008 mg/kg bw.

The results are shown in Annex 3 to the 2015 Report.

The Meeting concluded that the long-term intake of residues of chlorothalonil and its metabolite SDS-3701, from uses that have been considered by the JMPR, is unlikely to present a public health concern.

Short-term intake

The International Estimated Short Term Intake (IESTI) for chlorothalonil and its metabolite SDS-3701 were separately calculated for the plant and livestock commodities (and their processing fractions) for which new STMRs and HRs were estimated and for which consumption data were available. The results are shown in Annex 4 to the 2015 Report.

The IESTI for chlorothalonil varied from 0–30% of the ARfD (0.6 mg/kg bw) and the IESTI for its metabolite SDS-3701 from 0–10% of the ARfD (0.03 mg/kg bw). The Meeting concluded that the short-term intake of residues of chlorothalonil and SDS-3701, from uses that have been considered by the JMPR, is unlikely to present a public health concern.

Livestock animal dietary burden

Not necessary

5.6 CYANTRANILIPROLE (263)

RESIDUE AND ANALYTICAL ASPECTS

Cyantraniliprole is a diamide insecticide with a mode of action (ryanodine receptor activation) similar to chlorantraniliprole and flubendiamide, with foliar and systemic activity. It is effective against the larval stages of lepidopteran insects and also on thrips, aphids and other chewing and sucking insects.

Cyantraniliprole was initially evaluated for toxicology and residues by JMPR in 2013 and a ADI of 0–0.03mg/kg bw/day was estastablished. An ARfD was deemed to be unnecessary. The residue definitions were also established:

Definition of residue for compliance with MRL for both animal and plant commodities: cyantraniliprole.

Definiton of residue for estimation of dietary intake for unprocessed plant commodities: cyantraniliprole.

Definition of residue for estimation of dietary intake for processed plant commodities: sum of cyantraniliprole and IN –J9Z38, expressed as cyantraniliprole.

Definition of residue for estimation of dietary intake for animal commodities:

sum of cyantraniliprole, *2-[3-Bromo-1-(3-chloro-2-pyridinyl)-1H-pyrazol-5-yl]-3,4-dihydro-3,8-dimethyl-4-oxo-6-quinazolinecarbonitrile [IN-J9Z38], 2-[3-Bromo-1-(3-chloro-2-pyridinyl)-1H-pyrazol-5-yl]-1,4-dihydro-8-methyl-4-oxo-6-quinazolinecarbonitrile [IN-MLA84], 3-Bromo-1-(3-chloro-2-pyridinyl)-N-[4-cyano-2-(hydroxymethyl)-6-[(methylamino)carbonyl]phenyl]-1H-pyrazole-5-carboxamide [IN- N7B69] and 3-Bromo-1-(3-chloro-2-pyridinyl)-N-[4-cyano-2[[(hydroxymethyl)amino]carbonyl]-6-methylphenyl]-1H-pyrazole-5-carboxamide [IN-MYX98],* expressed a cyantraniliprole.

The residue is not fat soluble.

At the Forty-sixth Session of the CCPR(2014), cyantraniliprole was scheduled for evaluation of additional use patterns by 2015 JMPR.

The Meeting received supervised residue trial data for foliar and soil applications of cyantraniliprole on a range of fruit and vegetable crops, cereals, tree nuts and tea, and information on registered uses of cyantraniliprole on corresponding crops. The processing studies on corn were also submitted to the Meeting.

Methods of analysis

The analytical methods were previously evaluated (2013 Meeting). The same methods were used in the trials submitted to the current Meeting, and are considered valid for the commodities evaluated.

Stability of residues in stored analytical samples

The stability of residues of cyantraniliprole and metabolites in stored samples was covered by the freezer stability studies evaluated by the 2013 JMPR, and is considered adequate for the trials submitted to the current Meeting.

Results of Supervised residue trials on crops

The Meeting received the residue trials for strawberry, greenhouse cucumber, bean, pea, soya bean, artichoke, maize, and tea.

Where residues have been reported as not detected (ND), i.e., <LOD, the values have been considered as <LOQ (< 0.01 mg/kg) for the purposes of MRL setting. If a higher residue level was observed at a longer PHI than the GAP, the higher value has been used in MRL setting.

The Meeting noted that GAP has been authorised for the use of cyantraniliprole and the product labels were available from Canada, Columbia, India, Japan, Vietnam and USA.

Citrus fruits

The critical GAP for cyantraniliprole on citrus fruits is in USA: 3 foliar applications of 0.15 kg ai/ha with a total of 0.45 kg ai/ha/season, applied at least 7 days intervals with a PHI of 1 day. The 2013 Meeting received the supervised residue trials for cyantaniliprole on citrus fruit (orange, lemon, grapefruit and mandarin). The current Meeting evaluated the data against the GAP for citrus fruits from the USA. Cyantraniliprole was also registered for soil application in citrus, however, the residue trials with soil application showed that the soil application did not contribute significant residues in citrus fruits.

Orange

In trials conducted in USA and Europe matching the USA GAP (with 3 applications of 0.15 kg ai/ha, PHI of 1 day), cyantraniliprole residues in whole fruit were: 0.1(2), 0.12, 0.17, 0.2, 0.21, 0.22, 0.23, 0.26, 0.28, 0.3, 0.35 and 0.39 mg/kg (n=13). The cyantraniliprole residues in pulp were: 0.01, 0.013, 0.018, 0.021, 0.036, 0.04, 0.041, 0.043, 0.046, 0.064, 0.069, and 0.086(2) mg/kg (n=13).

Lemon

In trials conducted in USA matching the USA GAP (with 3 applications of 0.15 kg ai/ha, PHI of 1 day), cyantraniliprole residues in whole fruit were: 0.16(2), 0.19, 0.21 and 0.3 mg/kg (n=5). Cyantraniliprole residues in pulp were: 0.023, 0.057, 0.063, 0.07 and 0.11 mg/kg (n=5).

Grapefruit

In trials conducted in USA matching the USA GAP (with 3 applications of 0.15 kg ai/ha, PHI of 1 day), cyantraniliprole residues in whole fruit were: 0.091, 0.12(2), 0.14, 0.16, 0.19, and 0.31mg/kg (n=7). Cyantraniliprole residues in pulp were: 0.014, 0.021, 0.026, 0.029, 0.032, 0.033 and 0.049 mg/kg (n=7).

Mandarins

In trials conducted in Europe matching the USA GAP (with 3 applications of 0.15 kg ai/ha, PHI of 1 day), cyantraniliprole residues in whole fruit were: 0.47 mg/kg (n=1). Cyantraniliprole residues in pulp were: 0.2 mg/kg (n=1).

The Meeting noted that the GAP in USA was for citrus and the medians of the data sets for oranges, lemons, grapefruits and mandarins differed by less than 5-fold, and agreed to consider a group maximum residue level. In deciding on the data set to use for estimating a group maximum residue level (the Kruskal-Wallis H-test indicated that the residue populations for oranges, lemons, grapefruits and mandarins were not different) it was agreed to combine the results to give a data set of: 0.091, 0.1(2), 0.12(3), 0.14, 0.16(3), 0.17, 0.19(2), 0.2, 0.21(2), 0.22, 0.23, 0.26, 0.28, 0.3(2), 0.31, 0.35, 0.39 and 0.47 mg/kg (n=26) to recommend a maximum residue level for the citrus fruit group. It was agreed to combine the results in pulp to give a data set of: 0.01, 0.013, 0.014, 0.018, 0.021(2), 0.023, 0.026, 0.029, 0.032, 0.033, 0.036, 0.04, 0.041, 0.043, 0.046, 0.049, 0.057, 0.063, 0.064, 0.069, 0.07, 0.086(2), 0.11 and 0.2 mg/kg (n=26).

The Meeting estimated an STMR of 0.041 mg/kg and an HR of 0.2 mg/kg based on residues in pulp, and recommended a group maximum residue level of 0.7 mg/kg for cyantraniliprole on citrus fruit. The Meeting estimated an STMR of 0.20 mg/kg in orange fruit for calculation of STMR-P.

Pomegranate

The approved GAP for cyantraniliprole on pomegranate is available from India, up to 3 foliar applications of 0.09 kg ai/ha, applied at least 7-10 day intervals with a PHI of 5 days. The assessment was undertaken using the supervised residue trials for cyantaniliprole on pomeganate received by the 2013 Meeting. The current Meeting evaluated the data against the new GAP for pomegranate from India.

In one trial conducted on pomegranate in India matching the Indian GAP cyantraniliprole residues in rind, seed and juice were < 0.01 mg/kg (n=1). In other trials conducted in four locations in India with 2, 3, 5 applications at rate of 0.075-0.18 kg ai/ha and PHI of 5 days, the cyantraniliprole residues in rind, seed and juice were all < 0.01 mg/kg (n=11).

The Meeting noted that since different times and rates of application resulted in the same residues in pomegranate, the Meeting agreed to combine the data together to estimate a maximum residue level of 0.01* mg/kg, and an STMR of 0.01 mg/kg.

Fruiting vegetables, Cucurbits

The critical GAP for cyantraniliprole on cucurbit vegetables is in Canada, up to 4 foliar applications of 0.15 kg ai/ha, applied at least 5–7 day intervals with a PHI of 1 day.

The new trials conducted on protected cucumber in North America (with 3 applications of 0.15 kg ai/ha, a PHI of 0 day) did not match the critical GAP. The meeting confirmed the previous recommendation.

Legume vegetables

The critical GAP for cyantraniliprole on legume vegetables in Canada is up to 4 foliar applications of 0.15 kg ai/ha, applied at least 5 day intervals with a PHI of 1 day for succulent seed. The 2013 Meeting received the supervised residue trials for cyantaniliprole on bean and pea from Europe. The current Meeting received new trials on bean, pea and soya bean, and evaluated all trials available to the Meeting against the new GAP for legume vegetables from Canada.

Pea with pod

In trials conducted on pea with pod (edible-podded peas) in USA matching the Canadian GAP (4 foliar applications of 0.15kg ai/ha, 1 day PHI), cyantraniliprole residues in pea with pod were: 0.29, <u>0.61, 0.78</u> and 0.79 mg/kg (n=4).

The Meeting estimated an STMR of 0.7mg/kg, and the maximum residue level of 2.0 mg/kg for cyantraniliprole in pea with pod.

Pea without pod

In trials conducted on pea without pod (succulent shelled pea) in USA matching the Canadian GAP (4 foliar applications of 0.15 kg ai/ha, 1 day PHI), cyantraniliprole residues in seed of pea without pod were: 0.019, 0.046, <u>0.065, 0.076</u>, 0.082 and 0.10 mg/kg (n=6).

The Meeting estimated an STMR of 0.07 mg/kg, and maximum residue level of 0.3 mg/kg in pea without pod.

Bean with pod

In trials conducted on bean with pod (edible-podded beans) in USA matching the Canadian GAP (4 foliar applications of 0.15kg ai/ha, PHI of 1 day), cyantraniliprole residues in bean were: 0.11, 0.11, 0.23, <u>0.29</u>, 0.36, 0.43, and 0.73 mg/kg (n=7).

The Meeting estimated an STMR of 0.29 mg/kg and recommended the maximum residue level of 1.5 mg/kg for cyantraniliprole in bean with pod.

Bean without pod

In trials conducted on bean without pod (succulent shelled beans) in the USA matching the Canadian GAP (4 foliar applications at 0.15kg ai/ha, PHI of 1 day), cyantraniliprole residues in seed of succulent shelled bean were: 0.01, 0.023 and 0.057 mg/kg (n=3).

Since three trials were insufficient to estimate the STMR and maximum residue level, the Meeting agreed to extrapolate the STMR and maximum residue level from pea without pods. The

Meeting estimated an STMR of 0.07 mg/kg, and a maximum residue level of 0.3 mg/kg in bean without pod.

Soya bean, immature seed

In trials conducted on soya bean in the USA matching Canadian GAP (4 applications at 0.15 kg ai/ha, PHI of 1 day). The cyantraniliprole residues in immature seed were: 0.019, 0.035, <u>0.036,</u> 0.042 and 0.14 mg/kg (n=5)

The Meeting estimated an STMR of 0.036 mg/kg and recommended the maximum residue level of 0.3 mg/kg for cyantraniliprole in soya bean, immature seed.

Pulses

The critical GAP for cyantraniliprole on pulses in Canada is up to 4 foliar applications of 0.15 kg ai/ha, applied at 5 day intervals with a PHI of 7 days.

Beans (dry)

In new trials conducted on bean, dry (dry shelled beans) in USA matching the Canadian GAP (4 foliar applications of 0.15kg ai/ha, PHI of 7 day), cyantraniliprole residues in bean, dry were: < 0.01, < 0.01, < 0.01, < 0.01, < 0.01, <u>0.01, 0.015</u>, 0.021, 0.048, 0.049, 0.088 and 0.22 mg/kg (n=12).

The Meeting estimated a STMR of 0.01 mg/kg and recommended the maximum residue level of 0.3 mg/kg for cyantraniliprole in bean (dry).

Peas (dry)

In new trials conducted on pea, dry (dry shelled peas) in the USA matching Canadian GAP (4 foliar applications of 0.15kg ai/ha, PHI of 7 day), cyantraniliprole residues in peas (dry) were: 0.019, <u>0.077, 0.086</u> and 0.51 mg/kg (n=4).

The Meeting agreed that four trials were insufficient for the estimation of a STMR and maximum residue level recommendation.

Soya bean (dry)

In new trials, conducted on soya bean in the USA, matching the Canadian GAP (4 applications of 0.15 kg ai/ha, PHI of 7 days), cyantraniliprole residues in soya bean (dry) were: < 0.01, 0.011, 0.012, 0.017, 0.022, 0.023, 0.027, 0.027, 0.031, 0.031, <u>0.033</u>, 0.044, 0.056, 0.061, 0.083, 0.1, 0.12, 0.13, 0.15, 0.16 and 0.25 mg/kg (n=21).

The meeting estimated an STMR of 0.033 mg/kg and recommended the maximum residue level of 0.4 mg/kg for cyantraniliprole in soya bean (dry).

Artichoke

The GAP for cyantraniliprole on artichoke in Canada is up to 4 foliar applications of 0.025–0.15 kg ai/ha with a total of 0.45 kg ai/ha/season, applied at least 5–7 day intervals with a PHI of 7 days.

The new trials conducted on artichoke in Europe (2 foliar applications of 0.05kg/ha) did not match the Canadian GAP.

Maize

The GAP for cyantraniliprole on maize is available from Canada, for seed treatment at 0.012–0.024 kg ai/ha (up to 0.25 mg ai/ seed, or 100 g ai/100 kg seeds).

There were no trials matching the Canadian GAP, however, the Meeting noted that in 23 trials conducted on maize in North America, seed treatment of 0.5 mg ai/ seed, i.e., 2× GAP rate, the residues of cyantraniliprole in maize grain were all < 0.01 mg/kg. The Meeting agreed to estimate a

STMR of 0 mg/kg and recommend a maximum residue level of 0.01 mg/kg for cyantraniliprole in maize grain.

Tree nuts

The critical GAP for cyantraniliprole on tree nuts is from the USA, 3 foliar applications of 0.15 kg ai/ha, with a seasonal total of 0.45 kg ai/ha, applied at 7 day intervals with a PHI of 5 days. The Meeting received four new trials on almond and six new trials on pecan. In addition, the 2013 Meeting received supervised residue trials for cyantaniliprole on almond (6) and pecan (6). The current Meeting evaluated all available trials together against the GAP of the USA.

Almond

In trials conducted on almonds in the USA, matching US GAP (3 foliar application of 0.15 kg ai/ha, 0.45 kg ai/ha/season, PHI of 5 days), cyantraniliprole residues in nutmeat were < 0.01 (5), 0.01, 0.012, 0.014, 0.018 and 0.023 mg/kg (n=10).

Pecan

In trials conducted on pecans in the USA, matching US GAP (3 foliar application of 0.15 kg ai/ha, 0.45 kg ai/ha/season, PHI of 5 days), cyantraniliprole residues in nutmeat were all < 0.01 mg/kg (n=12).

The Meeting noted that the GAP in the USA was for tree nuts and the medians of the data sets for almond and pecan differed by less than 5-fold and agreed to consider a group maximum residue level. In deciding on the data set to use for estimating a group maximum residue level (the Kruskal-Wallis H-test indicated that the residue populations for almond and pecan were not different) it was agreed to combine the results to give a data set of: < 0.01(16), 0.01(2), 0.012, 0.014, 0.018 and 0.023 mg/kg (n=22) to recommend a maximum residue level for the tree nut group.

The Meeting estimated an STMR of 0.01 mg/kg, and recommended a group maximum residue level of 0.04 mg/kg for cyantraniliprole on tree nuts.

Oilseeds

The 2013 Meeting received supervised residue trials for cyantraniliprole on cotton, rapeseed and sunflower. The current Meeting evaluated the data against the GAP of the USA.

Cotton

The critical GAP for cyantraniliprole on cotton in the USA is for up to 3 foliar applications of 0.15 kg ai/ha with a total of 0.45 kg ai/ha/season, applied at 7 day intervals with a PHI of 7 days.

In trials conducted on cotton in the USA matching GAP, cyantraniliprole residues in cotton seed were: 0.012, 0.025, 0.035, 0.12, 0.12, 0.14, 0.16, 0.18, 0.2, 0.22, 0.26, 0.29 and 0.99 mg/kg (n=13).

The Meeting estimated an STMR of 0.16 mg/kg, and recommended the maximum residue level of 1.5 mg/kg for cyantraniliprole in cotton seed.

Rape seed (canola)

The critical GAP for cyantraniliprole on rape seed (canola) in the USA is up to 3 foliar applications of 0.15 kg ai/ha with a total of 0.45 kg ai/ha/season, applied at 7 day intervals with a PHI of 7 days.

In trials conducted on canola in the USA matching GAP, cyantraniliprole residues in rapeseed were: 0.019, 0.021, 0.022, 0.05, 0.059, 0.061, 0.07, 0.07, 0.084, 0.12, 0.17, 0.18, 0.27, 0.29, 0.32 and 0.61 mg/kg (n=16).

The Meeting estimated the maximum residue level of 0.8 mg/kg and an STMR of 0.077 mg/kg for cyantraniliprole in rapeseed.

Sunflower

The critical GAP for cyantraniliprole on sunflower in the USA is for up to 3 foliar applications of 0.15 kg ai/ha with a total of 0.45 kg ai/ha/season, applied at 7 day intervals with a PHI of 7 days.

In trials conducted on sunflower in the USA matching the USA GAP, cyantraniliprole residues in sunflower seed were: 0.028, 0.039, 0.059, 0.064, 0.067, 0.085, 0.092, 0.14 and 0.32 mg/kg (n=9).

The Meeting estimated the maximum residue level of 0.5 mg/kg and a STMR of 0.067 mg/kg for cyantraniliprole in sunflower.

Seed for beverages and sweets

Coffee

The 2013 Meeting received supervised residue trials for cyantraniliprole on coffee. The current Meeting evaluated the data against the new GAP from Columbia.

The new approved GAP for cyantraniliprole on coffee from Columbia is for up to 2 foliar application of 2.5–3.5 g ai/5 litres/100 trees, equivalent to 0.06–0.175 kg ai/ha with a total of 0.3 kg ai/ha/season, with a PHI of 7 days.

In two Brazilian trials matching the Columbian GAP, cyantraniliprole residues in green coffee beans were: < 0.01 and 0.02 mg/kg.

The Meeting noted that in a further eight trials from Brazil involved 2 foliar applications that matched the Columbian GAP but in which two soil drenches (0.01–0.06 g ai/100 mL/plant to achieve the equivalent of 0.2 kg ai/ha/treatment) were also applied 90 and 120 days before harvest, cyantraniliprole residues in green bean were: < 0.01 (3), 0.01(2), 0.02, 0.02, and 0.03 mg/kg (n=8).

The Meeting agreed that since the early season soil drench treatments did not appear to contribute to the final residue in coffee beans, the data from these two sets of results could be combined, giving a data set of: < 0.01(4), 0.01(2), 0.02(3) and 0.03 mg/kg (n=10).

The Meeting estimated a STMR of 0.01 mg/kg, and recommended a maximum residue level of 0.05 mg/kg for cyantraniliprole on coffee bean, with the withdrawal of the previous maximum residue level recommendation of 0.03 mg/kg.

Tea, green, dry

The approved GAP for cyantraniliprole on tea is from Japan, with 1 foliar application of 0.1–0.2 kg ai/ha and a PHI of 7 days.

In trials conducted in Japan matching the Japanese GAP, cyantraniliprole residues in tea, green(dry) were 4.19 and 20.6 mg/kg (n=2). The Meeting agreed that two trials were insufficient for the estimation of a STMR and a maximum residue level recommendation.

Animal feed

Bean forage and bean hay

The 2013 Meeting received supervised residue trials for cyantaniliprole on beans from Europe. The current Meeting received new trials on beans from the USA, and evaluated all available trials against the new GAP for pulses from Canada.

In new trials conducted on bean forage and hay (dry shelled beans) in the USA, matching the Canadian GAP (3 foliar applications of 0.15kg ai/ha, PHI of 7 day), cyantraniliprole residues in bean forage (dry matter) were: 6.3, 7.6, 11.6, and 16.9 mg/kg (n=4); cyantraniliprole residues in bean hay (dry matter) were: 5.2, 7.7, 9.2 and 19.1 mg/kg (n=4).

The Meeting estimated a median residue of 9.6 mg/kg and a highest residue of 16.9 mg/kg for cyantraniliprole in bean forage (dry matter) for the calculation of livestock dietary burdens.

The Meeting estimated a median residue of 8.5 mg/kg and a high residue of 19.1 mg/kg for cyantraniliprole in bean hay (dry matter), and recommended a maximum residue level of 40 mg/kg (DM).

Pea vine and pea hay

The 2013 Meeting received supervised residue trials for cyantaniliprole on peas from Europe. The current Meeting received new trials on peas from the USA, and evaluated all available trials against the new GAP for pulses from Canada.

In new trials conducted on pea vine and hay in USA matching the Canadian GAP (3 foliar applications of 0.15kg ai/ha, 7 day PHI), cyantraniliprole residues in pea vine (dry matter basis) were: 4.1, 6.6, 11.4 and 47.1 mg/kg (n=4); cyantraniliprole residues in pea hay (dry matter) were: 3.5, 6.6, 12.8 and 28.5 mg/kg (n=4).

The Meeting estimated a median residue of 9.0 mg/kg and a highest residue of 47.1 mg/kg (DM) for cyantraniliprole in pea vine (dry matter) for calculation of livestock dietary burdens.

The Meeting estimated a median residue of 9.7 mg/kg and a highest residue of 28.5 mg/kg for cyantraniliprole in pea hay, and recommended a maximum residue level of 60 mg/kg (DM) for cyantraniliprole in pea hay,

Soya bean forage and hay

The Meeting received new trials conducted on soya bean forage and hay from the USA, matching Canadian GAP (3 applications of 0.15 kg ai/ha, PHI of 7 days).

The cyantraniliprole residues in soya bean forage, on dry matter basis, were: 1.2, 2.7, 4.5, 4.9, 6.1, 12.0, 12.5 14.2, 16.9, 17.8, 21.6, 27.1, 27.2, 30.6, 39.5 and 45.3 mg/kg (n=16).

The cyantraniliprole residues in soya bean hay in dry matter were: 1.6, 2.5, 6.0, 10.0, 10.8, 10.9, 13.1, 13.2, 14.3, 22.5, 27.3, 28.4, 28.9, 32.8, 42.7 and 46.4 mg/kg (n=16)

The Meeting estimated a median residue of 15.5 mg/kg and a highest residue of 45.3 mg/kg for cyantraniliprole in soya bean forage (dry matter) for calculation of animal dietary burdens.

The Meeting estimated a median residue of 13.7 mg/kg and a highest residue of 46.4 mg/kg for cyantraniliprole in soya bean hay (dry matter), and recommended a maximum residue level of 80 mg/kg (DM) for cyantraniliprole in soya bean hay.

Almond hull

The 2013 Meeting received supervised residue trials for cyantaniliprole on almond hulls. The current Meeting evaluated the data against the new GAP from the USA.

In trials conducted on almonds hulls in the USA, matching US GAP (3 foliar application of 0.15 kg ai/ha, 0.45 kg ai/ha/season, PHI of 5 days), cyantraniliprole residues in almond hulls were: 0.72, 0.88, 0.93, 1.4, 1.9, 1.9, 2.5, 2.9, 3.6 and 4.6 mg/kg (n=10).

The Meeting estimated a mean residue of 1.9 mg/kg, a highest residue of 4.6 mg/kg on almond hulls for the purpose of estimating livestock dietary burdens.

Cotton gin trash

The 2013 Meeting received supervised residue trials for cyantraniliprole on cotton gin trash. The current Meeting evaluated the data against the GAP of the USA (3 applications of 0.15 kg ai/ha, with interval of 7 days and a PHI of 7 days).

In trials conducted on cotton in the USA, matching US GAP, residues in cotton gin trash were: 2.6, 2.7, 3.5 and 5 mg/kg (n=4)

The Meeting estimated the median residue of 3.1 mg/kg and the highest residue of 5 mg/kg in cotton gin trash for estimating livestock dietary burden.

Fate of residues during processing

The Meeting received processing studies on cyantranilipole residues in maize, cottonseed and oranges. The Meeting agreed that for commodities not being considered for maximum residue levels at this Meeting, the relevant processing studies would not be reviewed and processing factors would not be estimated. Estimated processing factors and STMR-Ps for the commodities considered at this Meeting are summarised below.

Summary of processing factors and STMR-P for cyantraniliprole+IN-J9Z38

RAC	Commodity	Cyantraniliprole+IN-J9Z38 [a]		RAC STMR (mg/kg) [b]	STMP-P (mg/kg)[d]
		Calculated processing factors	PF best estimate		
Maize	Grain			0.01	
	Asp gr fn [f]	175, 177.4	176		1.76
	Meal	0.22, 0.44	0.33		0.0033
	Flour	0.22, 0.33	0.27		0.0027
	Grits	<0.22, 0.22	0.22		0.0022
	Oil-dry	<0.22, <0.22	<0.22		<0.0022
	Oil-wet	0.44, <0.22	0.33		0.0033
	Starch	<0.22, <0.22	<0.22		<0.0022
Cottonseed [c]	RAC: seed			0.16	
	raw oil (solvent extr)		0.06		0.0096
	refined oil (solvent extr)		0.04		0.0064
	meal (solvent extr)		0.05		0.008
	hulls		0.34		0.054
	raw oil (cold press)		0.25		0.04
	refined oil (cold press)		0.04		0.0064
	meal (cold press)		0.09		0.014
Orange[(c)]	RAC: fruit			0.20	
	juice		<0.03		<0.006
	wet pulp		0.24		0.048
	dry pulp		<0.33		0.066
	meal		0.47		0.094
	molasses		0.59		0.12
	marmalade		<0.06		0.012
	oil		8.5		1.7
	canned		<0.03		<0.006
Orange	Oil	2.3, 8.2, 6.2[e]	6.2[e]		

[a] Each PF value represents a separate study where residues were above the LOQ in the RAC. The factor is the ratio of the combined cyantraniliprole plus IN-J9Z38 metabolite residues in the processed item divided by the residue of cyantraniliprole in the RAC.

[b] Residues in the RAC is cyantraniliprole.

[c] The processing factor was estimated in 2013 JMPR, the STMR-P was calculated in this Meeting.

[d] Residues in processed commodities is cyantraniliprole plus IN-J9Z38

[e] The processing factor based on residues of cyantraniliprole only for estimation of maximum residue level.

[f] Aspirated grain faction

The Meeting noted that in the studies available, cyantraniliprole residues did not concentrate in food commodities during processing except for orange oil. The Meeting estimated a maximum level of 4.5 (0.7×6.2) mg/kg for citrus oil, the processing factor was based on residues of parent only.

Residues in animal commodities

Farm animal dietary burden

The dietary burdens were estimated using the OECD diets listed in Appendix IX of the 2009 edition of FAO Manual. Potential cattle feed items include: pea, soya bean, cotton gin trash, maize and potatoes (including by-products). Dietary burden calculations for beef cattle, dairy cattle, broilers and laying poultry are presented Annex 6 to the Report and are summarized below.

Estimated maximum and mean dietary burden of farm animal (ppm of dry matter diet)

	Animal dietary burden, cyantraniliprole							
	US-Canada		EU		Australia		Japan	
	max	mean	max	mean	max	mean	max	mean
Beef cattle	0.69	0.37	12.6	3.38	46.8 [a]	15.59 [c,]	0.14	0.009
Dairy cattle	9.86	3.42	14	3.82	35.95 [b]	12.05 [d]	0.29	0.024
Poultry-broiler	0.00	0.00	0.05	0.02	0.00	0.00	0.00	0.00
Poultry-layer	0.00	0.00	4.71 [e, g]	1.56 [f, h]	0.00	0.00	0.00	0.00

[a] Highest maximum beef or dairy cattle dietary burden suitable for MRL estimates for mammalian meat

[b] Highest maximum dairy cattle dietary burden suitable for MRL estimates for mammalian milk

[c] Highest mean beef or dairy cattle dietary burden suitable for STMR estimates for mammalian meat

[d] Highest mean dairy cattle dietary burden suitable for STMR estimates for mammalian milk

[e] Highest maximum poultry dietary burden suitable for MRL estimates for poultry tissues

[f] Highest mean poultry dietary burden suitable for STMR estimates for poultry tissues

[g] Highest maximum poultry dietary burden suitable for MRL estimates for poultry eggs

[h] Highest mean poultry dietary burden suitable for STMR estimates for poultry eggs

Animal commodity maximum residue level

For beef and dairy cattle, the calculated maximum dietary burden suitable for estimating maximum residue levels in mammalian tissues and milk are 47 ppm and 36 ppm dry weight of feed, and the calculated mean dietary burdens suitable for estimating STMRs in mammalian tissues and in milk are 16 ppm and 12 ppm dry weight of feed respectively. The residue levels of cyantraniliprole and metabolites included in the residue definition in milk and tissue were calculated by estimation based on 10ppm, 30ppm and 100ppm feeding level in the feeding studies.

Cyantraniliprole feeding study	Feed level, ppm, for		Residue [a], mg/kg				
	Tissue residue	Milk residue	Milk	Muscle	Liver	Kidney	Fat
MRL, beef or dairy cattle							
Feeding study [b]	30	30	0.445	0.11	0.936	0.427	0.27
	100	100	1.109	0.373	2.3	1.351	1.03
Dietary burden and high residue	47	36	0.50	0.17	1.26	0.65	0.45
STMR, beef or dairy cattle							
Feeding study [c]	10	10	0.11	0.026	0.246	0.128	0.065
	30	30	0.445	0.081	0.722	0.356	0.202
Dietary burden mean residue estimate	16	12	0.21	0.041	0.38	0.19	0.10

[a] Residue values used in estimating STMR are the sum of cyantraniliprole and metabolites IN-N7B69, IN-J9Z38, IN-MLA84 and IN-MYX98

[b] high residues for tissues and mean residues for milk

[c] mean residues for tissues and mean residues for milk

Residues of cyantraniliprole expected in cattle milk and tissues for use in estimating maximum residue levels are: 0.45 mg/kg (fat), 0.17 mg/kg (muscle), 1.26 mg/kg (liver) and 0.65 mg/kg (kidney) and the mean residue for milk is 0.50 mg/kg.

The Meeting estimated maximum residue levels of 0.2 mg/kg for cyantraniliprole in meat (from mammals other than marine mammals), 1.5 mg/kg for edible offal (mammalian), 0.5 mg/kg for mammalian fat and 0.6 mg/kg for milks. The Meeting estimated STMRs (parent plus metabolites) for dietary intake estimation are 0.041 mg/kg for meat, 0.38 mg/kg for edible offal, 0.1 mg/kg for fat and 0.21 mg/kg for milk. The previous recommendations should be replaced.

For poultry, noting that in some countries, laying hens may also be consumed; the calculated maximum dietary burden suitable for estimating maximum residue levels in poultry tissues and eggs is 4.7 ppm and the calculated mean dietary burden suitable for estimating STMRs in poultry tissues and in eggs is 1.6 ppm. The residue levels of cyantraniliprole and metabolites included in the residue definition in eggs and tissue were calculated by estimation based on 3.0 ppm and 10 ppm feeding level, or extrapolation below the 3.0 ppm feeding level in the feeding studies.

Residues in kidney and liver at the expected dietary burden

	Feed level, ppm, for		Residue [a], mg/kg			
	Tissues residues	Eggs residues	Eggs	Muscle	Liver	Fat
Highest residue level, hens						
Feeding study [b]	3	3	0.151	0.009	0.098	0.014
	10	10	0.32	0.028	0.225	0.084
Calculated burden	4.7	4.7	0.13	0.014	0.13	0.031
STMR, hens						
Feeding study [c]	3	3	0.082	0.0075	0.0617	0.0159
Calculated burden	1.6	1.6	0.0426	0.0039	0.0321	0.0083

[a] Residue values used in estimating STMR are the sum of cyantraniliprole and metabolites IN-N7B69, IN-J9Z38, IN-MLA84 and IN-MYX98

[b] high residues for tissues and mean residues for egg

[c] mean residues for tissues and mean residues for egg

Residues of cyantraniliprole expected in poultry egg and tissues for use in estimating maximum residue levels are: 0.031 mg/kg (fat), 0.014mg/kg (muscle), and 0.13mg/kg (liver) and the mean residue for egg is 0.13 mg/kg.

The Meeting estimated maximum residue levels of 0.02 mg/kg for cyantraniliprole in poultry meat, 0.15 mg/kg for poultry offal, 0.04 mg/kg for poultry fat and 0.15 mg/kg for eggs. The Meeting estimated STMRs (parent plus metabolites) for dietary intake estimation are 0.004 mg/kg for meat, 0.032 mg/kg for edible offal, 0.008 mg/kg for fat and 0.043 mg/kg for egg. The Meeting withdrew its previous recommendations.

RECOMMENDATIONS

On the basis of the data from supervised trials the Meeting concluded that the residue levels listed in Annex 1 are suitable for establishing maximum residue limits and for and for IEDI assessment.

DIETARY RISK ASSESSMENT

Long-term intake

The International Estimated Daily Intake (IEDI) for cyantraniliprole was calculated for the food commodities for which STMRs or HRs were estimated and for which consumption data were available. The results are shown in Annex 3 to the 2015 Report.

The International Estimated Daily Intakes of cyantraniliprole for the 17 GEMS/Food regional diets, based on estimated STMRs were 2–20% of the maximum ADI of 0.03 mg/kg bw. The Meeting concluded that the long-term intake of residues of cyantraniliprole from uses that have been considered by the JMPR is unlikely to present a public health concern.

Short-term intake

The 2013 JMPR decided that an ARfD was unnecessary and concluded that the short-term intake of cyantraniliprole residues is unlikely to present a public health concern.

5.7 CYAZOFAMID (281)

TOXICOLOGY

Cyazofamid is the ISO-approved common name for 4-chloro-2-cyano-*N*,*N*-dimethyl-5-*p*-tolylimidazole-1-sulfonamide (IUPAC), with CAS number 120116-88-3. It is a cyanoimidazol class fungicide.

Cyazofamid has not been evaluated previously by JMPR and was reviewed by the present Meeting as the request of CCPR.

All critical studies contained statements of compliance with GLP.

Biochemical aspects

Cyazofamid was dose-dependently absorbed in rats: up to 84% at a low dose (0.5 mg/kg bw) and up to 6% at a high dose (1000 mg/kg bw). Peak plasma and tissue concentrations of radiolabelled cyazofamid were achieved within 1 hour after oral administration at the low and high doses. The radioactive dose was distributed primarily to the kidney and liver at the low dose and was more widely distributed at the high dose. The metabolic pathway of cyazofamid is rapid hydrolysis to form dimethylsulfonamic acid and 4-chloro-5-*p*-tolylimidazole-2-carbonitrile (CCIM). CCIM is then either oxidized at the benzonyl methyl group, resulting in 4-(4-chloro-2-cyanoimidazole-5-yl) benzoic acid (CCBA), the major urinary metabolite, or conjugated with glutathione and further metabolized to form CH_3-SO-CCIM and CH_3SO_2-CCIM, which are also excreted in the urine. Cyazofamid and its metabolites are rapidly excreted in urine at the low dose: greater than 90% excretion within 24 hours.

Toxicological data

The oral LD_{50} for cyazofamid was greater than 5000 mg/kg bw in mice and rats. The dermal LD_{50} was greater than 5000 mg/kg bw in rats. The inhalation LC_{50} was greater than 5.5 mg/L in rats. Cyazofamid was slightly irritating to the skin and eyes of rabbits. Cyazofamid was not sensitizing in the guinea-pig maximization test.

The kidney was the main target organ of cyazofamid toxicity in short- and long-term studies in rats. Cyazofamid at higher doses also decreased body weight gain in rats.

In a 6-week toxicity study in mice administered cyazofamid in the diet at a concentration of 0, 40, 200, 1000, 3500 or 7000 ppm (equal to 0, 8, 38, 193, 653 and 1419 mg/kg bw per day for males and 0, 9, 47, 248, 854 and 1796 mg/kg bw per day for females, respectively), the NOAEL was 7000 ppm (equal to 1419 mg/kg bw per day), the highest dose tested.

In a 90-day toxicity study in rats administered cyazofamid in the diet at a concentration of 0, 10, 50, 500 or 5000 ppm (equal to 0, 0.597, 2.91, 29.5 and 295 mg/kg bw per day, respectively) for males and 0, 50, 500, 5000 or 20 000 ppm (equal to 0, 3.30, 33.3, 338 and 1360 mg/kg bw per day, respectively) for females, the NOAEL was 500 ppm (equal to 29.5 mg/kg bw per day), based on effects on the kidney (i.e. basophilic tubules, increased urinary protein and pH) in males at 5000 ppm (equal to 295 mg/kg bw per day).

In a 90-day toxicity study in dogs administered cyazofamid by capsule at 0, 40, 200 or 1000 mg/kg bw per day (both sexes), the NOAEL was 1000 mg/kg bw per day, the highest dose tested.

In a 1-year toxicity study in dogs administered cyazofamid by capsule at 0, 40, 200 or 1000 mg/kg bw per day (both sexes), the NOAEL was 200 mg/kg bw per day, based on decreased spleen weight in both sexes at 1000 mg/kg bw.

The Meeting concluded that the overall NOAEL for oral toxicity in dogs was 200 mg/kg bw per day, and the overall LOAEL was 1000 mg/kg bw per day.

In an 18-month toxicity and carcinogenicity study in mice administered cyazofamid in the diet at a concentration of 0, 70, 700 or 7000 ppm (equal to 0, 9.5, 94.8 and 985 mg/kg bw per day for males and 0, 12.2, 124 and 1203 mg/kg bw per day for females, respectively), the NOAEL was 7000 ppm (equal to 985 mg/kg bw per day), the highest dose tested. No treatment-related tumours were observed in this study.

In a 2-year study of toxicity and carcinogenicity in rats administered cyazofamid in the diet at a concentration of 0, 10, 50, 500 or 5000 ppm (equal to 0, 0.336, 1.68, 17.1 and 171 mg/kg bw per day, respectively) for males and 0, 50, 500, 5000 or 20 000 ppm (equal to 0, 2.01, 20.2, 208 and 856 mg/kg bw per day, respectively) for females, the NOAEL was 500 ppm (equal to 17.1 mg/kg bw per day), based on kidney effects (i.e. increases in blood urea nitrogen and urinary volume) in males at 5000 ppm (equal to 171 mg/kg bw per day). No treatment-related tumours were observed in this study.

The Meeting concluded that cyazofamid is not carcinogenic in mice or rats.

Cyazofamid was tested for genotoxicity in an adequate range of assays, both in vitro and in vivo. No evidence of genotoxicity was found.

The Meeting concluded that cyazofamid is unlikely to be genotoxic.

On the basis of the lack of genotoxicity and the absence of carcinogenicity in mice and rats, the Meeting concluded that cyazofamid is unlikely to pose a carcinogenic risk to humans.

In a single-generation reproductive toxicity study in rats administered cyazofamid in the diet at a concentration of 0, 1000, 3000, 7000 or 20 000 ppm (equal to 0, 66.5, 200, 450 and 1327 mg/kg bw per day for males and 0, 77.5, 252, 562 and 1613 mg/kg bw per day for females, respectively), the NOAELs for maternal, reproductive and offspring toxicity were 20 000 ppm (equal to 1327 mg/kg bw per day), the highest dose tested.

In a two-generation reproductive toxicity study in rats administered cyazofamid in the diet at a concentration of 0, 200, 2000 or 20 000 ppm (equal to 0, 9.5, 94.2 and 958 mg/kg bw per day for F_0 males; 0, 13.4, 134 and 1340 mg/kg bw per day for F_0 females; 0, 8.9, 89.2 and 936 mg/kg bw per day for F_1 males; and 0, 13.7, 138 and 1400 mg/kg bw per day for F_1 females, respectively), the NOAEL for parental toxicity was 2000 ppm (equal to 134 mg/kg bw per day), based on reduced body weights in F_0 females at 20 000 ppm (equal to 1340 mg/kg bw per day). The NOAEL for reproductive toxicity was 20 000 ppm (equal to 936 mg/kg bw per day), the highest dose tested. The NOAEL for offspring toxicity was 2000 ppm (equal to 138 mg/kg bw per day), based on reduced body weights in F_1 females at 20 000 ppm (equal to 1400 mg/kg bw per day).

In a developmental toxicity study in rats administered cyazofamid by gavage at a dose of 0, 20, 100, 500 or 1000 mg/kg bw per day, the NOAELs for maternal and embryo/fetal toxicity in rats were 1000 mg/kg bw per day, the highest dose tested.

In a developmental toxicity study in rabbits administered cyazofamid by gavage at a dose of 0, 20, 100, 500 or 1000 mg/kg bw per day, the NOAELs for maternal and embryo/fetal toxicity in rabbits were 1000 mg/kg bw per day, the highest dose tested.

The Meeting concluded that cyazofamid is not teratogenic.

In an acute neurotoxicity study in rats administered cyazofamid by a single gavage dose at 0, 80, 400 or 2000 mg/kg bw, the NOAEL for acute neurotoxicity was 2000 mg/kg bw, the highest dose tested.

In a 90-day neurotoxicity study in rats administered cyazofamid in the diet at a concentration of 0, 500, 2000 or 20 000 ppm (equal to 0, 34, 134 and 1356 mg/kg bw per day for males and 0, 39, 156 and 1539 mg/kg bw per day for females, respectively), the NOAEL for subchronic neurotoxicity was 1356 mg/kg bw per day, the highest dose tested.

The Meeting concluded that cyazofamid is not neurotoxic.

In an immunotoxicity study in mice administered cyazofamid in the diet at 0, 600, 3000 or 6000 ppm (equal to 0, 136, 599 and 1381 mg/kg bw per day), the NOAEL for immunotoxicity was 1381 mg/kg bw per day, the highest dose tested.

The Meeting concluded that cyazofamid is not immunotoxic.

Biochemical and toxicological data on metabolites and/or degradates

Studies with radiolabelled CCIM demonstrated that this metabolite was more rapidly absorbed than cyazofamid itself.

Acute toxicity studies of CCIM (the first metabolite in rodents and in muscle and fat of large animals such as goats) were conducted in rats. Results of an in vitro genotoxicity test on this compound were also provided.

CCIM was more acutely toxic than the parent, with an oral LD_{50} in rats of 324 mg/kg bw. In this study, no deaths were observed at 100 and 160 mg/kg bw. Clinical signs were seen at all doses, but these were slight and occurred in only some animals at 100 mg/kg bw. CCIM did not show evidence of genotoxicity in vitro.

Human data

In reports on manufacturing plant personnel, no adverse health effects were noted.

The Meeting concluded that the existing database on cyazofamid was adequate to characterize the potential hazards to the general population, including fetuses, infants and children.

Toxicological evaluation

The Meeting established an ADI of 0–0.2 mg/kg bw on the basis of the NOAEL of 17.1 mg/kg bw per day in a 2-year study in rats, based on kidney effects in males at 171 mg/kg bw per day. A safety factor of 100 was applied.

The ADI also applies to CCIM, as CCIM is quickly formed and as plasma or liver concentrations are quickly decomposed to CCBA, the major urinary metabolite, or are conjugated with glutathione at low doses. The ADI for the sum of cyazofamid and CCIM is expressed as cyazofamid.

The Meeting concluded that it was not necessary to establish an ARfD for cyazofamid in view of its low acute oral toxicity and the absence of developmental toxicity and any other toxicological effects that would be likely to be elicited by a single dose.

The Meeting established an ARfD for CCIM of 0.2 mg/kg bw, on the basis of a LOAEL of 100 mg/kg bw for clinical signs identified in an acute toxicity study in rats. A safety factor of 500 was applied, including an additional factor of 5 to account for the use of a LOAEL instead of a NOAEL.

A toxicological monograph was prepared.

Levels relevant to risk assessment of cyazofamid

Species	Study	Effect	NOAEL	LOAEL
Mouse	Eighteen-month study of toxicity and carcinogenicity[a]	Toxicity	7 000 ppm, equal to 985 mg/kg bw per day[b]	–
		Carcinogenicity	7 000 ppm, equal to 985 mg/kg bw per day[b]	–
Rat	Two-year study of toxicity and carcinogenicity[a]	Toxicity	500 ppm, equal to 17.1 mg/kg bw per day	5 000 ppm, equal to 171 mg/kg bw per day
		Carcinogenicity	5 000 ppm, equal to 171 mg/kg bw per day[b]	–

Species	Study	Effect	NOAEL	LOAEL
	Two-generation study of reproductive toxicity[a]	Reproductive toxicity	20 000 ppm, equal to 936 mg/kg bw per day[b]	–
		Parental toxicity	2 000 ppm, equal to 134 mg/kg bw per day	20 000 ppm, equal to 1 340 mg/kg bw per day
		Offspring toxicity	2 000 ppm, equal to 138 mg/kg bw per day	20 000 ppm, equal to 1 400 mg/kg bw per day
	Developmental toxicity study[c]	Maternal toxicity	1 000 mg/kg bw per day[b]	–
		Embryo and fetal toxicity	1 000 mg/kg bw per day[b]	–
Rabbit	Developmental toxicity study[c]	Maternal toxicity	1 000 mg/kg bw per day[b]	–
		Embryo and fetal toxicity	1 000 mg/kg bw per day[b]	–
Dog[e]	Thirteen-week and 1-year studies of toxicity[d,e]	Toxicity	200 mg/kg bw per day	1 000 mg/kg bw per day

[a] Dietary administration.
[b] Highest dose tested.
[c] Gavage administration.
[d] Capsule administration.
[e] Two or more studies combined.

Estimate of acceptable daily intake (ADI) for sum of cyazofamid and CCIM, expressed as cyazofamid

0–0.2 mg/kg bw

Estimate of acute reference dose (ARfD) for cyazofamid

Unnecessary

Estimate of acute reference dose (ARfD) for CCIM

0.2 mg/kg bw

Information that would be useful for the continued evaluation of the compound

Results from epidemiological, occupational health and other such observational studies of human exposure

Critical end-points for setting guidance values for exposure to cyazofamid

Absorption, distribution, excretion and metabolism in mammals	
Rate and extent of oral absorption	Rapidly but dose-dependently absorbed (T_{max} < 1 h; absorption < 84% at low dose and < 6% at high dose)
Dermal absorption	No data
Distribution	Liver and kidney at low dose; more widely distributed at high dose
Potential for accumulation	No significant tissue accumulation

Rate and extent of excretion	Rapidly excreted (> 90% within 24 h)
Metabolism in animals	Hydrolysis, oxidation and conjugation with glutathione
Toxicologically significant compounds in animals and plants	Cyazofamid, CCIM
Acute toxicity	
Rat, LD_{50}, oral	> 5 000 mg/kg bw
Rat, LD_{50}, dermal	> 5 000 mg/kg bw
Rat, LC_{50}, inhalation	> 5.5 mg/L
Rabbit, dermal irritation	Slightly irritating to skin
Rabbit, ocular irritation	Slightly irritating to eye
Guinea-pig, dermal sensitization	Not sensitizing (maximization test)
Short-term studies of toxicity	
Target/critical effect	Kidney/basophilic tubule (rat)
Lowest relevant oral NOAEL	29.5 mg/kg bw per day (rat)
Lowest relevant dermal NOAEL	1 000 mg/kg bw per day (rat)
Lowest relevant inhalation NOAEC	No data
Long-term studies of toxicity and carcinogenicity	
Target/critical effect	Kidney/increased blood urea nitrogen, urine volume and kidney weight (rat)
Lowest relevant NOAEL	17.1 mg/kg bw per day (rat)
Carcinogenicity	Not carcinogenic in mice or rats[a]
Genotoxicity	
	No evidence of genotoxicity[a]
Reproductive toxicity	
Target/critical effect	Reduced body weight
Lowest relevant parental NOAEL	134 mg/kg bw per day (rat)
Lowest relevant offspring NOAEL	138 mg/kg bw per day (rat)
Lowest relevant reproductive NOAEL	936 mg/kg bw per day (highest dose tested; rat)
Developmental toxicity	
Target/critical effect	No toxic effect
Lowest relevant maternal NOAEL	1 000 mg/kg bw per day (highest dose tested; rat, rabbit)
Lowest relevant embryo/fetal NOAEL	1 000 mg/kg bw per day (highest dose tested; rat, rabbit)
Neurotoxicity	
Acute neurotoxicity NOAEL	2 000 mg/kg bw (highest dose tested; rat)
Subchronic neurotoxicity NOAEL	1 356 mg/kg bw (highest dose tested; rat)
Developmental neurotoxicity NOAEL	No data
Other toxicological studies	
Immunotoxicity NOAEL	1 381 mg/kg bw (highest dose tested; mouse)

Studies on toxicologically relevant metabolites	*CCIM* Oral LD_{50}: 324 mg/kg bw (rat) LOAEL: 100 mg/kg bw on the basis of clinical signs (rat) Not genotoxic in vitro
Medical data	
	No adverse effects noted in medical surveillance reports on manufacturing plant personnel

[a] Unlikely to pose a carcinogenic risk to humans from the diet.

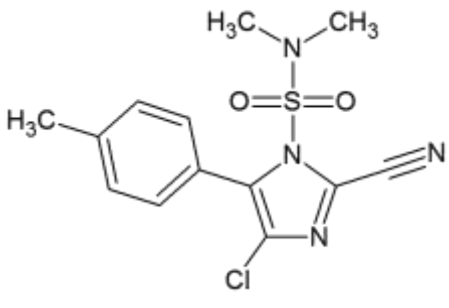
Summary

	Value	Study	Safety factor
Cyazofamid			
ADI	0–0.2 mg/kg bw	Two-year study of toxicity and carcinogenicity (rat)	100
ARfD	Unnecessary	–	–
CCIM			
ADI	Covered by ADI for parent		
ARfD	0.2 mg/kg bw	Acute toxicity study (rat)	500

RESIDUE AND ANALYTICAL ASPECTS

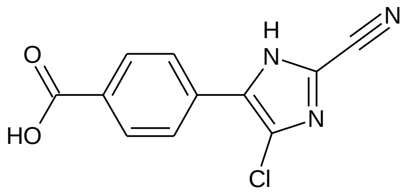
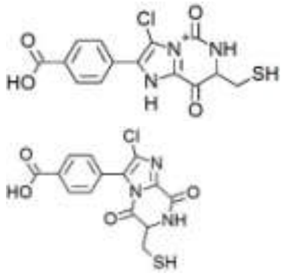
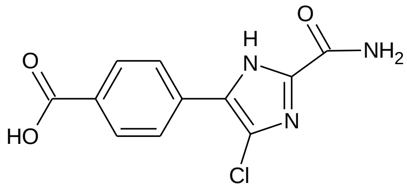
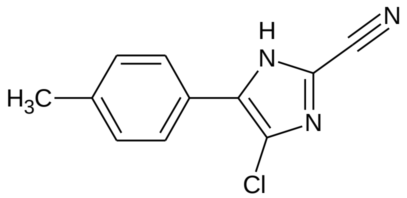
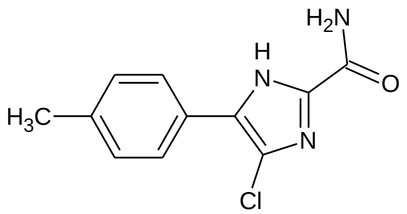
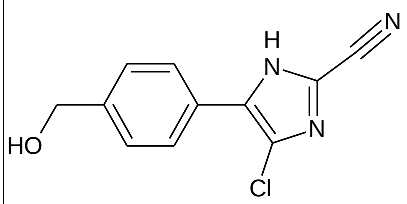
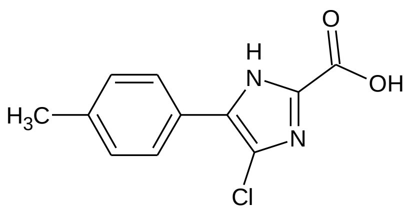
Cyazofamid (ISO common name, published) is a fungicide belonging to both the cyano-imidazole and sulphonamide classes of compounds. The biochemical mode of action is inhibition of all stages of fungal development. It was considered for the first time by the 2015 JMPR for toxicology and for residues.

The IUPAC name for cyazofamid is 4-chloro-2-cyano-*N,N*-dimethyl-5-*p*-tolylimidazole-1-sulfonamide and the CA name is 4-chloro-2-cyano-N,N-dimethyl-5-(4-methylphenyl)-1H-imidazole-1-sulfonamide, with registry number 120116-88-3.



Cyazofamid with ^{14}C radiolabelling in the benzene ring or in the imidazole ring was used in the metabolism and environmental fate studies. In this appraisal, these positions are referred to as the Bz and Im labels, respectively.

The following abbreviations, along with IUPAC names and structures, are used for the metabolites discussed in this appraisal:

CCBA	4-(4-chloro-2-cyanoimidazol-5-yl)benzoic acid	
CCBA (cysteine conjugates)		
CCBA-AM	4-(4-chloro-2-amidoimidazol-5-yl)benzoic acid	
CCIM	4-chloro-5-p-tolylimidazole-2-carbonitrile	
CCIM-AM	4-chloro-5-p-tolylimidazole-2-carboxamide	
CHCN	4-chloro-5-(4-hydroxymethylphenyl) imidazole-2-carbonitrile	
CTCA	4-chloro-5-p-tolylimidazole-2-carboxylic acid	

Plant metabolism

The Meeting received studies depicting the metabolism of cyazofamid in grapes, tomatoes, lettuce, and potatoes. All of the studies were conducted with cyazofamid which was radiolabelled, separately, in the benzene and imidazole rings.

Cyazofamid was applied five times, at ca. 100 g ai/ha at 21–25-day intervals, to grapevines growing in the field. Grapes were harvested 44 days after the last application (DALA). TRR in grapes was greater following treatment with Bz-labelled material (0.53 mg eq/kg, 0.89% of applied) than with Im-labelled material (0.31 mg eq/kg, 0.62% of applied). When processed into wine, radioactivity distributed primarily into the marc (wet pomace; 70% TRR, 3.7 mg eq/kg), with significantly lesser amounts in the vin de goutte (juice prior to pressing; 15% TRR, 0.21 mg eq/L) and vin de presse (juice after pressing; 10% TRR, 0.32 mg eq/L), indicating radioactivity may have been associated with surface residues. For grapes processed into juice, a similar trend was observed: 54% TRR (1.4mg eq/kg) in the marc and 33% TRR (0.3 mg eq/L) in the juice. Neither characterization nor identification of residues was reported in the study.

Metabolism of cyazofamid on tomatoes was investigated following treatment of field-grown plants with four foliar applications of cyazofamid at approximately 60, 95, 95, and 95 g ai/ha at 7-day intervals. In fruits harvested 1 DALA, TRR (surface rinses + juice + pulp) was 0.08 mg eq/kg from the Im treatment and 0.29 mg eq/kg from the Bz treatment. Of the total residue, the majority was contained in the surface rinse (54% and 83% for the Im and Bz labels, respectively). Of the radioactivity remaining in the fruits after rinsing, 71–81% TRR (ca. 0.033 mg eq/kg) was associated with the pulp and 13–29% TRR (ca. 5.5 mg eq/kg) was associated with the juice. Extraction of the pulp with, sequentially, hexane, ethyl acetate, and water released 75% of the radioactivity from the Bz-labelled sample and 90% from the Im-labelled sample. The principal residue from both labels was parent cyazofamid (ca. 78% TRR; 0.064 mg eq/kg Im, 0.22 mg/kg Bz), which is not unexpected given the short interval between application and harvest. The next-highest identified residue was CCIM (ca. 4–5% TRR, 0.004–0.13 mg/kg). A chromatographic fraction which was shown to consist primarily of radiolabelled sugars and citric acid accounted for 2.5–5.4% TRR (0.002–0.16 mg eq/kg), indicating breakdown of cyazofamid and incorporation into natural plant constituents.

Metabolism in lettuce was investigated following foliar treatment of glasshouse-grown plants. Three applications were made at a nominal rate of 100 g ai/ha on 14-day intervals. The test material was a mixture of cyazofamid labelled, separately, in the Im and Bz positions (in a 1:1 ratio). Lettuce leaves were harvested 14 DALA. Total radioactive residues were 0.85 mg eq/kg in the harvested leaves and 97% of the residues were extracted with ACN:H_2O (60:40, v/v with 0.1% acetic acid). Cyazofamid made up 89% of the TRR (0.76 mg/kg). No other compounds occurred at > 10% TRR. CCIM occurred at 3.7% TRR (0.031 mg/kg). Radioactivity in natural plant constituents occurred at 3.3% TRR (0.028 mg eq/kg). Based on analysis of the post-extraction solids (PES), those plant constituents consisted of starch and other water-soluble polysaccharides, protein, cellulose, and lignin.

Metabolism of cyazofamid was investigated in both field-grown and glasshouse-grown potatoes. In the field study, three foliar applications were made at rates of 100 or 400 g ai/ha. In the glasshouse study, five foliar applications were made at a rate of 400 g ai/ha. In both cases, applications were made on a 7-day interval and harvesting was done 7 DALA. In foliage, nearly all of the residue was cyazofamid. In tubers, the majority of the radioactivity was associated with the pulp. Sequential extractions of the pulp with ACN, ACN:H_2O (80:20, v/v), and ACN:H_2O (50:50, v/v) released 43 to 70% of the radioactivity, with the Bz-labelled samples generally being at the higher end of that range. In rinses of the tubers, the majority of the residue was cyazofamid (67–80% TRR, 0.0009–0.0018 mg/kg) and CCIM (14–20% TRR, 0.003 mg/kg); whereas in the tuber itself, the majority of the radioactivity was associated with starch (23–30% TRR, 0.005 mg/kg). Cyazofamid and CCIM were both < 5% TRR in tubers.

In plant metabolism studies with identification of residues, cyazofamid was the major residue in aerial portions of the plants and there was consistent demonstration of incorporation of radioactivity into natural plant components. The available data indicate that cyazofamid is translocated. The metabolite CCIM was consistently identified in these studies but never occurred at greater than 10% TRR.

Animal metabolism

The Meeting received studies elucidating the metabolism of cyazofamid in laboratory animals, lactating goats, and laying hens.

In rats, cyazofamid is well absorbed at doses relevant to dietary exposure, and rapidly metabolised, with the majority of excretion occurring via urine. In the plasma, there was no cyazofamid and the majority of radiolabel was CCIM. At 0.5 hours after a dose of [^{14}C-Bz]-CCIM, all of the radiolabel in the stomach contents was CCIM, and most of the radiolabel in liver (76.5%) and plasma (67.9%) was CCIM. CCBA, the main metabolite seen in these tissues 0.5 hours after dosing with CCIM, was also found in the blood and liver from the animals dosed with cyazofamid. Concentrations in blood and liver were greater in the CCIM-dosed animals than that in cyazofamid treated animals, suggesting that CCIM was much more rapidly absorbed than cyazofamid.

In goats dosed for five consecutive days at approximately 32 mg/animal/day (Im) or 25 mg/animal/day (Bz; both equivalent to 10 ppm in the diet), overall recovery of radioactivity was ca. 60% of the administered dose (AD). Most of the recovered radioactivity was in urine and faeces, with only 0.22% (Im) or 0.18% (Bz) of the AD accounted for in tissues. Despite the low retention of radioactivity, sufficient residues were present to characterize and identify specific compounds in all tissues. Total radioactive residues (TRR) in urine and faeces appeared to plateau by Day 3 of dosing. In milk from Bz-treated goats, TRR remained near the limit of quantification (LOQ, 0.005 mg eq/kg) for the duration of the dosing period. TRR did not plateau during the dosing period for the Im label, rising steadily from 0.005 mg eq/kg to 0.10 mg eq/kg. Aside from this difference in milk, there was little difference in the behaviour of cyazofamid based on the position of the radiolabel. Solvent (ACN or ACN:H_2O) extracted 74% TRR, 90% TRR, and 100% TRR in muscle, milk, and fat, respectively, and sequential extraction with ACN and ACN:H_2O extracted 92% TRR from kidney. For liver, the same sequential solvents used for kidney extracted only ca. 50% TRR. An additional 45% TRR was released from liver, in total, using HCl, NaOH, and protease treatments of the post-extraction solids (PES). Liver and kidney contained the highest levels of radioactivity (ca. 0.1 mg eq/kg). In other tissues and in milk, radioactivity was approximately an order of magnitude lower than in liver/kidney. Cyazofamid residues were < 0.001 mg/kg (0.1–0.3% TRR) in all tissues. The principal residues in tissues and milk were CCBA (free or cysteine-conjugated), CCIM, and their amide analogs. Total CCBA-related residues ranged from 12% TRR (< 0.002 mg/kg; muscle) to 85% TRR (0.090 mg/kg; kidney), and total CCIM-related residues ranged from 5.3% TRR (0.006 mg/kg; kidney) to 39% TRR (< 0.003 mg/kg; fat); the highest concentrations of CCIM-related residues was in liver, at 0.016 mg/kg (14% TRR). The chromatographic system used in the goat metabolism studies was generally not able to separate CCBA and its cysteine conjugate, and those residues were typically the main residues in all tissues.

In hens dosed for five consecutive days at 1.1 mg/bird/day (10 ppm in the diet), total radioactive residues (TRR) in excreta accounted for approximately 85–90% of the dosed material, and < 0.1% of the AD was retained in tissues/eggs. Total radioactive residues were < 0.006 mg eq/kg in all samples of eggs, muscle, blood, fat, and skin. Residue plateau in eggs could not be assessed. Acetonitrile + ACN:H_2O extraction was not efficient at solubilizing residues in kidney (ca. 50% TRR) and liver (ca. 30% TRR); however, chemical and enzymatic treatment of the resulting PES was able to release the unextracted residues, resulting in 100% recovery of TRR. In kidney, the only identified compounds occurring at > 10% TRR were CCBA (solvent-extracted; 12% TRR, 0.0035–0.0064 mg/kg), and CHCN conjugates (not further identified; solvent-extracted; 17% TRR, 0.005–0.010 mg/kg and PES acid hydrolysate; 30–67% TRR, 0.003–0.010 mg/kg). Two unidentified fractions from the acid-hydrolysate treatment, CM-2 and CM-3, accounted for ca. 15% TRR (0.001 mg eq/kg) each. Residue profiles in liver were similar to those in kidney, consisting of CCBA (acid hydrolysate only, 14% TRR, 0.002 mg/kg), CHCN conjugates (solvent extract, 12% TRR, 0.011 mg eq/kg; acid hydrolysate, 47% TRR, 0.0073 mg eq/kg), and CM-2/CM-3 (acid hydrolysate, 13% TRR, 0.002 mg eq/kg).

Overall, the animal metabolism studies show that the majority (99+%) of the dosed radioactivity is excreted. In goat, the principal terminal residues are CCBA, CCIM, and their related conjugates and amides. In hens, the principal terminal residues are CCBA, CHCN, and their conjugates. Although CCBA is common to both species, the formation of that compound appears to occur through different pathways.

Environmental fate

Cyazofamid is prone to hydrolysis (25 °C, pH 4, 7, 9). The main product of hydrolysis at 25 °C at all pH levels was CCIM, which represented ca. 82% of the radioactivity at pHs of 4, 5, and 7, and 77% at pH 9. At pH 9, CCIM-AM was found at level of ca. 10% of the radioactivity. CCIM itself is stable to hydrolysis. Cyazofamid is also prone to photolysis in aqueous systems [DT_{50} of 30 minutes], forming CCIM and CCTS; both of which undergo further photolysis. In soil, photolysis does not appear to be a significant pathway for degradation since dissipation was similar in both irradiated and dark samples.

In an aerobic soil metabolism study, cyazofamid had DT_{50} estimates of ca. five days and DT_{90} estimates ranging from 16 to 25 days. The major residues following treatment with cyazofamid were CCIM (peak on Day 3, ca. 20% AD, ca 0.025 mg eq/kg), CCIM-AM (peak on Day 7, 13% AD, 0.016 mg eq/kg), and CTCA (peak ca. Day 20 at ca. 20% of the applied dose, 0.025 mg eq/kg). The aerobic soil metabolism study also showed an increase in unextracted residues over time (up to 64% at study termination) as well as production of $^{14}CO_2$ (14% of applied material by study termination). In unextracted residues, radioactivity was associated predominantly with fulvic acid as well as humin and humic acid.

In a study with confined rotational crops, bare soil was treated with 5× 100 g/ha (for both radiolabel positions on a 7-day interval). Crops of lettuce, carrot, and wheat were put into the treated soil at plant-back intervals (PBIs) of 31, 120, and 360 days. For all PBIs, residues in lettuce, carrot root, carrot tops (Days 120 and 360), and wheat grain were too low to allow residue identification/characterization. In carrot tops (Day 31 only), residues of CCBA (2.2% TRR), CCIM (10.4% TRR), CCIM-AM (39.5% TRR, 0.001 mg/kg), and cyazofamid (20.1% TRR, 0.003 mg/kg) were identified. In wheat chaff, forage and straw, residues were associated primarily with carbohydrates (0.01–0.20 mg eq/kg). Residues of cyazofamid and metabolites were ≤ 0.003 mg eq/kg in those matrices. No field rotational crop or field dissipation studies were provided. The Meeting concluded that the confined rotational crop study adequately reflects critical gap conditions and that residues are not expected in rotational crops following treatments according to the GAPs under consideration.

Overall, there are no indications that cyazofamid or any of its degradation products are expected to accumulate in soils. Significant dissipation pathways in an agricultural system appear to be hydrolysis and potentially photolysis. The DT_{90} estimates for cyazofamid in the aerobic soil metabolism study indicate that applications made more than ca. 1 month prior to harvest will not contribute significantly to the residue levels in harvested crops.

Methods of residue analysis

The Meeting received analytical methods for the analysis of cyazofamid and CCIM in plant matrices. Method validation recoveries were reported for grapes, cucurbit vegetables, root crops, Brassica vegetables, leafy vegetables, beans, peppers, and hops. Three methods for plant matrices underwent independent laboratory validation. No methods were submitted for analysis of animal materials or soil (aside from the techniques used in the studies with radiolabelled material).

In summary, extraction of residues in field trial samples was accomplished with ACN, ACN:H_2O (80:20, v/v), ACN:H_2O w/ 2% acetic acid (50:50, v/v), ACN:acetone (80:20, v/v) or acetone. Extracted residues were then generally cleaned up by partitioning into a non-polar organic solvent, with additional clean-up by solid-phase extraction (or in one case gel-permeation chromatography). Analysis of residues was by LC-MS/MS, HPLC-UV, or GC-NPD. Three methods underwent independent laboratory validation. For those methods, extraction of cyazofamid and CCIM is by ACN:acetone, H_2O followed by acetonitrile, or acetonitrile only. Clean-up varies across the three methods, consisting of traditional solid-phase extraction (C_{-18}), dispersive solid-phase extraction (magnesium sulphate, sodium chloride, sodium citrate dibasic sesquihydrate, and sodium citrate tribasic dehydrate), or liquid/liquid partitioning (hexane and methylene chloride, sequentially) with Florisil® solid-phase extraction. For the validated methods, residue separation and quantitation is by LC-MS/MS in positive ionisation mode or by HPLC-UV (280 nm). For LC-MS/MS, evaluated ion transitions [M+H+] for quantification were 325.1 m/z→108.0 m/z for cyazofamid and 218.3 m/z→183.2 m/z for CCIM. Confirmation of cyazofamid is made using the same ion transitions, but with a cyano column on a gradient mobile phase. Confirmation of CCIM is based on a mass transition of 218.3 m/z→139.2 m/z. Based on results from other submitted studies, a confirmatory transition for cyazofamid is available (325.1 m/z→261.2 m/z). Method validation testing resulted in percent recoveries for cyazofamid ranging from 70 to 111% (except for raisins at 67%) and for CCIM ranging from 74 to 120% (except for potato chips at 68%). For both analytes in all matrices, relative standard deviations of recovery were less than 21%. An LOQ of 0.01 mg/kg was achieved for all matrices and analytes.

The solvent used for extraction is similar to that used in the metabolism studies with lettuce and potato (the first two extraction solvents in the tomato metabolism study were much less polar). On that basis, the methods are expected to have adequate extraction efficiency of incurred residues.

Testing of cyazofamid and CCIM through the FDA PAM multi-residue method protocols demonstrated that for most protocols, the test compounds showed poor sensitivity, poor recovery, and/or poor chromatography. An open-literature study [1] demonstrated good recovery of both cyazofamid (80% to 105%) and CCIM (75% to 99%) from fortified crop samples using the QuEChERS method, with relative standard deviations of ≤ 16%.

Analytical methods are available for analysis of cyazofamid and CCIM in plant commodities. Analytical methods for the analysis of cyazofamid residues in animal commodities were not provided.

Stability of residues in stored analytical samples

The Meeting received data indicating that residues of cyazofamid and CCIM are stable under frozen conditions as follows:

Matrix	Cyazofamid	CCIM
Grape (homogenized)	Up to 8 days	No Data
Grape (unhomogenized)	At least 365 days	No Data
Basil (fresh)	At least 284 days	Not stable [a] (less than 284 days)
Basil (dried)	At least 297 days	Not stable [a] (less than 297 days)
Hops cones	At least 509 days	At least 509 days
Cabbage	At least 860 days	At least 860 days
Tomato	Up to 365 days	At least 1093 days
Lettuce	At least 634 days	At least 634 days
Mustard greens	At least 977 days	At least 977 days
Spinach	At least 949 days	At least 949 days
Bean plants with pods	At least 889 days	At least 889 days
Bean pods with seeds	At least 887 days	At least 887 days
Been seeds without pods	At least 140 days	At least 140 days
Dry beans	At least 400 days	At least 400 days
Carrot	Not stable [a] (less than 374 days)	Not stable [a] (less than 374 days)
Potato	Up to 181 days	Up to 181 days

[a] Residues were measured only at the indicated storage period, and the amount remaining was < 70%. Basil and carrot samples were analysed on the same day as extraction.

Cyazofamid and CCIM were demonstrated to be stable in extracts of oilseed rape and dry beans for at least four days. Stability of these analytes in extracts from other matrices was not reported.

[1] Lee, H. Kim, E, Lee, JH. Sung, JH, Choi, H, and Kim, JH. 2014. Bull Environ Contam Toxicol 93(5):586-90. Analysis of cyazofamid and its metabolite in the environmental and crop samples using LC-MS/MS.

Definition of the residue

In plants, parent cyazofamid was the only compound to occur as a major residue in metabolism studies, and suitable methods are available for analysis. CCIM was consistently identified in metabolism studies as a minor residue and occurred at levels that were typically at least five-fold lower than cyazofamid, and typically < 0.01 mg/kg, in supervised residue trials. The Meeting considered residues of cyazofamid in rotational crops and concluded that uptake of residues from soil into rotational crops will be insignificant. Cyazofamid is expected to degrade during the production of processed products; especially those in which heating and/or hydrolysis occurs, resulting in the formation of CCIM. Nevertheless, levels of CCIM in processed commodities are generally low.

Cyazofamid exhibited low acute oral toxicity, and there was an absence of developmental toxicity and any other toxicological effects that would be likely to be elicited by a single dose. The primary plant metabolite, CCIM, however, was more acutely toxic than the parent compound and resulted in clinical signs at all doses tested in acute toxicity studies. For long-term exposures, the toxicity of CCIM is adequately addressed by parent cyazofamid.

The Meeting concluded that the residue definition for enforcement of MRLs in plant commodities is the parent compound, cyazofamid, only. Furthermore, the Meeting concluded that the residue definition for assessing long-term dietary intake from plant commodities is the combined residues of cyazofamid and CCIM, expressed as cyazofamid. An ARfD is not necessary for cyazofamid; however, the current Meeting established an ARfD for CCIM, and the residue definition for assessing short-term dietary intake from plant commodities is CCIM.

Studies depicting the nature of the residues in animals show generally low transfer of residues to tissues, milk, and eggs. Metabolism studies indicate that of the amount retained, residues are expected to be highest in offal and lower by approximately an order of magnitude in other matrices. Cyazofamid was not detected in any livestock matrix. The metabolite CCBA (free and as cysteine conjugates) was consistently found as a major residue (> 10% TRR, ranging from 0.002 mg/kg to 0.09 mg/kg) in goat and hen commodities. Data from goat kidney indicate that the cysteine conjugates form the majority of the CCBA residues (separate free/conjugated residue data were not reported for other matrices). The Meeting was uncertain about the relative amounts of free and cysteine-conjugated CCBA in tissues other than liver and about the availability of reference standards for cysteine-conjugated CCBA. The Meeting agreed not to establish residue definitions for livestock commodities.

Definition of the residue for compliance with the MRLs for plant commodities: *Cyazofamid.*

Definition of the residue for long-term dietary intake from plant commodities: *Cyazofamid and CCIM, expressed as cyazofamid.*

Noting that the current meeting established an ARfD for CCIM (in the absence of an ARfD for cyazofamid), the definition of the residue for short-term dietary intake from plant commodities is *CCIM*.

Definition of the residue for compliance with the MRLs and for dietary intake for animal commodities: *Not defined.*

Results of supervised residue trials on crops

The Meeting received supervised residue trial data for grapes, basil, hops, broccoli, cabbage, cucumber, summer squash, muskmelon, peppers, tomatoes, head and leaf lettuce, mustard greens, spinach, snap beans, lima beans, carrots, and potatoes. The trials were conducted in the USA for all crops, as well as Argentina, Europe (north and south), and Mexico for grapes; Germany for hops; Canada for lettuces; and Brazil and Canada for potatoes. For basil, residue data reflect both field and glasshouse growing conditions. All residue results are supported by adequate method and storage stability data unless otherwise noted.

For field trials with cabbage, all cabbage heads were cut in the field in order to reduce the size/weight of the sample; for lettuce and muskmelon, some samples were cut in the field. A comparison of the residue levels in field-cut and uncut samples indicates that field-cutting did not compromise the quality of the residue data obtained from field-cut samples.

For estimating dietary intake, combined residues (cyazofamid + CCIM) were calculated by multiplying the individual sample results from field trials of CCIM by the molecular weight factor of 1.49 (cyazofamid molecular weight = 324.8, CCIM molecular weight = 217.7) and adding the result to the corresponding residue of cyazofamid. For residues below the LOQ, the residue was assumed to be at the LOQ for calculation purposes; the "less than" designation was retained only if both residues were below the LOQ. Examples are shown below:

Cyazofamid	CCIM	Combined (expressed to two significant figures)
0.5 mg/kg	0.06 mg/kg	0.5 mg/kg + (0.06 mg/kg × 1.49) = 0.59 mg/kg
0.5 mg/kg	< 0.01 mg/kg	0.5 mg/kg + (0.01 mg/kg × 1.49) = 0.51 mg/kg
< 0.01 mg/kg	0.06 mg/kg	0.01 mg/kg + (0.06 mg/kg × 1.49) = 0.099 mg/kg
< 0.01 mg/kg	< 0.01 mg/kg	< 0.01 mg/kg + (< 0.01 mg/kg × 1.49) = < 0.025 mg/kg

Grapes

In grapes, the critical GAP based on highest application rate and shortest PHI is from the registration in Germany (eight foliar applications at 0.1 kg ai/ha on a 12- to 14-day interval with a 21-day PHI). Only a single field trial is available from Germany; however, additional residue trials matching the critical GAP are available from France, Italy, Spain, and Portugal. The Meeting noted that in all of these trials, grapes were stored as whole berries and, therefore, the residue levels are supported by the available storage stability data.

Mean field trial residues of cyazofamid from independent field trials matching the critical GAP (n=7) were: 0.01, 0.03, 0.04, 0.04, 0.06, 0.09, and 0.66 mg/kg.

Based on those data, the Meeting estimated a maximum residue level for grapes of 1.5 mg/kg.

From the trials cited above, residues of CCIM were (n=7): < 0.01 (7) mg/kg. For assessing short-term dietary intake from grapes, the HR, from a single sample, is 0.01 mg/kg.

From the trials cited above, the combined residues of cyazofamid and CCIM, expressed as cyazofamid, were (n=7): 0.02, 0.04, 0.05, 0.06, 0.08, 0.1, and 0.67 mg/kg. For assessing long-term dietary intake from grapes, the STMR from that data set is 0.06 mg/kg.

Brassica (Cole or Cabbage) Vegetables, Head Cabbage, Flowerhead Brassicas

The critical GAP is from the registration of cyazofamid on the Brassica (Cole) leafy vegetables crop group in the USA (one soil application at 0.753 kg ai/ha followed by five foliar applications at 0.08 kg ai/ha on a 7-10-day interval with a zero-day PHI). Supervised residue trials matching this GAP are available from the USA.

Mean field trial residues of cyazofamid in broccoli from independent field trials matching the critical GAP (n=5) were: 0.23, 0.34, 0.37, 0.46, and 0.84 mg/kg.

Mean field trial residues of cyazofamid in cabbage (with wrapper leaves) from independent field trials matching the critical GAP (n=9) were: 0.13, 0.15, 0.20, 0.25, 0.28, 0.30, 0.32, 0.56, and 0.75 mg/kg.

Noting that the residue trials address crops in the Codex commodity designation Brassica (Cole or cabbage) vegetables, head cabbage, flowerhead Brassicas and that the median residues from each crop are within a 5-fold range, the Meeting determined that a group MRL is appropriate. The cyazofamid residue data across the test crops are not significantly different by the Kruskal-Wallis test; therefore, the Meeting grouped the data together and is estimating a group maximum residue level for Brassica (Cole or cabbage) vegetables, head cabbage, flowerhead Brassicas based on the following cyazofamid residue data set (n=14): 0.13, 0.15, 0.20, 0.23, 0.25, 0.28, 0.30, 0.32, 0.34, 0.37, 0.46, 0.56, 0.75, and 0.84 mg/kg.

Based on those data, the Meeting estimated a maximum residue level for Brassica (Cole or cabbage) vegetables, head cabbage, and flowerhead Brassicas of 1.5 mg/kg.

From the trials cited above, residues of CCIM were (n=14): < 0.01 (11), 0.012, 0.014, and 0.023 mg/kg. For assessing short-term dietary intake from Brassica (Cole or cabbage) vegetables, head cabbage, flowerhead Brassicas, the HR, from a single sample, is 0.025 mg/kg.

From the trials cited above, the combined residues of cyazofamid and CCIM, expressed as cyazofamid, were (n=14): 0.14, 0.16, 0.21, 0.24, 0.26, 0.3, <u>0.31</u>, 0.33, 0.35, 0.38, 0.47, 0.58, 0.78, and 0.85 mg/kg. For assessing long-term dietary intake from Brassica (Cole or cabbage) vegetables, head cabbage, flowerhead Brassicas, the STMR from that data set is 0.31 mg/kg.

Fruiting vegetables, Cucurbits

The critical GAP is from the registration of cyazofamid on the cucurbit vegetables crop group in the USA (six foliar applications at 0.08 kg ai/ha on a 7–10-day interval with a zero-day PHI). Supervised residue trials matching this GAP are available from the USA.

Mean field trial residues of cyazofamid in <u>cucumber</u> from independent field trials matching the critical GAP (n=4) were: 0.01 and 0.02 (3) mg/kg.

Mean field trial residues of cyazofamid in <u>summer squash</u> from independent field trials matching the critical GAP (n=4) were: 0.02 (2) and 0.04 (2) mg/kg.

Mean field trial residues of cyazofamid in <u>muskmelon</u> from independent field trials matching the critical GAP (n=6) were: < 0.01, 0.02 (3), 0.03 (2), and 0.06 mg/kg.

Noting that the residue trials address crops in the Codex commodity designation Fruiting Vegetables, Cucurbits and that the median residues from each crop are within a 5-fold range, the Meeting determined that a group MRL is appropriate. The cyazofamid residue data across the test crops are not significantly different by the Kruskal-Wallis test; therefore, the Meeting grouped the data together and is estimating a group maximum residue level for Fruiting Vegetables, Cucurbits based on the following cyazofamid residue data set (n=14): < 0.01, 0.01, 0.02 (5), 0.03 (2), 0.04 (2), and 0.06 mg/kg..

Based on those data, the Meeting estimated a maximum residue level for Fruiting Vegetables, Cucurbits of 0.09 mg/kg.

From the trials cited above, residues of CCIM were (n=14): < 0.01 (12) and 0.01 (2) mg/kg. For assessing short-term dietary intake from Fruiting Vegetables, Cucurbits, the HR, from a single sample, is 0.01 mg/kg.

From the trials cited above, the combined residues of cyazofamid and CCIM, expressed as cyazofamid, were (n=14): 0.02 (2), 0.03, <u>0.04</u> (7), 0.04, 0.06 (2), and 0.08 mg/kg. For assessing long-term dietary intake from Fruiting Vegetables, Cucurbits, the STMR from that data set is 0.04 mg/kg.

Fruiting vegetables, other than Cucurbits (except Sweet Corn and Mushroom)

The critical GAP is from the registration of cyazofamid on the fruiting vegetables crop group in the USA (six foliar applications at 0.08 kg ai/ha on a 7–10-day interval with a zero-day PHI). Supervised residue trials matching this GAP are available from the USA.

Mean field trial residues of cyazofamid in <u>peppers, sweet (including pimento or pimiento)</u> from independent field trials matching the critical GAP (n=6) were: 0.038, 0.055, 0.058, 0.072, 0.098, and 0.22 mg/kg.

Mean field trial residues of cyazofamid in <u>peppers, chili</u> from independent field trials matching the critical GAP (n=3) were: 0.24, 0.25, and 0.31 mg/kg.

Mean field trial residues of cyazofamid in <u>tomatoes</u> from independent field trials matching the critical GAP (n=14) were: < 0.010, 0.025, 0.030 (2), 0.035, 0.040, 0.050 (4), 0.065, 0.075, 0.11, and 0.15 mg/kg.

Noting that the residue trials in the USA address crops in the Codex commodity designation Fruiting Vegetables, Other Than Cucurbits (except Sweet Corn and Mushrooms), the Meeting considered whether a group MRL is appropriate. Based on the five-fold difference in the median residue values, The Meeting concluded that a group recommendation is appropriate. Analysis of the data set by the Kruskal-Wallis test indicated that the residues are not from the same populations and should not be combined when estimating the maximum residue level. Of the crops in this category, field trials with chilli pepper resulted in the greatest median residue level and greatest overall single-sample residue; however, the number of trials on chilli pepper is insufficient for making a group recommendation and the Meeting decided to make recommendations for the individual crops.

The Meeting estimated a maximum residue levels for sweet peppers at 0.4 mg/kg, for chilli peppers at 0.8 mg/kg, and for tomato at 0.2 mg/kg. Furthermore, the Meeting extrapolated the tomato data to eggplant and estimated a maximum residue level for eggplant at 0.2 mg/kg.

From the trials cited above, residues of CCIM and their associated HRs (from single samples) for assessing short-term dietary intake were as follows:

Sweet pepper (n=5): < 0.01 (4) and 0.012 mg/kg [HR = 0.014 mg/kg]

Chili pepper (n=3): 0.012 and 0.014 (2) mg/kg [HR = 0.017 mg/kg]

Tomato (n=15): < 0.01 (13), 0.01, and 0.015 mg/kg [HR = 0.02 mg/kg]; and by extension,

Eggplant: [HR = 0.02 mg/kg].

From the trials cited above, the combined residues of cyazofamid and CCIM, expressed as cyazofamid, and their associated STMRs for assessing long-term dietary intake were as follows:

Sweet pepper (n=5): 0.05, 0.07, <u>0.07</u>, 0.09, and 0.24 mg/kg [STMR = 0.072 mg/kg]

Chilli pepper (n=3): <u>0.27</u> (2) and 0.33 mg/kg [STMR = 0.027 mg/kg];

Tomato (n=15): 0.02 (2), 0.04 (3), 0.05, <u>0.06 (5)</u>, 0.08, 0.09, 0.13, and 0.16 mg/kg [STMR = 0.06 mg/kg]; and by extension, Eggplant: [STMR = 0.06 mg/kg].

Leafy Vegetables (Including Brassica Leafy Vegetables)

The critical GAPs are from the registration of cyazofamid on the leafy greens crop subgroup in the USA (six foliar applications at 0.08 kg ai/ha on a 7–10-day interval with a zero-day PHI) and *Brassica* (Cole) leafy vegetables crop group in the USA (for mustard greens; one soil application at 0.753 kg ai/ha followed by five foliar applications at 0.08 kg ai/ha on a 7–10-day interval with a zero-day PHI). Supervised residue trials matching this GAP are available from Canada (head lettuce only) and the USA.

Mean field trial residues of cyazofamid in <u>head lettuce</u> from independent field trials matching the critical GAP (n=11) were: 0.070, 0.20, 0.26, 0.46, 0.63 (2), 0.73, 1.2, 1.5, 1.7, and 1.8 mg/kg.

Mean field trial residues of cyazofamid in <u>leaf lettuce</u> from independent field trials matching the critical GAP (n=11) were: 0.53, 0.76, 0.87, 0.89, 1.4, 1.8, 2.7, 2.8, 3.0, 4.0, and 4.4 mg/kg.

Mean field trial residues of cyazofamid in <u>mustard greens</u> from independent field trials matching the critical GAP (n=9) were: 1.4, 1.9, 3.3, 3.4, 3.5, 3.7, 5.5, 6.0, and 6.3 mg/kg.

Mean field trial residues of cyazofamid in <u>spinach</u> from independent field trials matching the critical GAP (n=10) were: 1.6, 2.0 (2), 2.2, 2.9, 3.3, 3.4, 3.6, 4.6, and 6.4 mg/kg.

Noting that the residue trials address crops in the Codex commodity designation Leafy Vegetables, the Meeting considered whether a group MRL is appropriate. The differences in median residue values across all four crops is greater than five-fold, indicating that a crop group recommendation is not appropriate. As median residue values for head lettuce, leaf lettuce, and spinach are within a five-fold range, the Meeting decided to make a recommendation for leafy vegetables, except Brassica leafy vegetables and to use data from mustard greens to make a recommendation for Brassica leafy vegetables.

Analysis of the residue data for lettuces and spinach by Kruskal-Wallis indicates that the residues are not from the same population and should not be combined when estimating the maximum residue level. Of these crops, the data from spinach has the highest median and highest residue.

On the basis of the data from spinach, the Meeting estimated a maximum residue level for Leafy Vegetables, except Brassica Leafy Vegetables at 10 mg/kg.

From the trials cited above, residues of CCIM and their associated HRs (from single samples) for assessing short-term dietary intake were as follows:

Head lettuce (n=11): < 0.010 (4), 0.01, 0.011, 0.013, 0.017 (2), 0.022, and 0.026 mg/kg [HR = 0.029 mg/kg];

Leaf lettuce (n=11): 0.011, 0.012, 0.016, 0.021, 0.025, 0.027, 0.037, 0.041 (2), 0.042, and 0.044 mg/kg [HR = 0.05 mg/kg];

Spinach (n=10): 0.029, 0.034, 0.045, 0.049, 0.05, 0.059, 0.088, 0.093, 0.12, and 0.14 mg/kg [HR = 0.15 mg/kg].

From the trials cited above, the combined residues of cyazofamid and CCIM, expressed as cyazofamid, and their associated STMRs for assessing long-term dietary intake were as follows:

Head lettuce (n=11): 0.08, 0.21, 0.27, 0.47, 0.64, 0.65, 0.74, 1.2, 1.5, 1.7, and 1.8 mg/kg [STMR = 0.65 mg/kg]

Leaf lettuce (n=11): 0.55, 0.80, 0.89, 0.93, 1.4, 1.8, 2.8, 2.9, 3.0, 4.1, and 4.5 mg/kg [STMR = 1.8 mg/kg];

Spinach (n=10): 1.6, 2.0, 2.1, 2.2, 3.0, 3.4, 3.5, 3.7, 4.8, and 6.6 mg/kg [STMR = 3.2 mg/kg].

For estimating dietary intake of the combined residues of cyazofamid and CCIM from leafy vegetables, except Brassica leafy vegetables, the data from spinach provide the highest residue estimate, with an STMR of 3.2 mg/kg.

For Brassica leafy vegetables, the Meeting estimated a maximum residue level of 15 mg/kg based on the data from mustard greens.

Residues of CCIM were (n=9): 0.032, 0.035 (2), 0.05, 0.053, 0.092, 0.11, 0.15, and 0.18 mg/kg. For assessing short-term dietary intake from Brassica leafy vegetables, the HR, from a single sample, is 0.19 mg/kg.

Combined residues of cyazofamid and CCIM in Mustard Greens were (n=9): 1.6, 2.0, 3.3, 3.5, 3.7, 4.0, 5.6, 6.1, and 6.4 mg/kg. For assessing long-term dietary intake from Brassica leafy vegetables, the STMR from that data set is 3.7 mg/kg.

Beans and beans, shelled

The critical GAP is from the registration of cyazofamid on beans (succulent podded and succulent shelled) in the USA (six foliar applications at 0.08 kg ai/ha on a 7–14-day interval with a zero-day PHI). Supervised residue trials in lima beans matching this GAP are available from the USA.

Mean field trial residues of cyazofamid in lima beans from independent field trials matching the critical GAP (n=6) were: < 0.010 (5) and 0.040 mg/kg.

Mean field trial residues of cyazofamid in snap beans from independent field trials matching the critical GAP (n=8) were: 0.018, 0.046, 0.059, 0.10, 0.12, 0.19, and 0.20 (2) mg/kg.

Noting that the residue trials in the USA address crops in the Codex commodity designation Legume Vegetables, the Meeting considered whether a group MRL is appropriate. Based on the spread in the median residue values, the Meeting determined that the residues from the trials are too dissimilar and that a group MRL is not appropriate.

The Meeting used the residue data from lima beans to estimate a maximum residue level for beans, shelled of 0.07 mg/kg.

From the trials cited above, residues of CCIM were (n=6): < 0.01 (6) mg/kg. For assessing short-term dietary intake from beans, shelled, the HR, from a single sample, is 0.01 mg/kg.

From the trials cited above, the combined residues of cyazofamid and CCIM, expressed as cyazofamid, were (n=6): 0.025 (5), and 0.06 mg/kg. For assessing long-term dietary intake from beans, shelled, the STMR from that data set is 0.025 mg/kg.

The Meeting used the residue data from snap beans to estimate a maximum residue level for beans, except broad bean and soya bean of 0.4 mg/kg.

From the trials cited above, residues of CCIM were (n=8): < 0.01 (8) mg/kg. For assessing short-term dietary intake from beans, except broad bean and soya bean, the HR, from a single sample, is 0.01 mg/kg.

From the trials cited above, the combined residues of cyazofamid and CCIM, expressed as cyazofamid, were (n=8): 0.04, 0.06, 0.07, 0.12, 0.13, 0.20, and 0.21 (2) mg/kg. For assessing long-term dietary intake from beans, except broad bean and soya bean the STMR from that data set is 0.125 mg/kg.

Carrot and Potato

The critical GAP for carrots is from the registration of cyazofamid on carrots in the USA (five foliar applications at 0.175 kg ai/ha on a 14–21-day interval with a 14-day PHI). Supervised residue trials matching this GAP are available from Canada and the USA.

Mean field trial residues of cyazofamid in carrots from independent field trials matching the critical GAP (n=15) were: < 0.010 (9), 0.022 (2), 0.027, 0.029, 0.034, and 0.039 mg/kg. Carrot samples were stored frozen for 91 to 443 days prior to analysis. Stability of cyazofamid in carrots during frozen storage was not demonstrated (58% remaining at 374 days, no other time points sampled). As a result, the Meeting did not estimate a maximum residue level, HR, or STMR for carrot.

The critical GAP for potatoes is from the registration of cyazofamid on potatoes in Brazil (six foliar applications at 0.1 kg ai/ha on a 7–10-day interval with a seven-day PHI). The submitted residue trials conducted in Brazil did not match the critical GAP. However, supervised residue trials matching this GAP are available from the USA.

Mean field trial residues of cyazofamid in potatoes from independent field trials matching the critical GAP (n=23) were: < 0.010 (23). A single sample from an exaggerated rate (10-fold for the final application only) had a quantifiable residue of cyazofamid (0.02 mg/kg)

Based on those data and the results from the metabolism study, the Meeting estimated a maximum residue level for potato of 0.01* mg/kg.

From the trials cited above, residues of CCIM were: < 0.01 mg/kg. For assessing short-term dietary intake from potato, the HR, from a single sample, is 0.01 mg/kg.

From the trials cited above, the combined residues of cyazofamid and CCIM, expressed as cyazofamid, were (n=23): < 0.025 (23) mg/kg. Noting the low residue at the exaggerated rate, the Meeting decided to set the STMR at 0.01 mg/kg for assessing long-term dietary intake from potato.

Basil and Hops

In basil, the critical GAP is from the registration in the USA (nine foliar applications at 0.088 kg ai/ha on a 10–14-day interval with a zero-day PHI). Mean field trial residues of cyazofamid in basil (sweet) from independent field trials conducted in the USA and matching the critical GAP (n=4) were: 2.5, 2.9, 7.2, and 9.4 mg/kg.

Stability of CCIM in sweet basil was not demonstrated (47% remaining at 284 days, the only time point analysed). As the data are insufficient for evaluating dietary intake, the Meeting is not making a recommendation for residues of cyazofamid in sweet basil.

In hops, the critical GAP is from the registration in the USA (six foliar applications at 0.06–0.08 kg ai/ha on a 7–10-day interval with a 3-day PHI). Mean field trial residues of cyazofamid in dried cones from independent field trials conducted in Canada and the USA and matching the critical GAP (with DAT ranging from 2 to 4 days; n=5) were: 2.5, 2.9, 3.2, 6.3, and 7.4 mg/kg.

Based on those data, the Meeting estimated a maximum residue level for hops (dried cones) of 15 mg/kg.

From the trials cited above, residues of CCIM were (n=5): 0.13, 0.17, 0.18, 0.24, and 0.44 mg/kg. For assessing short-term dietary intake from hops (dried cones), the HR, from a single sample, is 0.45 mg/kg.

From the trials cited above, the combined residues of cyazofamid and CCIM, expressed as cyazofamid, were (n=5): 3.1, 3.2, 3.6, 6.5, and 7.5 mg/kg. For assessing long-term dietary intake from hops (dried cones), the STMR from that data set is 3.6 mg/kg.

Fate of residues during processing

High-temperature hydrolysis

The Meeting received a study investigating the high-temperature hydrolysis of cyazofamid. Samples of aqueous buffered solutions were spiked with cyazofamid at ca. 1 mg/L and put under conditions simulating pasteurisation (90 °C, pH 4, 20 min.); baking, brewing, boiling (100 °C, pH 5, 60 min); and sterilisation (120 °C, pH 6, 20 min.). Solutions were analysed by HPLC-MS/MS prior to and after processing. Cyazofamid was readily hydrolysed to CCIM (ca. 80% for pasteurisation and 100% for both baking/brewing/boiling and sterilisation).

Based on the results of the high-temperature hydrolysis study, the Meeting assumed 100% yield in the conversion of cyazofamid to CCIM in all foods other than those specified as “raw” when conducting the short-term intake assessment for CCIM.

Residues after processing

In basil, the critical GAP is from the registration in the USA (nine foliar applications at 0.088 kg ai/ha on a 10–14-day interval with a zero-day PHI). Mean field trial residues of cyazofamid in dried basil from independent field trials conducted in the USA and matching the critical GAP (n=6) were: 9.7, 13, 14 (3), and 40 mg/kg

Stability of CCIM in basil (dry) was not demonstrated (59% remaining at 297 days, the only time point analysed). As the data are insufficient for evaluating dietary intake, the Meeting is not making a recommendation for residues of cyazofamid in basil (dry).

The Meeting received data depicting the concentration/dilution of residues during processing of grapes into raisins, must and wine; tomato into paste and puree; and potatoes into wet peel, chip, and flake commodities. Processed commodities were derived using simulated commercial practices. The residue data are supported by adequate analytical methods. Storage stability data demonstrate that residues of cyazofamid and CCIM are stable in those commodities under the conditions and storage periods used in the processing studies. Residues in raw and processed commodities are supported by adequate concurrent recovery data, with the exception of cyazofamid in raisins (67±10%) and CCIM in potato chips (68±4%).

Cyazofamid did not concentrate in any processed commodity. As no concentration of residues was observed, recommendations for maximum residue levels for grapes, tomatoes, or potatoes processed commodities are not necessary. The Meeting noted that for the potato commodities, residues were < LOQ in all samples and processing factors could not be calculated; however, the tubers used in the processing study were treated at an exaggerated rate such that quantifiable residues are not expected in processed commodities even if concentration is occurring upon processing.

For estimating short-term dietary intake, the Meeting based processing factors on the combined residues of cyazofamid (as CCIM equivalents) and CCIM in raw commodities and residues of CCIM only in processed commodities. When residues were < 0.01 in a sample, they were assumed to be 0.01 for purposes of deriving a processing factor.

For grapes, the combined residues of cyazofamid (as CCIM equivalents) and CCIM from field trials at the critical GAP were: 0.017, 0.033, 0.037, 0.050, 0.070, and 0.45 mg/kg, with an STMR of 0.044 mg/kg and an HR, from a single sample, of 0.47 mg/kg.

For tomatoes, the combined residues of cyazofamid (as CCIM equivalents) and CCIM from field trials at the critical GAP were: 0.017, 0.027, 0.030 (2), 0.033, 0.037, 0.044 (4), 0.054, 0.060, 0.075, and 0.11 mg/kg, with an STMR of 0.044 mg/kg and an HR, from a single sample, of 0.12 mg/kg.

For dried hops, the combined residues of cyazofamid (as CCIM equivalents) and CCIM from field trials at the critical GAP were: 2.1 (2), 2.4, 4.4, 5.0, and 5.1 mg/kg, with an STMR of 3.4 mg/kg and an HR, from a single sample, of 5.4 mg/kg.

For estimating long-term dietary intake, the Meeting based processing factors on the combined residues of cyazofamid and CCIM, expressed as cyazofamid, in raw and processed commodities. For all raw and processed commodities except potato, residues of parent or CCIM were quantifiable and processing factors could be derived. When residues were < 0.01 in a sample, they were assumed to be 0.01 for purposes of deriving a processing factor.

Crop	Processed commodity	Long-term processing factor [a]	Short-term yield factor [b]	Long-term processing factor [a]	Short-term yield factor [b]	STMR-P (Cyazofamid + CCIM), mg/kg	STMR-P (CCIM), mg/kg	HR-P (CCIM), mg/kg
Grape	Fruit (RAC)	–	–	–	–	STMR [c] = 0.06	STMR [d] = 0.044	HR [d] = 0.47
	Dried	0.22	0.064	0.22	0.064	0.013	0.0028	0.030
	Must	0.3, 0.5 (2), 0.59, 1.3, 1.8, 1.9	0.11, 0.25, 0.3 (3), 0.33	0.59	0.3	0.035	0.013	0.14
	Wine	0.18, 0.5 (7), 0.55, 0.66	0.11, 0.3 (7), 0.33, 0.5	0.5	0.3	0.03	0.013	0.14
Tomato	Fruit (RAC)	–	–	–	–	STMR = 0.06	STMR [d] = 0.044	HR [d] = 0.12
	Paste	0.72	0.54	0.72	0.54	0.043	0.024	0.069
	Puree	0.45	0.27	0.45	0.27	0.027	0.012	0.034
Potato	Tuber (RAC)	–	–	–	–	STMR [c] = 0.01	STMR [d] = 0.01	HR [d] = 0.01
	Chips	Not calculated		Not calculated		0.01	0.01	0.01
	Flakes	Not calculated		Not calculated		0.01	0.01	0.01
	Wet peel	Not calculated		Not calculated		0.01	0.01	0.01
Hops	Dried cones (RAC)	–	–	–	–	STMR [c] = 3.6	STMR [d] = 3.4	HR [d] = 5.4
	Beer	0.002	0.0014	0.002	0.0014	0.0072	0.0048	0.0076

[a] [Cyazofamid + CCIM (cyazofamid equivalents) in the processed commodity] ÷ [cyazofamid + CCIM (cyazofamid equivalents) in the raw commodity].

[b] CCIM in the processed commodity ÷ [cyazofamid (CCIM equivalents) + CCIM in the raw commodity].

[c] Cyazofamid + CCIM (cyazofamid equivalents)

[d] Cyazofamid (CCIM equivalents) + CCIM

Residues in animal commodities

The Meeting has not made a determination as to the residue definitions for compliance and dietary intake for animal commodities. Furthermore, the Meeting did not receive animal feeding studies or residue data for livestock feedstuffs from some crops considered in this appraisal (grape: grape pomace, beans: vines). The Meeting did not make a recommendation for animal commodities.

RECOMMENDATIONS

Definition of the residue for compliance with the MRLs for plant commodities: *Cyazofamid*.

Definition of the residue for estimating long-term dietary intake from plant commodities: *Cyazofamid plus CCIM, expressed as cyazofamid*.

Definition of the residue for estimating short-term dietary intake from plant commodities (to be compared to the ARfD for CCIM; an ARfD was determined to be unnecessary for cyazofamid): *CCIM*.

Definition of the residue for compliance with the MRLs and for dietary intake for animal commodities: *Not defined.*

FUTURE WORK

As future work, the Meeting recommends that methods be developed to assay residues of CCBA (free and conjugated) in animal commodities, and that any such methods include suitable digestion steps for liver.

DIETARY RISK ASSESSMENT

Long-term intake

The International Estimated Daily Intakes (IEDIs) of cyazofamid were calculated for the 17 GEMS/Food cluster diets using STMRs/STMR-Ps estimated by the current Meeting. The ADI for cyazofamid is 0–0.2 mg/kg bw. The calculated IEDIs for cyazofamid were 0–4% of the maximum ADI.

The Meeting concluded that the long-term intakes of residues of cyazofamid, when cyazofamid is used in ways that have been considered by the JMPR, are unlikely to present a public health concern.

Short-term intake

The International Estimated Short-Term Intakes (IESTI) of CCIM were calculated for food commodities and their processed commodities using HRs/HR-Ps or STMRs/STMR-Ps estimated by the current Meeting. The ARfD for CCIM is 0.2 mg/kg bw. The calculated maximum IESTI for CCIM was 90% of the ARfD for all commodities. The Meeting concluded that the short-term intake of residues of CCIM resulting from uses of cyazofamid, when cyazofamid is used in ways that have been considered by the JMPR, is unlikely to present a public health concern.

5.8 CYPRODINIL (207)

RESIDUE AND ANALYTICAL ASPECTS

Cyprodinil was first evaluated for residues and toxicological aspects by the 2003 JMPR. An ADI of 0–0.03 mg/kg bw for cyprodinil was established, and an ARfD was concluded as unnecessary. The residue definition was established as cyprodinil for both compliance with MRLs and dietary risk assessment for both plant and animal commodities. The residue is fat soluble.

Cyprodinil was evaluated by 2013 JMPR for additional crops. A number of Codex Maximum Residue limits for cyprodinil were established. Cyprodinil was scheduled by the Forty-sixth CCPR meeting in 2014 for evaluation of residue data for additional crops by the JMPR.

Methods of analysis

The Meeting received two analytical methods for determination of cyprodinil residues in plant matrices which are relevant to this evaluation. The LOQ for the HPLC-MS/MS (226.01–93.10) methods for rapeseed and meal was 0.02 mg/kg, and for rapeseed oil, 0.01 mg/kg.

Stability of residues in stored analytical samples

The Meeting received information on the storage stability of cyprodinil residues in plant matrices from trials conducted in conjunction with the residue studies submitted to the Meeting. These data and stability data from JMPR 2003 and 2013 covers the maximum storage period for samples in the residue studies submitted to this Meeting.

Residues of supervised trials on crops

The Meeting received supervised trial data for application of cyprodinil to oilseed rape, potatoes, and carrots, which was evaluated by 2013 JMPR.

Potato

Cyprodinil is registered in the Brazil for use on potatoes at a GAP of 4× 0.25 kg ai/ha and PHI of 7-days.

The residues of cyprodinil in potatoes from two trials conducted in Brazil and one trial in South Africa matching the Brazilian GAP were all < 0.02 mg/kg (LOQ). The meeting noted that three trials was insufficient to make a recommendation for a maximum residue level for potatoes.

Ginseng

The meeting received the request to extrapolate the maximum residue level from carrots to ginseng. The 2013 Meeting received supervised residue trials of carrots matching the US GAP. The Meeting noted that although the US GAP for ginseng is the same as that for carrots, the growth traits and cultivation practices are significantly different, and agreed not to extrapolate from carrots to ginseng.

Oilseed

Cyprodinil is registered in Canada for use on rapeseed at a GAP of 1× 0.365 kg ai/ha and a 35-day PHI.

Nine independent residue trials were conducted in rapeseed at GAP in Canada. Residues in seed of rapeseed at the 35 day PHI were all < 0.02 mg/kg (n=9).

Based on the residues from the Canadian trials, the Meeting estimated a maximum residue level of 0.02 mg/kg for seed of rapeseed and an STMR of 0.02 mg/kg.

Processing studies

A processing study for oilseed rape was evaluated by the current Meeting in which the application rate of cyprodinil was 1098 g ai/ha, 3-times the label rate. No residues (< LOQ), were found in seed, meal and oil, and therefore no processing factors could be established.

Residues in animal commodities

Farm animal dietary burden

Dietary burden calculations incorporating all commodities considered by the current, 2003 and 2013 Meetings for beef cattle, dairy cattle, broilers and laying poultry are presented in Annex 6. The calculations are made according to the livestock diets of the USA/Canada, the European Union, Australia and Japan as laid out in the OECD table. The animal dietary burden is the same as the results from 2013 meeting, and the Meeting confirmed the previous recommendation of MRLs in animal products.

	US/CAN		EU		AU		Japan	
	Max.	Mean	Max.	Mean	Max.	Mean	Max.	Mean
Beef cattle	0.91	0.37	13.9	1.8	5.8	1.4	0.46	0.46
Dairy cattle	1.7	0.87	13.5	1.4	23.3	1.8	0.26	0.26
Poultry—broiler	0.49	0.49	0.80	0.54	0.12	0.12	0.066	0.066
Poultry—layer	0.49	0.49	4.1	0.76	0.12	0.12	–	–

DIETARY RISK ASSESSMENT

Long-term intake

The International Estimated Dietary Intakes (IEDIs) of cyprodinil were calculated for the 17 GEMS/food cluster diets using STMRs/STMR-Ps estimated by the current Meeting and by the 2003 JMPR. The ADI is 0–0.03 mg/kg bw and the calculated IEDIs were 6–70% of the maximum ADI (0.03 mg/kg bw). The Meeting concluded that the long-term intakes of residues of cyprodinil, resulting from the uses considered by the current Meeting and by the 2003 JMPR are unlikely to present a public health concern.

Short-term intake

The 2003 JMPR decided that an ARfD was unnecessary and concluded that the short-term intake of cyprodinil residues is unlikely to present a public health concern.

5.9 DIFENOCONAZOLE (224)

RESIDUE AND ANALYTICAL ASPECTS

Difenoconazole is a systemic triazole fungicide and acts by inhibition of demethylation during ergosterol synthesis. It is applied by foliar spray or seed treatment and controls a broad spectrum of foliar, seed and soil-borne diseases caused by Ascomycetes, Basidiomycetes and Deuteromycetes, on a variety of crops. Difenoconazole was evaluated for the first time by JMPR 2007. The 2007 Meeting established an acceptable daily intake (ADI) of 0–0.01 mg/kg bw and an acute reference dose (ARfD) of 0.3 mg/kg bw. Maximum residue levels for a number of commodities were recommended by JMPR in 2007, 2010 and 2013.

Definition of residues for plant products (compliance with MRLs and dietary intake assessment): *difenoconazole.*

Definition of residues for animal products: sum of difenoconazole and CGA 205375 (1-[2-chloro-4-(4-chloro-phenoxy)-phenyl]-2-(1, 2, 4-triazol)-1-yl-ethanol), expressed as difenoconazole.

Difenoconazole was listed by the Forty-sixth Session of CCPR (2014) for the review of additional maximum residue levels. GAP information with supporting residue studies in strawberries, avocadoes, soya beans, cotton, peanuts, rice and oilseed rape (canola) was evaluated by the present Meeting.

Methods of analysis

The analytical method used for determination of difenoconazole residues in samples derived from supervised field trials and processing studies in strawberries, soya beans, rice and oilseed was evaluated by previous Meetings.

Two new pre-registration methods for plant matrices were presented to the 2015 Meeting. In these methods difenoconazole is extracted by high-speed homogenisation with an acetone/water mixture (2:1). After clean-up the residues were determined by (HPLC-MS/MS).The method has a validated LOQ of 0.01 mg/kg for difenoconazole in avocadoes, cotton, oilseed rape including processed commodities, peanuts, rice, soya beans and strawberries. The methods were used for determination of difenoconazole residues in samples from supervised field trials on cotton and peanuts presented to the current Meeting.

Stability of pesticide residues in stored analytical samples

The stability of residues from difenoconazole in stored samples was evaluated by the 2007 Meeting. The periods of demonstrated stability cover the frozen storage intervals used in the residue trials for which maximum residue levels were estimated.

Results of supervised residue trials on crops

The Meeting received new supervised trial data for foliar application of difenoconazole (EC or SC formulations) on strawberries, avocadoes, soya beans, rice, cotton, peanuts and oilseed rape, and noted that residue data from rice, soya beans and oilseed rape also were provided to the 2007 JMPR.

The results from new trials and those previously reported by the 2007 JMPR which either matched the critical GAP, or when results could be proportionally adjusted to reflect GAP application rates, were considered in estimating maximum residue levels, STMRs and HRs for the commodities for which GAP information was available. The proportionality approach was considered to scale the results from trials where the application rates range from 0.3× GAP to 4× GAP and where all other parameters matched the critical GAP.

Strawberry

Data from supervised trials on strawberries from USA conducted in 2008 and 2009 were presented to the Meeting. The critical GAP in USA is maximum foliar applications up to 0.129 kg/ha, an application interval of 7–14 days and a PHI of 0 days. The maximum application rate for difenoconazole is 0.515 kg ai/ha per crop and season.

Strawberries belong to the high acid category and storage data covering this category was not evaluated by 2007 JMPR and not included in the residue trials. As difenoconazole has a pKa of 1.1 an estimation of maximum residue levels was not made.

Avocado

Four independent supervised trials from Brazil conducted in 2007 and 2008 were presented to the Meeting. The critical GAP in Brazil is four foliar applications of 0.05 kg ai/ha at BBCH 62–79 (starting at flowering until fruit is around 5 cm) and with intervals of 14 days. The PHI is 14 days.

The trials from Brazil (4× 0.05 kg ai/ha at BBCH 71–79, interval 14 days, PHI 14 days) matched the critical GAP. Residues of difenoconazole in avocado fruits 14 days after the last application were (n=4) 0.02, 0.05 (2) and 0.26 mg/kg. The highest residue of 0.26 mg/kg was measured in an individual fruit sample.

The Meeting estimated a maximum residue level, an STMR value and an HR value for difenoconazole in avocado of 0.6 mg/kg, 0.05 mg/kg and 0.26 mg/kg, respectively.

Soya bean (dry)

Twenty one supervised trials from USA conducted in 2008 were presented to the Meeting. The critical GAP in USA is two foliar applications of 0.129 kg ai/ha, with an interval of seven days and a PHI of 14 days.

Six trials from Brazil (2× 0.075 kg ai/ha and a PHI of 30 days) presented to the 2007 JMPR did not match the critical GAP.

Eighteen independent trials from USA (2× 0.129 kg ai/ha, interval 7–10 days, PHI 14 days) matched the critical GAP. Residues of difenoconazole in soya beans were (n=18) < 0.01(12), 0.012, 0.013, 0.019, 0.021, 0.04 and 0.087 mg/kg. The highest residue of 0.15 mg/kg was measured in individual seed samples.

The Meeting estimated a maximum residue level and STMR value for difenoconazole in soya bean seeds of 0.1 mg/kg and 0.01 mg/kg, respectively. The Meeting withdraws its previous recommendation of 0.02* mg/kg for maximum residue level for soya beans (dry).

Rice

Eight supervised trials from Europe (Italy) conducted in 2009 and 2010 were presented to the current Meeting. A registered label was not available to the Meeting and an estimation of a maximum residue level was not made.

Cotton

Eight independent supervised trials from Brazil conducted in 2006–2008 were presented to the Meeting. The critical GAP in Brazil is three foliar applications of 0.075 kg ai/ha, an interval of 10–15 days and a PHI of 21 days.

Four trials (5× 0.075 kg ai/ha, BBCH 13–81, interval 21 days, PHI 30 days) were not according to GAP. Samples were only taken 30 days after last application, and the applications were two more than specified in the critical GAP.

Four trials were made with four applications of 0.075 kg ai/ha starting from BBCH 71 up to BBCH 83 and a PHI of 21 days. These trials matched the critical GAP from Brazil. Residues of difenoconazole in cotton were (n=4) < 0.01, 0.01 and 0.02 (2) mg/kg. An estimation of maximum residue levels was not made as four trials were considered insufficient.

Oilseeds

Peanut

Eight independent supervised trials from Brazil conducted in 2008–2010 were presented to the Meeting. The critical GAP in Brazil is three applications of 0.0875 kg ai/ha and a PHI of 22 day.

Four of the trials (3× 0.088 kg ai/ha, PHI 22 days) were according to the critical GAP and residues of parent difenoconazole were not detected. Another four trials (6× 0.125 kg ai/ha) were conducted as residue decline trials and residues of parent difenoconazole was not found.

As residues of difenoconazole not was detected at an exaggerated number of applications and application rates, the Meeting concluded a zero residue situation occurs after application of difenoconazole to peanuts in accordance with the Brazilian critical GAP.

Residues of difenoconazole in peanuts from eight independent trials matching GAP were (n=8) < 0.01 mg/kg.

The Meeting estimated a maximum residue level and STMR values for difenoconazole in peanut kernels of 0.01* mg/kg and 0 mg/kg, respectively.

Rape seed (canola)

Data from supervised trials on rape seed (canola) from Canada conducted in 2011 were presented to the Meeting. The critical GAP in Canada is one foliar application of 0.125 kg ai/ha and a PHI of 30 days.

Nine independent trials from Canada matching the critical GAP were available to the Meeting. Residues from difenoconazole in rape seed were (n=9) < 0.01, 0.011 (1), 0.015 (2), 0.033 (2), 0.038, 0.062 and 0.063 mg/kg.

The Meeting estimates a maximum residue level, and STMR value for difenoconazole in oilseed rape (rape seed) of 0.15 mg/kg and 0.03 mg/kg, respectively. The Meeting replaces its previous recommendation of 0.05 mg/kg for the maximum residue level for rape seed.

Animal feeds

Rape seed (canola), forage, fodder

Residue data for rape seed forage was not presented to the Meeting.

Soya bean

The Meeting noted that the GAP for difenoconazole in USA does not permit soya bean hay, forage or silage as animal feeds.

Rice whole crop (silage), and straw

Eight supervised trials from Europe (Italy) conducted in 2009 and 2010 were presented to the Meeting. Forage and straw samples were collected. A registered GAP was not available for rice. An estimation of maximum residues levels was not made.

Fate of residues during processing

The 2007 JMPR reported that difenoconazole was essentially stable during the hydrolysis conditions simulating food processing conditions and also estimated processing factors for a range of commodities. Relevant processing factors for difenoconazole and STMR-Ps for the commodities considered at this Meeting and used for dietary intake and risk assessment or for estimating livestock animal burden are summarised below.

Raw agricultural commodity	Processed commodity	Processing factors [a] (mean)	RAC (mg/kg)	STMR-P
			STMR	mg/kg
Soya bean	RAC		0.01	
	Meal	0.38		0.004
	Hulls	2		0.02
	Oil (refined)	0.8		0.08
	AGF [b]	622		6.22
Rape seed (canola)	RAC		0.03	
	Meal	0.55		0.016
	Refined oil	0.05		0.002

[a] The processing factor is the ratio of the total residue in the processed item divided by the total residue in the RAC

[b] Aspirated grain fraction

The Meeting noted that in the studies available difenoconazole residues did not concentrate in food commodities during processing. In feed commodities however residues increased in soya bean hulls and soya bean aspirated grain fractions (AGF).

Residues in animal commodities

Estimated dietary burdens of farm animals

The dietary burdens for beef cattle and dairy cattle were calculated using the OECD diets listed in Appendix IX of the 2009 edition of the FAO Manual. Potential feed items included: almond hulls, cabbage heads and leaves, bean vines, carrot hulls, canola meal, grape pomace, pea vines, potato culls, potato process waste, soya beans, soya bean aspirated grain fraction, sunflower meal, and wheat grain and hay.

The estimated the dietary burden for cattle and poultry and were not significantly different from the dietary burdens estimated by the 2013 JMPR. The only additional feed item included was soya bean.

The Meeting confirmed the previous recommendations for animal commodities.

RECOMMENDATIONS

On the basis of the data from supervised trials the Meeting concluded that the residue levels listed in Annex 1 are suitable for establishing maximum residue limits and for IEDI and IESTI assessment.

Definition of residue for plant products (compliance with MRLs and dietary intake assessment): *difenoconazole.*

Definition of residue for animal products (compliance with MRLs and dietary intake assessment): sum of difenoconazole and CGA 205375 (1-[2-chloro-4-(4-chloro-phenoxy)-phenyl]-2-(1, 2,4-triazol)-1-yl-ethanol), expressed as difenoconazole.

The residue is fat soluble (2007 JMPR Meeting).

DIETARY RISK ASSESSMENT

Long-term intake

The IEDI of difenoconazole based on the STMRs estimated by this and previous Meetings for the 17 GEMS/Food regional diets were 7–70% of the maximum ADI of 0.01 mg/kg bw (see Annex 3 of the Report). The Meeting concluded that the long-term dietary intake of residues of difenoconazole is unlikely to present a public health concern.

Short-term intake

The ARfD for difenoconazole is 0.3 mg/kg bw. The International Estimated Short-Term (IESTI) of difenoconazole for the commodities for which STMR, HR and maximum residue levels were estimated by the current Meeting are shown in Annex 4. The IESTI represented a maximum of 3% of the ARfD. The Meeting concluded that the short-term intake of difenoconazole residues from uses considered by the current Meeting was unlikely to present a public health concern.

5.10 ETHEPHON (106)

TOXICOLOGY

Ethephon is the ISO-approved common name for 2-chloroethylphosphonic acid (IUPAC), which has the CAS number 16672-87-0. Ethephon is a plant growth regulator that acts by release of ethylene, directly influencing several physiological processes, such as ripening and maturation, and stimulating the production of endogenous ethylene. Ethephon is used on a variety of crops, including fruits, vegetables, cereals and oilseed crops.

Ethephon was previously evaluated for toxicology by JMPR in 1977, 1978, 1993, 1995, 1997 and 2002. In 1993, the Meeting established an ADI of 0–0.05 mg/kg bw on the basis of a NOAEL of 0.5 mg/kg bw per day in studies in humans given repeated ethephon doses and application of a 10-fold safety factor. In 2002, the Meeting established an ARfD of 0.05 mg/kg bw on the basis of human data.

Ethephon was re-evaluated by the present Meeting as part of the periodic review programme of CCPR. Both new toxicity studies with ethephon in dogs and with the ethephon metabolite 2-hydroxyethyl phosphonic acid (or 2-hydroxyethephon; HEPA) in rats and previously submitted studies were considered by the present Meeting.

Some of the critical studies do not comply with GLP, as the data were generated before the implementation of GLP regulations. Overall, however, the Meeting considered that the database was adequate for the risk assessment.

Available studies with ethephon in humans were performed in accordance with the ethical standards at the time and were compliant with the Declaration of Helsinki.

Biochemical aspects

In rats, absorption of ethephon was rapid, with a time to reach the maximum plasma concentration (T_{max}) of 1.0–1.3 hours after a single oral dose of 50 mg/kg bw and 1.9–2.5 hours after a single oral dose of 1000 mg/kg bw. Peak plasma concentrations at 1000 mg/kg bw were less than proportional to dose, compared with those after 50 mg/kg bw. Six days after a single dose, tissues and carcass contained at most 0.06% of the administered radioactivity. Highest concentrations were found in bone, liver, blood and kidney. Radioactivity concentrations in brain were low. Radioactivity was excreted in urine (47–60%), expired air (18–22%, mainly ethylene) and faeces (4–6.5%), indicating that at least 65% of the administered dose was absorbed. Excretion was largely complete within the first 24 hours after dose administration. Ethephon was mainly recovered as its monosodium and disodium salts, ethylene and, to a lesser extent, HEPA. There were no remarkable differences in absorption and excretion between sexes and between oral dosing regimens.

Ethephon inhibits butyrylcholinesterase (BuChE) activity in plasma and, to a lesser extent, acetylcholinesterase (AChE) activity in erythrocytes. Ethephon has virtually no effect on brain AChE activity in vivo. In vitro studies showed that BuChE in plasma of dog, human and mouse was more sensitive to ethephon inhibition than BuChE in plasma of rabbit, rat, chicken and guinea-pig. Mechanistic investigations indicate that ethephon inhibits BuChE activity by phosphorylation at Ser-198 of the esteratic site, leading to the formation of a phosphobutyrylcholinesterase.

Toxicological data

The acute toxicity of ethephon is low (rat oral LD_{50} = 1564 mg/kg bw; rabbit dermal LD_{50} = 983 mg/kg bw; rat inhalation LC_{50} = 3.26 mg/L). Ethephon was severely irritating to the skin of rabbits. No eye irritation study was required, as technical ethephon has a pH of less than 2 and is therefore assumed to be corrosive to the eye. Ethephon was not a skin sensitizer in a Magnusson and Kligman test in guinea-pigs.

In repeated-dose oral toxicity studies with ethephon in mice, rats and dogs, the main effect was reduction of erythrocyte AChE activity.

In a 28-day study in mice administered ethephon at a dietary concentration of 0, 30, 100, 300, 1000 or 3000 ppm (equal to 0, 5.3, 18, 51, 181 and 546 mg/kg bw per day for males and 0, 6.5, 22, 69, 210 and 635 mg/kg bw per day for females, respectively), the NOAEL was 100 ppm (equal to 22 mg/kg bw per day), based on reduction of erythrocyte AChE activity observed in females at 300 ppm (equal to 69 mg/kg bw per day). In a second 28-day study in mice administered ethephon at a dietary concentration of 0, 3000, 10 000, 25 000 or 50 000 ppm (equal to 0, 530, 1800, 4500 and 10,000 mg/kg bw per day for males and 0, 630, 2200, 5900 and 15 000 mg/kg bw per day for females, respectively), no NOAEL could be identified, as reductions in erythrocyte AChE activity were observed at all doses.

In a 28-day range-finding study in rats administered ethephon at a dietary concentration of 0, 625, 1250, 2500, 5000 or 10 000 ppm (equal to 0, 52, 106, 214, 431 and 831 mg/kg bw per day for males and 0, 59, 120, 251, 487 and 980 mg/kg bw per day for females, respectively), the NOAEL was 625 ppm (equal to 52 mg/kg bw per day), based on reduction of erythrocyte AChE activity observed in males at 1250 ppm (equal to 106 mg/kg bw per day). In a second 28-day range-finding study in rats administered ethephon at a dietary concentration of 0, 10 000, 25 000 or 50 000 ppm (equal to 0, 962, 2300 and 4673 mg/kg bw per day for males and 0, 996, 2488 and 4900 mg/kg bw per day for females, respectively), no NOAEL could be identified, as reduction of AChE activity in erythrocytes was observed at all doses.

In a 1-year study in dogs administered ethephon at a dietary concentration of 0, 100, 300, 1000 or 2000 ppm (equal to 0, 2.8, 8.1, 27 and 54 mg/kg bw per day for males and 0, 2.6, 8.4, 30 and 50 mg/kg bw per day for females, respectively), the NOAEL was 1000 ppm (equal to 27 mg/kg bw per day), based on a lower body weight gain at 52 weeks in both sexes and low absolute and relative spleen weights in males at 2000 ppm (equal to 54 mg/kg bw per day). The effect of ethephon treatment on cholinesterase activity was not assessed in this study.

In a 2-year study in dogs administered ethephon at a dietary concentration of 0, 30, 300 or 1500 ppm (equal to 0, 0.86, 7.6 and 42.2 mg/kg bw per day for males and 0, 0.86, 8.4 and 47.8 mg/kg bw per day for females, respectively), the NOAEL was 30 ppm (equal to 0.86 mg/kg bw per day), based on reduction of erythrocyte AChE activity at 300 ppm (equal to 7.6 mg/kg bw per day).

In a 78-week carcinogenicity study in mice administered ethephon at a dietary concentration of 0, 30, 300 or 1000 ppm (equivalent to 0, 4.5, 45 and 150 mg/kg bw per day, respectively), the NOAEL was 30 ppm (equivalent to 4.5 mg/kg bw per day), based on reduction of erythrocyte AChE activity observed at weeks 52 and 78 in females at 300 ppm (equivalent to 45 mg/kg bw per day). No treatment-related tumours were observed in mice in this study.

In a second 78-week carcinogenicity study in which mice were administered ethephon at a dietary concentration of 0, 100, 1000 or 10 000 ppm (equal to 0, 14, 139 and 1477 mg/kg bw per day for males and 0, 17, 173 and 1782 mg/kg bw per day for females, respectively), the NOAEL was 100 ppm (equal to 14 mg/kg bw per day), based on reduction of erythrocyte AChE activity in both sexes at 1000 ppm (equal to 139 mg/kg bw per day). No treatment-related tumours were observed in mice in this study.

The overall NOAEL for the two 78-week studies in mice was 100 ppm (equal to 14 mg/kg bw per day). The overall LOAEL was 300 ppm (equivalent to 45 mg/kg bw per day).

In a 2-year toxicity and carcinogenicity study in rats administered ethephon at a dietary concentration of 0, 30, 300 or 3000 ppm (equal to 0, 1.2, 13 and 129 mg/kg bw per day for males and 0, 1.6, 16 and 171 mg/kg bw per day for females, respectively), the NOAEL was 300 ppm (equal to 13 mg/kg bw per day), based on reduction of erythrocyte AChE activity in both sexes at 3000 ppm (equal to 129 mg/kg bw per day). No treatment-related tumours were observed in rats in this study.

In a second 2-year toxicity and carcinogenicity study in which rats were administered ethephon at a dietary concentration of 0, 300, 3000, 10 000 or 30 000 ppm (equal to 0, 13, 131, 446 and 1416 mg/kg bw per day for males and 0, 16, 161, 543 and 1794 mg/kg bw per day for females, respectively), the NOAEL was 300 ppm (equal to 13 mg/kg bw per day), based on reduction of erythrocyte AChE activity observed in both sexes at 3000 ppm (equal to 131 mg/kg bw per day). No treatment-related tumours were observed in rats in this study.

The overall NOAEL for the two 2-year studies in rats was 300 ppm (equal to 13 mg/kg bw per day). The overall LOAEL was 3000 ppm (equal to 129 mg/kg bw per day).

The Meeting concluded that ethephon is not carcinogenic in mice or rats.

Ethephon was tested for genotoxicity in an adequate range of assays, both in vitro and in vivo. There was no evidence of genotoxicity in vitro, except for a positive response in *Salmonella typhimurium* strain TA1535 in both the absence and presence of metabolic activation. There was no evidence of genotoxicity in vivo.

Based on the weight of evidence, the Meeting concluded that ethephon is unlikely to be genotoxic in vivo.

In view of the lack of genotoxicity in vivo and the absence of carcinogenicity in mice and rats, the Meeting concluded that ethephon is unlikely to pose a carcinogenic risk to humans.

In a two-generation reproductive toxicity study in rats administered ethephon at a dietary concentration of 0, 300, 3000 or 30 000 ppm (equal to 0, 22, 220 and 2260 mg/kg bw per day for F_0 males and 0, 25, 260 and 2570 mg/kg bw per day for F_0 females, respectively; and 0, 20, 200 and 2220 mg/kg bw per day for F_{1b} males and 0, 24, 245 and 2520 mg/kg bw per day for F_{1b} females, respectively), the NOAEL for parental toxicity was 300 ppm (equal to 20 mg/kg bw per day), based on an increased incidence of loose faeces in F_{1b} males at 3000 ppm (equal to 200 mg/kg bw per day). The NOAEL for offspring toxicity was 300 ppm (equal to 22 mg/kg bw per day), based on an increased mortality in F_{1b} pups from PND 4 to PND 7 and a reduction in body weight gain during lactation in F_{2b} pups at 3000 ppm (equal to 220 mg/kg bw per day). The NOAEL for reproductive toxicity was 30 000 ppm (equal to 2220 mg/kg bw per day), the highest dose tested. The effect of ethephon treatment on cholinesterase activity was not assessed in this study.

In a developmental toxicity study in rats administered ethephon by gavage at a dose of 0, 200, 600 or 1800 mg/kg bw per day, the NOAEL for maternal toxicity was 600 mg/kg bw per day, based on increased mortality, clinical signs (salivation), reduced body weight gain, and various macroscopic findings and histological changes (focal lymphoid hyperplasia of the spleen and focal parenchymal fibrosis of the liver) at 1800 mg/kg bw per day. The NOAEL for embryo and fetal toxicity was 1800 mg/kg bw per day, the highest dose tested. The effect of ethephon treatment on cholinesterase activity was not assessed in this study.

In a second developmental toxicity study in rats administered ethephon by gavage at a dose of 0, 125, 250 or 500 mg/kg bw per day, the NOAEL for maternal toxicity and for embryo and fetal toxicity was 500 mg/kg bw per day, the highest dose tested. The effect of ethephon treatment on cholinesterase activity was not assessed in this study.

In a developmental toxicity study in rabbits administered ethephon by gavage at a dose of 0, 50, 100 or 250 mg/kg bw per day, the NOAEL for maternal toxicity was 50 mg/kg bw per day, based on a body weight reduction from GD 7 to GD 12 and an increased number of resorptions at 100 mg/kg bw per day. The NOAEL for embryo and fetal toxicity was 50 mg/kg bw per day, based on a reduced number of live fetuses and reduced viability of fetuses at 100 mg/kg bw per day. The effect of ethephon treatment on cholinesterase activity was not assessed in this study.

In a second developmental toxicity study in rabbits administered ethephon by gavage at a dose of 0, 62.5, 125 or 250 mg/kg bw per day, the NOAEL for maternal toxicity was 125 mg/kg bw per day, based on mortality, clinical signs of toxicity and decreased body weight at 250 mg/kg bw per day. The NOAEL for embryo and fetal toxicity was 125 mg/kg bw per day. As three does died and 14 does were killed in a moribund condition at 181 mg/kg bw per day, the number of fetuses in the high-dose group was insufficient to conclude on the effects of ethephon on prenatal development at 250 mg/kg bw per day. The effect of ethephon treatment on cholinesterase activity was not assessed in this study.

In a pilot neurotoxicity study in rats aimed at finding the time to peak effect after a single gavage dose of ethephon of 0, 250, 500, 1000 or 2000 mg/kg bw, the maximum suppression of plasma cholinesterase activity for all groups occurred at 4–8 hours following treatment. Erythrocyte and brain AChE levels were not affected by treatment in this study.

In an acute neurotoxicity study in rats administered ethephon by gavage at a dose of 0, 500, 1000 or 2000 mg/kg bw, no NOAEL could be identified, as increased incidences of myosis were observed at all dose levels. The effect of ethephon treatment on cholinesterase activity was not assessed in this study.

In a 13-week neurotoxicity study in rats administered ethephon by gavage at a dose of 0, 75, 150 or 400 mg/kg bw per day (the high dose was decreased to 300 mg/kg bw per day during week 10/11 of treatment), the NOAEL was 75 mg/kg bw per day, based on reduction of erythrocyte cholinesterase in females at 150 mg/kg bw per day.

In a 28-day neurotoxicity study in dogs administered ethephon at a dietary concentration of 0, 250 or 750 ppm (equal to 0, 6 and 14 mg/kg bw per day, respectively), the NOAEL was 250 ppm (equal to 6 mg/kg bw per day), based on reduction of AChE activity in erythrocytes at 750 ppm (equal to 14 mg/kg bw per day).

In a 90-day neurotoxicity study in dogs administered ethephon at a dietary concentration of 0, 70, 140 or 525 ppm (equal to 0, 2, 4 and 15 mg/kg bw per day for males and 0, 2, 4 and 18 mg/kg bw per day for females, respectively), the NOAEL was 70 ppm (equal to 2 mg/kg bw per day), based on reduction of AChE activity in erythrocytes at 140 ppm (equal to 4 mg/kg bw per day).

The Meeting noted that in the neurotoxicity studies, no clinical signs of neurotoxicity were observed, even though erythrocyte AChE activity was reduced.

No evidence for delayed neurotoxicity was observed in three studies in chickens.

Toxicological data on metabolites and/or degradates

HEPA is a significant metabolite of ethephon in rats and is also the main plant metabolite. Acute and short-term toxicity and genotoxicity studies with HEPA were available. The acute oral toxicity of HEPA was low (rat LD_{50} > 2000 mg/kg bw). HEPA did not cause inhibition of plasma cholinesterase activity in vitro.

In a 28-day toxicity study in rats administered HEPA by gavage at a dose of 0, 125, 350 or 1000/700 mg/kg bw per day (the highest dose was reduced from 1000 to 700 mg/kg bw per day from day 5 onwards, as a result of mortality), the NOAEL was 350 mg/kg bw per day, based on mortality, clinical signs, reduced body weight gain and feed consumption (females only), changes in urinary parameters, and various macroscopic findings and histological changes (epithelial necrosis and intraluminal inflammatory exudates in trachea) observed at 1000/700 mg/kg bw per day. The effects observed at the high dose are considered related to the gavage administration and the physicochemical properties of HEPA.

HEPA was negative in a gene mutation test in bacteria and in a gene mutation test and a chromosomal aberration test in mammalian cells in vitro.

In gavage studies in rats, the toxicity of HEPA was similar to that of ethephon. The effects observed in these studies with high doses of HEPA or ethephon are likely the result of a local gastrointestinal effect due to the physicochemical properties of these compounds and are therefore not relevant to the risk assessment. As HEPA does not reduce cholinesterase activity and as the NOAEL for HEPA in a 28-day gavage study is at least 2 orders of magnitude higher than the NOAEL of 0.5 mg/kg bw in humans that forms the basis of the ADI and ARfD, HEPA is not considered to be a toxicologically relevant metabolite.

Human data

In a 28-day study in human volunteers, five males and five females received ethephon at oral (capsule) doses of approximately 1.5 mg/kg bw per day for males and 2.2 mg/kg bw per day for females, divided over three daily dosages. Three males and three females received placebo. Transient, subjective complaints, such as diarrhoea or urgency of bowel movements, were observed on 1–4 days in the first week of treatment in four volunteers receiving ethephon, but not in control subjects. Urgency or an increased frequency of urination was observed during the course of the study in one control and five treated volunteers. In addition, loose stools, stomach cramps and/or gas, flank pain, and loss or increase of appetite were occasionally reported by some volunteers treated with ethephon. No changes in plasma and erythrocyte cholinesterase activities and no persistent side-effects were observed. No treatment-related changes in haematology, clinical biochemistry or urine analysis parameters were noted.

In a 16-day study, volunteers received ethephon orally (by capsule) at a dose of 0 or 0.5 mg/kg bw per day (divided over three daily dosages). Ten males and 10 females received ethephon, and six males and four females received placebo. No treatment-related clinical signs or changes in erythrocyte AChE values or in haematology, clinical chemistry or urine analysis parameters were observed.

In a 22-day volunteer study using ethephon at oral (capsule) doses of 0 (three males and three females), 0.17 (three males and four females) and 0.33 mg/kg bw per day (four males and three females), no treatment-related clinical signs or changes in erythrocyte AChE activities or haematology, clinical chemistry or urine analysis parameters were observed.

The Meeting concluded that the existing database on ethephon was adequate to characterize the potential hazards to the general population, including fetuses, infants and children.

Toxicological evaluation

The Meeting reaffirmed the ADI of 0–0.05 mg/kg bw, established on the basis of the overall NOAEL of 0.5 mg/kg bw per day in studies in humans, based on transient, subjective complaints, such as diarrhoea and urgency of bowel movements, loose stools, stomach cramps and/or gas, urgency or an increased frequency of urination, flank pain, and loss or increase of appetite, with the application of a 10-fold safety factor.

The Meeting reaffirmed the ARfD for ethephon of 0.05 mg/kg bw, established on the basis of the overall NOAEL of 0.5 mg/kg bw per day in studies in humans, based on transient, subjective complaints, such as diarrhoea and urgency of bowel movements, loose stools, stomach cramps and/or gas, urgency or an increased frequency of urination, flank pain, and loss or increase of appetite observed during the first week of treatment, with the application of a 10-fold safety factor.

Levels relevant to risk assessment of ethephon

Species	Study	Effect	NOAEL	LOAEL
Mouse	Seventy-eight-week studies of toxicity and carcinogenicity[a,b]	Toxicity	100 ppm, equal to 14 mg/kg bw per day	300 ppm, equivalent to 45 mg/kg bw per day
		Carcinogenicity	10 000 ppm, equal to 1 477 mg/kg bw per day[c]	–
Rat	Two-year studies of toxicity and carcinogenicity[a,b]	Toxicity	300 ppm, equal to 13 mg/kg bw per day	3 000 ppm, equal to 129 mg/kg bw per day
		Carcinogenicity	30 000 ppm, equal to 1 416 mg/kg bw per day[c]	–
	Two-generation study of reproductive	Reproductive toxicity	30 000 ppm, equal to 2 220 mg/kg bw per day[c]	–

Species	Study	Effect	NOAEL	LOAEL
	toxicity[a]	Parental toxicity	300 ppm, equal to 20 mg/kg bw per day	3 000 ppm, equal to 200 mg/kg bw per day
		Offspring toxicity	300 ppm, equal to 22 mg/kg bw per day	3 000 ppm, equal to 220 mg/kg bw per day
	Developmental toxicity study[d]	Maternal toxicity	600 mg/kg bw per day	1 800 mg/kg bw per day
		Embryo and fetal toxicity	1 800 mg/kg bw per day[c]	–
Rabbit	Developmental toxicity study[d]	Maternal toxicity	50 mg/kg bw per day	100 mg/kg bw per day
		Embryo and fetal toxicity	50 mg/kg bw per day	100 mg/kg bw per day
Dog	Thirteen-week study of neurotoxicity[a]	Toxicity	70 ppm, equal to 2 mg/kg bw per day	140 ppm, equivalent to 4 mg/kg bw per day
	Two-year study of toxicity[a]	Toxicity	30 ppm, equal to 0.86 mg/kg bw per day	300 ppm, equal to 7.6 mg/kg bw per day
Human	Sixteen- and 28-day studies of toxicity[b,e]	Toxicity	0.5 mg/kg bw per day	1.5 mg/kg bw per day

[a] Dietary administration.
[b] Two or more studies combined.
[c] Highest dose tested.
[d] Gavage administration.
[e] Capsule administration.

Estimate of acceptable daily intake (ADI)

0–0.05 mg/kg bw

Estimate of acute reference dose (ARfD)

0.05 mg/kg bw

Information that would be useful for the continued evaluation of the compound

Results from epidemiological, occupational health and other such observational studies of human exposure

Critical end-points for setting guidance values for exposure to ethephon

Absorption, distribution, excretion and metabolism in mammals	
Rate and extent of oral absorption	Rapid; > 65% at 50 and 1 000 mg/kg bw (rat)
Dermal absorption	No data
Distribution	Widespread distribution, highest concentrations found in bone, liver, blood and kidney; low concentrations in brain (rat)
Potential for accumulation	Low

Rate and extent of excretion	Rapid; largely complete within the first 24 h after dose administration
Metabolism in animals	Converted to its monosodium and disodium salts, ethylene and, to a lesser extent, HEPA
Toxicologically significant compounds in animals and plants	Ethephon
Acute toxicity	
Rat, LD_{50}, oral	1 564 mg/kg bw
Rabbit, LD_{50}, dermal	983 mg/kg bw
Rat, LC_{50}, inhalation	3.26 mg/L
Rabbit, dermal irritation	Severely irritating
Rabbit, ocular irritation	Assumed to be corrosive, pH < 2
Guinea-pig, dermal sensitization	Not sensitizing (maximization test)
Short-term studies of toxicity	
Target/critical effect	Reduction of erythrocyte AChE activity
Lowest relevant oral NOAEL	0.86 mg/kg bw per day (dog)
Lowest relevant dermal NOAEL	237 mg/kg bw per day (highest dose tested); severe dermal irritation at 119 mg/kg bw per day (rabbit)
Lowest relevant inhalation NOAEC	No data
Long-term studies of toxicity and carcinogenicity	
Target/critical effect	Reduction of erythrocyte AChE activity
Lowest relevant NOAEL	13 mg/kg bw per day (rat)
Carcinogenicity	Not carcinogenic in mice or rats[a]
Genotoxicity	
	Unlikely to be genotoxic in vivo[a]
Reproductive toxicity	
Target/critical effect	No reproductive effect
Lowest relevant parental NOAEL	20 mg/kg bw per day (rat)
Lowest relevant offspring NOAEL	22 mg/kg bw per day (rat)
Lowest relevant reproductive NOAEL	2 220 mg/kg bw per day (highest dose tested; rat)
Developmental toxicity	
Target/critical effect	Reduced viability and number of live fetuses
Lowest relevant maternal NOAEL	50 mg/kg bw per day (rabbit)
Lowest relevant embryo/fetal NOAEL	50 mg/kg bw per day (rabbit)
Neurotoxicity	
Acute neurotoxicity LOAEL	500 mg/kg bw
Subchronic neurotoxicity NOAEL	2 mg/kg bw per day (dog)
Developmental neurotoxicity NOAEL	No data
Delayed neurotoxicity	Negative
Other toxicological studies	

Studies with HEPA	Oral LD_{50}: > 2 000 mg/kg bw (rat) 28-day study: NOAEL = 350 mg/kg bw per day (rat) Negative in a gene mutation test in bacteria and in a gene mutation test and a chromosomal aberration test in mammalian cells in vitro
Human data	
	NOAEL 0.5 mg/kg bw per day. Transient, subjective clinical signs were reported in a 28-day oral (capsule) study in human volunteers, using ethephon doses of approximately 1.5–2.2 mg/kg bw per day. No effects on plasma or erythrocyte cholinesterase activities.

[a] Unlikely to pose a carcinogenic risk to humans from the diet.

Summary

	Value	Study	Safety factor
ADI	0–0.05 mg/kg bw	Sixteen-day and 28-day studies in humans	10
ARfD	0.05 mg/kg bw	Sixteen-day and 28-day studies in humans	10

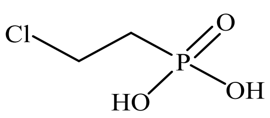
RESIDUE AND ANALYTICAL ASPECTS

Ethephon, 2-chloroethylphosphonic acid, is a systemic plant growth regulator belonging to the phosphonate family. It is readily absorbed by the plant and releases ethylene, a natural plant hormone. Ethylene not only influences directly several physiological processes such as ripening and maturation, but also stimulates the endogenous ethylene production. It has been registered in many countries for a variety of crops, including fruits, vegetables, cereals and oilseed crops.

Ethephon was first evaluated by JMPR in 1977 as a new compound, and then reviewed several times for residues. It was evaluated under the periodic review programme in 1994. The compound was listed in the Priority List by the Forty-sixth Session of CCPR in 2014 for toxicological and residue evaluation by the current Meeting in the CCPR periodic review programme.

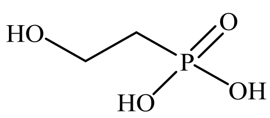
The Meeting received information on identity, metabolism and environmental fate, residue analysis, use pattern, supervised trials (on apples, cherries, grapes, figs, olives, pineapples, tomatoes, cereals, and cotton), processing, and animal feeding studies.

In this Appraisal, the following names were used for referred compounds.



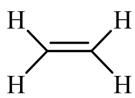
Ethephon

2-Chloroethylphosphonic acid



HEPA

(2-hydroxyethyl)-phosphonic acid



Ethylene

Plant metabolism

The Meeting received information on plant metabolism studies conducted on a variety of plants including information from the published scientific literature. The information dated from 1962 to 2003 and covered peaches, grapes, pineapples, cucumbers, squash, melons, tomatoes, wheat, hazelnuts, walnuts and cotton.

Many studies conducted on various plants indicate the release of ethylene after treatment with ethephon. In several of such studies, methanol, acidified methanol or water was used to extract ethephon from fruits and/or leaves and, where data are available, significant amount of the applied radioactivity (> 60%) or TRR (> 80%) was recovered in the surface wash and solvent extract combined.

The studies involving characterization and identification of other metabolites are described below.

Tomato plants grown outdoor were treated with a foliar spray of uniformly labelled [^{14}C]ethephon at a rate approximating 1.46 kg ai/ha at the "green mature" or "colour break" growth stage and fruits were harvested 0, 5 and 12 days after the treatment (DAT). The majority of the radioactivity was recovered from the methanol surface wash on 0 DAT but 96% (including surface wash) and 98% of the TRR was recovered in methanol extracts of 5 DAT and 12 DAT samples respectively.

The predominant radioactive residue in methanol extract of tomato fruit was ethephon, 70% and 59% of the TRR corresponding to 1.2 mg/kg and 0.68 mg/kg in 5 DAT and 12 DAT was found in fruits, respectively. The concentration of ethephon decreased over the time period in the study from 7.5 mg/kg at 0 DAT to 0.68 mg/kg at 12 DAT. The only significant metabolite found was HEPA accounting for 15% TRR (0.26 mg/kg) on 5 DAT and 13% TRR (0.15 mg/kg) on 12 DAT. No other metabolites exceeded 5% TRR in the methanol extract.

Wheat plants grown outdoor were treated with a foliar spray of [^{14}C]ethephon at a rate of 0.36 kg ai/ha and 3.6 kg ai/ha at the forage stage (BBCH 39) and forage samples were collected on 0 DAT, hay on 14 DAT and grain and straw on 34 DAT. The majority of radioactivity was recovered in methanol extracts of plant parts (hay and straw) on 14 and 34 DAT regardless of the dose used (94% TRR including 1% in surface wash in hay of both doses and 58% and 74% TRR in straw respectively) while radioactivity was similarly distributed in the methanol surface wash and methanol extract (45–46% and 54–55% TRR) of forage on 0 DAT. Unextracted residues were about 5% in 14 DAT for hay and 10% (1×) and 26% (10×) in 34 DAT for straw.

Methanol extraction recovered only 28 and 22% TRR from grain samples after the low and high doses. Acid hydrolysis of the remaining solid released a further 56 and 71% TRR; extraction of the post-hydrolysis solids released a total of 9.9% and 4.3% TRR, respectively. This indicates the presence of significant conjugates in grains. Unextracted residues were 1.8–6.0% TRR.

Most of the TRR was attributed to the sum of ethephon and HEPA. The major radioactive residue in 14 DAT hay was HEPA (72% TRR and 3.7 mg/kg) followed by ethephon (20% TRR and 1.0 mg/kg). In the 34 DAT straw, the major radioactive residue was ethephon (62% TRR and 1.5 mg/kg).

In 34 DAT grain, HEPA was found at a similar level as ethephon after the low dose (HEPA 48% TRR and 0.51 mg/kg and ethephon, 44% and 0.47 mg/kg). After the higher dose, approximately two times larger amount of HEPA was found than ethephon (HEPA, total of 60% TRR and 2.0 mg/kg; and ethephon, total of 32% TRR and 1.1 mg/kg). No other metabolites exceeded 3% of TRR.

Cotton plants grown outdoor were treated with a foliar spray at a rate of 1.4 kg ai/ha seven days before harvest. Plants were harvested at 7 DAT. The majority of radioactivity was recovered in methanol/water (9:1) for gin trash (89% TRR) and in methanol extract for seeds (82% TRR).

The predominant radioactive residue in gin trash was ethephon at 93% TRR and 30 mg/kg; and 78% TRR and 0.64 mg/kg in seeds. HEPA was low, 1.7% TRR and 0.52 mg/kg in gin trash and 9.6% TRR and 0.08 mg/kg in seeds. No other metabolites exceeded 2% of TRR.

In summary, plant metabolism studies conducted on tomatoes, wheat and cotton indicate that the metabolism of ethephon in these plants was qualitatively similar and indicate that radioactivity penetrated into plants after a foliar application and translocated to edible matrices of plants.

After foliar application to plants, ethephon was metabolized to ethylene and phosphates and HEPA which would be either metabolized to carbon dioxide and phosphate or incorporated into biomolecules such as proteins, carbohydrates and lipids after further metabolism.

In tomatoes, cotton, and wheat hay, most radioactivity was recovered from methanol extracts whilst in wheat grains and straw a significant amount of radioactivity was recovered in the acid hydrolysate, suggesting ethephon is present in conjugated forms.

In tomato and cotton, ethephon was the predominant residue with little HEPA present. However, in wheat grains, HEPA and its conjugates were present at a similar concentration as that of ethephon and its conjugates after the 1× dose and approximately two times higher concentration than ethephon after the 10× exaggerated rate in grain. In wheat hay, HEPA was present at 3.5 times higher than ethephon.

Ethephon would be an appropriate marker for plants except cereal grains and straw in which ethephon was significantly metabolised to HEPA and to conjugates of ethephon and HEPA.

Animal metabolism

The Meeting received information on the fate of orally-dosed [^{14}C]ethephon in lactating goats and laying hens.

Metabolism studies on laboratory animals including rats were reviewed in the framework of toxicological evaluation by the current JMPR.

After oral administration of ethephon to rats, absorption was rapid with a Tmax of 1.0–1.3 hours and 1.9–2.5 hours after a single oral dose of 50 or 1000 mg/kg bw, respectively. Six days after a single dose tissue, and carcass contained only 0.08% or less of administered radioactivity. Highest concentrations were found in liver and kidney. Radioactivity was excreted in urine (47–60%), expired air (18–21%, mainly ethylene) and faeces (4–6.5%), indicating that at least 65% of the administered dose was absorbed. Ethephon was mainly metabolized to ethylene and to a small extent to HEPA.

Two lactating goats were orally administered [^{14}C]ethephon twice daily after am and pm milking in capsules for seven consecutive days at 0.37 and 0.46 mg/kg bw/day (approximately 10 ppm in the diet). The goats were sacrificed approximately 16 hours after the last dose.

A significant portion of the administered dose was released as ethylene (29%) and carbon dioxide (2.0%). Radioactivity was also excreted in urine (19%) and faeces (6.7%). In total, milk contained 3.3% of the administered dose, tissues 3.0%, and content of gastro ontestinatl (GI) tract, 0.84%. Amongst tissues, kidney contained the highest radioactivity at 1.2 mg eq/kg followed by liver at 1.0 mg eq/kg. Fat contained 0.50 mg eq/kg, heart 0.16 mg eq/kg and muscle 0.10 mg eq/kg. Over the study period, average TRR in milk increased from 0.081 mg/kg on day 0.5 to a plateau level of 0.42 mg/kg at day 3.5. The fat fraction of milk contained 45% of the TRR in milk; skimmed milk contained 0.15–0.20 mg eq/kg; and milk fat, 3.0–4.2 mg eq/kg.

In order to estimate ethephon, portions of tissues were hydrolyzed by shaking at 40 °C at pH 11 for one hour to transform ethephon to ethylene. Ethylene released by this hydrolysis was 0.4% TRR in kidney corresponding to 0.008 mg/kg ethephon, 0.05% TRR in fat, and 0% TRR in muscle, liver and milk. Radioactivity in the remaining solids were 0.3%, 2.1%, 71% and 35% of the respective TRR in kidney, liver, muscle and fat.

Extraction of a portion of liver with ether released 5.3% TRR, methanol, a further 64% TRR leaving 27% TRR unextracted. Precipitation with trichloroacetic acid resulted in 12% TRR in liver which is associated with proteins. Glycogen was isolated at a concentration of 0.9 mg/kg.

Two studies were provided on metabolism of ethephon in laying hens. In both studies, hens were orally administered either by capsule or gavage [^{14}C]ethephon at a rate equivalent to 53–67 ppm in the diet for five consecutive days. Hens in the first study were sacrificed 22–23 hours after the last dose and those in the second 9–10 hours after the last treatment.

In the first study, the majority of the administered dose (58%) was recovered as expired ethylene while expired carbon dioxide was negligible. In the excreta, 26–30% of the administered dose was recovered. Liver contained 0.31 mg eq/kg (average), followed by kidney with 0.20 mg eq/kg and fat with 0.15 mg eq/kg. Radioactive residues in the eggs and tissues accounted for less than 1% of the administered dose. Muscle contained 0.023 mg eq/kg showing lower levels than other tissues. Radioactive residues in eggs reached a plateau on Day 4. No identification of metabolites was carried out in this study.

In the second study, approximately one third of the administered dose was recovered in excreta. About 3% of the administered dose was recovered as ethylene but this percentage is not reliable due to the leakage in the experiment. Radioactive residues in the eggs and tissues accounted for less than 1% of the administered dose. Kidneys contained 0.71−1.1 mg eq/kg, liver 0.63–0.90 mg eq/kg, and fat 0.051–0.091 mg eq/kg and muscle, 0.051–0.058 mg eq/kg. Radioactive residues in eggs did not reach a plateau within the study period of 5 days. Higher radioactivity was found in eggs in this study than the first study reaching the level of approximately 0.40 mg eq/kg on Day 5. In eggs, egg yolk contained much higher radioactivity than egg white (1.02 mg eq/kg egg yolk and 0.092 mg eq/kg in egg white).

Ethephon and HEPA were identified in methanol/water extracts of muscle, liver and kidney but not in the hexane/tetrahydrofuran extracts of fat or eggs (both yolk and white). Ethephon was the major residue in kidney accounting for 42% of TRR (0.30 mg/kg) but at a similar level as HEPA in liver (ethephon, 0.11 mg/kg; HEPA, 0.10 mg/kg) and muscle (ethephon, 0.006 mg/kg; HEPA, 0.009 mg/kg). Significant radioactivity was incorporated into amino acids (3–35% of TRR) in these tissues and in fatty acids (around 40% TRR) in fat. Significant amounts of radioactive residues (23 or 40% TRR for liver and 42 or 71% TRR for fat) remain unidentified. In eggs, radioactivity was incorporated into peptides (93% TRR in egg white) and fatty acids/cholesterol/glycerol (77–79% in egg yolk).

In summary, ethephon, when administered orally, was rapidly eliminated either in the excreta or expired as ethylene. Ethephon and HEPA were identified in kidney, liver and muscle in hens. Ethephon was found in kidneys of goats at very low concentrations. Ethephon was metabolized through two routes: metabolized to ethylene and/or to carbon dioxide through HEPA. A similar metabolic pattern was observed in rats, goats and hens. In livestock, radioactivity was found in fatty acids, proteins and glycogen.

Environmental fate

Hydrolysis

Ethephon degrades rapidly at pH 7 and 9 with the half-life of 2.4 and 1.0 day, respectively. At pH 5, it degrades more slowly with a half-life of 73.5 days. Ethylene gas and methylated phosphoric acid were the only degradation products found.

Photochemical degradation

Ethephon showed degradation under continuous irradiation for 360 hours at pH 5 at 25 °C. The half-life was 29 days under irradiation and 51 days without irradiation. Ethephon and ethylene were the only major compounds found. Ethylene was the only degradate of ethephon in the headspace.

Aerobic soil metabolism

The studies on aerobic soil degradation of ethephon in five different soils at 20–25 °C indicate that ethephon applied on soil degraded over time with different rates with the formation of ethylene. DT_{50} values ranged from 2.7–38 days for the five soils tested.

Photolysis on soil surface

Photolysis of ethephon on soil was found to be insignificant. Only ethylene and carbon dioxide were formed.

Field dissipation

Field dissipation studies were conducted at three sites in the USA. In all cases ethephon declined with time. DT_{50} values were 6.8–2 5 days.

Residues in succeeding crops

A confined rotational crop study was conducted to examine the nature and level of residues of ethephon in three succeeding crops (radish, collard and wheat) under outdoor conditions. A single application of radio-labelled ethephon was made on bare plots in plastic containers at a rate of 2.36 kg ai/ha (approximating the highest single application rate for cotton in the USA among approved label rates available to the Meeting). After plant back intervals (PBI) of 30, 120 and 379 days, collard, radish and wheat were planted into the treated soil. Mature radish, collard and wheat were harvested 54–62 days, 68–91 days and 110–158 days after planting. Immature wheat foliage was harvested 47–68 days after planting.

Ethephon declined steadily in soil. Radioactivity in mature plant samples declined in parallel with or faster than the decline in soil. The total extracted radioactive residues were at or lower than 0.07 mg eq/kg in any sample analysed. The solvent extraction recovered 34–37% TRR in 30 day PBI collards, 120 day PBI radish top and 30 day PBI and 120 day PBI wheat forage. As observed in the metabolism study on wheat, only 7.3–24% TRR were extracted by solvents from 30 day PBI and 120 PBI wheat grains and straw.

In the HPLC analysis of plant extracts, where radioactivity was sufficient for characterization, ethephon and HEPA were detected at or below 0.01 mg/kg in the extracts of radish, collard and wheat. No unknown peaks were observed. Sequential treatments of the unextracted radioactive residues for natural components indicated that most of the radioactivity in the plant samples were incorporated into biomolecules, such as starch, proteins, and cellulose fractions.

Overall, ethephon was shown to degrade relatively fast in soil with half-lives around or shorter than the plant back interval of 30 days. The confined succeeding crop study indicated the presence of very low levels of ethephon and HEPA in rotational crops. Therefore, no significant residues of ethephon or HEPA would be expected in rotational crops.

Methods of analysis

Analytical methods for determination of residues of ethephon and its metabolite HEPA were developed for a wide range of matrices of plant and animal origin.

There are three different principles for these analytical methods:

- Ethylene-release by heating in alkaline solution (headspace GC-FID)
- Derivatization to methyl ester using diazomethane (GC-FPD or GC-NPD)
- Extraction: mostly by methanol, acidified methanol or 0.01% formic acid
- LC-MS/MS (m/z 143→ 107 or 145-> 107 and HEPA 125→ 95)
- Extraction: mostly by a mixture of methanol, water and formic acid. Clean-up: mostly with SPE column.

The LC-MS/MS methods were used in the more recent studies.

The methods for plant matrices were validated for ethephon resulting in acceptable mean recoveries and relative standard deviations (RSDs) with the LOQ of 0.01–0.05 mg/kg. They are suitable for determining ethephon in a free form (some methods also for free HEPA).

An LC-MS/MS method was recently developed to determine ethephon and HEPA in both free and conjugated forms in cereal grains, straw and green materials. For the extraction of these compounds, grains and straw were extracted first with methanol and then by a mixture of concentrated hydrochloric acid and water at 50 °C overnight and the extract and hydrolysate were combined for analysis. For green materials, this acid hydrolysis step was not included. This method was validated for ethephon and HEPA in these matrices resulting in acceptable mean recoveries and RSDs with the LOQ of 0.01 mg/kg for grains and 0.05 mg/kg for straw and green materials.

Methods for animal matrices were validated for ethephon resulting in acceptable mean recoveries and RSDs. The LOQ was 0.002–0.01 mg/kg. They are suitable for determining ethephon in a free form.

A multi-residue method DFG S19 (two variants) was examined for analysis of ethephon in plants for enforcement. However, due to low extraction (30%), this method does not seem appropriate for analysis of ethephon.

Stability of pesticide residues in stored analytical samples

The stability of ethephon was investigated in homogenates of various plant and animal matrices at –20–15 °C at fortification levels 0.2–1.0 mg/kg (plant matrices) or 0.1 mg/kg (animal matrices).

Ethephon was stable when stored frozen for at least 24 months in apples, cherries, grapes, blackberries, pineapples (fruit and forage), melons (36 months), peppers, tomatoes, wheat (grain and straw) and cotton seed (25 months). It was also stable for at least 12 months in apple juice and cotton seed oil.

Ethephon was stable when stored frozen for at least 4 months, the longest period tested, in bovine milk, bovine meat and egg.

Definition of the residue

Plant metabolism studies indicate that ethephon is metabolised in a qualitatively similar pattern in plants. Ethephon penetrates into plants after foliar application and residues of ethephon were found in edible commodities. Ethephon was metabolized to ethylene, which is naturally occurring in plants (but at levels not relevant to MRL setting). Ethephon was metabolized to form HEPA and further metabolized to be incorporated in many biomolecules, such as proteins, carbohydrates and lipids.

In the plants studied, ethephon was the major residue. Except for cereal grains, hay and straw, HEPA was found at much lower concentrations than the parent. In wheat plant fractions, HEPA was present at similar concentrations or higher concentrations than those of ethephon in grain and in hay.

In wheat grains and straw, radioactive residues were recovered at a significant proportion from acid hydrolysate and most of these radioactivity was attributed to ethephon and HEPA. This indicates that ethephon and HEPA were also present in these commodities in the form of conjugates.

The current Meeting considered that HEPA is not a toxicologically relevant metabolite as it does not inhibit cholinesterase activity and the NOAEL for HEPA in a 28-day gavage study in animals is at least two orders of magnitude higher than the NOAEL in humans that formed the basis of the ADI and ARfD.

Residues of ethephon were not expected to occur in significant concentrations in rotational crops.

In summary, the Meeting noted that in cereal grains and straw, presence of ethephon in the form of conjugates is significant. In other plant commodities, the Meeting considered that ethephon would be a good marker for enforcement and for estimation of dietary intake.

One recently developed and validated method, involving methanol extraction and acid hydrolysis/extraction of post methanol-extraction solids is capable of determining total ethephon in free and conjugated forms in cereal matrices. There are other validated methods suitable for determining ethephon in its free form in plant matrices.

In animal metabolism studies, ethephon was rapidly eliminated either in the excreta or exhaled as ethylene. Ethephon was found at low levels in tissues. No metabolites were significant. The Meeting considered that ethephon is a suitable marker for enforcement and for estimation of dietary intake.

There are validated methods available for the determination of ethephon in its free form in animal matrices.

The log K_{ow} (–1.8 to –0.6 at 20 °C) indicates that ethephon is highly water-soluble. Although radioactive residues were found at higher levels in milk fat and egg yolk than skimmed milk or egg white, they were attributed to radioactivity incorporated into fatty acids. The Meeting concluded that the residue is not fat-soluble.

Based on the above, the Meeting recommended the following residue definitions for plant and animal commodities.

Definition of the residue for plant commodities except cereal grains and straw (for compliance with the MRL and for estimation of dietary intake): *Ethephon.*

Definition of the residue for cereal grains and straw (for compliance with the MRL and for estimation of dietary intake*): Ethephon and its conjugates, expressed as ethephon.*

Definition of the residue for animal commodities (for compliance with the MRL and for estimation of dietary intake): *Ethephon.*

The residue is not fat-soluble.

Results of supervised residue trials on crops

The Meeting received supervised trial data for ethephon on apples, cherries, grapes, figs, olives, pineapples, tomatoes (outdoor and indoor), barley, rye, wheat and cotton using foliar sprays of mostly SL formulations containing various concentrations of ethephon.

As ethephon is reviewed under the periodic review programme, the Meeting decided to withdraw its previous recommendations for blueberries, cantaloupes, peppers, dried chilli peppers, hazelnuts and walnuts due to the lack of data.

Apple

A total of 18 supervised trials were conducted on apples in Europe in 2000, 2002, 2006 and 2007, eight in France, two in Germany, one in the UK, two in Italy, two in Spain, one in Portugal and two in Greece.

Residues of ethephon from 13 trials matching critical GAP for apple in France (0.036 kg ai/hL, one to two applications, and pHI 10 days) were: < 0.05, 0.06, 0.07, 0.08, 0.08, 0.14, 0.15, 0.15, 0.24, 0.26, 0.27, 0.40 and 0.49 mg/kg.

The trials matching GAP in France were appropriate for estimating a maximum residue level. The Meeting estimated a maximum residue level of 0.8 mg/kg for apples to replace the previous recommendation. The Meeting also estimated an STMR of 0.15 mg/kg and an HR of 0.49 mg/kg.

Cherries

A total of 15 supervised trials were conducted on cherries in Europe in 2000, 2002 and 2009, ten in France, one in Italy, one in Spain, one in Greece, one in Belgium and one in the Netherlands.

Residues of ethephon from 13 trials matching GAP in Austria for cherries and in the Netherlands for sour cherries (0.36 kg ai/ha, one application, PHI 7 days) were: 0.28, 0.30, 0.33, 0.37, 0.44, 0.52, 0.65, 0.67, 0.91, 1.4, 2.0, 2.3 and 2.7 mg/kg.

The Meeting estimated a maximum residue level of 5 mg/kg for cherries to replace the previous recommendation and an STMR of 0.65 mg/kg and an HR of 2.7 mg/kg.

Grapes

A total of ten supervised trials were conducted on grapes in France in 1995, 2006 and 2009. The GAP in France for grapes allows one application at a maximum rate of 0.45 kg ai/ha with a PHI of 28 days.

Residues from ten trials matching GAP in France were: 0.05, 0.07, 0.14, 0.18, 0.18, 0.20, 0.21, 0.25, 0.37 and 0.52 mg/kg.

The Meeting estimated a maximum residue level of 0.8 mg/kg for grapes to replace the previous recommendation, an STMR of 0.19 mg/kg and an HR of 0.52 mg/kg.

Fig

Six supervised trials were conducted on figs in Brazil in 2004–2005. GAP in Brazil for figs allows one application of 0.94 kg ai/hL with a PHI of 5 days. Ethephon should be applied directly to fruits using brushes with sponge tips or other equipment for even distribution.

Residues from three trials matching GAP in Brazil were, 0.71, 0.73 and 0.75 mg/kg. The Meeting estimated a maximum residue level of 3 mg/kg, an STMR of 0.73 mg/kg and an HR of 0.75 mg/kg for fig.

Olives

Eight supervised trials were conducted on olives in Spain in 2007–2008. GAP in Italy allows two applications (1st application 18 days before harvest at a rate of 0.45 kg ai/ha and 2nd application 11 days before harvest at 0.60 kg ai/ha) with a PHI of 11 days.

Residues from eight trials matching GAP in Italy were, 0.85, 0.90, 0.98, 1.6, 2.2, 2.5, 2.6 and 4.3 mg/kg.

The Meeting estimated a maximum residue level of 7 mg/kg, an STMR of 1.9 mg/kg and an HR of 4.3 mg/kg for olives.

Pineapple

A total of 15 supervised trials were conducted. Five in Brazil in 1994, 1995 and 2005, two in Costa Rica in 1998, two in Côte d'Ivoire in 1997 and 1998, and six in the USA in 1989.

GAP in Kenya for pineapple allows one application at the maximum rate of 1.92 kg ai/ha with a PHI of 7 days. Residues from trial conducted in Côte d'Ivoire matching this GAP were (n=2): 0.11 and 0.97 mg/kg.

Residues from five trials in Brazil matching GAP in Brazil for pineapple (one application at a maximum rate of 0.94 kg ai/ha with a PHI of 14 days) were: < 0.05, 0.11, 0.15, 0.19 and 0.20 mg/kg.

The trials conducted in the USA involved two applications of ethephon and the rate of the first application was two times higher than GAP in Costa Rica (up to two applications at the maximum rate of 1.2 kg ai/ha with a PHI of 1 day; first one 5–7 months before harvest and second 1–2 weeks before harvest) but it was made six months earlier than the expected harvest time with little impact on the residues at harvest.

In the trial in Costa Rica, pineapple was harvested on 0 DALA but as the decline trials indicated that there was no significant decline from 0 to 1 DALA, the Meeting agreed to use the data from 0 DALA.

Residues from trials conducted in the USA and Costa Rica matching GAP in Costa Rica were (n=4), 0.19, 0.22, 0.42 and 0.72 mg/kg. One trial conducted in Brazil matched GAP in Costa Rica and residues were (n=1), 0.47 mg/kg. Combined residue dataset was (n=5), 0.19, 0.22, 0.42, 0.47 and 0.72 mg/kg.

As the dataset from five trials matching GAP in Costa Rica would lead to a higher maximum residue level than the dataset from five trials matching GAP in Brazil, the Meeting decided to use the dataset associated with GAP in Costa Rica. The Meeting estimated a maximum residue level of 1.5 mg/kg to replace its previous recommendation.

The Meeting calculated a mean pulp/whole fruit ratio to be 0.29 using residue levels higher than LOQ. Using the mean and highest residue in whole fruit and this ratio, the Meeting estimated an STMR of 0.12 mg/kg and an HR of 0.21 mg/kg for pineapple.

Tomato

A total of 33 supervised trials on tomatoes were conducted. Twenty-one trials were in Europe in 1999, 2000, 2001 and 2004 and 15 in the USA in 1989–1991 and 2005. As the labels provided to the Meeting do not specify outdoor or indoor uses, the Meeting considered both trials conducted outdoor and indoor.

The critical GAP for the European trials was GAP in Italy which allows the maximum rate of 1.92 kg ai/ha which can be divided into two applications with a PHI of 7 days. Residues from 12 outdoor trials in Europe matching GAP in Italy were 0.24, 0.30, 0.40, 0.45, 0.46, 0.5, 0.55, 0.57, 0.62, 0.68, 0.78, and 0.78 mg/kg.

Residues from nine indoor trials matching GAP in Italy were 0.31, 0.36, 0.45, 0.51, 0.52, 0.66, 0.68, 0.69 and 0.79 mg/kg.

Residues from five independent outdoor trials in the USA matching GAP in Canada (one application of 1.54 kg ai/ha, PHI 14–21 days) were 0.05, 0.06, 0.09, 0.67 and 0.69 mg/kg.

As the outdoor and indoor trials conducted in Europe were in compliance with the same GAP of Italy and they were not significantly different according to Mann-Whitney U test, they could be combined to estimate a maximum residue level. Residues in the combined data set were 0.24, 0.30, 0.31, 0.36, 0.40, 0.45, 0.45, 0.46, 0.5, 0.51, 0.52, 0.55, 0.57, 0.62, 0.66, 0.68, 0.68, 0.69, 0.78, 0.78 and 0.79 mg/kg.

The Meeting confirmed the pervious recommendation of 2 mg/kg for tomato and estimated an STMR of 0.52 mg/kg and an HR of 0.79 mg/kg.

Cereal grains

As the residue definition for cereal grains was recommended to be “ethephon and its conjugates, expressed as ethephon”, the Meeting used only those trial data obtained with the recently developed analytical method involving acid hydrolysis to convert ethephon conjugates to free ethephon.

Barley

A total of 53 trials were conducted in Europe in 2000, 2001, 2004, 2007, 2008, 2013 and 2014 on barley.

There are several different groups of GAP in Europe. Critical GAP is either GAP in the UK allowing a maximum single rate of 0.48 kg ai/ha, maximum total rate of 0.48 kg ai/ha, and application timing up to BBCH 49, or GAP in Germany allowing one application at a maximum rate of 0.46 kg ai/ha up to BBCH 49.

Residues from seven trials matching GAP in the UK or Germany were 0.03, 0.07, 0.09, 0.13, 0.23, 0.41, 0.73 mg/kg.

The Meeting estimated, using the dataset matching GAP in the UK or Germany, a maximum residue level of 1.5 mg/kg for barley grains to replace the previous recommendation, and an STMR of 0.13 mg/kg.

Rye

Nine supervised trials were conducted in 2006–2007 in Europe. No data were available on the sum of free and conjugated ethephon in rye grains. (See “Wheat” section below.)

Wheat

A total of 43 supervised trials were conducted on wheat in Europe in 2000, 2001, 2004, 2006, 2007, 2013 and 2014.

There are several different groups of GAP in Europe. Critical GAP is that in Austria and Germany allowing one application at a maximum rate of 0.46 kg ai/ha with application timing up to BBCH 51.

Residues from eight supervised trials matching these GAP were 0.05, 0.06, 0.06, 0.08, 0.11, 0.14, 0.23 and 0.31 mg/kg.

The Meeting estimated, using the dataset from trials matching GAP in Austria and Germany, a maximum residue level of 0.5 mg/kg for wheat grains to replace the previous recommendation, and an STMR of 0.095 mg/kg.

As there are similar GAPs existing for wheat, rye and triticale in countries in Europe, the Meeting decided to extrapolate the maximum residue level and STMR for wheat to rye and triticale.

Cotton seed

A total of ten trials were conducted in Europe in 1993, 1994, 1995 and 2008 on cotton, 41 trials in the USA in 1989, 1993 and 1994, and seven trials in Brazil in 1996 and 2006.

Residues from ten trials conducted in Europe matching GAP in Greece for cotton (one application at a maximum rate of 1.44 kg ai/ha with a PHI of 7 days) were 0.07, < 0.10, < 0.10, < 0.10, 0.10, 0.19, 0.30, 0.35, 0.59 and 1.13 mg/kg.

Residues from six independent trials conducted in Brazil matching GAP in Brazil for cotton (one application at a maximum rate of 1.2 kg ai/ha with a PHI of 7 days) were all below the LOQ: < 0.10 (4) and < 0.20 (2) mg/kg.

Residues from 30 trials matching GAP in the USA for cotton (one application at a maximum rate of 2.24 kg ai/ha with a PHI of 7 days) were 0.06, 0.09, 0.10, 0.11, 0.16, 0.18, 0.23, 0.24, 0.26, 0.26, 0.34, 0.35, 0.36, 0.41, 0.54, 0.55, 0.59, 0.61, 0.65, 0.69, 0.75, 0.86, 1.18, 1.42, 1.50, 2.40, 2.42, 2.73, 2.88 and 4.93 mg/kg.

As the residues from US trials would lead to a higher maximum residue level, the Meeting used the results of the US trials to estimate a maximum residue level. The Meeting estimated a maximum residue level of 6 mg/kg for cotton seed to replace the previous recommendation, and an STMR of 0.545 mg/kg.

Animal feed

Cereal forage

As there is no restriction on feed uses of treated cereal plants, the Meeting used residues in forage samples collected on 0 DALA for cereal forage. Since the determination of ethephon in green materials do not require acid hydrolysis, the Meeting used all available data on barley green material.

Barley forage

Residues in forage collected on 0 DAT from 19 trials matching GAP in the UK or GAP in Germany (a maximum single rate of 0.48 kg ai/ha, maximum total rate of 0.48 kg ai/ha, and application timing up to BBCH 49, or one application at a maximum rate of 0.46 kg ai/ha up to BBCH 49) were 2.6, 3.0, 3.2, 4.2, 4.8, 5.1, 5.7, 6.2, 6.2, 6.2, 6.6, 6.6, 7.7, 7.9, 8.1, 8.4, 9.4, 10 and 11 mg/kg.

Residues from 15 trials matching GAP in France (one application at a maximum application rate of 0.48 kg ai/ha and application timing up to BBCH 39 with a PHI of 56 days) in forage were 3.3, 3.5, 4.2, 4.6, 5.2, 5,6, 5.6, 5.9, 6.0, 6.2, 6.7, 8.1, 8.2, 8.3 and 9.5 mg/kg.

Residues from five trials matching GAP in Poland (one application at a maximum application rate of 0.72 kg ai/ha and application timing up to BBCH 39 were 6.0, 7.1, 8.9, 9.6 and 13 mg/kg.

Residues from seven trials matching another GAP in France (one application at a maximum rate of 0.23 kg ai/ha and application timing up to BBCH 39) were 3.0, 3.7, 4.1, 4.5, 5.2, 5.4, 5.9 and 7.5 mg/kg.

Residues arising from five trials using the application rate of 0.72 kg ai/ha showed higher median and highest residues. Based on this dataset, the Meeting estimated a median residue of 8.9 mg/kg and a highest residue of 13 mg/kg ("as received" basis) for barley forage for animal dietary burden calculation.

Rye forage

Residues in forage collected on 0 DAT from nine trials matching GAP in Germany and Austria (one application at a max rate of 0.73 kg ai/ha, application timing up to BBCH 49) were 4.4, 6.4, 7.2, 7.7, 9.1, 9.2, 9.4, 9.6 and 13 mg/kg.

The Meeting estimated a median and highest residue of 9.1 mg/kg and 13 mg/kg for rye forage on an "as received" basis.

Wheat forage

Residues in forage collected 0 DAT from 17 trials matching GAP in Austria and Germany (one application at a maximum rate of 0.46 kg ai/ha, application timing up to BBCH 51) were 3.1, 3.3, 3.5, 4.0, 4.9, 5.2, 5.9, 6.2, 6.4, 6.5, 7.0, 7.0, 7.1, 7.2, 7.5, 10 and 16 mg/kg.

Residues from 18 trials matching GAP in France (one application at a maximum rate of 0.48 kg ai/ha and application timing up to BBCH 39) were 3.1, 4.5, 4.9, 5.6, 5.7, 6.0, 6.1, 6.9, 7.0, 7.2, 7.4, 7.7, 8.3, 12, 14, 14, 17 and 18 mg/kg

Using the dataset from trials matching GAP in France, the Meeting estimated a median residue of 7.1 mg/kg and a highest residue of 18 mg/kg for wheat forage ("as received" basis).

Cereal straw and fodder, dry

As the residue definition for cereal straw was recommended to be "ethephon and its conjugates, expressed as ethephon", the Meeting used only those trial data obtained using the recently developed analytical method involving acid hydrolysis to convert ethephon conjugates to free ethephon.

Barley straw and fodder, dry

Residues from seven trials matching GAP in the UK or Germany (a maximum single rate of 0.48 kg ai/ha, maximum total rate of 0.48 kg ai/ha, and application timing up to BBCH 49, or one application at a maximum rate of 0.46 kg ai/ha up to BBCH 49) in straw were 0.35, 0.43, 0.51, 0.64, 1.2, 1.5 and 3.6 mg/kg.

Using the data set from the trials matching GAP in the UK or Germany, the Meeting estimated a maximum residue level of 7 mg/kg on a dry weight basis (moisture content of 89%) to replace the previous recommendation. For the purpose of calculation of animal dietary burden, the Meeting estimated a median residue and highest residue of 0.64 mg/kg and 3.6 mg/kg ("as received" basis).

Rye straw and fodder, dry

No data were available on the sum of free and conjugated ethephon in rye straw. (See "Summary of cereal straw and fodder, dry" section below.)

Wheat straw and fodder

Residues from eight trials matching GAP in Austria and Germany (one application at a maximum rate of 0.46 kg ai/ha and application timing up to BBCH 51) in straw were 0.36, 0.44, 0.57, 0.66, 1.2, 1.2, 1.3 and 1.5 mg/kg.

Residues from eight trials matching GAP in France (one application at a maximum rate of 0.48 kg ai/ha and application timing up to BBCH 39 with a PHI of 70 days) in straw were 0.21, 0.29, 0.30, <u>0.44</u>, <u>0.84</u>, 0.86, 1.2 and 1.7 mg/kg.

Using the data set from the trials matching GAP in France, the Meeting estimated a median residue of 0.64 mg/kg and a highest residue of 1.7 mg/kg ("as received" basis).

Summary

The Meeting noted that it is not always possible to distinguish straw and fodder of barley, rye, triticale and wheat moving in trade, due to their similarity in appearance. It also noted that there are common or similar GAPs existing for wheat, rye and triticale in countries in Europe. The Meeting decided to extend the maximum residue level recommended for barley straw and fodder at 7 mg/kg on a dry weight basis to straw and fodder of wheat, rye and triticale. The new maximum residue levels for rye and wheat straw and fodder, dry replaces the respective previous recommendations.

The median residue and highest residue estimated for wheat straw and fodder should also apply to rye and triticale straw and fodder, dry.

Cotton gin trash

In 12 US trials, residues in <u>cotton gin trash</u> were analysed and reported. Residues in cotton gin trash from ten trials matching GAP in the USA were: 8.41, 11.1, 13.5, 17.1, 25.1, 28.9, 40.5, 45.5, 54.2 and 55.7 mg/kg. The Meeting estimated a median residue of 27 mg/kg. From the highest residue concentration of individual samples, the Meeting estimated a highest residue of 67 mg/kg.

Fate of residues during processing

High temperature hydrolysis

To simulate the degradation of ethephon during pasteurization, baking, brewing, boiling and sterilisation, the hydrolysis of radio-labelled ethephon was investigated in sterile buffered aqueous solutions.

After incubation at 90 °C (pH 4) for 20 minutes, about 80% of ethephon remained and about 10% was recovered as ethylene. The majority of ethephon was converted to ethylene (76–78%) after incubation at 100 °C (pH 5) for 60 minutes or 120 °C (pH 6) for 20 minutes. Only a minor amount of HEPA was formed.

Processing

The Meeting received information on processing of apple, grapes, olives, tomato, barley, wheat, and cotton seed.

Processing factors calculated for the processed commodities of the above raw agricultural commodities are shown in the table below. STMR-Ps were calculated for processed commodities of apples, grapes, tomatoes, barley, wheat and cotton seed for which maximum residue levels were estimated. Where residues concentrate in processed commodities the Meeting estimated maximum residues levels for these processed commodities using the maximum residue levels for the respective raw agricultural commodities and processing factors.

As no data were available on the processing of fig to dried or dried and candied figs, the Meeting withdrew its previous recommendation on figs, dried and dried and candied.

The processing factor of grape to dried grapes was estimated at 1.2 and therefore a maximum residue level for dried grapes was unnecessary. The Meeting decided to withdraw its previous recommendation on dried grapes.

RAC or Processed commodities	Processing factor		STMR-P	Maximum residue level
	Individual value	Best estimate		
Apple			0.15 (STMR)	0.8
Apple juice	< 0.4, 0.4, 0.5, < 0.8, 1.5	0.5	0.075	–
Apple sauce	0.4, 0.5, < 0.8, 1.1	0.5	0.075	–
Grape			0.19(STMR)	0.8
Dried grapes	0.79, 0.89, 1.0, 1.4, 3.2, 8.5	1.2	0.23	–
Grape juice	0.5, 0.7, 0.8, 1.1	0.75	0.14	–
Must	0.7, 0.8, 0.8, 0.9, 1.0, 1.0	0.85	0.16	–
Wine	0.7, 1.0, 1.2, 1.4, 1.5, 2.1,	1.3	0.25	–
Olives			1.9	–
Olive oil (virgin and refined)	< 0.02, < 0.03	< 0.02	0.038	–
Table olives	< 0.01, < 0.02, < 0.02, < 0.03	< 0.01	0.019	–
Tomato			0.52(STMR)	2
Tomato juice	< 0.1, 0.1, < 0.2, 0.34	0.22	0.18	–
Tomato puree	< 0.1, < 0.1, < 0.2, 0.60	0.60	0.31	–
Tomato paste	0.5, 0.6, 0.75	0.6	0.31	–
Tomato preserves	< 0.1, < 0.2, 0.2	0.2	0.10	–
Barley			0.13(STMR)	1.5
Pearl barley	0.9	0.9	0.12	–
Wheat			0.095 (STMR)	0.5
Flour	0.1, 0.2, < 0.3,	0.15	0.014	–
Wheat germ	2.0	2.0	0.19	1
Wheat bran	1.4, 3.1, 3.5	3.1	0.29	1.5
Cotton seed			0.545 (STMR)	6
Cottonseed refined oil	< 0.02,< 0.03, < 0.03	< 0.02	0.011	–

For the purpose of calculating animal dietary burden, the Meeting estimated the following median residues for feed items.

RAC or Processed commodities	Processing factor		median residue
	Individual value	Best estimate	
Apple			0.15 (STMR)
Wet pomace	0.3, 0.4, 0.6, < 0.8, 1.1	0.5	0.075
Dry pomace	2.0	2.0	0.30
Grape			0.19(STMR)
Wet pomace	0.4, 0.6, 0.9, 1.1	0.75	0.14
Tomato			0.52(STMR)
Wet pomace	< 0.1, < 0.1, < 0.2, 0.52	0.52	0.27
Dry pomace	1.9	1.9	0.99
Barley			0.13(STMR)
Barley hulls	1.6	1.6	0.21
Cotton seed			0.55 (STMR)
Meal	0.02, 0.03, 0.07	0.03	0.016

Residues in animal products

Farm animal feeding studies

Lactating cows received oral administration of ethephon at dose rates equivalent to 44, 128 and 415 ppm in the diet once daily for 28 consecutive days. The residues of ethephon in whole milk appeared to reach plateau after Day 4. Ethephon in milk was 0.007 mg/kg at 44 ppm dose, 0.02 mg/kg at 128 ppm dose, and 0.03 mg/kg at the 415 ppm dose. After a 28 day-administration, the highest concentration of ethephon in kidney was 0.58, 3.2 and 7.8 mg/kg respectively after 44, 128 and

415 ppm dose. In liver, it was 0.08, 0.51 and 0.99 mg/kg. In muscle, the ethephon concentration was much lower at 0.01, 0.05 and 0.12 mg/kg for these dose groups. In fat, at the highest dose, ethephon was present at only 0.06 mg/kg.

Laying hens were orally administered with ethephon at rates equivalent to 2.3, 6.9 and 23 ppm in the diet once daily for 28 consecutive days. The residues of ethephon in whole eggs were very low and those from the highest dose group contained at a maximum 0.0036 mg/kg. Therefore, eggs from the 2.3 ppm and 6.9 diets were not analyzed. After 28-day administration, liver contained the highest concentration of ethephon, 0.033 mg/kg at the 2.3 ppm dose, 0.068 at the 6.9 ppm dose and 0.29 ppm at the 23 ppm dose. In skin + fat, it was 0.014, 0.032 and 0.117 mg/kg. In muscle, it was 0.060 at 23 ppm diet.

Estimation of dietary burdens

The maximum and mean dietary burdens were calculated using the highest and median residues of ethephon estimated at the current Meeting on a basis of the OECD Animal Feeding Table. In Australia, use of ethephon-treated cereal green materials as feed is not allowed and cereal forage is not in trade. Residues arising from use of ethephon in barley, rye and wheat forages were not used for calculating animal dietary burden for the Australian diets.

Summary of livestock dietary burdens (ppm of dry matter diet)

	US-Canada		EU		Australia		Japan	
	Max	Mean	max	Mean	Max	Mean	Max	mean
Beef cattle	4.19	1.65	18.8	9.14	4.04	0.81	0.13	0.13
Dairy cattle	14.5	6.22	18.9 [a]	9.17 [b]	1.46	0.79	0.059	0.059
Broilers	0.11	0.11	0.10	0.10	0.024	0.024	0.015	0.015
Layers	0.11	0.11	7.33 [c]	3.17 [d]	0.024	0.024	0.012	0.012

[a] Suitable for estimating maximum residue levels for milk, meat, fat and edible offal of cattle

[b] Suitable for estimating STMRs for milk, meat, fat and edible offal of cattle

[c] Suitable for estimating maximum residue levels for eggs, meat, fat and edible offal of poultry

[d] Suitable for estimating STMRs for eggs, meat, fat and edible offal of poultry

Residues in milk and cattle tissues

The maximum and mean dietary burdens in cattle were 18.9 and 9.17 ppm of dry matter diet respectively for estimating a maximum residue level and STMR for milk and edible tissues. The maximum residue levels, STMRs and HRs for relevant commodities of mammal origin were estimated using the residue levels in tissues and milk at 0 and 44 ppm feeding groups.

	Feed level (ppm) for milk residues	Ethephon (mg/kg) in	Feed level (ppm) for tissue residues	Ethephon (mg/kg) in			
		milk		Muscle	Liver	Kidney	Fat
Maximum residue level beef or dairy cattle							
Feeding study [a]	0 44	– 0.002	0 44	< 0.01 0.016	0.05 0.095	0.03 0.64	< 0.01 < 0.01
Dietary burden and highest residue	18.9	0.0009	18.8	0.007	0.069	0.29	0.004
STMR beef or dairy cattle							
Feeding study [b]	0 44	– 0.002	0 44	< 0.01 0.01	0.05 0.08	0.03 0.49	< 0.01 < 0.01
Dietary burden and mean residue	9.17	0.0004	8.25	0.002	0.056	0.13	0.002

[a] Highest residues for tissues and mean residue for milk

[b] Mean residues for tissues and mean residue for milk

The level < LOQ at 0 ppm dose is assumed to be 0 mg/kg residue.

The Meeting estimated STMRs of 0.0004, 0.002, 0.056, 0.13 and 0.002 mg/kg, and HRs of 0.0009, 0.007, 0.069, 0.29 and 0.004 mg/kg for milk, meat, liver and kidney respectively.

On a basis of highest residues above, the Meeting estimated maximum residue levels of 0.01 *, 0.01 *, 0.4 and 0.01 * mg/kg for milks mammalian meat, edible offal and fat, respectively.

The previous recommendations for milk of cattle, goats and sheep, meat of cattle, goats, houses, pigs and sheep, and edible offal of cattle, goats, horses, pigs and sheep were withdrawn.

Residues in eggs and chicken tissues

The maximum and mean dietary burdens in poultry were 7.33 and 3.17 ppm of dry matter diet respectively for estimating a maximum residue level and STMR for eggs and edible tissues. The maximum residue levels, STMRs and HRs for relevant commodities of poultry origin were estimated using the residue levels in tissues and eggs at 2.3, 6.9 and 23 ppm feeding groups.

	Feed level (ppm) for egg residues	Ethephon (mg/kg) in			
		Eggs	Muscle	Liver	Fat [a]
Maximum residue level broiler or layer hens					
Feeding study	6.9 23	na 0.0023	0.015 0.060	0.068 0.23	0.032 0.117
Dietary burden and highest residue	7.33	0.00005	0.016	0.072	0.034
STMR broiler or layer hens					
Feeding study	2.3 6.9	na na	< 0.01 0.012	0.031 0.062	0.013 0.024
Dietary burden and mean residue	3.17	0 [b]	0.01	0.037	0.015

[a] From data in fat + skin

[b] At a dose of 23 ppm in the dry matter diet, residues were 0.0036 mg/kg

The Meeting estimated STMR of 0, 0.01, 0.037 and 0.015 mg/kg, and HR of 0.00005, 0.016, 0.072 and 0.034 mg/kg, respectively for poultry eggs, meat, edible offal and fat.

On a basis of HR, the Meeting estimated maximum residue levels of 0.01 *, 0.02, 0.08 and 0.04 mg/kg for eggs, poultry meat, edible offal and fat, respectively. The recommendations for poultry meat and edible offal replace the previous recommendations.

The Meeting withdrew its previous recommendation on chicken eggs.

RECOMMENDATIONS

On the basis of the data from supervised trials the Meeting concluded that the residue levels listed in Annex 1 are suitable for establishing maximum residue limits and for IEDI and IESTI assessment.

Definition of the residue for plant commodities except cereal grains and straw (for compliance with the MRL and for estimation of dietary intake): *Ethephon.*

Definition of the residue for cereal grains and straw (for compliance with the MRL and for estimation of dietary intake): *Ethephon and its conjugates, expressed as ethephon.*

Definition of the residue for animal commodities (for compliance with the MRL and for estimation of dietary intake): *Ethephon.*

The residue is not fat-soluble.

DIETARY RISK ASSESSMENT

Long-term intake

The International Estimated Dietary Intakes (IEDIs) of ethephon were calculated for the 17 GEMS/Food cluster diets using STMRs and STMRPs estimated by the current Meetings (Annex 3). The ADI is 0–0.05 mg/kg bw and the calculated IEDIs were 0–6% of the maximum ADI. The Meeting concluded that the long-term intake of residues of ethephon resulting from the uses considered by the current JMPR is unlikely to present a public health concern.

Short-term intake

The International Estimated Short-Term Intakes (IESTI) of ethephon were calculated for commodities using HRs/HR-Ps and STMRs/STMR-Ps estimated by the current Meeting (see Annex 4). The ARfD is 0.05 mg/kg and the calculated IESTIs were 0–100% of the ARfD for the general population and 0–70% of the ARfD for children. The Meeting concluded that the short-term intake of residues of ethephon, when used in ways that have been considered by the JMPR, is unlikely to present a public health concern.

5.11 FLONICAMID (282)

TOXICOLOGY

Flonicamid is the ISO-approved common name for *N*-cyanomethyl-4-(trifluoromethyl)nicotinamide (IUPAC), with CAS number 158062-67-0. It is a novel systemic pyridine carboxamide insecticide with selective activity against hemipterous pests, such as aphids and whiteflies, and thysanopterous pests.

Flonicamid has not previously been evaluated by JMPR and was reviewed by the present Meeting at the request of CCPR.

All critical studies contained statements of compliance with GLP.

Biochemical aspects

In metabolism studies conducted in rats using flonicamid labelled with ^{14}C at the 3-nicotinamide position, flonicamid was rapidly absorbed. T_{max} values were under 1 hour at the low and high doses (2 and 400 mg/kg bw, respectively), and half-lives were between 4.5 hours at the low dose and 11.6 hours at the high dose. Radiolabel concentrations in the plasma in all dose groups decreased in a manner consistent with first-order kinetics. The majority of administered radioactivity was excreted in the urine within the first 24 hours. There was no evidence of bioaccumulation following repeated dosing. Distribution to the tissues was extensive, with levels similar to concentrations in plasma; however, slightly higher concentrations were seen in the liver, kidneys, adrenals, thyroid and ovaries following single or repeated dosing in both sexes and in the lungs following repeated dosing in males.

The main urinary residue was unchanged parent, followed by 4-trifluoromethylnicotinamide (TFNA-AM), which was also the predominant metabolite in the faeces and bile. Other metabolites were 4-trifluoromethylnicotinic acid (TFNA), TFNA-AM *N*-oxide conjugate (not specified), *N*-(4-trifluoromethylnicotinoyl) glycinamide (TFNG-AM), *N*-(4-trifluoromethylnicotinoyl) glycine (TFNG) and TFNA-AM.

Toxicological data

In rats, flonicamid is of moderate acute oral toxicity (LD_{50} = 884 mg/kg bw), low acute dermal toxicity (LD_{50} > 5000 mg/kg bw) and low acute inhalation toxicity (LC_{50} > 4.90 mg/L). Flonicamid was slightly irritating to the eyes and non-irritating to the skin of rabbits. It was not a dermal sensitizer in guinea-pigs.

The main target organs are the liver, haematopoietic system and lungs in mice and the liver and kidneys in rats. In long-term studies in rats, the skeletal muscles, eyes and stomach are also targets. In dogs, effects on general condition and clinical signs are the main signs of toxicity.

In a 90-day range-finding study in mice, which tested dietary flonicamid concentrations of 0, 100, 1000 and 7000 ppm (equal to 0, 15, 154 and 1069 mg/kg bw per day for males and 0, 20, 192 and 1248 mg/kg bw per day for females, respectively), increased incidences of minimal centrilobular hypertrophy in the liver in males and increased incidences of minimal to moderately severe extramedullary haematopoiesis in the spleen were seen in both sexes at 1000 ppm (equal to 154 mg/kg bw per day). The lungs were not evaluated in this study.

In a 28-day range-finding study in rats, dietary flonicamid concentrations of 0, 50, 100, 500, 1000 and 5000 ppm (equal to 0, 3.61, 7.47, 36.45, 73.8 and 353.4 mg/kg bw per day, respectively) for males and 0, 100, 500, 1000, 5000 and 10 000 ppm (equal to 0, 7.47, 36.45, 73.8, 353.4 and 642 mg/kg bw per day, respectively) for females were tested. The kidneys of two males per dose at 0 and 5000 ppm were immunostained for α_2u-globulin. In addition to effects on clinical chemistry and haematology parameters and on the liver (e.g. dark coloration, hepatocellular hypertrophy and increased incidence of liver enlargement) at 5000 ppm in males and females, males also exhibited increased incidence of pale kidneys, increased kidney weights, increased incidence of hyaline droplet depositions of proximal tubular cells and granular casts of the kidneys. Hyaline droplets were positive for α_2u-globulin. As a result, the Meeting considered hyaline droplets of the kidneys to be specific to male rats and not applicable to the human risk assessment.

In a 90-day study in the rat, which tested dietary flonicamid concentrations of 0, 50, 200, 1000 and 2000 ppm (equal to 0, 3.08, 12.11, 60.0 and 119.4 mg/kg bw per day, respectively) for males and 0, 200, 1000 and 5000 ppm (equal to 0, 14.52, 72.3 and 340.1 mg/kg bw per day, respectively) for females, the NOAEL was 200 ppm (equal to 12.11 mg/kg bw per day), based on increased kidney weights, granular casts and increased basophilic changes in the renal tubules in males at 1000 ppm (equal to 60 mg/kg bw per day). The Meeting was unable to dismiss the possible human relevance of the kidney findings in the male rats because of the observation of kidney effects in female rats at higher doses in this study and in female dogs (see below).

In a 90-day study in dogs, which tested capsule flonicamid doses of 0, 3, 8, 20 and 50 (females only) mg/kg bw per day, the NOAEL was 8 mg/kg bw per day, based on vomiting, ataxia, decreased activity, laboured breathing, prostration, decreased body weight and body weight gain in both sexes, decreased feed consumption in females and decreased thymus weight in males at 20 mg/kg bw per day. Tubular vacuolation of the inner cortex of the kidney was noted in 2/4 females at 50 mg/kg bw per day.

In a 1-year study in dogs, which tested capsule flonicamid doses of 0, 3, 8 and 20 mg/kg bw per day, the NOAEL was 8 mg/kg bw per day, based on vomiting and increased reticulocytes in males and females and decreased body weight gain in females at 20 mg/kg bw per day.

The Meeting concluded that the overall NOAEL for oral toxicity in dogs was 8 mg/kg bw per day, and the overall LOAEL was 20 mg/kg bw per day.

In an 18-month study in CD-1 mice, which tested dietary flonicamid concentrations of 0, 250, 750 and 2250 ppm (equal to 0, 29, 88 and 261 mg/kg bw per day for males and 0, 38, 112 and 334 mg/kg bw per day for females, respectively), a NOAEL was not identified, as an increase in the combined incidence of alveolar/bronchiolar adenomas and/or carcinomas in both sexes, an increase in extramedullary haematopoiesis of the spleen, increased pigment deposition in the femoral and sternal bone marrow, increased centrilobular hepatocellular hypertrophy, increased incidence of hyperplasia/hypertrophy of the epithelial cells of the terminal bronchioles and masses/nodules in lung of males and decreased cellularity of the femoral bone marrow in females were observed at 250 ppm (equal to 29 mg/kg bw per day), the lowest dose tested.

In a second 18-month study in CD-1 mice, which tested dietary flonicamid concentrations of 0, 10, 25, 80 and 250 ppm (equal to 0, 1.2, 3.1, 10.0 and 30.3 mg/kg bw per day for males and 0, 1.4, 3.7, 11.8 and 36.3 mg/kg bw per day for females, respectively), the NOAEL was 80 ppm (equal to 10.0 mg/kg bw per day), based on an increase in lung adenomas in males, a slight lung hyperplasia/hypertrophy in the terminal bronchiole epithelial cells in males and females and an increased incidence of hyperplasia of alveolar epithelial cells in females at 250 ppm (equal to 30.3 mg/kg bw per day).

The overall NOAEL for the two long-term mouse studies was 80 ppm (equal to 10.0 mg/kg bw per day), and the overall LOAEL was 250 ppm (equal to 29 mg/kg bw per day).

In a 2-year study in rats, which tested dietary flonicamid concentrations of 0, 50, 100, 200 and 1000 ppm (equal to 0, 1.84, 3.68, 7.32 and 36.5 mg/kg bw per day, respectively) for males and 0, 200, 1000 and 5000 ppm (equal to 0, 8.92, 44.1 and 219 mg/kg bw per day, respectively) for females, the NOAEL was 200 ppm (equal to 7.32 mg/kg bw per day), based on decreased body weight and body weight gain, decreased rearing, and increased incidences of keratitis and pelvic dilatation in the kidneys in males and decreased triglyceride levels and increased striated muscle atrophy in females at 1000 ppm (equal to 36.5 mg/kg bw per day). No treatment-related tumours were observed in this study.

The Meeting concluded that flonicamid causes lung tumours in CD-1 mice, but is not carcinogenic in rats.

Flonicamid was tested for genotoxicity in an adequate range of assays, both in vitro and in vivo. No evidence of genotoxicity was found.

The Meeting concluded that flonicamid is unlikely to be genotoxic.

Mechanistic studies were performed in support of the hypothesis that lung tumours caused by flonicamid were due to a non-genotoxic proliferative process specific to the Clara cells of CD-1 mice. The investigators identified a possible threshold for mitogenic effects between 80 and 250 ppm (equal to 12.3 and 40.9 mg/kg bw per day, respectively) in a 3-day dietary toxicity study in male mice. Flonicamid caused a transient increase in elongation and hyperplasia/hypertrophy of the Clara cells in the lungs of male mice. In a short-term dietary study of flonicamid and its metabolites in CD-1 mice, proliferation of the respiratory bronchiolar epithelial cells was specific to the parent compound, as male mice exposed to TFNG, TFNA and TFNA-AM did not exhibit this finding. Flonicamid did not cause such proliferation in female rats or in B6C3F1 and C57 mice. Overall, the mechanistic studies support the plausibility of the proposed mode of action.

In view of the lack of genotoxicity, the absence of carcinogenicity in rats and the fact that lung tumours were observed only in CD-1 mice with a plausible mode of action, the Meeting concluded that flonicamid is unlikely to pose a carcinogenic risk to humans from the diet.

In a reproductive toxicity study in rats, which tested dietary concentrations of 0, 50, 300 and 1800 ppm (equal to 0, 3.7, 22.3 and 133 mg/kg bw per day for males and 0, 4.4, 26.5 and 153 mg/kg bw per day for females, respectively), the NOAEL for parental toxicity was 300 ppm (equal to 22.3 mg/kg bw per day), based on increased proximal tubule cell vacuolation of the kidney observed in females and increased kidney weights, tubular basophilic change and granular casts observed in males at 1800 ppm (equal to 133 mg/kg bw per day). The NOAEL for offspring toxicity was 300 ppm (equal to 26.5 mg/kg bw per day), based on delayed sexual maturation and decreased uterine weight in F_1 females at 1800 ppm (equal to 153 mg/kg bw per day). The NOAEL for reproductive toxicity was 1800 ppm (equal to 133 mg/kg bw per day), the highest dose tested. Minor changes in levels of reproductive hormones observed at 300 ppm and above in the absence of any adverse effects on reproduction were not considered toxicologically relevant.

In a range-finding developmental toxicity study in rats, which tested gavage flonicamid doses of 0, 30, 100, 300 and 1000 mg/kg bw per day, the first signs of toxicity in the dams were clinical signs of eye discharge, forelimb wounding, loss of abdominal fur, soiled fur around the external genital region, vaginal haemorrhage, white discharge on the tray, and decreased body weight gain and feed consumption at 1000 mg/kg bw per day. There were no external abnormalities at the highest dose tested.

In a developmental toxicity study in rats, which tested gavage flonicamid doses of 0, 20, 100 and 500 mg/kg bw per day, the NOAEL for maternal toxicity was 100 mg/kg bw per day, based on increased liver weights and histopathological changes in the liver and kidneys observed at 500 mg/kg bw per day. The NOAEL for embryo and fetal toxicity was 100 mg/kg bw per day, based on an increase in cervical rib skeletal variations observed at 500 mg/kg bw per day.

In a range-finding developmental toxicity study in rabbits, which tested gavage flonicamid doses of 0, 3, 10 and 30 mg/kg bw per day, decreased body weight gain, feed consumption and gravid uterine weight were observed in the dams at 30 mg/kg bw per day. In the offspring, a decreased number of live fetuses, decreased fetal weights and decreased percentage of male fetuses were observed at 30 mg/kg bw per day.

In a developmental toxicity study in rabbits, which tested gavage flonicamid doses of 0, 2.5, 7.5 and 25 mg/kg bw per day, the NOAEL for maternal toxicity was 7.5 mg/kg bw per day, with decreased body weight, feed consumption and gravid uterine weight being observed at 25 mg/kg bw per day. The NOAEL for embryo and fetal toxicity was 7.5 mg/kg bw per day, with decreased fetal weights being observed at 25 mg/kg bw per day.

In an acute neurotoxicity study in rats, which tested flonicamid at gavage doses of 0, 100, 300, 600 (males only) and 1000 (females only) mg/kg bw per day, signs of systemic toxicity, decreased total locomotor activity, increased resting time and increased landing foot splay were observed at the high dose in both sexes, and increased forelimb grip strength was observed in females at the high dose. The effects were not considered specific to neurotoxicity, but rather indicative of systemic toxicity.

In a 13-week neurotoxicity study in rats, which tested dietary concentrations of 0, 200, 1000 and 10 000 ppm (equal to 0, 13, 67 and 625 mg/kg bw per day for males and 0, 16, 81 and 722 mg/kg bw per day for females, respectively), effects at the high dose included decreased body weight gain and feed consumption in males and females, decreased body weights in females, decreased rearing and total motor activity in males, decreased locomotor activity in males and females, and increased landing foot splay in males. The effects were not considered specific to neurotoxicity, but rather indicative of systemic toxicity.

The Meeting concluded that flonicamid is not neurotoxic.

In a 28-day immunotoxicity study in female mice, which tested dietary flonicamid concentrations of 0, 100, 600 and 6000 ppm (equal to 0, 23.2, 142 and 1540 mg/kg bw per day, respectively), clinical signs of toxicity and decreased body weight and body weight gain were observed at the high dose. No specific immunotoxic effects were observed.

The Meeting concluded that flonicamid is not immunotoxic.

Toxicological data on metabolites and/or degradates

Acute toxicity and genotoxicity studies were performed on five metabolites: TFNA (plants, also in rat), TFNA-AM (all livestock commodities, also in rat), TFNG (plants, also in rat), TFNG-AM (rat) and 6-hydroxy-4-trifluoromethylnicotinic acid (TFNA-OH) (secondary crops). Additionally, short-term dietary studies were conducted with TFNA and TFNG.

TFNA was of low acute oral toxicity (LD_{50} > 2000 mg/kg bw) and did not show evidence of genotoxicity in an Ames test. In a 90-day toxicity study in rats, TFNA was given at a dietary concentration of 0, 50 or 2000 ppm for males (equal to 0, 3.42 and 136 mg/kg bw per day, respectively) and 0, 200 or 5000 ppm for females (equal to 0, 15.9 and 409 mg/kg bw per day, respectively). The modest increase in blood glucose levels in females at 5000 ppm was not considered toxicologically significant, and no other changes were observed. The NOAEL was 2000 ppm (equal to 136 mg/kg bw per day) for males and 5000 ppm (equal to 409 mg/kg bw per day) for females, the highest doses tested. The Meeting concluded that TFNA is markedly less toxic than the parent compound.

TFNA-AM was of low acute oral toxicity (LD_{50} > 2000 mg/kg bw) and did not show evidence of genotoxicity in an Ames test. As TFNA-AM is a major rat metabolite, the Meeting concluded that TFNA-AM would be no more toxic than the parent compound.

TFNG, a minor metabolite found in the rat liver, but a major plant metabolite, was of low acute oral toxicity (LD_{50} > 2000 mg/kg bw) and did not show evidence of genotoxicity in an Ames test. In a 90-day toxicity study in rats, TFNG was given at a dietary concentration of 0, 50 or 2000 ppm for males (equal to 0, 3.56 and 135 mg/kg bw per day, respectively) and 0, 200 or 5000 ppm for females (equal to 0, 16.5 and 411 mg/kg bw per day, respectively). The NOAEL was 2000 ppm (equal to 135 mg/kg bw per day) for males and 5000 ppm (equal to 411 mg/kg bw per day) for females, the highest doses tested. The Meeting concluded that TFNG is markedly less potent than the parent compound.

TFNA-OH was of low acute oral toxicity (LD_{50} > 2000 mg/kg bw) and did not show evidence of genotoxicity in an Ames test. The Meeting concluded that TFNA-OH would likely be less potent than the parent compound, taking into consideration the limited data available and the structural similarity to TFNA.

TFNG-AM was of low acute oral toxicity (LD_{50} > 2000 mg/kg bw) and did not show evidence of genotoxicity in an Ames test. The Meeting concluded that TFNG-AM would be no more toxic than the parent compound.

Human data

No information was provided on the health of workers involved in the manufacture or use of flonicamid.

The Meeting concluded that the existing database on flonicamid was adequate to characterize the potential hazards to the general population, including fetuses, infants and children.

Toxicological evaluation

The Meeting established an ADI of 0–0.07 mg/kg bw on the basis of a NOAEL of 7.32 mg/kg bw per day in the 2-year rat study, based on decreased body weight, decreased rearing, effects on clinical chemistry and effects on kidney and muscle observed at 36.5 mg/kg bw per day. This ADI is supported by the overall NOAEL of 8 mg/kg bw per day in dogs and the NOAELs of 7.5 mg/kg bw per day for maternal and embryo/fetal toxicity in the developmental toxicity study in rabbits. A safety factor of 100 was applied. The margin between the upper bound of the ADI and the LOAEL of 30.3 mg/kg bw per day for lung adenomas in male mice is about 430.

The Meeting concluded that the ADI would apply to the sum of flonicamid and the metabolites TFNA-AM and TFNG-AM, expressed as flonicamid.

The Meeting concluded that it was not necessary to establish an ARfD for flonicamid in view of its low acute toxicity and the absence of developmental toxicity and any other toxicological effects that would be likely to be elicited by a single dose.

Levels relevant to risk assessment of flonicamid

Species	Study	Effect	NOAEL	LOAEL
Mouse	Eighteen-month studies of toxicity and carcinogenicity[a,b]	Toxicity	80 ppm, equal to 10.0 mg/kg bw per day	250 ppm, equal to 29 mg/kg bw per day
		Carcinogenicity	80 ppm, equal to 10.0 mg/kg bw per day	250 ppm, equal to 29 mg/kg bw per day
Rat	Two-year study of toxicity and carcinogenicity[a]	Toxicity	200 ppm, equal to 7.32 mg/kg bw per day	1 000 ppm, equal to 36.5 mg/kg bw per day
		Carcinogenicity	1 000 ppm, equal to 36.5 mg/kg bw per day[c]	–
	Two-generation study of reproductive toxicity[a]	Reproductive toxicity	1 800 ppm, equal to 133 mg/kg bw per day[c]	–
		Parental toxicity	300 ppm, equal to 22.3 mg/kg bw per day	1 800 ppm, equal to 133 mg/kg bw per day
		Offspring toxicity	300 ppm, equal to 26.5 mg/kg bw per day	1 800 ppm, equal to 153 mg/kg bw per day
	Developmental toxicity study[d]	Maternal toxicity	100 mg/kg bw per day	500 mg/kg bw per day
		Embryo and fetal toxicity	100 mg/kg bw per day	500 mg/kg bw per day
	Acute neurotoxicity study[d]	Neurotoxicity	600 mg/kg bw per day[c]	–

Species	Study	Effect	NOAEL	LOAEL
	Subchronic neurotoxicity study[a]	Neurotoxicity	625 mg/kg bw per day[c]	–
Rabbit	Developmental toxicity study[d]	Maternal toxicity	7.5 mg/kg bw per day	25 mg/kg bw per day
		Embryo and fetal toxicity	7.5 mg/kg bw per day	25 mg/kg bw per day
Dog	Thirteen-week and 1-year studies of toxicity[b,e]	Toxicity	8 mg/kg bw per day	20 mg/kg bw per day

[a] Dietary administration.
[b] Two or more studies combined.
[c] Highest dose tested.
[d] Gavage administration.
[e] Capsule administration.

Estimate of acceptable daily intake (ADI) (for sum of flonicamid and metabolites TFNA-AM and TFNG-AM, expressed as flonicamid)

0–0.07 mg/kg bw

Estimate of acute reference dose (ARfD)

Unnecessary

Information that would be useful for the continued evaluation of the compound

Results from epidemiological, occupational health and other such observational studies of human exposure

Critical end-points for setting guidance values for exposure to flonicamid

Absorption, distribution, excretion and metabolism in mammals	
Rate and extent of oral absorption	Rapid, almost complete at low and high doses
Dermal absorption	Not given
Distribution	Widely distributed at levels similar to plasma, higher concentrations in liver, kidneys, adrenals, thyroid and ovaries and in lungs in males following repeated dosing
Potential for accumulation	No evidence of accumulation
Rate and extent of excretion	93–98% excreted within 7 days; predominantly in urine within the first 24 h
Metabolism in animals	Multiple metabolites, approximately 50% excreted unchanged
Toxicologically significant compounds in animals and plants	Flonicamid, TFNA-AM, TFNG-AM
Acute toxicity	
Rat, LD_{50}, oral	884 mg/kg bw
Rat, LD_{50}, dermal	> 5 000 mg/kg bw
Rat, LC_{50}, inhalation	> 4.90 mg/L
Rabbit, dermal irritation	Not irritating
Rabbit, ocular irritation	Slightly irritating

Guinea-pig, dermal sensitization	Not sensitizing (Magnusson and Kligman maximization test or Buehler method)
Short-term studies of toxicity	
Target/critical effect	Clinical signs of toxicity and decreased body weight (dog)
Lowest relevant oral NOAEL	8 mg/kg bw per day (dog)
Lowest relevant dermal NOAEL	1 000 mg/kg bw per day (rat)
Long-term studies of toxicity and carcinogenicity	
Target/critical effect	Decreased body weight, decreased rearing, effects on clinical chemistry, effects on kidney and muscle
Lowest relevant NOAEL	7.32 mg/kg bw per day (rat)
Carcinogenicity	Carcinogenic in mice, but not in rats[a]
Genotoxicity	
	Not genotoxic[a]
Reproductive toxicity	
Target/critical effect	Kidney effects in parents; delayed sexual maturation and decreased uterine weight in female offspring
Lowest relevant parental NOAEL	22.3 mg/kg bw per day (rat)
Lowest relevant offspring NOAEL	26.5 mg/kg bw per day (rat)
Lowest relevant reproductive NOAEL	133 mg/kg bw per day (highest dose tested; rat)
Developmental toxicity	
Target/critical effect	Decreased maternal body weight, gravid uterine weight and fetal weight
Lowest relevant maternal NOAEL	7.5 mg/kg bw per day (rabbit)
Lowest relevant embryo/fetal NOAEL	7.5 mg/kg bw per day (rabbit)
Neurotoxicity	
Acute neurotoxicity NOAEL	600 mg/kg bw (highest dose tested; rat)
Subchronic neurotoxicity NOAEL	625 mg/kg bw per day (highest dose tested; rat)
Developmental neurotoxicity NOAEL	No data
Other toxicological studies	
Immunotoxicity NOAEL	1540 mg/kg bw per day (highest dose tested; mouse)
Studies on toxicologically relevant metabolites	TFNA-AM Oral LD_{50} > 2 000 mg/kg bw (rat) No evidence of genotoxicity TFNG-AM Oral LD_{50} > 2 000 mg/kg bw (rat) No evidence of genotoxicity
Mechanistic/mode of action studies	Causes increased cell division in CD-1 mouse lungs after 3 d at a threshold between 12.3 and 40.9 mg/kg bw per day Does not cause similar increases in rats, B6C3F1 or C57 mice TFNG, TFNA and TFNA-AM do not cause an increase in cell division Following a recovery period of 1–3 weeks, there is no evidence of increased cell division

Medical data	
	No information was provided

[a] Unlikely to pose a carcinogenic risk to humans from the diet.

Summary

	Value	Study	Safety factor
ADI	0–0.07 mg/kg bw	Two-year toxicity study (rat)	100
ARfD	Unnecessary	–	–

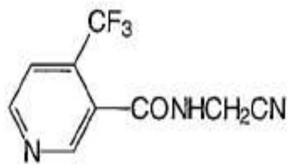
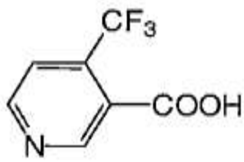
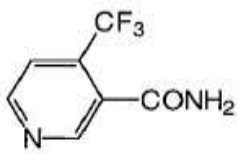
RESIDUE AND ANALYTICAL ASPECTS

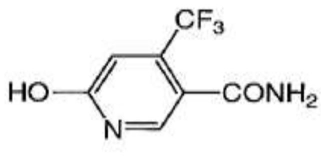
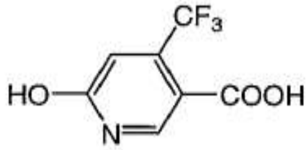
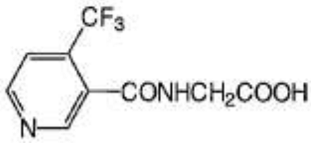
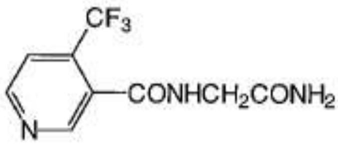
Flonicamid is a new insecticide for control of aphids and other sucking insects. It belongs to a new class of chemistry known as pyridinecarboxamide. At the Forty-sixth Session of the CCPR, flonicamid was scheduled for evaluation, for both toxicology and residues, as a new compound by the 2015 JMPR.

The Meeting received information on the metabolism of flonicamid in peaches, bell peppers, potatoes, wheat, lactating goats, laying hens and rotational crops, environmental fate, methods of residue analysis, freezer storage stability, GAP, supervised residue trials on various fruits, vegetables, tree nuts, oil seeds, dried hops, mint and tea, processing studies as well as livestock feeding studies.

In this document, the code names and chemical structures of the metabolites were as follows:

Flonicamid is *N*-cyanomethyl-4-(trifluoromethyl)nicotinamide (IUPAC).

Code Name	*Structure*	*Chemical Name*
Flonicamid IKI-220		*N*-cyanomethyl-4-(trifluoromethyl)nicotinamide
TFNA		4-trifluoromethylnicotinic acid
TFNA-AM		4-trifluoromethylnicotinamide

OH-TFNA-AM		6-hydroxy-4-trifluoromethylnicotinamide
TFNA-OH		6-hydroxy-4-trifluoromethylnicotinic acid
TFNG		*N*-(4-trifluoromethylnicotinoyl)glycine
TFNG-AM		*N*-(4-trifluoromethylnicotinoyl)glycinamide

Environmental fate in soil

The FAO Manual (FAO, 2009) explains the data requirements for studies of environmental fate. The focus should be on those aspects that are most relevant to MRL setting. For flonicamid, supervised residue trials were received for foliar spray on permanent crops and on annual crops. Therefore, according to the FAO manual, only studies on aerobic degradation, photolysis and rotational crops (confined, field) were evaluated.

Degradation

The route of degradation of [^{14}C]flonicamid in soil under aerobic conditions was investigated in a biologically active loamy sand soil collected from Madison, Ohio, USA and stored in a greenhouse. Flonicamid rapidly declined from 99.3% of the applied radioactivity (AR) at Day 0 to 2.3% by Day 30, resulting in a DT_{50} of 1 day and a DT_{90} of 3.4 days. TFNA and TFNA-OH were major components of the residue with TFNG, TFNG-AM and TFNA-AM all identified as minor metabolites.

The rate of aerobic degradation of [^{14}C]flonicamid, radiolabelled at the 3 position of the pyridine was investigated in three biologically active soils (sandy loam and sand at 10 °C and/or 20 °C)

For the soils incubated at 20 °C the DT_{50} and DT_{90} values for flonicamid ranged from 0.7 to 1.8 days and 2.3 to 6.0 days, respectively. For the soil incubated at 10 °C, the DT_{50} and DT_{90} values for flonicamid were 2.4 days and 7.9 days, respectively. TFNA, TFNA-OH and TFNG-AM were the major degradates in all soils over the course of the study. Minor degradates TFNG and TFNA-AM were detected at all sampling points over the course of the study. All of the degradates were metabolised and mineralised to carbon dioxide and immobilised as soil-bound residue.

Photolysis

The photochemical degradation of [pyridyl-^{14}C]flonicamid was investigated in a loamy sand under laboratory conditions.

[^{14}C]Flonicamid decreased to 60% of the applied radioactivity (AR) after 15 days of continuous illumination, resulting in a DT_{50} of 22 days. Concurrently, the major metabolite TFNG-AM was detected in Day 1 sample extracts and increased by Day 15. TFNA-AM and TFNG were also detected as minor metabolites in the illuminated soils, reaching maximum concentrations of 5% AR (Day 11 and Day 15) and 2% AR (Day 15), respectively.

In summary, based on the results of the environmental fate studies, flonicamid as well as its metabolites are likely to readily degrade and not persist in aerobic soil environments.

Plant metabolism

The metabolism of flonicamid was studied in peaches, bell peppers, potatoes and wheat.

Peach

Flonicamid, radiolabelled at the 3 position of the pyridine ring and formulated as a wettable granule, was applied twice to peach trees grown outdoor, with a 14-day re-treatment interval, at rates of 100 g ai/ha (low rate) or 500 g ai/ha (high rate) per application. Mature fruits and leaves were harvested 21 days after the last treatment (DALA). Overall total radioactive residues (TRRs) in fruits at the low rate and the high rate were 0.10 mg eq/kg and 0.32 mg eq/kg, respectively, while in the leaves, TRRs followed the same trend, where residues were lower at the lower application rate (6.2 mg eq/kg) compared to those at the higher treatment rate (24 mg eq/kg).

The peaches were subjected to a surface wash using deionised water which removed very little radioactivity (≤ 15% TRRs), evidence of limited penetration. The majority of the TRRs were partitioned into the juice fraction (64–73% of the TRR) and to a lesser extent into the pulp (21% TRRs). While juice was not further extracted with organic solvents, extraction of the pulp with acetonitrile:water:phosphoric acid recovered 92% TRR. At both treatment rates, flonicamid (30–60% TRRs) and TFNA (17–49% TRRs) were the predominant residues in juice and pulp. All other metabolites, TFNG, TFNG-AM and TFNA- AM were ≤ 6% TRRs.

Bell pepper

A single application of flonicamid, radiolabelled at the 3 position of the pyridine ring, formulated as a 50% wettable granule formulation, was made to greenhouse grown bell pepper plants at 100 g ai/ha. Fruits and leaves were harvested 7 days and 14 days after treatment (DAT).

The TRRs in fruits decreased insignificantly from 0.17 mg eq/kg (7 DAT) to 0.11 mg eq/kg (14 DAT) while TRRs in leaves decreased from 2.2 mg eq/kg, when harvested 7 days after treatment to 1.4 mg eq/kg at 14 DAT.

The %TRR in the methanol:water surface wash for both leaves and fruits decreased as the corresponding extracted TRRs (61–81% TRRs) and those in the post-extraction solids (PES) increased with increasing DAT. This trend demonstrated the penetration of the radioactivity from the surface into the leaves and fruits.

Flonicamid and TFNG were the predominant residues in leaves (47–74% TRRs and 12–28% TRRs, respectively) while only flonicamid was the predominant residue in fruits (77–91% TRRs) at both harvest intervals. All identified metabolites (TFNA, TFNA-AM and TFNG-AM) were either not detected or were ≤ 12% TRRs.

Potato

Potato plants maintained outdoor were treated, either at the lower rate of 100 g ai/ha or the higher rate of 500 g ai/ha, with flonicamid radiolabelled at the 3 position of the pyridine ring and formulated as a 50% wettable powder. Both treatments were repeated at a two-week interval and potato tubers and foliage were harvested 14 days after the last application.

Overall TRRs in tubers at the low rate and the high rate were 0.11 mg eq/kg and 0.20 mg eq/kg, respectively, while those in mature foliage were higher than those in tubers;

1.5 mg eq/kg at the low rate and 7.7 mg eq/kg at the high rate. Considering the applications were made to the foliage of the potato plants, the presence of measurable TRRs in the tubers is evidence of translocation of the radioactivity from the foliage to the tubers. Furthermore, while the TRRs in tubers and foliage increased with increased application, the distribution of TRRs was relatively the same irrespective of the treatment rate.

Extraction of the potato tubers with ACN and ACN:water recovered up to 93% TRRs while extraction of potato foliage with ACN:water:acetic acid recovered up to 90% TRRs. Analysis of each of the extracted fractions of potato tubers and foliage from the low and high rate demonstrated that the major components of the residue, TFNA and TFNG, accounted for a significant portion of the TRRs. Moreover, TFNA accounted for 34% TRRs in tubers and 12–17% TRRs in foliage at both rates while TFNG accounted for 25–39% TRRs in tubers and 28–36% TRRs in leaves at both rates. The parent, flonicamid, accounted for 6–19% TRRs in potato tubers and 10–25% TRRs in foliage. Each of the other identified metabolites (TFNA conjugate, TFNG-AM, TFNA-AM, PM-1a, PM-1b and PM-3a) accounted for < 10% TRRs in tubers and in foliage. Overall, the general metabolic profile in foliage was similar to that in tubers.

Spring wheat

Spring wheat plants grown outdoor were treated with flonicamid, radiolabelled at the 3 position of the pyridine ring and formulated as a wettable powder, at a single application rate of 100 g ai/ha or 2 applications at 100 g ai/ha with a re-treatment interval of 7 days. Forage and hay were harvested 14 days and 42 days, respectively, after the single application. Approximately 95 days after the second treatment (200 g ai/ha/season), mature plants were harvested and separated into straw, chaff and grain.

Overall residues were lower in the wheat grain sample (2.6 mg eq/kg) than the straw (5.6 mg eq/kg) or chaff (6.6 mg eq/kg). The TRRs in the chaff were higher compared to straw potentially because of tissue size differences (higher surface area to weight ratio) assuming a uniform application. Further to this, considering the timing of application of the test material and the measurable TRRs in grain, chaff and straw at maturity, there appears to have been translocation of the radioactivity from the site of application to the mature plant parts.

Only forage and hay were analysed to elucidate the nature of the flonicamid residues. Extraction of these matrices with ACN:water:acetic acid recovered 96% TRRs. The analysis of forage and hay samples demonstrated that the nature and distribution of metabolites were similar in both matrices. The parent compound, flonicamid, and the TFNG metabolite represented the majority of the TRRs in both the forage (flonicamid: 43% TRRs; TFNG: 33% TRRs) and hay (flonicamid: 22%TRRs; TFNG: 53% TRRs). Metabolites TFNG-AM, TFNA and TFNA-AM were present at ≤ 13% TRRs.

In a second spring wheat metabolism study, plants grown outdoor were treated with flonicamid, radiolabelled at the 3 position of the pyridine ring and formulated as a wettable granule, at rates equivalent to 100 g ai/ha or 500 g ai/ha. The wheat plants were harvested 21 DAT and separated into straw (leaves and stem), chaff and grain (with hulls attached).

The TRRs in wheat straw, chaff and grain increased with increased application rate with the highest TRRs observed in chaff, followed by straw and grain, irrespective of the application rate. The distribution of TRRs was relatively the same irrespective of the treatment rate.

Similar to the first wheat metabolism study, extraction with ACN:water:acetic acid recovered 80–94%TRRs with flonicamid (24–50%TRRs) and TFNG (17–44% TRRs) representing the predominant residues at both treatment rates. All identified metabolites (TFNA, TFNG-AM, TFNA-AM and N-oxide TFNA AM) were either not detected or were each ≤ 10% TRR.

In summary, the Meeting determined that the degree of metabolism in all crops tested, following foliar application, was qualitatively similar, with the parent compound as the predominant residue. The major metabolic pathway of flonicamid in plants involved hydrolysis of the cyano group and the amide groups.

Rotational crops

In the confined rotational crop study, flonicamid, radiolabelled at the 3 position of the pyridine ring and formulated as a wettable granule was applied twice to loamy sand soil at a rate equivalent to 100 g ai/ha at an interval of two weeks. After the appropriate plant-back intervals (PBIs) of 30, 120 or 360 days, the rotational crops, representative of the root vegetable (carrot), small grain (wheat), and leafy vegetable (lettuce) crop groups, were planted.

TRRs in all raw agricultural commodities (RACs) declined with prolonged PBIs such that, at the 120-day PBI, no further characterization/identification of the TRRs was performed for immature and mature lettuce and mature carrot roots due to the low total radioactivity. Further to this, at the 360-day PBI, none of the TRRs from any of the crop parts were further subjected to characterization/identification as these were also too low.

Analysis of the harvested crop samples demonstrated very little uptake of ^{14}C-residues. Of the radioactivity taken up by plants, only limited amounts of flonicamid were detected (≤ 13% TRRs). TFNG and TFNG-AM were identified at > 10% TRRs in most RACs. In addition to TFNG, other identified metabolites accounting for > 10% TRRs in wheat matrices and mature carrot root included TFNA-AM and TFNA-OH.

Conversely, in the field accumulation study, no quantifiable residues of flonicamid or its metabolites TFNG, TFNA, and TFNA-AM were detected in wheat (forage, straw and grain) and turnip (tops and roots) planted at either 30 or 60 days after the last application of flonicamid to the primary crop, cotton.

Based on the findings of the field crop rotation studies, the Meeting concluded that the uptake of quantifiable residues of flonicamid or its associated metabolites in secondary crops is unlikely.

Animal metabolism

Metabolism studies in rats reviewed by the 2015 JMPR and conducted using [^{14}C]flonicamid labelled at the 3-nicotinamide position, indicated that flonicamid was rapidly absorbed and quickly excreted. The majority of administered radioactivity was excreted in the urine and within the first 24 hours. There was no evidence of bioaccumulation following repeat doses. Distribution into the tissues was extensive with levels similar to blood concentrations; however, slightly higher concentrations were seen in the liver, kidneys, adrenals, thyroid and ovaries following single or repeat dosing and in the lungs following repeat dosing in males.

The main urinary residue was unchanged parent, followed by TFNA-AM, which was also the predominant metabolite in the faeces and bile. Other metabolites were TFNA in the faeces of low-dose animals, TFNA-AM N-oxide conjugate in the high-dose animals, TFNG-AM in the bile of high-dose animals and TFNG and TFNA-AM in the liver.

Metabolism studies were conducted in lactating goats where they were dosed orally once daily for 5 consecutive days with 3-pyridine-^{14}C-labelled flonicamid at a dose level equivalent to 10 ppm in feed. The major route of elimination of the radioactivity was via the urine which accounted for 49% of the administered dose (AD), while faeces accounted for up to 21% of the AD and milk accounted for 1% of the AD. Overall, the tissue burden was low, accounting for < 10% of the AD. The TRRs were highest in liver (1.2 mg eq/kg) followed by kidney (0.70 mg eq/kg), muscle (0.30–0.40 mg eq/kg) and fat (0.05–0.14 mg eq/kg).

Extraction of milk, using ethanol and ethanol:water recovered 97% TRRs and extraction of tissues and organs using ACN and ACN:water containing 1% acetic acid recovered greater than 42% TRRs. Flonicamid was rapidly metabolised in lactating goats, representing less than 6% TRRs in tissues and organs. TFNA-AM was the major component of the residue in organs (29% TRRs in liver, 31–41% TRRs in kidney), tissues (74% TRRs in fat, 42–50% TRRs in muscle) and milk (97% TRRs). The minor metabolites TFNA and 6-OH-TFNA-AM each accounted for ≤ 7% TRRs in liver, kidney, muscle and milk.

Leghorn laying hens were dosed orally once daily for 5 consecutive days with 3-pyridine-^{14}C-labelled flonicamid at a dose level equivalent to 10 ppm in feed. Approximately 91% of AD including 6% of AD from the gastrointestinal tract and its contents was recovered. Most of the AD (72%) was excreta-related. TRRs in egg white and egg yolk accounted for about 2.4% of AD (1.8% AD in egg white plus 0.6% AD in yolk). The tissue burden was low (< 6% of the AD) with highest concentrations of ^{14}C-residues found in kidney (1.4 mg eq/kg) followed by liver (1.2 mg eq/kg), muscle (evenly distributed between breast and thigh muscle; 1.0 mg eq/kg each), skin (0.70 mg eq/kg) and fat (0.15 mg eq/kg).

Extraction of eggs, tissues and organs with ACN and ACN:water containing 1% acetic acid recovered more than 81% TRR. Flonicamid accounted for only a very small percentage of the TRRs in eggs (2–4% TRRs), tissues (< 1% TRRs) and organs (< 0.5% TRRs). TFNA-AM was the predominant component of the residue in egg whites and egg yolks (≤ 96%TRRs), liver (93%TRRs), kidney (76%TRRs) and tissues (97%TRRs in both breast muscle and thigh muscle, 96%TRRs in skin and 95%TRRs in fat). Other metabolites identified in organs and tissues were OH-TFNA-AM and TFNG-AM, however, neither of these accounted for greater than 5% of TRR.

The Meeting concluded that, in all species investigated, the total administered radioactivity was quickly and almost completely eliminated in excreta. The metabolic profiles differed quantitatively between the species, but qualitatively there were no major differences. The routes and products of metabolism in animals were consistent across the studies resulting from the hydrolysis of the cyano function to the amide function as well as ring hydroxylation. Moreover, TFNA-AM was the major component of the residue in all tissues, organs, milk and eggs of livestock animals.

While the overall metabolism in plants, livestock and rats is similar, the metabolism of flonicamid in animals is more extensive with hydrolysis of flonicamid to the major amide metabolite TFNA-AM.

Methods of analysis

The Meeting received descriptions and validation data for analytical methods for residues of flonicamid and its relevant metabolites TFNA-AM, TFNA and TFNG in plant commodities and for flonicamid, TFNA-AM, TFNA, TFNG and OH-TFNA-AM in animal commodities. Residue analytical methods rely on LC/MS-MS. Typical limits of quantitation (LOQs) achieved for plant commodities fell in the range of 0.01–0.02 mg/kg for each analyte. The LOQs for milk and animal products (liver, kidney, muscle and eggs) were 0.01 mg/kg for each analyte. Methods were successfully subjected to independent laboratory validation.

The acid version (addition of 1% formic acid to the acetonitrile extraction solvent) of the QuEChERS multi residue LC-MS/MS method was used for flonicamid, TFNA, TFNG and TFNA-AM in plant matrices with LOQs of 0.01 mg/kg for each analyte.

The Meeting determined that suitable methods are available for the analysis of flonicamid and its relevant metabolites in plant and animal commodities.

Stability of residues in stored analytical samples

The Meeting received storage stability studies under freezer conditions at –17 °C for flonicamid and its relevant metabolites TFNA-AM, TFNA and TFNG for the duration of the storage of 18 to 23 months in a wide range of raw and processed crop matrices, including high-water, high-starch and high-oil crops. The Meeting concluded that residues of flonicamid, TFNA-AM, TFNA and TFNG are stable for at least 18 months. Freezer storage stability studies were also conducted concurrently with several of the crop field trials, demonstrating similar results.

All milk samples from the feeding studies were frozen at –20 ºC and analysed within 30 days after sampling. Therefore, storage stability data are not necessary. In contrast, all tissue samples were analysed within 12 months of collection. Freezer storage stability studies, conducted concurrently with the feeding studies, demonstrated that flonicamid, TFNA, TFNA-AM, OH-TFNA-AM and

TFNG were stable for 374 days in all tissues except fat. For fat, flonicamid and its metabolites were demonstrated to be stable for 315 days.

Definition of the residue

In primary crops, the parent compound represented the majority of the residue accounting for up to 61% TRRs in peach fruits, 91%TRRs in bell pepper fruits, 19% TRRs in potato and up to 50% TRRs in wheat forage, hay, straw, chaff and grain. Metabolites TFNA and TFNG were identified as predominant metabolites (> 10%TRRs) in all crop commodities. In the crop field trials, residues of TFNA and TFNG were measurable in all crops, the magnitude of which was crop-dependent. However, both the TFNA and TFNG were seen in the rat metabolism study and considered to be up to 10-fold less toxic than the parent flonicamid based on toxicity studies reviewed by the 2015 WHO.

In the field accumulation study no measurable residues of parent or any of its associated metabolites were observed in secondary crops.

In light of the above, the Meeting decided to define the residue for enforcement/monitoring and for risk assessment for plant commodities as parent only.

In the farm animal metabolism studies, the parent, flonicamid, was rapidly degraded in ruminants and poultry, accounting for ≤ 6% TRRs in all tissues, milk and eggs. Conversely, the metabolite TFNA-AM accounted for the majority of the radioactivity in goat tissues (29–74% TRRs) and milk (92–97%TRRs) and laying hen tissues (76–97% TRRs) and eggs (ca. 95%TRRs).

Similar findings were observed in the livestock feeding studies whereby flonicamid was present at very low levels in all animal commodities with the metabolite TFNA-AM representing the majority of the residues in tissues, milk and eggs. Therefore, TFNA-AM will be included in the residue definition for enforcement as a marker compound. Since the method of analysis is capable of analysing both flonicamid and TFNA-AM, the Meeting agreed to define the residue for enforcement/monitoring as flonicamid and TFNA-AM.

The log K_{ow} for flonicamid is 0.3. In the metabolism studies there was no evidence of the parent compound and TFNA-AM partitioning into fatty matrices (fat, milk and egg yolks) as the total residues were present at comparable concentrations in all livestock matrices. In the dairy cattle and poultry feeding studies, there was no evidence of the total residues of flonicamid and TFNA-AM sequestering into milk, eggs or fat. Therefore, the Meeting did not consider the residue fat soluble.

As TFNA-AM was the major component of the residue in all animal matrices in both the metabolism and feeding studies, the Meeting decided to define the residue for dietary risk assessment for animal commodities as parent and TFNA-AM.

Based on the above, the Meeting recommended that the residue definition for compliance with MRLs and estimation of dietary intake should be as follows:

Definition of the residue for compliance with MRL and estimation of dietary intake for plant commodities: *Flonicamid*

Definition of the residue for compliance with MRL and estimation of dietary intake for animal commodities: Flonicamid and the metabolite TFNA-AM, expressed as parent.

The residue is not fat soluble.

Results of supervised residue trials

Pome fruits

Results from supervised field trials on apples and pears conducted in the US were provided to the Meeting, including apple and pear data from Australia.

A total of 16 independent supervised trials were conducted in the US on apples (12) and pears (4). The GAP in the US for pome fruits allows three applications at a maximum rate of 0.1 kg ai/ha with a PHI of 21 days.

Flonicamid residues from 12 apple trials matching the US GAP were: 0.02, 0.04 (3), 0.05 (4), 0.06, 0.07, 0.10 and 0.11 mg/kg.

Flonicamid residues from four pear trials matching the US GAP were: 0.01 (3) and 0.02 mg/kg.

A total of seven independent supervised trials were also conducted on apples in Australia according to the Australian GAP which allows three applications at a maximum rate of 0.01 kg ai/hL with a PHI of 21 days. Nine supervised trials were conducted on pears in Australia, however, in the absence of an Australian GAP, these trials were not considered.

Flonicamid residues from seven apple trials matching the Australia GAP were 0.09, 0.12 (2), 0.13, 0.15, 0.22 and 0.24 mg/kg.

The Meeting noted that in the US a group GAP for pome fruit exists and decided to explore the possibility of setting a group maximum residue level. As the supervised trials on apples conducted in Australia in accordance with the Australian GAP lead to the higher residues, the Meeting recommended that the group maximum residue level be based on the dataset from Australia.

Based on the Australian residue data for apples, the Meeting estimated a maximum residue level for pome fruits of 0.8 mg/kg and an STMR of 0.13 mg/kg.

Stone fruits

Results from supervised field trials on peaches, cherries and plums conducted in the US were provided to the Meeting.

A total of 19 independent supervised trials were conducted in the US on peaches (8), cherries (6) and plums (5) according to the US GAP on stone fruits which allows three applications at a maximum rate of 0.1 kg ai/ha with a 14-day PHI.

Residues of flonicamid from eight peach trials matching the US GAP for stone fruits were: 0.09 (2), 0.10, 0.13, 0.15, 0.22 (2) and 0.42 mg/kg.

Residues of flonicamid from six cherry trials matching the US GAP for stone fruits were: 0.26, 0.27 (2), 0.28 (2) and 0.36 mg/kg.

Residues of flonicamid from five plum trials matching the GAP for stone fruits were: 0.01, 0.02, 0.03 and 0.04 (2) mg/kg.

The Meeting noted that in the US a group GAP for stone fruits exists and decided to explore the possibility of setting a group maximum residue level. Since median residues among the representative commodities were not within a 5-fold range (0.14 mg/kg vs. 0.28 mg/kg vs. 0.03 mg/kg), the Meeting decided to estimate maximum residue levels for each subgroup based on the individual dataset for each representative commodity.

The Meeting estimated a maximum residue level of 0.9 mg/kg and an STMR of 0.28 mg/kg for cherries subgroup.

The Meeting estimated a maximum residue level of 0.7 mg/kg and an STMR of 0.14 mg/kg for peaches subgroup.

The Meeting estimated a maximum residue level of 0.1 mg/kg and an STMR of 0.03 mg/kg for plums subgroup.

Strawberries

Results from supervised field trials on strawberries conducted in the US were provided to the Meeting.

A total of eight independent supervised trials were conducted in the US on strawberries according to the US GAP for low growing berries, which allows three applications at a maximum rate of 0.1 kg ai/ha with a 0-day PHI.

Residues of flonicamid matching the US GAP were: 0.13, 0.19, 0.27, 0.33, 0.41, 0.47, 0.54 and 0.59 mg/kg.

The Meeting estimated a maximum residue level of 1.5 mg/kg and an STMR of 0.37 mg/kg for low growing berries.

Brassica (Cole or cabbage) vegetables, Head cabbages, Flowerhead brassicas

Results from supervised field trials on cabbage and broccoli conducted in the US were provided to the Meeting.

A total of 12 independent supervised trials were conducted in the US on broccoli (6) and cabbage (6) according to the US GAP on Brassica (Cole) Leafy Vegetables which allows three applications at a maximum rate of 0.1 kg ai/ha with a 0-day PHI.

Residues of flonicamid from six broccoli trials matching the US GAP for Brassica (Cole) leafy vegetables were: 0.250, 0.428, 0.432, 0.462, 0.499 and 0.553 mg/kg.

Residues of flonicamid from six trials on cabbage (with wrapper leaves) matching the US GAP for Brassica (Cole) Leafy Vegetables were: < 0.025, 0.025, 0.062, 0.205, 0.288 and 1.262 mg/kg.

Residues of flonicamid from six trials on cabbage (without wrapper leaves) matching the US GAP for Brassica (Cole) Leafy Vegetables were: < 0.025 (6) mg/kg.

The Meeting noted that in the US a group GAP for Brassica (Cole) leafy vegetables exists and decided to explore the possibility of setting a group maximum residue level. Since median residues among the representative crops were within a 5-fold range (0.45 mg/kg vs. 0.134 mg/kg) and the Mann-Whitney test indicated that the residues were not statistically different, the Meeting decided to estimate a group maximum residue level based on the following combined residues: < 0.025(7), 0.025, 0.062, 0.205, 0.288 and 1.262 mg/kg.

The Meeting estimated a maximum residue level of 2.0 mg/kg and an STMR of 0.358 mg/kg for Brassica (Cole or cabbage) vegetables, head cabbages and flowerhead Brassicas.

The Meeting estimated an STMR of 0.02 mg/kg for cabbage (without wrapper leaves).

Fruiting vegetables, Cucurbits

Supervised field trials on field- and greenhouse-grown melons conducted in Southern EU and on field-grown pumpkins conducted in Hungary were provided to the Meeting. However, only four trials on melons and four trials on pumpkins matched the critical GAP of Slovenia which allows three foliar spray applications of a WG formulation at 0.05 kg ai/ha with a re-treatment interval of 7 days and a PHI of 1 day. Therefore, in the absence of a sufficient number of trials matching the Slovenia critical GAP, these trials were not considered further.

A total of 17 independent supervised trials, conducted in the US on cucumber (6), melon (6) and summer squash (5) according to the US GAP on cucurbit vegetables, which allows three applications at a maximum rate of 0.1 kg ai/ha with a 0-day PHI, were provided to the Meeting. In addition, the Meeting received four greenhouse cucumber trials conducted in Canada and the US according to the US critical GAP which allows two foliar spray or soil applications at a maximum rate 0.15 kg ai/ha with a re-treatment interval of 6–7 days and a 0-day PHI.

Residues of flonicamid from six field cucumber trials matching the US GAP for cucurbit vegetables were: 0.04, 0.06 (3), 0.07 and 0.12 mg/kg.

Residues of flonicamid from six melon trials matching the US GAP for cucurbit vegetables were: 0.020, 0.03, 0.04, 0.05, 0.06 and 0.09 mg/kg.

Residues of flonicamid from five summer squash trials matching the US GAP for cucurbit vegetables were: 0.01, 0.03 (3) and 0.04 mg/kg.

Residues of flonicamid from the greenhouse cucumber trials matching the US GAP for the foliar spray application were: 0.05, 0.06, 0.14 and 0.54 mg/kg.

Residues of flonicamid from the greenhouse cucumber trials where the growth media was treated were: 0.09, 0.13, 0.16 and 0.20 mg/kg.

For greenhouse cucumbers, as there is an insufficient number of supervised trials conducted in accordance with the US critical GAP, the Meeting did not consider these trials further.

In addition to the US trials, the Meeting received 10 independent supervised field trials conducted in Australia on cucumbers (2), melons (5) and summer squash (3) according to the Australian GAP on cucurbit vegetables which allows three applications at a maximum rate of 0.1 kg ai/ha with a 1-day PHI.

Residues of flonicamid from two field cucumber trials matching the Australian GAP for Cucurbit Vegetables were: 0.03 (2) mg/kg.

Residues of flonicamid from five melon trials matching the Australian GAP for Cucurbit Vegetables were: 0.03, <u>0.05 (2)</u>, 0.09 and 0.17 mg/kg.

Residues of flonicamid from three summer squash trials matching the Australian GAP for Cucurbit Vegetables were: 0.01, <u>0.04</u> and 0.08 mg/kg.

Since the use of flonicamid on the cucurbits crop group is registered in Australia, the residue decline trials demonstrated limited dissipation of flonicamid residues with increasing PHI and that there are an insufficient number of Australian trials at the critical GAP, the Meeting compared the US field trials against the Australian GAP and combined them as follows:

Residues of flonicamid in field cucumbers from eight trials were: 0.03 (2), 0.04, <u>0.06</u> (3), 0.07 and 0.12 mg/kg.

Residues of flonicamid in melons from 11 trials were: 0.02, 0.03(2), <u>0.04 (2), 0.05 (2)</u>, 0.06, 0.09 (2) and 0.17 mg/kg.

Residues of flonicamid in summer squash from eight trials were: 0.01 (2), <u>0.03</u> (3), 0.04 (2) and 0.08 mg/kg.

The median residues among the representative crops were within a 5-fold range (0.06 mg/kg vs. 0.05 vs 0.03 mg/kg) and the Kruskall-Wallis test indicated that the residues were not statistically different, therefore, the Meeting decided to combine the dataset as follows: 0.01 (2), 0.02, 0.03 (7), 0.04 (5), 0.05 (2) <u>0.06</u> (4), 0.07, 0.08, 0.09 (2), 0.12 and 0.17 mg/kg.

The Meeting estimated a maximum residue level for fruiting vegetables, cucurbits, of 0.2 mg/kg and an STMR of 0.04 mg/kg.

Fruiting vegetables, other than cucurbits

Results from supervised field trials on <u>tomatoes</u>, <u>bell peppers</u> and <u>non-bell peppers</u> were conducted in the US as well as supervised trials on greenhouse tomatoes conducted in Canada and the US were provided to the Meeting.

A total of 34 independent supervised trials were conducted in the US on field tomatoes (26), bell peppers (6) and non-bell peppers (2) according to the US GAP on fruiting vegetables, which allows three foliar spray applications of a WG formulation at a maximum rate of 0.1 kg ai/ha or two applications of a SG formulation at a maximum rate of 0.15 kg ai/ha. For both formulations, the crops may be harvested at a 0-day PHI.

Three additional trials were conducted in Canada and the US on greenhouse tomatoes where treatments were conducted according to the US GAP which allows two foliar spray applications at a maximum rate of 0.15 kg ai/ha with a 0-day PHI.

Only field tomato trials were conducted with both the WG and SG formulations, however, it was not clear which formulation resulted in the critical GAP:

Residues of flonicamid from 12 field tomato trials where the WG formulation was applied according to the US critical GAP for fruiting vegetables were: 0.03, 0.05, 0.06, 0.07, 0.08, 0.09 (3), 0.14, 0.15, 0.22 and 0.23 mg/kg.

Residues of flonicamid from 14 field tomato trials where the SG formulation was applied according to the US critical GAP for fruiting vegetables were: < 0.01, 0.05(2), 0.06, 0.07, 0.08, 0.10 (2), 0.11, 0.12 (2), 0.13, 0.15 and 0.19, mg/kg.

As highest residues in tomatoes were observed following treatment with the WG formulation, only these were considered when estimating the maximum residue level.

Residues of flonicamid from six bell pepper trials matching the US critical GAP for fruiting vegetables were: 0.06 (3), 0.10 and 0.11 (2) mg/kg.

Residues of flonicamid from two non-bell pepper trials matching the US critical GAP for fruiting vegetables, other than cucurbits were: 0.21 and 0.22 mg/kg.

As the GAP in the US is for the fruiting vegetables crop group, the median values from the trials conducted in the US on tomatoes, bell peppers and non-bell peppers were within 5-fold (0.09 mg/kg vs 0.08 mg/kg vs 0.21 mg/kg) and the Kruskall-Wallis test indicated that the residues from field trials were not statistically different, the Meeting decided to estimate a group maximum residue level. The residues in tomatoes, bell peppers and non-bell peppers were combined as follows: 0.03, 0.05, 0.06 (4), 0.07, 0.08, 0.09 (3), 0.10, 0.11 (2), 0.14, 0.15, 0.21, 0.22 (2) and 0.23 mg/kg.

The Meeting estimated a maximum residue level of 0.4 mg/kg and an STMR of 0.09 mg/kg for fruiting vegetables, other than cucurbits, excluding mushrooms and sweet corn.

Leafy vegetables

Leafy vegetables (excluding Brassica leafy vegetables)

Results from supervised field trials on head lettuce, leaf lettuce, spinach and radish leaves conducted in the US were provided to the Meeting.

A total of 18 independent supervised trials were conducted in the US on head lettuce (6), leaf lettuce (6) and spinach (6) according to the US GAP on leafy vegetables which allows three applications at a maximum rate of 0.1 kg ai/ha with a 0-day PHI.

A total of five independent supervised trials were conducted in the US on radish leaves according to the US GAP on root and tuber vegetables which allows three applications at a maximum rate of 0.1 kg ai/ha with a 3-day PHI.

Residues of flonicamid from six head lettuce (with wrapper leaves) trials matching the US GAP for leafy vegetables were: 0.39, 0.43, 0.49, 0.52, 0.58 and 0.62 mg/kg.

Residues of flonicamid from six trials on leaf lettuce matching the US GAP for leafy vegetables (except Brassica) were: 1.94, 2.18, 2.52, 2.67, 2.71, 3.06 and 3.11 mg/kg.

Side-by-side trials were conducted on cos lettuce comparing the WG formulation with the SG formulation with and without surfactant. These trials were not considered further in the estimation of the maximum residue level.

Residues of flonicamid from six trials on spinach matching the US GAP for leafy vegetables were: 4.82, 4.86, 5.71, 5.73, 6.59 and 6.97 mg/kg.

Residues of flonicamid from five trials on radish leaves matching the US GAP for root and tuber vegetables were: 0.21, 3.1, 5.4, 5.7 and 8.5 mg/kg.

As the GAP in the US is established for the leafy vegetables crop group, the Meeting decided to explore the possibility of setting a group MRL. The median residues in head lettuce, leaf lettuce and spinach, which are the representative commodities for this subgroup, differed by more than 5-fold (0.51 mg/kg vs 2.67 mg/kg vs 5.72 mg/kg). In addition, as the GAP for radish leaves differs from that of the other leafy vegetables, the Meeting decided to estimate maximum residue levels for each commodity based on the individual datasets without extrapolation to the entire subgroup.

The Meeting estimated a maximum residue level of 1.5 mg/kg and an STMR of 0.51 mg/kg for head lettuce with wrapper leaves.

For leaf lettuce, the Meeting estimated a maximum residue level of 8 mg/kg and an STMR of 2.67 mg/kg

The Meeting estimated a maximum residue level of 20 mg/kg and an STMR of 5.72 mg/kg for spinach.

The Meeting estimated a maximum residue level of 20 mg/kg and an STMR of 8.50 mg/kg for radish leaves.

Brassica leafy vegetables

Results from supervised field trials on mustard greens conducted in the US were provided to the Meeting.

A total of eight independent supervised trials were conducted in the US on mustard greens according to the US GAP on Brassica (Cole) leafy vegetables which allows three applications at a maximum rate of 0.1 kg ai/ha with a 0-day PHI.

Residues of flonicamid from eight trials on mustard greens matching the US GAP for Brassica (Cole) leafy vegetables were: 2.04, 2.21, 3.96, 4.40, 4.78, 4.92, 6.87 and 8.31 mg/kg.

The Meeting estimated a maximum residue level of 15 mg/kg and an STMR of 8.31 mg/kg for the Brassica leafy vegetables subgroup.

Root and tuber vegetables

Results from supervised field trials on potatoes, carrots and radish roots conducted in the US and Australia (potatoes only) were provided to the Meeting.

A total of 23 independent supervised trials were conducted in the US on potatoes (16), carrots (2) and radishes (5) according to the critical GAP in the US which allows three applications at a maximum rate of 0.1 kg ai/ha with a 7-day PHI for potatoes and a 3-day PHI for carrots and radishes.

Residues of flonicamid from 16 potato trials matching the US GAP were: < 0.01 (15) and 0.015 mg/kg.

Residues of flonicamid from two carrot trials matching the US GAP were: 0.02 (2) mg/kg.

Residues of flonicamid from five radish trials matching the US GAP were: 0.02, 0.07, 0.10, 0.13 and 0.21 mg/kg.

The Meeting noted that in the US, group GAPs for root and tuber vegetables and tuberous and corm vegetables exist; however, as these GAPs are different for each crop group and there is an insufficient number of supervised residue trials provided for carrots, the Meeting decided to estimate individual maximum residue levels for potato and radish roots only.

For potatoes, the Meeting estimated a maximum residue level of 0.015 mg/kg and an STMR of 0.01 mg/kg.

The Meeting estimated a maximum residue level of 0.4 mg/kg and an STMR of 0.10 mg/kg for radish roots.

Celery

Results from supervised field trials on celery conducted in the US were provided to the Meeting.

A total of six independent supervised trials were conducted in the US on celery according to the US GAP for leafy vegetables, except Brassica vegetables, which includes the leaf petioles subgroup, and allows three applications at a maximum rate of 0.1 kg ai/ha with a 0 PHI.

Residues of flonicamid matching the US GAP were: 0.35, 0.43, 0.44, 0.45, 0.46, 0.93 mg/kg.

The Meeting estimated a maximum residue level of 1.5 mg/kg and an STMR of 0.45 mg/kg for celery.

Cereal grains

Results from supervised trials on wheat and barley conducted in Northern and Southern EU were provided to the meeting.

A total of 23 independent supervised trials were conducted in EU on wheat (15) and barley (8). The wheat trials were conducted according to the Slovenia GAP which allows two applications at a maximum rate of 0.07 kg ai/ha with a 28-day PHI.

As there is no GAP for barley, these trials were not considered further.

Residues of flonicamid in wheat grain matching the Slovenia GAP were: < 0.01 (11), 0.01, 0.02, 0.04 and 0.06 mg/kg.

The Meeting estimated a maximum residue level of 0.08 mg/kg and an STMR of 0.01 mg/kg for wheat.

Tree nuts

Results from supervised field trials on almonds, pecans and pistachios conducted in the US were provided to the Meeting.

A total of 12 independent supervised trials were conducted in the US on almonds (5), pecans (5) and pistachios (2) according to the US GAP which allows three applications at a maximum rate of 0.1 kg ai/ha with a 40-day PHI.

Residues of flonicamid in almond nutmeats matching the US GAP were: < 0.01 (5) mg/kg.

Residues of flonicamid in pecan nutmeats matching the US GAP were: < 0.01 (5) mg/kg.

Residues of flonicamid in pistachios matching the US GAP were 0.02 and 0.04 mg/kg.

As the Meeting could not conclude that there are no measurable residues in all tree nuts in the tree nut crop group and considering the insufficient number of supervised residue trials for pistachios, the Meeting agreed to estimate individual maximum residue levels for almonds and pecans at 0.01* mg/kg with an STMR of 0.01 mg/kg.

Oilseeds

Rape seed

Results from supervised field trials on rape seed conducted in the US were provided to the Meeting.

A total of nine independent supervised trials were conducted in the US on rape seed according to the US GAP which allows three applications at a maximum rate of 0.1 kg ai/ha with a 7-day PHI.

Residues of flonicamid matching the US GAP were: < 0.02, 0.02 (3), 0.04, 0.08, 0.09, 0.17 and 0.33 mg/kg.

The Meeting estimated a maximum residue level of 0.5 mg/kg and an STMR of 0.04 mg/kg for rape seed.

Cotton seed

Results from supervised field trials on cotton conducted in the US and Australia were provided to the Meeting.

The GAP in the US is three applications at a maximum rate of 0.1 kg ai/ha with a 30-day PHI while the GAP in Australia is three applications at a maximum rate of 0.07 kg ai/ha with a 7-day PHI.

As the critical GAP is in Australia, only the Australian trials were considered.

Residues of flonicamid in cottonseed from eight independent supervised residue trials matching the Australian critical GAP were: 0.01 (2), 0.02, 0.04, 0.09, 0.13, 0.16 and 0.34 mg/kg.

The Meeting estimated a maximum residue level of 0.6 mg/kg and an STMR of 0.06 mg/kg for cottonseed.

Mint

Results from supervised field trials on fresh mint leaves conducted in the US were provided to the Meeting.

A total of three independent supervised trials were conducted in the US on mint according to the US GAP which allows three applications at a maximum rate of 0.1 kg ai/ha with a 7-day PHI.

Residues of flonicamid matching the US GAP were: 1.70, 1.92 and 2.36 mg/kg.

The Meeting estimated a maximum residue level of 6 mg/kg and an STMR of 1.92 mg/kg for mint.

Dried hops

Results from supervised field trials on dried hops conducted in the US were provided to the Meeting.

A total of four independent supervised trials were conducted in the US on dried hops according to the US GAP which allows three applications at a maximum rate of 0.1 kg ai/ha with a 10-day PHI.

Residues of flonicamid matching the US GAP were: 0.56, 1.15, 2.82 and 9.33 mg/kg.

The Meeting estimated a maximum residue level of 20 mg/kg and an STMR of 1.98 mg/kg for dried hops.

Teas

Results from supervised field trials on tea conducted in Japan were provided to the Meeting.

A total of two independent supervised trials were conducted in Japan on tea according to the Japanese GAP which allows one application at a maximum rate of 0.1 kg ai/ha with a 7-day PHI.

Residues of flonicamid in green tea leaves matching the Japanese GAP were: 15.7 and 20.1 mg/kg.

There is insufficient data for the Meeting to estimate a maximum residue level.

Animal feeds

Straw, fodder and forage of cereal grains and grasses including buckwheat fodder forage

Wheat

Results from supervised trials on wheat and barley conducted in Northern and Southern EU were provided to the meeting.

A total of 23 independent supervised trials were conducted in EU on wheat (15) and barley (8). The wheat trials were conducted according to the Slovenia GAP which allows two applications at a maximum rate of 0.07 kg ai/ha with a 28-day PHI.

As there is no GAP for barley, these trials were not considered further.

Residues of flonicamid in wheat forage matching the Slovenia Gap were: 0.64, 0.69, 0.83, 0.88 and 0.99 (2).

The Meeting estimated a maximum residue level of 3.0 mg/kg and a median of 0.86 mg/kg for wheat forage.

Residues of flonicamid in wheat straw matching the Slovenia GAP were: < 0.02 (5), 0.02, 0.04 (2), 0.05 (3), 0.08, 0.09, 0.11 and 0.23 mg/kg.

The Meeting estimated a maximum residue level of 0.3 mg/kg and a median of 0.04 mg/kg for wheat straw and fodder, dry.

Alfalfa

Results from six independent supervised field trials on alfalfa (4) and clover (2) conducted in the US were provided to the Meeting.

The US GAP for alfalfa grown west of the Rockies allows two applications at a maximum rate of 0.10 kg ai/ha with PHIs of 14 days for seed and forage and 60 days for hay.

Two supervised trials were conducted on clover in the US, however, in the absence of a US GAP, these trials were not considered.

Four trials were conducted on alfalfa in the US, of which only two were conducted according to the US GAP. In the absence of a sufficient number of trials, the Meeting could not estimate a maximum residue level or a median residue for alfalfa seed, forage and hay.

Miscellaneous fodder and forage crops (fodder)

Almond hulls

Results from supervised field trials on almonds conducted in the US were provided to the Meeting.

Five independent trials were conducted on almonds in the US. The GAP in the US allows three applications at a maximum rate of 0.10 kg ai/ha with a PHI of 40 days.

Residues in almond hulls (dry weight) from five trials matching US GAP were: 0.92, 1.09, 1.81, 2.75 and 4.73 mg/kg. The meeting estimated a maximum residue level of 9 mg/kg and a median residue of 1.8 mg/kg.

Cotton gin trash

Results from supervised field trials on cotton conducted in the US and Australia were provided to the Meeting.

The GAP in the US is three applications at a maximum rate of 0.1 kg ai/ha with a 30-day PHI while the GAP in Australia is three applications at a maximum rate of 0.07 kg ai/ha with a 7-day PHI.

As the critical GAP is in Australia, only the Australian trials were considered.

The residues of flonicamid in cotton gin trash from eight independent supervised trials matching the Australian critical GAP were: 0.66, 1.20, 1.33, 1.60, 1.70, 2.30, 2.75, 3.00 and 3.72 mg/kg.

The Meeting estimated a median residue of 1.7 mg/kg.

Fate of residues during processing

High temperature hydrolysis

To simulate the degradation of flonicamid during pasteurization, baking, brewing, boiling and sterilisation, the hydrolysis of radio-labelled flonicamid was investigated in sterile buffered aqueous solutions.

After incubation at 90 °C (pH 4) for 20 minutes, 100 °C (pH 5) for 60 minutes or 120 °C (pH 6) for 20 minutes, no loss of radioactivity occurred. More specifically, flonicamid accounted for at least 96% of the applied radioactivity. Therefore, very limited degradation of flonicamid was observed in aqueous buffer solutions under all the conditions tested with no significant degradation product being formed.

Processing

The Meeting received information on the fate of flonicamid residues and its metabolites TFNA-AM, TFNA and TFNG during the processing of raw agricultural commodities (RAC) like apples, peaches, plums, tomatoes, potatoes, rape seed, cotton and mint.

Processing factors calculated for the processed commodities of the above raw agricultural commodities are shown in the table below. STMR-Ps were calculated for processed commodities for which maximum residue levels were estimated.

RAC	Processed Commodity	Calculated processing factors	Best estimate	STMR-P
		Flonicamid		
Peaches	Canned peaches	0.3, 0.5, 0.3, 3.3	0.3 (median)	0.08
	Juice	1.0, 1.0, 0.3, 0.5	0.8 (median)	1.8
	Jam	0.3, 1.0, 1.0, 0.2	0.7 (median)	0.16
	Puree	0.7, 1.0, 1.0, 0.8	0.9 (median)	0.21
Plums	Dried prunes	1.0	1.0	0.04
Tomato	Paste	16.1	16.1	1.45
Potato	Chips	0.95	0.95	0.01
	Flakes	2.7	2.7	0.03
Canola	Refined oil	< 0.1	0.1	0.004
Cotton	Refined oil	< 0.24 (US), 0.6 and 0.04 (AUS)	0.32 (mean; AUS)	0.02
Mint	Oil	< 0.03	0.03	0.06

As the residue concentration in both apple juice and apple pomace were higher than in fresh apple which is not physically possible, the Meeting determined that the apple processing study was not reliable and did not calculate a processing factor for juice.

As the residue concentration is higher in tomato paste than in fresh tomato, the Meeting estimated a maximum residue level of 7.0 mg/kg by multiplying the maximum residue level for fruiting vegetables, other than cucurbits, (0.4 mg/kg) by 16.1.

Residues in animal commodities

Farm animal feeding studies

The Meeting received information on the residue levels arising in tissues and milk when three groups of dairy cows were fed with a diet containing 2.50, 6.89 and 23.7 ppm of a 1:1 mixture of flonicamid:TFNG for 28 consecutive days. As demonstrated in the metabolism studies, residues of TFNG present in feed items may be converted to TFNA-AM. Therefore, the Meeting concluded that the test material used in the feeding studies was appropriate.

In milk, no quantifiable (< LOQ) residues of flonicamid were detected in any test group. For TFNA-AM, the average residues increased from < LOQ in the low dose group to 0.02 mg/kg in the mid dose group and to 0.08 mg/kg in the high dose group.

In liver, no quantifiable residues of flonicamid were detected. For TFNA-AM, residues were detected in the mid and high dose groups above the LOQ using two different analytical methods (FMC-P-3580/RCC 844743) with different LOQ (0.025/0.01 mg/kg). TFNA-AM levels increased from less than LOQ in the low dose group to 0.039/0.02 mg/kg in the mid dose group and 0.113/0.05 mg/kg in the high dose group.

In kidney, TFNA-AM was detected in the medium and high dose groups above the LOQ using the same analytical methods as those used for kidney. TFNA-AM levels increased from levels below

LOQ in the low dose group to 0.031/0.02 mg/kg in the mid dose group and 0.105/0.09 mg/kg in the high dose group.

In muscle, only TFNA-AM was found. The level increased from below LOQ (0.025 mg/kg) in the low dose group to 0.027 mg/kg in the mid dose group and 0.088 mg/kg in the high dose group. Similarly, only TFNA-AM was measurable in fat and only at the high dose level (0.015 mg/kg).

The Meeting also received information on the residue levels arising in tissues and eggs when groups of laying hens were fed with a diet containing 0.26, 2.51, 7.47 and 25.83 ppm of a 1:1 mixture of flonicamid:TFNG for 28 consecutive days.

The average flonicamid residues in eggs increased from < LOQ in the very low and low dose groups to 0.02 mg/kg in the mid dose group and to 0.08 mg/kg in the high dose group. Average residues of TFNA-AM increased from < LOQ in the very low and low dose groups to 0.27 mg/kg in the mid dose group and 0.95 mg/kg in the high dose group.

No quantifiable residues (< LOQ) of flonicamid were found in muscle in any treatment group. No quantifiable residues (< LOQ) of TFNA-AM was measurable in muscle at the very low dose group, but there appeared to be a dose response relationship at all other dose levels; 0.049 mg/kg in the low dose group, 0.168 mg/kg in the mid dose group and 0.654 mg/kg in the high dose group.

In liver and fat, no quantifiable residues (< LOQ) of flonicamid were found at any dosing level. For liver, TFNA-AM residues increased from < 0.01 mg/kg (very low) to 0.05 mg/kg (low) to 0.17 mg/kg (mid) and 0.71 mg/kg (high) while for fat, TFNA-AM residues increased from 0.01 mg/kg (very low) to 0.02 mg/kg (low) to 0.06 mg/kg (mid) and 0.29 mg/kg (high).

Estimated dietary burdens of farm animals

Maximum and mean dietary burden calculations for flonicamid are based on the feed items evaluated for cattle and poultry as presented in Annex 6. The calculations were made according to the livestock diets from Australia, the EU, Japan and US-Canada in the OECD feeding table.

The foliar application of flonicamid to apples, cabbage, potato, almonds, rape seed, cotton and wheat resulted in residues of flonicamid in the following feed items: wet apple pomace, head cabbage with wrapper leaves, potato culls, almond hulls, rape seed meal, undelinted cottonseed, cotton seed hulls, cottonseed meal, gin trash, wheat forage, grain and straw. Based on the named feed items, the calculated maximum animal dietary burden for dairy or beef cattle was in Australia (3.96 ppm), followed by EU (1.39 ppm) and US-Canada (0.29 ppm).

	Livestock dietary burden, flonicamid, ppm of dry matter							
	US-Canada		EU		Australia		Japan	
	Max	Mean	Max	Mean	Max	Mean	Max	Mean
Beef cattle	0.27	0.13	1.39	1.02	3.96 a	3.44 c	0.003	0.003
Dairy cattle	0.81	0.70	0.82	0.71	2.38 b	2.07 d	0.002	0.002
Poultry—broiler	0.03	0.03	0.01	0.01	0.02	0.02	0	0
Poultry—layer	0	0	0.40 e	0.34 f	0	0	0	0

[a] Suitable for MRL estimates for mammalian meat, fat and edible offal

[b]. Suitable for MRL estimates for milk

[c] Suitable for STMR estimates for mammalian meat, edible offal

[d] Suitable for STMR estimate for milk

[e] Suitable for MRL estimates for eggs, meat, fat and edible offal of poultry

[f] Suitable for STMR estimates for eggs, meat, fat and edible offal of poultry

Animal commodities maximum residue level estimation

As all dietary burdens were lower than the lowest feeding levels from the dairy cow and laying hen feeding studies and since all residues of flonicamid and TFNA-AM were below the limit of quantitation at the lowest feeding levels, there is no expectation of any measurable transfer of residues from the feed items into the livestock commodities (see tables below).

	Feed level (ppm) for milk residues	Total flonicamid and TFNA-AM residues in milk (mg/kg)	Feed level for tissue residues (ppm)	Flonicamid and TFNA-AM Residues			
				Muscle	Liver	Kidney	Fat
Maximum residue level—beef or dairy cattle							
Feeding study	2.50	0.043	2.50 6.89	< 0.045 0.050	< 0.045 0.062	< 0.045 0.054	< 0.02 < 0.02
Dietary burden and residue estimate	2.38	0.04	3.96	0.047	0.051	0.048	< 0.02
STMR—beef or dairy cattle							
Feeding study	2.50	0.041	2.50 6.89	< 0.045 0.047	< 0.045 0.059	< 0.045 0.051	< 0.02 < 0.02
Dietary burden and residue estimate	2.07	0.04	3.44	0.045	0.048	0.046	< 0.02

	Feed level (ppm) for egg residues	Total flonicamid and TFNA-AM residues in eggs (mg/kg)	Feed level for tissue residues (ppm)	Flonicamid and TFNA-AM Residues		
				Muscle	Liver	Fat
Maximum residue level—poultry broiler or layer						
Feeding study	0.26 2.51	0.02 0.11	0.26 2.51	< 0.02 0.07	< 0.02 0.08	< 0.02 0.04
Dietary burden and residue estimate	0.40	0.03	0.40	0.02	0.02	0.02
STMR—poultry broiler or layer						
Feeding study	0.26 2.51	0.02 0.09	0.26 2.51	< 0.02 0.06	< 0.02 0.06	< 0.02 0.03
Dietary burden and residue estimate	0.34	0.02	0.34	0.02	0.02	0.02

The Meeting estimated maximum residue levels of 0.02* mg/kg for mammalian fats, 0.04 mg/kg for milks and 0.05 mg/kg for meat from mammals other than marine mammals and 0.06 mg/kg for edible offal (mammalian). The STMRs for mammalian fats, milks, meat from mammals other than marine mammals and edible offal (mammalian) are 0.02 mg/kg, 0.04 mg/kg. 0.047 mg/kg and 0.051 mg/kg, respectively.

In addition, the Meeting estimated maximum residue levels of 0.02* mg/kg for poultry meat (including Pigeon meat), poultry fats and edible offal of poultry and 0.03 mg/kg for eggs. The STMRs were 0.02 mg/kg, 0.02 mg/kg, 0.02 mg/kg and 0.02 mg/kg for meat, edible offal, fat and eggs, respectively.

RECOMMENDATIONS

On the basis of the data from supervised trials the Meeting concluded that the residue levels listed in Annex 1 are suitable for establishing maximum residue limits and for IEDI assessment.

Definition of the residue for compliance with the MRL and for estimation of dietary intake for plant commodities: *Flonicamid*

Definition of the residue for compliance with the MRL and for estimation of dietary intake for animal commodities: Sum of flonicamid, N-cyanomethyl-4-(trifluoromethyl)nicotinamide and the metabolite TFNA-AM, 4-(trifluoromethyl)nicotinamide.

DIETARY RISK ASSESSMENT

Long-term intake

The International Estimated Dietary Intakes (IEDIs) of flonicamid were calculated for the 17 GEMS/Food cluster diets using STMRs and STMR-Ps estimated by the current Meeting (Annex 3 to the 2015 Report) estimated by the current Meeting (Annex 3). The ADI is 0–0.07 mg/kg bw and the calculated IEDIs were 1–10% of the maximum ADI. The Meeting concluded that the long-term intake of residues of flonicamid resulting from the uses considered by the current JMPR is unlikely to present a public health concern.

Short-term intake

The Meeting decided that an ARfD is unnecessary and concluded that the short-term intake of residues resulting from the use of flonicamid, considered by the present Meeting, is unlikely to present a public health concern.

5.12 FLUAZIFOP-*P*-BUTYL (283)

Fluazifop-*p*-butyl has not been evaluated previously by JMPR and was included on the agenda of the present meeting at the request of CCPR.

A toxicity data package on fluazifop-*p*-butyl was received by the Meeting, and a draft toxicological monograph was prepared.

The Meeting was made aware during the meeting of the existence of studies that may be relevant for its comprehensive review of fluazifop-*p*-butyl but which had not been submitted. Following a request to the sponsor to provide all relevant studies, a three-generation study with a teratology phase was received later during the meeting, together with a technical appraisal outlining its unacceptability for any evaluation.

This three-generation study was part of the toxicology data package considered for the toxicological evaluation of fluazifop-*p*-butyl by EFSA and the Food Safety Commission of Japan. EFSA decided not to use the study because of study deficiencies and because another two-generation study had been submitted; this two-generation study was also available to the 2015 JMPR. In contrast, the Japanese authorities considered the three-generation study to be a valid basis for the evaluation of fluazifop-*p*-butyl.

The Meeting concluded that a thorough evaluation of this complex three-generation study was not possible during the meeting, and therefore completion of the evaluation of fluazifop-*p*-butyl was postponed.

The Meeting noted that there are various metabolites of fluazifop-*p*-butyl – CF3-pyridone (X), despyridinyl acid (III), Pyr-Ph ether (IV) and compound 40 (XL) – that are found in plant commodities for which there is considerable dietary consumption. However, apart from CF3-pyridone (X), for which some studies were provided, no toxicity data were provided for these metabolites. In this respect, it is noted that at least one metabolite (i.e. despyridinyl acid (III)) may be a metabolite common to several pesticide compounds.

The Meeting re-emphasized the importance of a complete submission of data on all compounds and their metabolites to enable JMPR to perform a state-of-knowledge risk assessment.

5.13 FLUMIOXAZIN (284)

TOXICOLOGY

Flumioxazin is the ISO-approved common name for *N*-(7-fluoro-3,4-dihydro-3-oxo-4-prop-2-ynyl-2*H*-1,4-benzoxazin-6-yl)cyclohex-1-ene-1,2-dicarboxamide (IUPAC), with the CAS number 103361-09-7. It acts as a herbicide by inhibition of protoporphyrinogen oxidase, resulting in an accumulation of porphyrins. It is used against weeds and mosses.

Flumioxazin has not been evaluated previously by JMPR and was reviewed by the present Meeting at the request of CCPR.

This evaluation is based mainly on the study reports submitted by the sponsor. All critical studies contained statements of compliance with GLP, unless otherwise specified.

The authors conducted a literature search; articles relevant for a toxicological or human health evaluation were included in the evaluation and are described in the appropriate sections.

Biochemical aspects

Experiments in bile duct–cannulated rats given 1 mg/kg bw orally showed that absorption of flumioxazin was at least 80%, with similar amounts in urine and bile. Radioactivity in the urine of rats given [^{14}C]flumioxazin was 31–43% at the low dose (1 mg/kg bw) and 13–23% at the high dose (100 mg/kg bw). Flumioxazin was widely distributed. Radioactivity was detected mainly in excretory organs and was eliminated rapidly, showing that flumioxazin and its metabolites do not accumulate in tissues. Radioactivity in faeces of rats given [^{14}C]flumioxazin was 56–72% at the low dose and 78–85% at the high dose. Excretion was rapid, with 69–87% of the dose being eliminated in urine and faeces within 24 hours of dosing. Urinary excretion of radioactivity was higher in females than in males in all groups, and pretreatment with unlabelled flumioxazin had little effect on the route or rate of excretion.

Flumioxazin was metabolized extensively. Seven of the 35 metabolites detected and quantified when dosing with [phenyl-^{14}C]flumioxazin were identified, and 10 of the 29 metabolites detected and quantified when dosing with [^{14}C-phthalimide]flumioxazin were identified. The main metabolic reactions were hydroxylation of the cyclohexene ring of the tetrahydrophthalimide moiety, cleavage of the imide linkage, cleavage of the amide linkage in the benzoxazine ring, reduction of the double bond in the tetrahydrophthalimide ring, acetylation of the amino group of the aniline derivative and incorporation of a sulfonic acid group in the tetrahydrophthalimide ring.

Toxicological data

Flumioxazin was not acutely toxic to rats, with no mortality at limit doses after oral (LD_{50} > 5000 mg/kg bw) or dermal (LD_{50} > 2000 mg/kg bw) exposure. In rats exposed to flumioxazin via inhalation, an LC_{50} greater than 3.93 mg/L was reported. Flumioxazin was not irritating to the skin and caused only minimal eye irritation in rabbits. It was not a skin sensitizer in a maximization test.

Short-term toxicity studies were conducted in the mouse, rat and dog. In all three species, liver was a target organ. Anaemia was also observed in the rat.

In a 13-week study, mice received flumioxazin in the diet at a concentration of 0, 100, 1000, 3000 or 10 000 ppm (equal to 0, 16.3, 164, 459 and 1062 mg/kg bw per day for males and 0, 18.6, 202, 595 and 2163 mg/kg bw per day for females, respectively). The NOAEL was 3000 ppm (equal to 459 mg/kg bw per day), based on increased liver weight and decreased ovary weight at 10 000 ppm (equal to 1062 mg/kg bw per day).

In a 90-day study in rats, flumioxazin was offered to groups of rats at a dietary concentration of 0, 30, 300, 1000 or 3000 ppm (equal to 0, 2.28, 20.7, 69.7 and 244 mg/kg bw per day for males and 0, 2.21, 21.7, 71.5 and 230 mg/kg bw per day for females, respectively). The NOAEL was 300 ppm (equal to 20.7 mg/kg bw per day), based on changes in haematological and clinical chemistry parameters at 1000 ppm (equal to 69.7 mg/kg bw per day).

In a second 90-day study in rats, flumioxazin was offered to animals at a dietary concentration of 0, 30, 300, 1000 or 3000 ppm (equal to 0, 1.9, 19.3, 65.0 and 197 mg/kg bw per day for males and 0, 2.2, 22.4, 72.9 and 218 mg/kg bw per day for females, respectively). The NOAEL was 30 ppm (equal to 2.2 mg/kg bw per day), based on haematological changes (including anaemia and extramedullary haematopoiesis) in females at 300 ppm (equal to 22.4 mg/kg bw per day), although the effects were marginal. For males, the NOAEL was 300 ppm (equal to 19.3 mg/kg bw per day), based on increases in liver, heart, kidney and thyroid weights at 1000 ppm (equal to 65.0 mg/kg bw per day).

In dog studies, flumioxazin was administered in gelatine capsules to groups of dogs of both sexes at a dose of 0, 10, 100 or 1000 mg/kg bw per day for 90 days or for 1 year. The NOAELs for both the 90-day and 12-month studies were 10 mg/kg bw per day, based on increases in total cholesterol and phospholipid levels and elevated alkaline phosphatase activity at 100 mg/kg bw per day in the 90-day study and similar changes (elevated alkaline phosphatase activity and increased liver weights) at 100 mg/kg bw per day in the 12-month study.

In a 78-week study in mice, flumioxazin was administered at a dietary concentration of 0, 300, 3000 or 7000 ppm (equal to 0, 31, 315 and 754 mg/kg bw per day for males and 0, 37, 346 and 859 mg/kg bw per day for females, respectively). The incidence of centrilobular hepatocyte hypertrophy was increased in males receiving 3000 and 7000 ppm; at these doses, there was an increase in diffuse hypertrophy and single-cell necrosis of hepatocytes in females. The NOAEL was 300 ppm (equal to 37 mg/kg bw per day), based on non-neoplastic changes in the liver in females. In this study, no increases in tumour incidence were reported.

In a 24-month rat study, flumioxazin was administered at a dietary concentration of 0, 50, 500 or 1000 ppm (equal to 0, 1.8, 18 and 36.5 mg/kg bw per day for males and 0, 2.2, 21.8 and 43.6 mg/kg bw per day for females, respectively). At the highest dose tested (1000 ppm), anaemia was the most significant toxicological finding; it was also apparent in rats receiving 500 ppm flumioxazin. The NOAEL was 50 ppm (equal to 1.8 mg/kg bw per day), based on an increase in anaemia. Under the conditions of the study, tumour incidence was unaffected by treatment.

The Meeting concluded that flumioxazin is not carcinogenic in mice or rats.

Flumioxazin was tested for genotoxicity in an adequate range of assays, both in vitro and in vivo. Flumioxazin was negative in in vitro studies, but resulted in an increase in chromosomal aberrations. However, there was no genotoxic activity in follow-up in vivo studies.

The Meeting concluded that flumioxazin is unlikely to be genotoxic in vivo.

In view of the lack of genotoxicity in vivo and the absence of carcinogenicity in mice and rats, the Meeting concluded that flumioxazin is unlikely to pose a carcinogenic risk to humans from the diet.

A two-generation reproductive toxicity study in rats was conducted with flumioxazin using dietary concentrations of 0, 50, 100, 200 and 300 ppm (equal to 0, 3.2, 6.3, 12.7 and 18.9 mg/kg bw per day for males and 0, 3.8, 7.6, 15.1 and 22.7 mg/kg bw per day for females, respectively). The NOAEL for parental toxicity was 200 ppm (equal to 12.7 mg/kg bw per day), based on clinical signs of toxicity and reductions in body weight, body weight gain, feed consumption and organ weights. The reproductive NOAEL was also 200 ppm (equal to 12.7 mg/kg bw per day), based on reduced gestation index in both the F_0 and F_1 generations and on an increase in the number of F_1 dams that did not deliver a litter. The NOAEL for offspring toxicity was 50 ppm (equal to 3.2 mg/kg bw per day), based on increased postnatal pup mortality in the F_1 generation.

Flumioxazin was administered by gavage to groups of pregnant rats at a dose of 0, 1, 3, 10 or 30 mg/kg bw per day during organogenesis (days 6 through 15). The NOAEL for embryo and fetal toxicity in rats was 3 mg/kg bw per day, based on an increased incidence of malformations (cardiac ventricular septal defects) in the fetuses at 10 mg/kg bw per day. The NOAEL for maternal toxicity was 30 mg/kg bw per day, the highest dose tested.

Studies have been conducted to elucidate the mechanism of formation of ventricular septal defects reported in rats as a possible consequence of protoporphyrinogen oxidase (PPO) inhibition. GD 12 was determined to be the most sensitive day, based on the incidence of embryonic deaths, reductions in fetal weight and the incidence of ventricular septal defects. Effects were seen in offspring within hours after administration and progressed through the development of the pups/fetuses. In studies comparing effects seen in rats and in rabbits, fewer or no effects were seen in rabbits.

Flumioxazin inhibits a key enzyme, PPO, in the rat, thereby interfering with normal haem synthesis. Available in vitro investigations in specimens and cell lines from different species indicated (slightly) higher sensitivity of rats compared with rabbits or humans.

The disease variegate porphyria is a disorder of hepatic haem biosynthesis, which is seen in humans carrying autosomal dominant mutations in the gene for PPO. Children with homozygous variegate porphyria were reported to exhibit various findings, such as photosensitivity, retarded mental development, delayed development, seizures, nystagmus or structural abnormalities of the hands.

The sponsor proposed a case that the induction of ventricular septum defects in rats is not relevant for humans. However, the Meeting considered that the case is not robust enough to support the mode of action in rats and to demonstrate the non-relevance for humans.

Pregnant rabbits were administered flumioxazin by oral gavage at 0, 300, 1000 or 3000 mg/kg bw per day on days 7−19 of gestation. The NOAEL for embryo and fetal toxicity was 3000 mg/kg bw per day, the highest dose tested. The NOAEL for maternal toxicity was 1000 mg/kg bw per day, based on reductions in maternal body weight gains and feed consumption.

The Meeting concluded that flumioxazin is teratogenic in rats, but not in rabbits.

In an acute neurotoxicity study, flumioxazin was administered once via gavage at a dose of 0, 200, 700 or 2000 mg/kg bw to groups of rats of both sexes. The NOAEL for acute neurotoxicity was 2000 mg/kg bw, the highest dose tested, based on the absence of specific neurotoxic effects.

In a subchronic dietary neurotoxicity study, flumioxazin was administered to groups of rats via the diet at a dose of 0, 500, 1500 or 4500 ppm (equal to 0, 37, 110 and 323 mg/kg bw per day for males and 0, 41, 124 and 358 mg/kg bw per day for females, respectively) for 90 days. The NOAEL for subchronic neurotoxicity was 4500 ppm (equal to 323 mg/kg bw per day), the highest dose tested. Haematological changes were reported for all dose groups from 500 ppm (equal to 37 mg/kg bw per day).

The Meeting concluded that flumioxazin is not neurotoxic.

In a 28-day immunotoxicity study in female rats, groups of animals were treated with diet containing 0, 500, 1500 or 4500 ppm flumioxazin (equal to 0, 42, 126 and 371 mg/kg bw per day, respectively). No adverse effects on antibody-forming cell response were reported up to 4500 ppm (equal to 371 mg/kg bw per day), the highest dose tested. Haematological changes were reported from 1500 ppm (equal to 126 mg/kg bw per day).

The Meeting concluded that flumioxazin is not immunotoxic.

Toxicological data on metabolites and/or degradates

Some metabolites were reported to occur as residues in plant metabolism studies. Metabolites 4-OH-flumioxazin and 3-OH-flumioxazin were reported to be major residues in goat and poultry matrices when animals were evaluated after a relatively short post-administration period.

Besides mechanistic in vitro data on PPO inhibition, no toxicological data were submitted on some of these metabolites. The metabolites 4-OH-flumioxazin and 3-OH-flumioxazin were observed in rats in amounts above 10%, when further downstream metabolites observed in toxicokinetic studies are included. Flumioxazin and the metabolites 4-OH-flumioxazin and 3-OH-flumioxazin were reported as Cramer class III (modules: Cramer rules; Cramer rules, with extensions), when evaluated with Toxtree (v. 2.6.13).

Acute and chronic exposures to 3-OH-flumioxazin and 4-OH-flumioxazin (up to 9 µg/day) are below the TTC for Cramer class III compounds (90 µg/day). Hence, no safety concern is anticipated.

Human data

In reports on manufacturing plant personnel, no adverse health effects were noted. No information on accidental or intentional poisoning in humans is available.

The Meeting concluded that the existing database on flumioxazin was adequate to characterize the potential hazards to the general population, including fetuses, infants and children.

Toxicological evaluation

The Meeting established an ADI of 0–0.02 mg/kg bw on the basis of a NOAEL of 1.8 mg/kg bw per day for anaemia in a long-term study in rats, with application of a safety factor of 100.

The Meeting established an ARfD of 0.03 mg/kg bw on the basis of a NOAEL of 3 mg/kg bw per day for malformations in a developmental toxicity study in rats, with application of a safety factor of 100. This ARfD applies to women of childbearing age only.

The Meeting concluded that it is not necessary to establish an ARfD for the remainder of the population in view of the low acute oral toxicity of flumioxazin and the absence of other toxicological effects that would be likely to be elicited by a single dose.

A toxicological monograph was prepared.

Levels relevant to risk assessment of flumioxazin

Species	Study	Effect	NOAEL	LOAEL
Mouse	Eighteen-month study of toxicity and carcinogenicity[a]	Toxicity	300 ppm, equal to 37 mg/kg bw per day	3 000 ppm, equal to 346 mg/kg bw per day
		Carcinogenicity	7 000 ppm, equal to 754 mg/kg bw per day[b]	–
Rat	Two-year study of toxicity and carcinogenicity[a]	Toxicity	50 ppm, equal to 1.8 mg/kg bw per day	500 ppm, equal to 18 mg/kg bw per day
		Carcinogenicity	1 000 ppm, equal to 36.5 mg/kg bw per day[b]	–
	Multigeneration study of reproductive toxicity[a]	Reproductive toxicity	200 ppm, equal to 12.7 mg/kg bw per day	300 ppm, equal to 18.9 mg/kg bw per day
		Parental toxicity	200 ppm, equal to 12.7 mg/kg bw per day	300 ppm, equal to 18.9 mg/kg bw per day
		Offspring toxicity	50 ppm, equal to 3.2 mg/kg bw per day	100 ppm, equal to 6.3 mg/kg bw per day
	Developmental toxicity study[c]	Maternal toxicity	30 mg/kg bw per day[b]	–
		Embryo and fetal toxicity	3 mg/kg bw per day	10 mg/kg bw per day
Rabbit	Developmental toxicity study[c]	Maternal toxicity	1 000 mg/kg bw per day	3 000 mg/kg bw per day

Species	Study	Effect	NOAEL	LOAEL
		Embryo and fetal toxicity	3 000 mg/kg bw per day[b]	–
Dog	Ninety-day and 1-year studies of toxicity[d,e]	Toxicity	10 mg/kg bw per day	100 mg/kg bw per day

[a] Dietary administration.
[b] Highest dose tested.
[c] Gavage administration.
[d] Gelatine capsule administration.
[e] Two or more studies combined.

Estimate of acceptable daily intake (ADI)

0–0.02 mg/kg bw

Estimate of acute reference dose (ARfD)

0.03 mg/kg bw (applies to women of childbearing age)

Unnecessary (for the general population)

Information that would be useful for the continued evaluation of the compound

Results from epidemiological, occupational health, and other such observational studies of human exposures

Critical end-points for setting guidance values for exposure to flumioxazin

Absorption, distribution, excretion, and metabolism in mammals	
Rate and extent of oral absorption	> 80% in the rat
Dermal absorption	Not given
Distribution	Widely distributed
Potential for accumulation	No potential for accumulation
Rate and extent of excretion	Rapidly excreted, 30–40% via urine and 60% via faeces within 7 days
Metabolism in animals	Extensively metabolized; hydroxylation of cyclohexene ring and cleavage of the imide linkage
Toxicologically significant compounds in animals and plants	Parent compound
Acute toxicity	
Rat, LD_{50}, oral	> 5 000 mg/kg bw
Rat, LD_{50}, dermal	> 2 000 mg/kg bw
Rat, LC_{50}, inhalation	> 3.93 mg/L air (maximal attainable concentration)
Rabbit, dermal irritation	Not irritating
Rabbit, ocular irritation	Minimally irritating
Guinea-pig, dermal sensitization	Not sensitizing (Magnusson and Kligman test)
Short-term studies of toxicity	

Target/critical effect	Haematotoxicity (rat), liver (mouse, rat)
Lowest relevant oral NOAEL	2.2 mg/kg bw per day (90-d rat)
Long-term studies of toxicity and carcinogenicity	
Target/critical effect	Haematotoxicity (rat), liver (mouse)
Lowest relevant oral NOAEL	1.8 mg/kg bw per day (2-year rat)
Carcinogenicity	Not carcinogenic in mice or rats[a]
Genotoxicity	
	Unlikely to be genotoxic in vivo[a]
Reproductive toxicity	
Target/critical effect	Impairment of reproductive capacity at dose levels associated with systemic toxicity; increased postnatal pup mortality in the absence of parental toxicity
Lowest relevant parental NOAEL	12.7 mg/kg bw per day (rat)
Lowest relevant offspring NOAEL	3.2 mg/kg bw per day (rat)
Lowest relevant reproductive NOAEL	12.7 mg/kg bw per day (rat)
Developmental toxicity	
Target/critical effect	Malformations (ventricular septum defects)
Lowest relevant maternal NOAEL	30 mg/kg bw per day (rat)
Lowest relevant embryo/fetal NOAEL	3 mg/kg bw per day (rat)
Neurotoxicity	
Acute neurotoxicity NOAEL	2 000 mg/kg bw (highest dose tested; rat)
Subchronic neurotoxicity NOAEL	323 mg/kg bw per day (highest dose tested; rat)
Developmental neurotoxicity NOAEL	No data
Other toxicological studies	
Mechanism studies	Mechanistic studies related to developmental toxicity in rats
Studies performed on metabolites or impurities	In vitro studies with metabolites were performed within the mechanistic studies for the proposed mode of action for developmental toxicity in rats
Immunotoxicity NOAEL	371 mg/kg bw per day (highest dose tested; rat)
Medical data	
	No evidence of adverse health effects attributed to flumioxazin during manufacturing operations reported

[a] Unlikely to pose a carcinogenic risk to humans from the diet.

Summary

	Value	Study	Safety factor
ADI	0–0.02 mg/kg bw	Two-year toxicity study (rat)	100
ARfD[a]	0.03 mg/kg bw	Developmental toxicity study (rat)	100

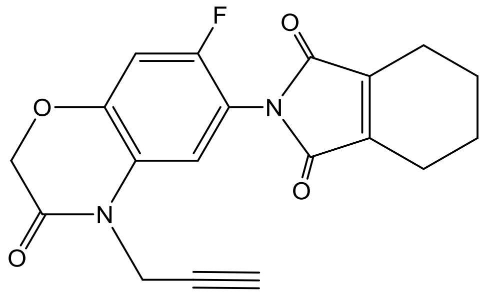
[a] Applies to women of childbearing age only; no ARfD necessary for the general population.

RESIDUE AND ANALYTICAL ASPECTS

Flumioxazin is a phenylthalimide protoporphyrogen oxidase inhibiting herbicide used for pre-emergent and post-emergent control of a range of broad-leaf weeds and suppression of some grass weed species in a range of fruit, vegetable and field crops.

It was scheduled by the Forty-sixth Session of the CCPR as a new compound for consideration by the 2015 JMPR. The manufacturer submitted studies on metabolism, analytical methods, supervised field trials, processing, freezer storage stability and environmental fate in soil.

Authorisations exist for the use of flumioxazin as pre-emergence or early post-emergence broadcast treatments, as directed inter-row band soil treatments and as a pre-harvest desiccant (harvest aid) treatment in North America, Europe, Latin America, Australia and some Asian countries.



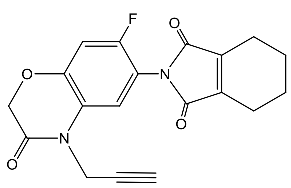
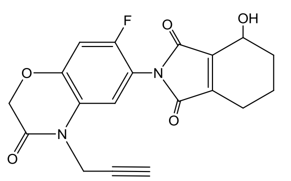
Flumioxazin

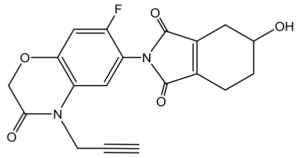
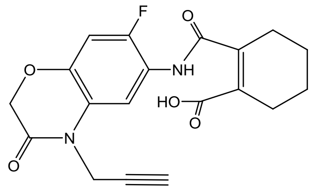
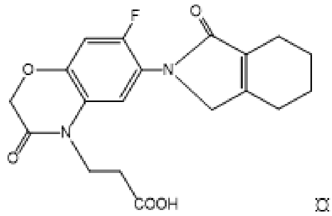
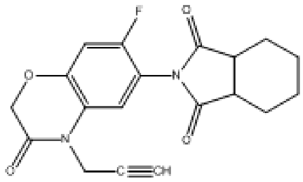
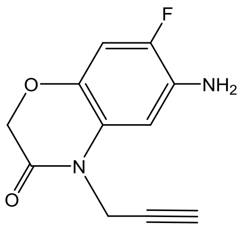
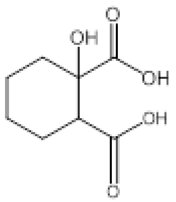
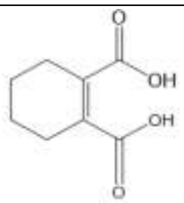
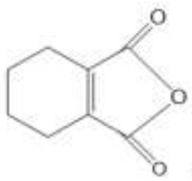
(MW 354.3)

Flumioxazin has a low vapour pressure and water solubility (approximately 0.8 mg/L) that is not pH dependent. It is soluble in medium polarity organic solvents (e.g. dichloromethane, acetone or ethyl acetate), but only slightly soluble in hexane. The octanol/water partition co-efficient (Log P_{OW} 2.55) is not pH dependent and indicates limited potential to bioaccumulation. Hydrolysis in aqueous media is pH-dependant, with half-lives ranging from 3–5 days at pH 5 to less than 25 minutes at pH 9 and the photolytic half-life is about 1 day.

The following abbreviations are used for the major metabolites discussed below:

Major flumioxazin metabolites identified in plant, animal and soil matrices.

Compound Name/Code	Structure		Matrices
Flumioxazin (S-53482) (V-53482)		*N*-(7-fluoro-3,4-dihydro-3-oxo-4-prop-2-ynyl-2*H*-1,4-benzoxazin-6-yl)cyclohex-1-ene-1,2-dicarboxamide	Plants Goat Hen Rat Soil Photolysis
3-OH-Flumioxazin		7-fluoro-6-(3-hydroxy-3,4,5,6-tetrahydrophthalimido)-4-(2-propynyl)-2H-1,4-benzoxazin -3(4H)-one	Goat Hen Rat

Compound Name/Code	Structure		Matrices
4-OH-Flumioxazin		7-fluoro-6-(4-hydroxy-3,4,5,6-tetrahydrophthalimido)-4-(2-propynyl)-2H-1,4-benzoxazin-3(4H)-one	Goat Hen Rat
482-HA		N-(7-fluoro-3,4-dihdyro-3-oxo-4-prop-2-ynyl-2H- 1,4-benzoxazin-6-yl)cyclohex-1-ene-1-carboxamide-2-carboxylic acid	Plants (rotational) Rat Soil Photolysis
482-CA		2-[7-fluoro-3-oxo-6-(3,4,5,6-tetrahydrophthalimido)-2H-1,4-benzoxazin-4-yl] propionic acid	Plants (rotational) Soil
SAT-482		6-(cis-1,2-cyclohexanedicarboximido)-7-fluoro-4-(2-propynyl)2H-1,4-benzoxazin-3(4H)-one	Goat Rat
APF		6-amino-7-fluoro-4-(2-propenyl)-2H-1,4-benzoxazin-3(4H)-one	Plants Rat Soil Photolysis
1-OH-HPA		1-hydroxy-*trans*-1,2-cyclohexanedicarboxylic acid	Plants Rat Photolysis
THPA		3,4,5,6-tetrahydrophthalic acid	Plants Goat Hen Rat Soil Photolysis
Δ^1-TPA		3,4,5,6-tetrahydrophthalic anhydride	Plants (rotational) Hen Soil Photolysis

Environmental fate

The Meeting received information on the environmental fate and behaviour of flumioxazin, including hydrolytic stability, photochemical degradation in soils and aerobic metabolism studies.

Hydrolysis

Radiolabelled flumioxazin (0.1 mg/L) incubated in the dark in sterile aqueous buffered solutions at pH 5, 7, and 9 for up to 30 days at 25 °C was rapidly hydrolysed, with calculated half-lives of about 3.4–5 days at pH 5, 19–26 hours at pH 7 and 14–23 minutes at pH 9. At pH 7, hydrolysis was biphasic, with longer half-lives of 11–14 days after the first 2–3 days.

The major degradation products after 30 days of incubation at pH 7 and pH 5 were APF (80–87% AR) and THPA (84–96% AR). At pH 9, the major degradate was 482-HA (96–99% AR).

Photochemical degradation in soil

In a photochemical degradation study in a sandy loam soil, unextracted residues in the phenyl-label study increased from an initial 3% AR to 43% AR by Day 6 and were significantly lower in the THP-label study, up to 9.3% AR on day 14. Volatiles did not exceed 0.5% of the applied radiocarbon for the irradiated samples or 0.2% for the dark controls.

Flumioxazin accounted for 97–99% AR in the day-0 samples, decreasing in the irradiated samples to 29% (Day 6—phenyl-label) and 82% AR (Day 7—THP-label) and to 37% AR in the THP-label samples on day 14. The only significant degradates identified at more than 10% AR were Δ^1-TPA and THPA.

Levels of Δ^1-TPA peaked at 22% AR on Day 9 in the irradiated samples, but were < 10% AR at all other sampling times. THPA reached a maximum of about 13% AR (9% AR in the dark control samples) at the end of the 14-day study period.

The calculated photolytic soil degradation half-lives were 3.2 days (phenyl-label study) and 8.4 days (THP-label study) and were 12–16 days in non-irradiated samples.

Aerobic soil metabolism

Under aerobic conditions, unextracted or mineralised residues increased from about 6% AR to 84% AR after 91 days in the THP-label study (55% AR released as carbon dioxide) and in the phenyl-label study, increased to a plateaux level of about 77–85% AR from day 60 (6–12% AR released as carbon dioxide). Extraction efficiencies ranged from 94–102% in the two studies.

Flumioxazin residues decreased from 93–98% AR to 60–64% AR after 7 days and 7.6–12% AR by about day 60 with calculated half-lives of 12–17.5 days. Calculated DT_{90} values (FOMC) were about 51 days (phenyl-label) and 95 days (THP-label). No identified or characterised degradates accounted for more than 8% AR.

The proposed degradation pathways include hydrolysis of the parent compound to 482-HA or oxidation to 482-CA, leading to THPA (in equilibrium with Δ^1-TPA). THPA appears to be an end product that is incorporated into soil organic components or oxidized to CO_2.

In summary, flumioxazin is rapidly hydrolysed in aqueous solutions, with the cleavage products APF and THPA being the predominant degradates at pH 7. In soil it is susceptible to photochemical degradation (average DT_{50} of about 5 days) and is not persistent in soil, with an average DT_{50} of about 15 days. Aqueous hydrolysis, photochemical degradation and aerobic soil metabolism are all likely to be a significant degradation pathways.

Plant metabolism

The Meeting received information on the metabolism of [^{14}C]flumioxazin, separately labelled in the phenyl and the tetrahydrophthaloyl (THP) rings, in soya bean and peanut (pre-emergent treatments), grape and apple (inter-row soil treatments), sugar cane (directed soil/foliar treatments) and rotational crops.

Peanut

In a metabolism study on peanuts, [^{14}C]flumioxazin was applied either as a pre-emergent broadcast soil treatment 3 days after sowing at a rate equivalent to 0.11 kg ai/ha, or as a pre-plant treatment 32 days before sowing at 0.33 kg ai/ha. Samples of mature foliage and whole peanuts were harvested from the Pre-em plots 194 days after treatment (DAT) and from the Pre-plant plots 245 days after resowing (277 DAT).

Total radioactive residues (TRR) in all matrices from the pre-emergent treatment were below 0.02 mg eq/kg (phenyl-label) and less than 0.04 mg eq/kg (THP-label). In the pre-plant treatment, TRRs were *ca.* 3× higher except for the phenyl-label hulls and the THP-label vines. Radioactive residues were generally lowest in vines (up to 0.03 mg eq/kg) and highest in hulls (up to 0.17 mg eq/kg). Nutmeat from the pre-emergent treatment contained up to 0.03 mg eq/kg and from the pre-plant treatment were up to 0.09 mg eq/kg.

Solvent extraction and more aggressive acid, base and enzyme hydrolysis were able to extract 65–77% TRR in nutmeats and hulls and more than 90% TRR in vines.

Flumioxazin residues were < 1% TRR (< 0.001 mg/kg) in hulls and vines and not detected in nutmeat. The majority of the ^{14}C-residues were found in four chromatographic regions, each of which accounted for up to 0.005 mg eq/kg in hulls and up to 0.01 mg eq/kg in nutmeat and vines except in hulls from the pre-plant treatment, where one region contained up to 0.04 mg eq/kg, mostly multiple unknown components.

Soya bean

In metabolism studies on soya beans, [^{14}C]flumioxazin was applied to soil (sandy loam) three days after sowing at rates equivalent to 0.1 kg ai/ha or 0.2 kg ai/ha. Forage and root samples were taken 53 or 70 days after treatment and samples of plants (without pods), pods, seeds and roots were harvested at maturity, 100 or 138 days after treatment.

In the 0.1 kg ai/ha treatment plots, total radioactive residues in mature seeds were less than 0.25 mg eq/kg and were found at up to 0.06 mg eq/kg (phenyl-label) and 0.33 mg eq/kg (THP-label) in pods. In immature foliage, TRRs were up to 0.05 mg eq/kg (phenyl-label) and 0.07 mg eq/kg (THP-label). Hay from immature forage contained up to 0.19 mg eq/kg (phenyl-label) and up to 0.29 mg eq/kg (THP-label). TRRs in the samples from the 0.2 kg ai/ha treatment plots were generally about twice those in the equivalent samples from the 0.1 kg ai/ha treatment plots. The higher levels of radioactivity found in the THP-label samples suggested a preferential uptake of the THP-derived cleavage products from soil.

Sequential acetone:water and acetone:HCl extractions were able to extract 60–76% TRR in hay and forage and 25–66% TRR in seeds and more aggressive extraction techniques were able to extract most of the remaining radioactivity, with about 1–4% remaining in the post-extraction solids.

Flumioxazin made up < 1.8–6.1% TRR in 53 DAT forage (< 0.01 mg/kg) and hay (< 0.03 mg/kg) and were found at trace levels (< 2.3% TRR, < 0.004 mg/kg) only in seed from the 0.2 kg ai/ha treatment in the THP-label study. Metabolite 1-OH-HPA (free or partly cellulose conjugated) was the predominant residue, making up 15–25% of the TRR in immature forage, 26–32% TRR in hay and about 38–42% TRR (0.06–0.09 mg/kg) in seed.

Apples and grapes

In metabolism studies on apples and grapes, [^{14}C]flumioxazin was applied as sprays to bare soil (1.2 m × 1.2 m loamy sand plots) surrounding the trees or vines. The apple study involved two treatments equivalent to 0.47 kg ai/ha, applied 47 days before fruit thinning and 60 days later (about

60 days before fruit maturity) with about 30 cm of tree trunks receiving direct spray. In the grape study, one treatment equivalent to 0.6 kg ai/ha was applied about 90 days before harvest.

Total radioactive residues (TRR) were extremely low in all samples analysed, up to 0.003 mg eq/kg in apples, up to 0.005 mg eq/kg in grapes and up to 0.04 mg eq/kg in grape shoots.

In the grape study, 78–92% TRR could be solvent-extracted and HPLC analysis indicated the presence of a number of metabolites, the majority of which (58% TRR) were polar in nature. In both studies, further characterization or identification of the residues was not conducted.

Sugar cane

In a metabolism study on sugar cane, [^{14}C]flumioxazin was applied at a rate equivalent to 0.48 kg ai/ha as a directed soil/foliar spray to 1.5–2 m high sugar canes prior to stem elongation (at the 6–10 leaf stage) with up to 1 m of the plants receiving direct spray. Immature sugarcane forage (leaves and canes) were sampled about a month after the application and mature canes and leaves (3–3.6 m high) were also sampled at maturity, 90 days after treatment, when the canes were 5 cm in diameter.

Total radioactive residues were 0.001–0.004 mg eq/kg in mature cane, 0.23–0.89 mg/kg in immature forage and 0.5–1.0 mg/kg in mature leaves. More than 90% TRR was able to be extracted in acetonitrile and water.

Flumioxazin was the predominant residue in immature forage and mature leaves, accounting for 81–93% TRR (up to 0.83 mg/kg and 0.92 mg/kg repectively) and 68–75% TRR in canes, but at levels below 0.003 mg/kg.

Other minor components were all < 5% TRR in imature foliage and below 10% TRR or < 0.001 mg eq/kg in mature leaves. In the post-extraction solids (PES), radioactivity was distributed into all leaf constituents including the starch, cellulose, lignin, lipids and proteins, but did not exceed 0.03 mg eq/kg in any individual PES sub-fraction, with none of the individual TLC bands containing significant residue and none corresponded to any of the reference standards.

In summary, when applied to soil prior to crop emergence or as directed treatments to soil surrounding established perennial plants, flumioxazin does not translocate or accumulate in significant concentrations in plant matrices. In general, no parent residues were found in any of the plant matrices except in soya beans and peanut hulls. Low levels of flumioxazin were found in soya bean forage and soya bean hay and trace levels were present in soya bean seed and peanut hulls. The only significant metabolite was 1-OH-HPA (free or partly cellulose conjugated), which was present at 15–25% TRR in immature soya bean forage, and about 38–42% TRR (0.06–0.09 mg/kg) in soya bean seed.

Following directed foliar applications to sugar canes, flumioxazin is not translocated, with only traces of radioactivity found in canes. Flumioxazin accounted for more than 90% of the TRR in immature leaves (30 days after treatment), more than 81% TRR in mature leaves (90 days after treatment) and up to 75% TRR (up to 0.003 mg/kg) in canes.

Rotational crops

Two confined rotational crop studies using lettuce, carrots and wheat as rotational crops planted in bare sandy loam soil, were treated at rates equivalent to 0.105 kg ai/ha or 0.21 kg ai/ha. The rotational crops were planted 30 days after treatment in all plots and 120, 180 and 365 days after treatment in the higher treatment plots.

Radioactive residues were only detected in small amounts in all rotational crops at all plant-back intervals, with the highest radioactivity being 0.13 mg eq/kg in the straw from wheat planted 120 days after treatment with the THP-label. In the phenyl-label study, TRRs decreased in the longer plant-back intervals but in the THP-label study, TRRs increased in some commodities at the 120-day and 180-day plant-back intervals, suggesting that THP-derived cleavage products in soil are either more readily assimilated by the plants or less tightly bound to soil than those from the phenyl label.

In the soil the majority of the radioactivity stayed at the upper 0–10 cm layer, with flumioxazin accounting for the majority of the extracted residue in most samples.

From 47–84% TRR was able to be solvent-extracted (including refluxing with acetonitrile:0.25N HCl) from wheat forage, straw and chaff, lettuce, carrot tops and roots, with 5–12% TRR being extracted from wheat grain.

Flumioxazin residues were present at less than 0.01 mg/kg in all matrices except wheat straw where levels of 0.03 mg/kg were found in the 120-day plant-back treatment. The only identified metabolites found above 10% TRR were 1-OH-HPA, THPA, and Δ^1-TPA each found at up to 15% TRR (but below 0.004 mg/kg eq) in wheat straw from the 120-day and 180-day PBI plots.

In summary, radioactive residues in rotational crops planted 30–365 days after bare soil treatments with [^{14}C]flumioxazin were low, less than 0.05 mg eq/kg in all matrices except wheat straw, where THP-labelled radioactivity was present at up to 0.13 mg eq/kg, 40% of which was flumioxazin.

The Meeting concluded that since the application rates in the rotational crop studies generally covered the range of GAP treatment rates for annual crops, residues are not expected in rotational crops following treatments according to the GAPs under consideration.

Animal metabolism

The Meeting received information on the metabolism of [^{14}C]flumioxazin, separately labelled in the phenyl and the tetrahydrophthaloyl (THP) rings, in rats, lactating goats and laying hens.

The metabolism of flumioxazin in rats was evaluated by the WHO Core Assessment Group of the 2015 JMPR. Excretion of radioactivity was rapid, with 69–87% being eliminated in urine and faeces within 24 hours with the remainder found mainly in excretory organs. Flumioxazin was extensively metabolised (29–35 metabolites detected and quantified), with 7–10 of these being identified. Flumioxazin accounted for 47–66% of the administered dose in the 100 mg/kg bw dose group and up to 2% in the 1 mg/kg bw dose group. Metabolites found at more than 5% of the applied dose were 3-OH-flumioxazin, 3-OH-flumioxazin-SA, 4-OH-flumioxazin and 4-OH-flumioxazin-SA.

Lactating goats were orally dosed with [^{14}C]flumioxazin at doses equivalent to 11.8 ppm (phenyl-label) and 7.2 ppm (THP-label) in the feed for 5 consecutive days and sacrificed 6 hours after the last dose.

The majority of the radioactivity (80–93% AR) was found in urine, faeces or the GI tract, with < 1% AR remaining in tissues and 0.22% AR in milk. Radioactivity was extremely low in fat (up to 0.008 mg/kg), low in muscle, up to 0.014 mg/kg (phenyl-label) and 0.028 mg/kg (THP-label), but higher in liver, up to 0.21 mg/kg (phenyl-label) and 0.33 mg/kg (THP-label). In kidney the radioactive residues were up to 0.18 mg/kg (phenyl-label) and 0.24 mg/kg (THP-label). The average total radioactivity concentration in milk plateaued around Day 3 at about 0.04 mg/kg (phenyl-label) and about 0.06 mg/kg in the THP-label study.

More than 80% TRR from milk, liver and kidney and 58–74% TRR from muscle was able to be solvent-extracted. TRR in fat were not investigated further.

The parent compound was extensively metabolised, with residues above 0.001 mg/kg found only in liver (up to 0.01 mg/kg and < 5% TRR).

The 4-OH-flumioxazin metabolite accounted for up to 14% TRR in kidney (up to 0.025 mg/kg) and muscle (up to 0.003 mg/kg). In liver, both the 4-OH-flumioxazin and 3-OH-flumioxazin residues did not exceed 0.025 mg/kg (about 9% TRR).

Metabolite 482-HA was the predominant component in milk (14% TRR) but absolute levels were below 0.005 mg/kg eq and it was also found in liver and kidney at close to 10% TRR, 0.02 mg/kg).

Metabolite B, tentatively identified as 3- or 4-OH-SAT-482, made up about 14% TRR (0.024 mg/kg) in kidney and 18% TRR in milk (0.005 mg/kg). In liver, metabolite F, tentatively identified as an isomer of 3- or 4-OH-SAT-482, made up about 11% TRR (0.03 mg/kg).

In muscle, metabolite C accounted for 20–23% TRR and 12% TRR in milk but absolute levels were all below 0.005 mg/kg.

Laying hens were orally dosed with [^{14}C]flumioxazin (phenyl-label or THP-label) at doses equivalent to 10 ppm in the feed for 14 consecutive days and sacrificed 4 hours after the last dose (in order to ensure sufficient radiolabel remained to allow further investigation).

Radioactivity in the excreta, GI tract contents and cage wash accounted for 83–94% AR, with liver, kidney, muscle, fat, skin and eggs contained relatively small amounts of radioactivity (totalling < 0.6–0.9% of the administered dose). Radioactivity in egg yolks accounted for 0.35–0.36% AR, with < 0.01% AR in the corresponding egg whites. Liver contained 0.08–0.27% AR (0.24 mg/kg eq and 1.14 mg/kg eq) in the phenyl-label study and the THP-label study respectively. In egg yolks, residues reached a plateau of 0.4–0.6 mg/kg eq by Day 10 or 11 in the two studies.

More than 87% TRR in eggs was extracted with methanol or ethanol, and acetonitrile was able to extract 37–67% TRR from muscle. In the phenyl-label liver and kidney samples, sequential extractions with acetonitrile and bicarbonate were able to extract more than 90% TRR and further enzyme extraction released an additional 10% TRR. In the THP-label liver and kidney samples, sequential acetonitrile and acetonitrile:water extractions were able to extract 80–87% TRR.

In solvent-extracted samples, the parent compound was the predominant residue in fat (49% TRR), skin + fat (12–25% TRR), muscle (10–14% TRR), a significant component in liver and kidney (7–9% TRR), made up about 4–9% TRR in egg yolk and was not detected in egg white. Absolute levels of flumioxazin were up to 0.13 mg/kg in skin + fat and fat, < 0.08 mg/kg in liver and kidney, < 0.04 mg/kg in egg yolk and about 0.02 mg/kg in muscle.

Metabolites present at more than 10% TRR or more than 0.01 mg/kg were 4-OH-flumioxazin, 3-OH-flumioxazin and 4-OH-flumioxazin-SA.

The 4-OH-flumioxazin accounted for 9–12% TRR in all tissues (< 0.03 mg/kg in muscle and fat, < 0.1 mg/kg in kidney and skin + fat and 0.12 mg/kg in liver) while the 3-OH-flumioxazin accounted for 8–12% TRR (0.015 mg/kg) in muscle. Metabolite 4-OH-flumioxazin-SA accounted for 32% TRR in egg yolk (0.14 mg/kg).

All other identified metabolites were found at < 8% TRR and the highest level of any single unidentified metabolite was measured in liver, at 12% TRR.

In summary, in the ruminant and poultry metabolism studies, flumioxazin is extensively metabolised with limited transfer into tissues, eggs or milk (less than 0.5% of the administered dose). Flumioxazin was not found at levels above 0.01 mg/kg in goat milk or tissues but was present in most poultry commodities, highest residues being found in fat (0.13 mg/kg, 49% TRR), with lower levels (up to 0.08 mg/kg) in other tissues and egg yolks.

Other metabolites present at more than 10% TRR in various commodities were 4-OH-flumioxazin, 4-OH-flumioxazin-SA, 3-OH-flumioxazin, metabolite B, tentatively identified as 3- or 4-OH-SAT-482 and metabolite F, tentatively identified as an isomer of metabolite B.

Analytical methods

Several analytical methods have been reported and validated for the analysis of flumioxazin in plant and animal commodities. The basic approach employs extraction with acetone/water or hexane/acetonitrile, partitioning into dichloromethane and/or acetonitrile, Florisil or silica gel clean-up and analysis by GC-MS. For processed plant oils, the initial acetone extraction and dichloromethane partitioning steps are omitted and for animal commodities the dichloromethane partitioning step is also omitted. The LOQs for these methods is 0.02 mg/kg.

Two methods have also been validated for measuring residues of the 1-OH-HPA metabolite (free and conjugated) in some food and feed commodities. Residues are extracted using acid hydrolysis, partitioned into ethyl acetate and refluxed for 30 minutes with acetone, triisopropanolamine and dimethyl sulphate to convert the 1-OH-HPA to its dimethyl ester. After partitioning into hexane and Florisil column clean-up, residues are analysed by GC/MS. The LOQs for the method range from 0.02–0.1 mg/kg.

A more recent HPLC-MS/MS method was reported in the lactating cow feeding study for measuring residues of flumioxazin, 3-OH-flumioxazin and 4-OH-flumioxazin. Tissue samples are extracted in acetonitrile and acidic acetonitrile:water and milk samples are extracted with acetone. The extracts are then partitioned with dichloromethane/water and the organic phase further partitioned with acetonitrile/hexane. Analysis for flumioxazin, 3-OH-flumioxazin and 4-OH-flumioxazin was by HPLC-MS/MS (flumioxazin: m/z 355→299, 3-OH-flumioxazin: m/z 371→299/107 and 4-OH-flumioxazin: m/z 371 →299/107) with an LOQ of 0.02 mg/kg.

For plant and processed plant commodities, the DFG S19 (GC-MS) method was validated for the analysis of flumioxazin in cereals, potatoes and oily substrates (sunflower seeds). After extraction with aqueous acetone and partitioned into ethyl acetate/cyclohexane, extracts are cleaned-up by gel permeation chromatography and residues are determined by GC-MS. The LOQ is 0.02 mg/kg. Recovery rates ranged from 84–102% for all analytes in all matrices.

The Meeting concluded that suitable methods are available to measure flumioxazin in plant and animal commodities.

Stability of pesticide residues in stored analytical samples

Flumioxazin residues were stable in analytical samples stored frozen (–18 to –20 °C) for at least the storage intervals used in the supervised residue trials, with residues in the stored samples usually more than 80% of the spiked sample levels. In general, residue stability was shown for up to:

26–30 months	non-bell peppers, alfalfa (forage, hay)
12–18 months	maize (forage, grain, stover), olives, summer squash, olive oil, soya bean (forage, hay)
9–12 months	celery, cherries, cotton seed, soya bean seed, peanut (forage, hay, hulls, nutmeat), mint, potatoes (fresh and processed)
6–9 months	apple (juice, wet pomace), globe artichoke, asparagus, cabbage, cucumber, tomato, almond (nutmeat, hulls), mint oil, strawberry, grape (fresh, dried)
2–6 months	onions, cottonseed (meal, hulls gin trash), blueberries, melons, pecans, grape juice, sugarcane, molasses and refined sugar.

Definition of the residue

When flumioxazin is applied to soil prior to crop emergence or as directed treatments to soil surrounding established plants, flumioxazin does not translocate or accumulate in significant concentrations in plant matrices. In general, no parent or identifiable metabolites are found in the plant matrices except in soya beans, where low levels of flumioxazin (below 0.01 mg/kg) were found in forage and seeds, and up to 0.03 mg/kg in hay from immature forage.

The only significant metabolite in plant commodities following pre-emergence treatment is 1-OH-HPA (free or partly cellulose conjugated), present at 15–25% TRR in immature soya bean forage, and about 38–42% TRR (0.06–0.09 mg/kg) in soya bean seed. However, in supervised field trials on soya beans, residues of this metabolite were all below the LOQ (0.02 mg/kg) and the Meeting concluded that 1-OH-HPA need not be included in the residue definition for dietary intake estimation.

Following directed foliar applications, flumioxazin is not translocated, with the majority of the residue in sugar cane leaves about 1 month after treatment being the parent. The Meeting concluded that this would also be the case where flumioxazin was used as a pre-harvest treatment to scenescing plants.

In confined crop rotation studies, radioactive residues in rotational crops planted 30–365 days after bare soil treatments were low, generally less than 0.01 mg/kg eq in all matrices except wheat straw, where flumioxazin was found at up to 0.03 mg/kg in straw from wheat planted 120 days after treatment with 0.21 kg ai/ha (2× GAP).

Based on the above, the Meeting considered that a suitable residue definition for plant commodities would be flumioxazin (parent only), both for MRL-compliance and dietary intake estimation.

In animal commodities, metabolism studies in goats and poultry indicate that flumioxazin is almost completely excreted, with < 1% of the applied radioactivity remaining in milk, eggs and tissues after 6 hours. In animals dosed with about 7–10 ppm flumioxazin in the diet, residues of parent compound were below 0.01 mg/kg in goat milk and tissues, but were higher in poultry, being the predominant identified residue, found at up to 0.13 mg/kg (49% TRR) in poultry fat and up to 0.08 mg/kg in other tissues and egg yolks.

Identified metabolites found above 10% TRR and above 0.01 mg/kg in various matrices were 4-OH-flumioxazin and 3-OH-flumioxazin and 4-OH-flumioxazin-SA (only in egg yolk).

In the animal metabolism studies, metabolites 3-OH-flumioxazin and 4-OH-flumioxazin were present at up to 15% TRR in most tissues from animals sacrificed 6 hours after the last dose. However in the dairy cow feeding study, these metabolites were not found in milk or tissues from animals sacrificed 24 hours after dosing at about 2–3× the dose used in the goat metabolism study. The Meeting concluded that because of the short interval to sacrifice, the animal metabolism studies over-estimated the expected residues in cattle and noted that no detectable residues of parent or metabolites are expected in poultry. Since safety concerns with 3-OH-flumioxazin or 4-OH-flumioxazin are not anticipated, the Meeting agreed they need not be included in the residue definitions.

The Meeting noted that 4-OH-flumioxazin-SA was not a significant residue in any matrix except egg yolk and that the calculated dietary burden (0.57 ppm) was about 0.04% of the dose rate used in the metabolism study. The Meeting therefore considered that 4-OH-flumioxazin-SA need not be included in the residue definition for dietary intake estimation.

The Meeting noted that a multi-residue method exists to measure parent residues in plant commodities and that the analytical method used in the goat feeding study was able to measure both the parent compound and the 3-OH-flumioxazin and 4-OH-flumioxazin metabolites.

The Meeting agreed that for MRL-compliance and dietary intake estimation for plant and animal commodities the residue definitions should be flumioxazin.

The Meeting noted that the octanol/water partition coefficient (Log P_{ow}) for flumioxazin was 2.55, and while the information on the relative distribution of flumioxazin in fat/muscle and egg yolk/egg white was limited, the Meeting concluded that the residue was not fat soluble.

Proposed definition of the residue (for compliance with the MRL and estimation of dietary intake for plant and animal commodities): *flumioxazin.*

The residue is not fat-soluble.

Results of supervised residue trials on crops

The Meeting received supervised trial data for flumioxazin applied as pre-emergence or early post-emergence broadcast treatments on a range of vegetable and field crops, as directed inter-row band soil treatments on a number of fruit crops and as a pre-harvest desiccant (harvest aid) treatment on several pulse and cereal crops. These trials were conducted in North America.

Where residues have been reported in the studies as being not quantifiable, the values have been considered as < LOQ for the purposes of MRL setting

Perennial crops

The critical GAP for pome fruit, stone fruit, bush berries, grapes, olives, pomegranates and tree nuts in the USA is for soil treatments of up to 0.42 kg ai/ha as directed band sprays under the crop canopy, avoiding contact with trunks or vines, with a maximum seasonal rate of 0.82 kg ai/ha, a retreatment interval of at least 30 days and a PHI of 60 days (7 days for bush berries).

In more than 60 independent trials on these crops conducted in the USA and matching the USA GAP, flumioxazin residues in the fruit and nutmeat were all < 0.02 mg/kg.

The Meeting noted that when applied to soil, flumioxazin remained predominantly in the upper 10 cm layer and was not persistent or root-absorbed. In the grape and apple metabolism studies where the treatments reflected the above GAP, total radioactivity levels in the fruit were extremely low (< 0.005 mg eq/kg).

The Meeting therefore agreed to estimate maximum residue limits of 0.02(*) mg/kg for flumioxazin on pome fruit, stone fruit, bush berries, grapes, olives, pomegranate and tree nuts.

The Meeting also agreed that as no flumioxazin residues are to be expected in mature fruit at harvest, STMRs and HRs could be established at 0 mg/kg for these fruit and nut commodities.

Strawberry

The critical GAP for strawberries in the USA is for soil treatments of up to 0.105 kg ai/ha as a shielded inter-row band spray (avoiding contact with fruit or foliage) applied up to fruit set, with a maximum seasonal rate of 0.105 kg ai/ha.

Trials on strawberries conducted in the USA involved one directed inter-row soil application, 1–2 days before harvest, with a previous broadcast soil application to dormant strawberries in some of these trials.

The Meeting agreed that these trials did not match the USA GAP. No maximum residue level for strawberries was estimated.

Bulb vegetables

Results from supervised trials on bulb onions conducted in the USA were provided to the Meeting.

Onion, dry bulb

The critical GAP for bulb onions in the USA is for broadcast soil/foliar treatments of up to 0.07 kg ai/ha to onions between the 2-leaf and 6-leaf stage, with a maximum seasonal rate of 0.105 kg ai/ha.

In nine independent trials on bulb onions conducted in the USA where two broadcast applications of 0.1–0.115 kg ai/ha were applied at or about the 2-leaf stage and 29–78 days later (42–49 days before harvest), residues in the dry bulbs were all < 0.02 mg/kg.

The Meeting noted that since residues were all < LOQ in these supervised trials with application rates higher than specified in the USA GAP, the data could be used to estimate a maximum residue level.

The Meeting estimated an STMR of 0 mg/kg, and HR of 0 mg/kg and a maximum residue level of 0.02* mg/kg for flumioxazin on onion, bulb.

Garlic

The critical GAP for garlic in the USA is for one pre-emergent broadcast soil application of up to 0.21 kg ai/ha, no later than 3 days after planting. No trials matching this GAP were provided and no maximum residue level for garlic was estimated by the Meeting.

Cabbage, head

Results from supervised trials on head cabbages conducted in the USA were provided to the Meeting.

The critical GAP for head cabbages in the USA is for inter-row soil treatments of up to 0.14 kg ai/ha between raised plastic-mulched beds up to just before transplanting, with a maximum seasonal rate of 0.28 kg ai/ha.

In seven independent trials on head cabbages conducted in the USA where one broadcast soil application of 0.1–0.11 kg ai/ha was applied just before transplanting, residues in cabbage heads (with wrapper leaves) were all < 0.02 mg/kg.

Although the broadcast treatment method used in the supervised trials did not match the USA GAP for inter-row applications just before transplanting, the Meeting agreed that since the use directions specified treatment only to the row middles between raised plastic mulched beds that are at least 60 cm wide and since the broadcast treatment method represented the worst-case situation, the data set (all < LOQ) could be used to estimate a maximum residue level and that the STMR and HR could be established at 0 mg/kg as no flumioxin residues would be expected in mature cabbages at harvest.

The Meeting estimated an STMR of 0 mg/kg, an HR of 0 mg/kg and a maximum residue level of 0.02* mg/kg for flumioxazin on cabbages, head.

Fruiting vegetables, Cucurbits

Results from supervised trials on outdoor cucumbers, summer squash and melons (cantaloupes) conducted in the USA were provided to the Meeting.

The critical GAP for cucurbit vegetables in the USA is for inter-row soil treatments of up to 0.14 kg ai/ha between raised plastic-mulched beds up to 14 days before planting with an option to apply an additional inter-row soil treatment up to 21 days after transplanting/emergence but before the start of flowering, with a maximum seasonal rate of 0.28 kg ai/ha.

In six independent trials matching the GAP in the USA, residues of flumioxazin in cucumbers were all < 0.02 mg/kg.

In seven independent trials matching the GAP in the USA, residues of flumioxazin in summer squash were all < 0.02 mg/kg.

In eight independent trials matching the GAP in the USA, residues of flumioxazin in melons were all < 0.02 mg/kg.

Based on the combined results of the cucumber, summer squash and melon trials, with residues of < 0.02 (n=21), the Meeting agreed to consider establishing a group maximum residue level for fruiting vegetables, cucurbits.

The Meeting estimated an STMR of 0.02 mg/kg, an HR of 0.02 mg/kg and a maximum residue level of 0.02* mg/kg for flumioxazin on fruiting vegetables, cucurbits.

Fruiting vegetables, other than Cucurbits

Results from supervised trials on outdoor tomatoes, sweet peppers and chilli peppers conducted in the USA were provided to the Meeting.

The critical GAP for fruiting vegetables in the USA is for inter-row soil treatments of up to 0.14 kg ai/ha between raised plastic-mulched beds up to 14 days before planting with an option to apply an additional inter-row soil treatment up to 21 days after transplanting/emergence but before the start of flowering, with a maximum seasonal rate of 0.28 kg ai/ha.

In seven independent trials matching the GAP in the USA but with the last application 15–21 days before harvest, when immature fruit were present, residues of flumioxazin in tomatoes were all < 0.02 mg/kg.

In nine independent trials on sweet peppers (6) and chilli peppers (3) matching the GAP in the USA but with the last application 15–21 days before harvest, when immature fruit were present, residues of flumioxazin in peppers were all < 0.02 mg/kg.

Although the timing of the last application in the supervised trials did not match the USA GAP for use up to the start of flowering, the Meeting agreed that the later applications (when fruitlets were present) represented a worst-case situation and that since residues were all < LOQ, the data set could be used to estimate a maximum residue level.

Based on the combined results of tomato, sweet pepper and chilli pepper trials, with residues of < 0.02 (16), the Meeting agreed to consider establishing a group maximum residue level for fruiting vegetables, other than cucurbits.

The Meeting estimated an STMR of 0.02 mg/kg, an HR of 0.02 mg/kg and a maximum residue level of 0.02* mg/kg for flumioxazin on fruiting vegetables, other than cucurbits (except sweetcorn and mushrooms).

Pulses

Results from supervised trials on dry beans, dry peas and soya beans conducted in North America were provided to the Meeting.

Beans (dry)

In the USA, the critical GAP for beans, dry is for a broadcast foliar application of up to 0.105 kg ai/ha as a harvest aid (desiccant) up to 5 days before harvest.

In 10 independent trials matching the GAP in the USA, residues of flumioxazin in dry bean seeds were < 0.02 (5), 0.02, (4), and 0.05 mg/kg.

The Meeting noted that the GAP in the USA for dry beans includes lupins, chickpeas and lentils, and agreed to extrapolate the data for dry beans to these commodities.

The Meeting estimated a maximum residue level of 0.07 mg/kg and an STMR of 0.02 mg/kg for flumioxazin on beans (dry), lupins (dry), chickpeas (dry) and lentils (dry).

Peas (dry)

The critical GAP for field peas in the USA is for a broadcast foliar application of up to 0.105 kg ai/ha as a harvest aid (desiccant) up to 5 days before harvest.

In 13 independent trials matching the GAP in the USA, residues of flumioxazin in dry pea seeds were < 0.02 (8), 0.02, 0.02, 0.03, 0.03 and 0.06 mg/kg. (Highest residue of duplicate samples = 0.07 mg/kg)

The Meeting estimated an STMR of 0.02 mg/kg and a maximum residue level of 0.07 mg/kg for flumioxazin on peas (dry).

Soya bean (dry)

The critical GAP for soya beans in the USA is for pre-plant or pre-emergent broadcast soil applications of 0.105 kg ai/ha (up to 3 days after sowing), with a maximum seasonal rate of 0.105 kg ai/ha.

In 39 independent trials matching the GAP in the USA, residues of flumioxazin in soya bean seeds were all < 0.02 mg/kg. In one processing study involving an exaggerated rate of 0.54 kg ai/ha, residues in soya bean were also < 0.02 mg/kg.

The Meeting estimated an STMR of 0 mg/kg and a maximum residue level of 0.02* mg/kg for flumioxazin on soya bean (dry).

Root and tuber vegetables

Results from supervised trials on potatoes conducted in the USA were provided to the Meeting.

Potato

The critical GAP for potatoes in the USA is for broadcast soil applications of up to 0.053 kg ai/ha, after planting (hilling) but before crop emergence, with a maximum seasonal rate of 0.053 kg ai/ha.

In 11 independent trials conducted in the USA, flumioxazin residues in tubers were all < 0.02 mg/kg following one pre-emergence application of 0.13–0.15 kg ai/ha.

The Meeting noted that since residues were all < LOQ in these supervised trials with application rates higher than specified in the USA GAP, the data could be used to estimate a maximum residue level and would support an STMR and HR of 0 mg/kg.

The Meeting estimated an STMR of 0 mg/kg, an HR of 0 mg/kg and a maximum residue level of 0.02* mg/kg for flumioxazin on potato.

Sweet potato

The Meeting noted that GAP also existed in the USA for the use of flumioxazin on sweet potato as a broadcast soil application of up to 0.105 kg ai/ha prior to transplanting and agreed that the results of the USA potato trials, matching this GAP could be used to estimate a maximum residue level for sweet potatoes.

The Meeting estimated an STMR of 0 mg/kg, an HR of 0 mg/kg and a maximum residue level of 0.02* mg/kg for flumioxazin on sweet potato.

Stem and stalk vegetables

Results from supervised trials on asparagus, globe artichoke and celery conducted in North America were provided to the Meeting.

Artichoke, Globe

The critical GAP for globe artichokes in the USA is for broadcast pre-plant or pre-emergence soil applications of up to 0.21 kg ai/ha, with a maximum seasonal rate of 0.21 kg ai/ha.

In three independent trials matching the pre-plant GAP in the USA, flumioxazin residues in artichoke heads were all < 0.02 mg/kg.

The Meeting estimated an STMR of 0.02 mg/kg, an HR of 0.02 mg/kg and a maximum residue level of 0.02* mg/kg for flumioxazin on artichoke, Globe.

Asparagus

The critical GAP for asparagus in the USA is for broadcast soil applications of up to 0.21 kg ai/ha not later than 14 days before spear emergence, with a maximum seasonal rate of 0.21 kg ai/ha.

In eight independent trials matching the GAP in the USA, flumioxazin residues in spears were all < 0.02 mg/kg.

The Meeting noted that in these trials, residues were all < LOQ in the 2× plots, and agreed that the data would support an STMR and HR of 0 mg/kg.

The Meeting estimated an STMR of 0 mg/kg, an HR of 0 mg/kg and a maximum residue level of 0.02* mg/kg for flumioxazin on asparagus.

Celery

The critical GAP for celery in the USA is for broadcast soil applications of up to 0.105 kg ai/ha, 3–7 days after transplanting), with a maximum seasonal rate of 0.105 kg ai/ha.

No trials matched this broadcast post-transplanting GAP in the USA and no maximum residue level for celery was estimated by the Meeting.

Cereal grains

Results from supervised trials on maize and wheat conducted in North America were provided to the Meeting.

Maize

The critical GAP for maize in the USA is for broadcast soil applications of up to 0.105 kg ai/ha applied from 30 to 14 days before sowing, with a maximum seasonal rate of 0.105 kg ai/ha.

In 21 independent trials matching the GAP in the USA, with pre-planting intervals of 6–14 days, flumioxazin residues in maize grain were all < 0.02 mg/kg.

The Meeting noted that in three of these trials and in the processing study involving exaggerated application rates, residues were also < LOQ, and agreed that the data would support an STMR of 0 mg/kg.

The Meeting estimated an STMR of 0 mg/kg and a maximum residue level of 0.02* mg/kg for flumioxazin on maize.

Wheat

The critical GAP for wheat in the USA is for a broadcast foliar application of up to 0.07 kg ai/ha as a harvest aid (desiccant) up to 10 days before harvest.

In 20 independent trials matching the GAP in the USA, residues of flumioxazin in wheat grain were 0.05 (4), 0.06, 0.06, 0.07, 0.08, 0.09, 0.1 (3), 0.11, 0.11, 0.12, 0.13, 0.13, 0.18, 0.23 and 0.31 mg/kg.

The Meeting estimated an STMR of 0.1 mg/kg and a maximum residue level of 0.4 mg/kg for flumioxazin on wheat.

Sugar cane

Results from supervised trials on sugar cane conducted in the USA were provided to the Meeting.

The critical GAP for sugar cane in the USA is for directed inter-row soil/stem band applications of up to 0.14 kg ai/ha after the canes are 60 cm in height or at layby (when canes are more than 76 cm in height), with a minimum 14-day retreatment interval, a maximum seasonal use of 0.42 kg ai/ha and a PHI of 90 days. The label also states that the spray solution must not contact foliage above 15 cm from the base of cane.

The Meeting noted that the supervised trials did not match the GAP in the USA, as they involved single foliar treatments applied over the top of the canes. No maximum residue level for sugar cane was estimated by the Meeting.

Oilseeds

Results from supervised trials on oilseed rape, cottonseed, sunflower seed and peanuts conducted in the USA were provided to the Meeting.

Cotton seed

The critical GAP for cotton seed in the USA is for directed inter-row band soil treatments of up to 0.07 kg ai/ha after cotton has reached 15 cm in height or at layby (when plants are more than 40 cm in height), with a maximum seasonal rate of 0.14 kg ai/ha, a retreatment interval of at least 30 days and a PHI of 60 days.

In 12 independent trials on cotton, involving higher application rates of 0.1–0.12 kg ai/ha but otherwise matching the GAP in the USA, residues in cotton seed were < 0.01(11) and 0.01 mg/kg. The Meeting agreed to use the proportionality approach to estimate a maximum residue level by scaling these results to the 0.07 kg ai/ha rate (scaling factors of 0.63-0.67). Proportionaly adjusted residues were all < 0.01 mg/kg (n=12).

The Meeting estimated an STMR of 0.01 mg/kg and a maximum residue level of 0.01 mg/kg for flumioxazin on cotton seed.

Linseed

The critical GAP for linseed (flax seed) is in the USA, involving a broadcast foliar application of up to 0.105 kg ai/ha as a harvest aid (desiccant) up to 5 days before harvest.

No trials on linseed were available and while there were trials provided on rape seed matching the GAP for linseed in the USA, the Meeting agreed not to extrapolate these data to linseed because of the different seed-head morphologies. No maximum residue level was estimated for linseed.

Peanuts

The critical GAP for peanuts in the USA is for broadcast soil applications of up to 0.105 kg ai/ha prior to sowing or pre-emergent (up to 2 days after sowing), with a maximum seasonal rate of 0.105 kg ai/ha.

In 13 independent trials on peanuts matching the GAP in the USA, flumioxazin residues in peanut nutmeat were all < 0.02 mg/kg. In one processing study involving an exaggerated rate of 0.54 kg ai/ha, residues in nutmeat were also < 0.02 mg/kg.

The Meeting estimated an STMR of 0 mg/kg and a maximum residue level of 0.02* mg/kg for flumioxazin on peanut.

Sunflower seed

The critical GAP for sunflower seed in the USA is for a broadcast foliar application of up to 0.105 kg ai/ha as a harvest aid (desiccant) up to 5 days before harvest.

In eight independent trials on sunflower seed matching the GAP in the USA, residues of flumioxazin in sunflower seed were 0.04, 0.04, 0.05, 0.1, 0.12, 0.18, 0.18 and 0.29 mg/kg.

The Meeting estimated an STMR of 0.11 mg/kg and a maximum residue level of 0.5 mg/kg for flumioxazin on sunflower seed.

Mints

Results from supervised trials on fresh mints conducted in the USA were provided to the Meeting.

The critical GAP for mints (spearmint, peppermint) in the USA is for broadcast applications of up to 0.14 kg ai/ha to dormant plants in autumn and spring, with a maximum seasonal rate of 0.28 kg ai/ha, a retreatment interval of at least 60 days and a PHI of 80 days.

In three independent trials on spearmint and peppermint, involving higher application rates of 0.28 kg ai/ha but otherwise matching the GAP in the USA, residues in fresh mint leaves were all < 0.02 mg/kg. In these trials, separate plots were also treated with 0.42 kg ai/ha (3× GAP), and residues in mint leaves from these plots ranged from < 0.02–0.03 mg/kg.

The Meeting agreed that the results from the 0.42 kg ai/ha application rate, when scaled down to the GAP application rate (scaling factor of 0.5) would support an STMR and HR of 0.01 mg/kg.

The Meeting estimated an STMR of 0.01 mg/kg, an HR of 0.01 mg/kg and a maximum residue level of 0.02 mg/kg for flumioxazin on mints.

Animal feeds

Results from supervised trials on alfalfa and on animal feed commodities from almonds (hulls), cotton (gin trash), peanuts (hulls, vines and hay), soya beans (forage and hay), maize (forage and stover) and wheat (forage, hay and straw) were provided to the Meeting.

For peanuts and soya beans, the US GAP includes a condition that treated crops must not be grazed or fed to livestock, and the Meeting did not evaluate the trial results for feed commodities from these crops.

Alfalfa forage and fodder

The critical GAP for alfalfa in the USA is for broadcast foliar applications of up to 0.14 kg ai/ha in winter (after the final cut) and in spring, after the first cut, before the crop reaches 15 cm in height, with a minimum retreatment interval of 60 days, a maximum seasonal rate of 0.28 kg ai/ha and a PHI of 25 days for harvest or grazing.

In six independent trials on alfalfa involving one broadcast application 24–26 days before the first cut and a second application to regrowth 6–8 days after the first cut, flumioxazin residues in forage were 0.04, 0.1, 0.11, 0.12, 0.14 and 0.39 mg/kg (fresh weight).

In six independent trials on alfalfa involving one broadcast application to regrowth 7–9 days after the first cut, flumioxazin residues in forage were 0.03, 0.06, 0.1, 0.18, 0.23 and 0.8 mg/kg (fresh weight).

The Meeting noted that the residue populations from the single and double treatments were not statistically different, suggesting that the residue contribution from first application (prior to the foliage being cut and removed) was not significant and agreed to use the data from the single post-cutting treatment to estimate median and highest residues for estimating livestock dietary burdens.

The Meeting estimated a median residue of 0.14 mg/kg (fresh weight) and a highest residue of 0.8 mg/kg (fresh weight) for alfalfa forage.

In alfalfa hay sampled from the same trials and same PHIs but allowed to dry in the field for 2-7 days, residues were: 0.11, 0.24, 0.3, 0.46, 0.86 and 1.5 mg/kg.

The Meeting estimated, a median residue of 0.38 mg/kg (fresh weight), a highest residue of 1.5 mg/kg (fresh weight) and after correcting for an average 89% dry matter, estimated a maximum residue level of 3.0 mg/kg (dry weight)for flumioxazin on alfalfa fodder.

Almond hulls

In five independent trials on almonds matching the inter-row soil band treatment GAP in the USA, residues in almond hulls were < 0.01, 0.01, 0.04, 0.06 and 0.55 mg/kg.

The Meeting noted that residues in perennial fruit and nuts are not expected following the use of flumioxazin as an inter-row soil band treatment, and that while in these trials, no residues were present in almond nutmeat, the levels reported in hulls were likely to have arisen from contamination at harvest when the nuts were shaken from the tree and picked up off the ground.

The Meeting estimated a median residue of 0.04 mg/kg for flumioxazin on almond hulls.

Cotton gin trash

In seven independent trials on cotton, involving higher application rates of 0.1–0.12 kg ai/ha but otherwise matching the GAP in the USA, residues in cotton gin trash were < 0.01, 0.03, 0.04, 0.16, 0.24, 0.25 and 0.48 mg/kg. When proportionally adjusted to the 0.07 kg ai/ha GAP application rate (scaling factor of 0.65), the scaled residues are < 0.01, 0.02, 0.03, 0.1, 0.15, 0.16 and 0.31 mg/kg.

The Meeting estimated a median residue of 0.1 mg/kg and a highest residue of 0.31 mg/kg for flumioxazin on cotton gin trash.

Maize forage and fodder

In 21 independent trials matching the pre-plant broadcast soil application GAP in the USA, flumioxazin residues in maize forage sampled at the late dough/early dent growth stage (BBCH 86) were all < 0.02 mg/kg.

The Meeting estimated a median residue of 0 mg/kg and a highest residue of 0 mg/kg for flumioxazin on maize forage.

In maize fodder (stover) sampled from the same 21 trials at grain maturity, flumioxazin residues were all < 0.02 mg/kg.

The Meeting estimated a maximum residue level of 0.02* mg/kg (dry weight), a median residue of 0 mg/kg and a highest residue of 0 mg/kg for flumioxazin on maize fodder.

Wheat forage and hay

The critical GAP for wheat grown for forage or hay in the USA is for a pre-plant or pre-emergence broadcast soil application of up to 0.07 kg ai/ha, with no grazing until the wheat is at least 13 cm high.

In three independent trials matching the pre-plant GAP in the USA, residues of flumioxin in forage were all < 0.02 mg/kg and residues in hay sampled at BBCH 61–85 were also < 0.02 mg/kg.

The Meeting estimated a maximum residue level of 0.02* mg/kg (dry weight), a median residue of 0 mg/kg (fresh weight) and a highest residue of 0 mg/kg (fresh weight) for wheat hay and a median residue of 0 mg/kg for wheat forage.

Wheat straw

The critical GAP for wheat in the USA is for a broadcast foliar application of up to 0.07 kg ai/ha as a harvest aid (desiccant) up to 10 days before harvest.

In 21 independent trials matching the pre-harvest desiccant GAP in the USA, residues of flumioxazin in wheat straw sampled at grain maturity (10 day PHI) were 0.23, 0.76, 1.1, 1.4, 1.5, 1.6, 1.6, 1.6, 1.6, 1.7, 1.7, 1.8, 1.8, 2.1, 2.4, 2.4, 2.6, 3.2, 3.2, 3.4 and 3.7 mg/kg.

The Meeting estimated a a median residue of 1.7 mg/kg (fresh weight), a highest residue of 3.7 mg/kg (fresh weight) and after correction for an average 88% dry matter content, estimated a maximum residue level of 7.0 mg/kg (dry weight), for wheat straw.

Fate of residues during processing

Hydrolysis in aqueous media is pH-dependant, with half-lives at 25 °C ranging from 3–5 days at pH 5 to less than 25 minutes at pH 9 in acetate buffer. After incubation at pH 7 for 2 hours, 482-HA was the only degradate observed (at about 5% TRR) and in the pH 5 buffer solution incubated for 8 hours, levels of 482-HA, THPA and Δ^1-TPA had each increased to about 5% TRR.

The fate of flumioxazin residues has been examined in a number of studies simulating household and commercial processing of apples, plums, grapes, olives, soya beans, potatoes, sugar cane, maize, wheat, oilseed rape, sunflower seed, peanuts and mint. Except for wheat, sugar cane, oilseed rape and sunflower seed, processing factors could not be estimated because residues in the fresh commodities were below the respective method LOQs.

Estimated processing factors for sugar cane were 0.5 for molasses and < 0.18 for sugar and for oilseed rape, the calculated processing factors were 0.12 for meal and < 0.04 for oil.

Estimated processing factors and STMR-Ps for wheat and sunflower seed, where residues in the raw agricultural commodities (RACs) were above the respective method LOQs are summarised below.

Summary of selected processing factors and STMR-P values for flumioxazin

RAC	Matrix	Flumioxazin [a] Calculated processing factors	STMR-P (mg/kg)
Wheat (0.1 mg/kg)	bran	0.94	0.094
	flour	0.14	0.014
	middling	0.22	0.022
	shorts	0.31	0.031
	germ	1.03	0.103
	aspirated grain fraction	308	30.8
Sunflower seed (0.11 mg/kg)	oil	< 0.009	0.001
	meal	0.065	0.007

[a] Each PF value represents a separate study where residues were above the LOQ in the RAC and is the ratio of the flumioxazin residues in the processed item divided by the residues in the RAC.

The Meeting noted that for wheat, residues do not concentrate in wheat bran, flour, middlings, shorts, and germ. However residues of flumioxazin concentrate by 308× in the aspirated grain fractions. For rape seed, sunflower, and sugar cane, there is no concentration of flumioxazin residues in the corresponding processed fractions.

Residues in animal commodities

Farm animal feeding studies

In a lactating cow feeding study three groups of dairy cattle (three cows per group) were dosed orally with flumioxazin at levels equivalent to 2, 6.2 and 19.5 ppm in the diet for 28 consecutive days (0.7 mg/kg bw/day, 0.22 mg/kg bw/day and 0.73 mg/kg bw/day respectively) and the animals were sacrificed 24 hours after the last dose. Analysis for flumioxazin, 3-OH-flumioxazin and 4-OH-flumioxazin was by HPLC-MS/MS with an LOQ of 0.02 mg/kg.

At the 19.5 ppm dose level, residues of flumioxazin, 3-OH-flumioxazin and 4-OH-flumioxazin were all non-detectable (LOD of 0.01 mg/kg) in all samples of milk, skim milk, cream, liver, kidneys, muscle, and fat. Samples from the lower dose group animals were not analysed.

No poultry feeding studies were provided. In the poultry metabolism study, where two groups of 10 hens were dosed with at levels equivalent to 10 ppm [^{14}C]flumioxazin (phenyl-label or THP-label) in the diet for 14 consecutive days (average of 0.68 mg/kg bw/day), THP-labelled flumioxazin residues were found at levels of up to 0.13 mg/kg in fat, 0.06–0.08 mg/kg in edible offal (liver and kidney), 0.04 mg/kg in egg yolk and up to 0.17 mg/kg in muscle.

Residues of the 4-OH-flumioxazin metabolite (THP-label) were up to 0.07 mg/kg in skin + fat, 0.03 mg/kg in fat, 0.12–0.08 mg/kg in edible offal (liver and kidney), 0.02 mg/kg in egg yolk and up to 0.18 mg/kg in muscle.

Residues of the 3-OH-flumioxazin metabolite (THP-label) were up to 0.04 mg/kg in skin + fat, 0.03 mg/kg in fat, 0.08–0.06 mg/kg in edible offal (liver and kidney), 0.016 mg/kg in egg yolk and up to 0.16 mg/kg in muscle.

Farm animal dietary burden

The Meeting estimated the dietary burden of flumioxazin in farm animals on the basis of the diets listed in Appendix IX of the 2009 edition of the JMPR Manual. Dietary burden calculations for beef cattle, dairy cattle, broilers and laying poultry are presented in Annex X and are summarised below:

Estimated maximum and mean dietary burdens of farm animals

	Animal dietary burden, flumioxazin, ppm of dry matter diet							
	US-Canada		EU		Australia		Japan	
	max	mean	max	mean	max	mean	max	mean
Beef cattle	2.6	2.2 [c]	2.5	0.7	3.8 [a]	1.6	0.39	0.26
Dairy cattle	1.0	0.41	1.9	0.67	2.3 [b]	0.71 [d]	0.59	0.28
Poultry—broiler	0.23	0.23	0.15	0.15	0.15	0.15	0.14	0.049
Poultry—layer	0.23	0.23	0.57 [e, g]	0.34 [f, h]	0.14	0.14	0.11	0.11

[a] Highest maximum beef or dairy cattle dietary burden suitable for MRL estimates for mammalian tissues

[b] Highest maximum dairy cattle dietary burden suitable for MRL estimates for mammalian milk

[c] Highest mean beef or dairy cattle dietary burden suitable for STMR estimates for mammalian tissues.

[d] Highest mean dairy cattle dietary burden suitable for STMR estimates for milk.

[e] Highest maximum poultry dietary burden suitable for MRL estimates for poultry tissues.

[f] Highest mean poultry dietary burden suitable for STMR estimates for poultry tissues.

[g] Highest maximum poultry dietary burden suitable for MRL estimates for poultry eggs.

[h] Highest mean poultry dietary burden suitable for STMR estimates for poultry eggs.

For beef and dairy cattle, the calculated maximum dietary burden is 3.8 ppm dry weight of feed and for poultry, noting that in some countries, laying hens may also be consumed, suitable calculated maximum and mean dietary burdens are 0.57 ppm and 0.34 ppm dry weight of feed respectively.

Animal commodity maximum residue levels

The Meeting noted that in the cow feeding study, no detectable residues of flumioxazin or the 3-OH-flumioxazin or 4-OH-flumioxazin metabolites were found in milk or any tissues from the 19.5 ppm dose group animals.

As this dose rate is more than 5× the maximum dietary burdens of 3.82 ppm for beef and dairy cattle, the Meeting concluded that residues of flumioxazin, 3-OH-flumioxazin and 4-OH-flumioxazin are not expected in mammalian milk, meat, fat or edible offal.

The Meeting estimated maximum residue levels of 0.02* mg/kg for flumioxazin in meat (from mammals other than marine mammals), edible offal (mammalian), mammalian fat and for milks. Estimated STMRs and HRs for dietary intake estimation are 0 mg/kg for meat, 0 mg/kg for edible offal, 0 mg/kg for fat and 0 mg/kg for milk.

In the hen metabolism study, the highest residues of flumioxazin were up to 0.08 mg/kg in liver and kidney, 0.13 mg/kg in fat, 0.02 mg/kg in muscle and 0.04 mg/kg in egg yolk, equivalent to 0.014 mg/kg in eggs (35:65 yolk:white). As the 10 ppm dose rate in this study is 17.5× the maximum dietary burdens of 0.57 ppm for poultry broilers and layers, the Meeting concluded that the maximum residues of flumioxazin are not expected to exceed 0.005 mg/kg in poultry edible offal, 0.007 mg/kg in fat and would be lower in poultry meat and eggs (0.001 mg/kg or less).

The 10 ppm dose rate is also 29× the mean dietary burdens of 0.34 ppm for poultry broilers and layers, and the Meeting concluded that the mean residues of flumioxazin are not expected to exceed 0.003 mg/kg in poultry edible offal, 0.004 mg/kg in fat and less than 0.001 mg/kg in poultry meat and eggs.

The Meeting estimated maximum residue levels of 0.02* mg/kg for flumioxazin in poultry meat, poultry offal, poultry fat and eggs. Estimated HRs for dietary intake estimation are 0.007 mg/kg for poultry fat, 0.001 mg/kg for poultry meat, 0.005 mg/kg for poultry offal and 0.001 mg/kg for eggs and the STMRs are 0.003 mg/kg for poultry offal, 0.004 mg/kg in fat, 0.001 mg/kg for poultry meat and 0.001 mg/kg for eggs.

RECOMMENDATIONS

On the basis of the data from supervised trials the Meeting concluded that the residue levels listed in Annex 1 are suitable for establishing maximum residue limits and for IEDI assessment.

Definition of the residue (for MRL-compliance and estimation of dietary intake, plant and animal commodities): *flumioxazin.*

The residue is not fat soluble.

DIETARY RISK ASSESSMENT

Long-term intake

The International Estimated Daily Intake (IEDI) for flumioxazin was calculated for the food commodities for which STMRs or HRs were estimated and for which consumption data were available. The results are shown in Annex 3.

The International Estimated Daily Intakes of flumioxazin for the 17 GEMS/Food cluster diets, based on estimated STMRs were 0–1% of the maximum ADI of 0.02 mg/kg bw (Annex 3). The Meeting concluded that the long-term intake of residues of flumioxazin from uses that have been considered by the JMPR is unlikely to present a public health concern.

Short-term intake

The International Estimated Short Term Intake (IESTI) for flumioxazin was calculated for food commodities and their processed fractions for which maximum residue levels were estimated and for which consumption data were available. The results are shown in Annex 4.

For flumioxazin, the IESTI varied from 0–7% of the ARfD (0.03 mg/kg bw for women of child-bearing age) and the Meeting concluded that the short-term intake of residues of flumioxazin from uses considered by the Meeting is unlikely to present a public health concern.

5.14 FLUOPYRAM (243)

RESIDUE AND ANALYTICAL ASPECTS

Fluopyram, a pyridylethylamide broad spectrum fungicide was evaluated for the first time by the 2010 JMPR, where an ADI of 0–0.01 mg/kg bw and an ARfD of 0.5 mg/kg bw were established, residue definitions were proposed and maximum residue levels were recommended for a number of uses where GAP information was available. New GAP and supporting information were evaluated by JMPR in 2012 and 2014 JMPRs and a number of additional maximum residue levels were recommended.

Residue definitions established by the 2010 JMPR are:

- for plant products (compliance with MRLs and dietary intake assessment): *fluopyram*
- for animal products (compliance with MRLs): sum of fluopyram and 2-(trifluoromethyl) benzamide, expressed as fluopyram
- for animal products (dietary intake assessment): sum of fluopyram, 2-(trifluoromethyl)benzamide and the combined residues N-{(E)-2-[3-chloro-5-(trifluoromethyl)pyridin-2-yl]ethenyl}-2-trifluoromethyl) benzamide and N-{(Z)-2-[3-chloro-5-(trifluoromethyl)pyridin-2-yl]ethenyl}-2-trifluoromethyl) benzamide, all expressed as fluopyram.

New GAP information and supporting residue data were provided by the manufacturer for evaluation by the Meeting.

Resultd of supervised residue trials on crops

The Meeting received new supervised trial data for foliar applications of fluopyram (SC formulations, generally in combinations with other fungicides) on tomatoes, beans, peas, and sunflower and for seed treatments or in-furrow soil treatments on soya bean and cotton. The Meeting also noted that data for some of these crops had been provided to the 2010 JMPR.

The results from these new trials and those previously reported by the 2010 JMPR and either matching critical GAP or where the results can be proportionally adjusted (scaled) to reflect GAP application rates were used to estimate maximum residue levels, STMRs and HRs for a number of commodities for which GAP information was available. Frozen sample storage times in the new trials were within the storage intervals considered acceptable by the 2010 JMPR and the analytical methods used in these trials were the same as those evaluated by JMPR in 2010.

Fruiting vegetables (except Cucurbits)

Tomato

The Meeting was advised that new GAP exists in Greece for fluopyram on protected tomatoes, involving up to three foliar applications of 0.15 kg ai/ha with a 3-day PHI.

In four independent protected tomato trials matching this GAP in Greece, residues were 0.04, 0.07, 0.08 and 0.13 mg/kg.

New GAP was also provided for tomatoes in Ukraine, up to two foliar applications of 0.15 kg ai/ha with a 7 day PHI.

In eight independent trials on field tomatoes conducted in Europe and matching this GAP in Ukraine, fluopyram residues were: < 0.01, 0.02, 0.06, 0.07, 0.1, 0.13, 0.13 and 0.17 mg/kg.

The Meeting noted that the 2010 JMPR had recommended a fluopyram maximum residue level of 0.4 mg/kg based on trials on protected tomatoes where residues had been proportionally adjusted to the GAP in Morocco.

The Meeting agreed that the 2010 JMPR recommendations accommodated the new GAPs for tomatoes in Greece and Ukraine.

Peppers and eggplant

The Meeting noted that the new GAP in Greece for fluopyram on protected tomatoes (3× 0.15 kg ai/ha, 3-day PHI) also applied to protected peppers and eggplants and that the 2012 JMPR had recommended a maximum residue level of 0.5 mg/kg for peppers based on the GAP in Turkey.

No trials matching the GAP in Greece on peppers and eggplants were available. The Meeting noted that the previous trials on protected peppers provided to the 2010 and 2012 JMPRs all involved only two applications and application rates of either 0.06 kg ai/ha or 0.3 kg ai/ha and agreed that the proportionality approach could not be used to support revised recommendations for peppers and/or extrapolation to eggplants.

Legume vegetables

Beans (except broad bean and soya bean)

The critical GAP for beans in Netherlands and Belgium is for up to two foliar applications of 0.25 kg ai/ha, with a 7-day PHI and results from supervised trials from Europe on protected and outdoor beans were provided to the Meeting to supplement the data provided to the 2010 JMPR.

In nine independent trials on protected beans matching this critical GAP, fluopyram residues were: 0.07, 0.15, 0.16, 0.16, 0.2, 0.22, 0.22, 0.43 and 0.69 mg/kg in beans with pods.

In 32 independent trials on outdoor beans conducted in Europe and matching this critical GAP, fluopyram residues were: **< 0.01, < 0.01, 0.01,** 0.03, **0.04,** 0.04, **0.05**, 0.05, 0.07, **0.08, 0.08**, **0.09, 0.1**, 0.1, 0.11, 0.11, 0.12, **0.14**, **0.15**, **0.17**, **0.17**, 0.17, 0.18, 0.19, 0.2, 0.21, 0.24, 0.24, 0.25, 0.26, **0.32** and 0.43 mg/kg in beans with pods. (Results in bold are from the new trials).

The Meeting noted that the data sets for protected and outdoor bean were statistically different and agreed to use the data from the trials on protected beans to estimate a maximum residue level of 1 mg/kg, an STMR of 0.2 mg/kg and an HR of 0.69 mg/kg for fluopyram on beans (except broad bean and soya bean).

Peas, shelled

The critical GAP for peas (without pods) in Netherlands and Belgium is for up to two foliar applications of 0.25 kg ai/ha, with a 7-day PHI and results from supervised trials from Europe on outdoor peas were provided to the Meeting to supplement the data provided to the 2010 JMPR.

In 30 independent trials conducted in Europe and matching this critical GAP, fluopyram residues were: **< 0.01, < 0.01, < 0.01**, < 0.01, **0.01, 0.01**, 0.01, **0.02, 0.02, 0.02**, 0.02, 0.02, 0.02, 0.02, **0.03, 0.03**, 0.03, 0.03, **0.04**, 0.05, 0.05, 0.05, **0.05**, **0.06, 0.06**, **0.06**, **0.09, 0.09**, 0.1 and **0.12** mg/kg in peas without pods. (Results in bold are from the new trials).

The Meeting estimated a maximum residue level of 0.2 mg/kg, an STMR of 0.03 mg/kg and an HR of 0.12 mg/kg for fluopyram on peas, shelled.

Beans, shelled

The Meeting noted that the GAP for beans in Netherlands and Belgium (up to two foliar applications of 0.25 kg ai/ha, with a 7-day PHI) was for beans with and without pods, and since this GAP for beans was the same as for peas, the Meeting agreed to extrapolate the data from peas, shelled to beans, shelled.

The Meeting estimated a maximum residue level of 0.2 mg/kg, an STMR of 0.03 mg/kg and an HR of 0.12 mg/kg for fluopyram on beans, shelled.

Soya bean (dry)

Results from supervised trials from the USA on soya beans were provided to the Meeting. In 21 independent trials matching the GAP in the USA for use as a seed treatment (0.25 mg ai/seed) fluopyram residues were < 0.01 (12), 0.01, 0.01, 0.01, 0.02, 0.02, 0.03, 0.03 and 0.03 mg/kg in dry soya beans.

The Meeting noted that the metabolism studies did not cover the use of fluopyram as a seed treatment. However the Meeting noted the 2010 JMPR conclusions that fluopyram is slowly degraded in soil and when present, is the major residue in 30-day PBI rotational crops and agreed that the established residue definitions would also cover the use of fluopyram as a seed treatment.

The Meeting estimated a maximum residue level of 0.05 mg/kg and an STMR of 0.01 mg/kg for fluopyram on soya bean (dry).

Oilseeds

Sunflower seed

Results from supervised trials from Europe on sunflowers were provided to the Meeting.

The critical GAP in Ukraine and Moldovia is for up to two foliar sprays of 0.125 kg ai/ha, applied before the start of flowering (BBCH 57) and with a minimum PHI of 50 days.

The Meeting received results from 12 independent trials conducted in Europe, where two foliar sprays of 0.125–0.13 kg fluopyram/ha were applied up to the seed development or early ripening stages (BBCH 67–85). As these trials did not match the critical GAP, the Meeting did not recommend a maximum residue level for fluopyram on sunflower seed.

Cotton seed

Results from supervised trials from the USA on cotton were provided to the Meeting. These trials included separate plots where fluopyram was applied as a pre-plant seed treatment, or as as a combination of a seed treatment and an in-furrow soil treatment at planting.

In the USA, GAP exists for the use of fluopyram as a pre-plant seed treatment (0.35 mg ai/seed) and also as an in-furrow soil treatment of 0.25 kg ai/ha.

In the plots from 11 independent trials where the seed was treated with 0.5 mg/kg/seed (1.4× GAP), fluopyram residues in cotton seed were all < 0.01 mg/kg (n=11) and in the plots treated with a seed treatment (0.5 mg ai/seed—1.4× GAP) followed by an in-furrow soil treatment matching the US GAP (0.25 kg ai/ha) residues in cotton seed were also < 0.01 mg/kg.

The Meeting noted that the US GAP did not exclude the use of both a seed treatment and an in-furrow treatment at planting, and since residues following the seed treatment + in-furrow soil treatment were all < 0.01 mg/kg (n=11), the Meeting estimated a maximum residue level of 0.01 mg/kg and an STMR of 0.01 mg/kg for fluopyram on cotton seed.

Animal feeds

Bean forage

In 22 of the European trials on outdoor beans evaluated by the Meeting, residues of fluopyram in fresh bean forage from trials matching the GAP in Belgium and Netherlands (two applications of 0.25 kg ai/ha, PHI 7 days) were: 0.24, 0.25, 0.26, 0.31, 0.34, **0.38**, 0.42, **0.55**, 0.57, **0.58**, 0.68, 0.71, 0.72, 0.8, **0.82**, **0.85**, 0.86, 0.88, 1.3, 1.6, 2.8 and 4.3 mg/kg (Results in bold are from the new trials).

The Meeting estimated a median residue of 0.7 mg/kg (fresh weight) and a highest residue of 4.3 mg/kg (fresh weight) for fluopyram on bean forage.

Cotton gin by-products

In the trials from the USA on cotton, residues of fluopyram were measured in gin by-products from six plots that were treated with a combination of a seed treatment (at 1.4× GAP) and an in-furrow soil treatment (at GAP). Residues in these trials were: < 0.01, 0.02, 0.02, 0.03, 0.03 and 0.06 mg/kg.

The Meeting noted that although the in-furrow soil treatment rates in these trials matched the USA GAP, the seed treatment rates were 1.4× higher than GAP and agreed it was not possible to apply the proportionality approach for this combined treatment regime to derive median and highest residues for calculating the livestock dietary burden.

Pea vines and hay

In 30 of the European trials on outdoor peas evaluated by the Meeting, residues of fluopyram in fresh pea vines from trials matching the GAP in Belgium and Netherlands (two applications of 0.25 kg ai/ha, PHI 7 days) were: **0.14**, 0.2, **0.28**, **0.4**, 0.45, **0.46**, 0.46, **0.5**, **0.54**, **0.63**, 0.81, **0.92**, 0.93, 1.1, **1.7**, 1.9, **2.1**, 2.3, **3.2**, 3.3, 3.5, **4.0**, 4.3, **4.9**, 6.6, **7.7**, **8.0**, **8.4**, **9.2** and **9.6** mg/kg (Results in bold are from the new trials).

The Meeting estimated a median residue of 1.8 mg/kg (fresh weight) and a highest residue of 9.6 mg/kg (fresh weight) for fluopyram on pea vines (green).

Residues of fluopyram in pea hay/straw from the new European trials matching the GAP in Belgium and Netherlands and sampled 20–43 days after the last application were: 0.15, 0.33, 0.44, 0.44, 0.64, 0.8, 0.82, 0.93, 3.4, 3.6, 3.6, 4.8, 4.9, 6.3, 7.2, 11, 18 and 19 mg/kg (n=18).

The Meeting estimated a median residue of 3.5 mg/kg (fresh weight), a highest residue of 19 mg/kg (fresh weight) and after correction for an average 88% dry matter content, estimated a maximum residue level of 40 mg/kg for fluopyram on pea hay.

Animal commodity maximum residue levels

Farm animal feeding studies

The 2010 JMPR reviewed feeding studies with fluopyram on lactating dairy cows and laying hens and the conclusions from these residue transfer studies were used to estimate residue levels of fluopyram and its metabolites in milk, eggs and livestock tissues, based on the above dietary burdens.

Farm animal dietary burden

The Meeting estimated the dietary burden of fluopyram in farm animals on the basis of the diets listed in Annex 6 of the 2009 JMPR Report (OECD Feedstuffs Derived from Field Crops) and using the estimated residues in livestock feed commodities evaluated by the Meeting and by previous JMPRs.

	Animal dietary burden, fluopyram, ppm of dry matter diet							
	US-Canada		EU		Australia		Japan	
	Max	Mean	Max	Mean	Max	Mean	Max	Mean
Beef cattle	0.14	0.13	16	2.4	32 a	7.6 c	0.04	0.04
Dairy cattle	4.5	1.3	21	2.7	25 b	7 d	0.07	0.07
Poultry—broiler	0.041	0.041	0.21	0.12	0.021	0.021	–	–
Poultry—layer	0.041	0.041	5.8 e, g	0.92 f, h	0.021	0.021	–	–

[a] Highest maximum beef or dairy cattle dietary burden suitable for MRL estimates for mammalian tissues

[b] Highest maximum dairy cattle dietary burden suitable for MRL estimates for mammalian milk

[c] Highest mean beef or dairy cattle dietary burden suitable for STMR estimates for mammalian tissues

[d] Highest mean dairy cattle dietary burden suitable for STMR estimates for milk

[e] Highest maximum poultry dietary burden suitable for MRL estimates for poultry tissues

[f] Highest mean poultry dietary burden suitable for STMR estimates for poultry tissues

[g] Highest maximum poultry dietary burden suitable for MRL estimates for poultry eggs

[h] Highest mean poultry dietary burden suitable for STMR estimates for poultry eggs

Animal commodity maximum residue levels

The calculations used to estimate total residues for use in estimating maximum residue levels, STMRs and HRs are shown below. For maximum residue level estimation, the total residues are the sum of fluopyram plus BZM (expressed as fluopyram equivalents) and for dietary intake estimation (STMRs and HRs) the total residues are the sum of fluopyram, BZM and total olefins (expressed as fluopyram equivalents).

Cattle

For beef and dairy cattle, the highest maximum dietary burdens were 32 ppm and 25 ppm (dairy) and the mean dietary burdens were 7.6 ppm and 7 ppm (dairy).

	Feed level for milk (ppm)	Total residues in milk (mg/kg)	Feed level for tissues (ppm)	Total residues (mg/kg)			
				Muscle	Liver	Kidney	Fat
MRL beef or dairy cattle (fluopyram + BZM)							
Feeding study [a]	14.4 44	0.25 0.64	14.4 44	0.045 0.83	2.88 6.	0.39 0.93	0.4 0.78
Dietary burden/residue estimate	25	0.38	32	0.52	4.7	0.71	0.63
High residue beef or dairy cattle (fluopyram + BZM + Total olefins)							
Feeding study [a]			14.4 44	0.47 0.86	2.9 6.1	0.41 0.97	0.52 1.2
Dietary burden/residue estimate			32	0.7	4.8	0.74	0.86
STMR beef or dairy cattle ((fluopyram + BZM + Total olefins)							
Feeding study [b]	1.5 14.4	0.02 0.27	1.5 14.4	0.02 0.32	0.35 2	0.03 0.31	0.04 0.31
Dietary burden/residue estimate	7	0.12	7.6	0.16	1.1	0.16	0.17

[a] For estimating highest residues for tissues and mean residues for milk

[b] For estimating mean residues for tissues and for milk

Total residues of fluopyram and BZM (expressed as fluopyram equivalents) calculated in cattle milk and tissues for use in estimating maximum residue levels are: 0.63 mg/kg (fat), 0.52 mg/kg (muscle), 4.7 mg/kg (liver) and 0.71 mg/kg (kidney) and the mean residue for milk is 0.38 mg/kg.

The Meeting estimated maximum residue levels of 0.7 mg/kg for fluopyram in meat (from mammals other than marine mammals), 0.7 mg/kg for mammalian fats (except milk fats), 0.8 mg/kg for edible offal (mammalian) except liver, 5 mg/kg for liver of cattle, goats, pigs and sheep and 0.5 mg/kg for milks and agreed to withdraw the previous recommendations.

Estimated HRs for dietary intake estimation for fluopyram (and including residues of BZM and total olefins) are 0.86 mg/kg for mammalian fat, 0.7 mg/kg for mammalian muscle, 4.8 mg/kg for liver and 0.74 mg/kg for kidney and other edible offal.

Estimated STMRs for dietary intake estimation for fluopyram (and including residues of BZM and total olefins) are 0.17 mg/kg for mammalian fat, 0.16 mg/kg for mammalian muscle, 1.1 mg/kg for liver of cattle, goats, pigs and sheep, 0.16 mg/kg for kidney and other edible offal of cattle, goats, pigs and sheep and 0.12 mg/kg for milks

Poultry

The dietary burdens for poultry broilers are 0.21 ppm (maximum) and 0.12 ppm (mean) but the Meeting decided to estimate residue levels in poultry tissues using the higher maximum and mean dietary burdens in poultry layers (5.8 ppm and 0.92 ppm respectively) as they may also be consumed. Since the dose-response curves in the poultry feeding study showed a linear relationship (R^2 values of 0.97–0.99) and as the maximum dietary burden estimates were not more than 120% of the highest dose, the Meeting agreed to estimate maximum total residues by extrapolation from the results of the poultry feeding study.

	Feed level for eggs (ppm)	Total residues in eggs (mg/kg)	Feed level for tissues (ppm)	Total residues (mg/kg)		
				Muscle	Liver	Skin with Fat
MRL broiler or laying hen (fluopyram + BZM)						
Feeding study [a]	4.8	0.72	4.8	0.33	1.6	0.64
Dietary burden/residue estimate	5.8	0.87	5.8	0.39	1.9	0.75
High residue broiler or laying hen (fluopyram + BZM + Total olefins)						
Feeding study [a]	4.8	0.74	4.8	0.39	1.64	0.72
Dietary burden/residue estimate	5.8	0.8	5.8	0.46	1.9	0.85
STMR broiler or laying hen (fluopyram + BZM + Total olefins)						
Feeding study [b]	0.49 1.6	0.08 0.22	0.49 1.6	0.03 0.09	0.16 0.43	0.06 0.12
Dietary burden/residue estimate	0.92	0.13	0.92	0.058	0.26	0.086

[a] For estimating highest residues for tissues and mean residues for eggs

[b] For estimating mean residues for tissues and for eggs

Combined residues of fluopyram and BZM (expressed as fluopyram equivalents) expected in poultry eggs and tissues for use in estimating maximum residue levels are: 0.75 mg/kg (fat), 0.39 mg/kg (muscle), 1.9 mg/kg (liver) and 0.87 mg/kg (eggs).

The Meeting estimated maximum residue levels of 0.5 mg/kg for fluopyram in poultry meat, 1 mg/kg for poultry fat, 2.0 mg/kg for poultry edible offal and 1.0 mg/kg for eggs.

Estimated HRs for dietary intake estimation for fluopyram (and including residues of BZM and total olefins) are 0.85 mg/kg for poultry fat, 0.46 mg/kg for poultry muscle, 1.9 mg/kg for poultry edible offal and 0.8 mg/kg for eggs.

Estimated STMRs for dietary intake estimation for fluopyram (and including residues of BZM and total olefins) are 0.086 mg/kg for poultry fat, 0.058 mg/kg for poultry muscle, 0.26 mg/kg for poultry edible offal and 0.13 mg/kg for eggs.

RECOMMENDATIONS

On the basis of the data from supervised trials the Meeting concluded that the residue levels listed in Annex 1 are suitable for establishing maximum residue limits and for IEDI assessment.

Definition of the residue for compliance with the MRL and for the estimation of dietary intake for plant commodities: *fluopyram*

Definition of the residue for compliance with the MRL for animal commodities: *Sum of fluopyram and 2-(trifluoromethyl) benzamide, expressed as fluopyram*

Definition of the residue for the estimation of dietary intake for animal commodities: Sum of fluopyram, 2-(trifluoromethyl)benzamide and the combined residues N-{(E)-2-[3-chloro-5-(trifluoromethyl)pyridin-2-yl]ethenyl}-2-trifluoromethyl) benzamide and N-{(Z)-2-[3-chloro-5-(trifluoromethyl)pyridin-2-yl]ethenyl}-2-trifluoromethyl) benzamide, all expressed as fluopyram.

DIETARY RISK ASSESSMENT

Long-term intake

The International Estimated Daily Intakes (IEDIs) for fluopyram were calculated for the food commodities for which STMRs or HRs were estimated and for which consumption data were available. The results are shown in Annex 3 to the 2015 Report.

The International Estimated Daily Intakes of fluopyram for the 17 GEMS/Food regional diets, based on estimated STMRs were 4–30% of the maximum ADI of 0.01 mg/kg bw (Annex 3). The Meeting concluded that the long-term intake of residues of fluopyram from uses that have been considered by the JMPR is unlikely to present a public health concern.

Short-term intake

The International Estimated Short-term Intakes (IESTIs) for fluopyram were calculated for the food commodities for which STMRs or HRs were estimated and for which consumption data were available (Annex 4 to the 2015 Report).

For fluopyram the IESTI varied from 0–10% of the ARfD (0.5 mg/kg bw) and the Meeting concluded that the short-term intake of residues of fluopyram from uses considered by the Meeting is unlikely to present a public health concern.

5.15 FLUPYRADIFURONE (285)

TOXICOLOGY

Flupyradifurone is the ISO-approved common name for 4-[(6-chloro-3-pyridylmethyl)(2,2-difluoroethyl)amino]furan-2(5*H*)-one (IUPAC), with the CAS number 951659-40-8. Flupyradifurone is a butenolide insecticide that works by binding to and activating nicotinic acetylcholine receptors in insects.

Flupyradifurone has not previously been evaluated by JMPR and was reviewed by the present Meeting at the request of CCPR.

All critical studies contained statements of compliance with GLP.

Biochemical aspects

In studies conducted in rats using [^{14}C]flupyradifurone, maximum plasma concentrations of radioactivity were reached at 1 hour after a single oral dose of 2 mg/kg bw and 2–4 hours after a single oral dose of 200 mg/kg bw. Based on the level of radioactivity in urine and tissues following oral dosing, estimates of gastrointestinal absorption ranged from 79% in males to 91% in females. A comparison of the dose-normalized area under the plasma concentration–time curve (AUC) following equivalent oral and intravenous doses (2 mg/kg bw) in males indicated that gastrointestinal absorption was 93%. The plasma elimination half-life ranged from 3 to 8 hours. The majority (up to 90%) of radioactivity was excreted in urine within 24 hours. There was no evidence of tissue accumulation. Although flupyradifurone was the main compound detected in excreta (up to 50% of the radioactivity in males and 70% of the radioactivity in females), it undergoes hydroxylation, conjugation and cleavage reactions to generate eight identified metabolites and 19 unidentified metabolites.

Toxicological data

In rats, the oral LD_{50} was greater than 300 and less than 2000 mg/kg bw, the dermal LD_{50} was greater than 2000 mg/kg bw and the LC_{50} was greater than 4.67 mg/L. Flupyradifurone was not irritating to the skin or eyes of rabbits or a skin sensitizer in mice.

In mice, rats and dogs, the liver is the main target organ, with the thyroid an additional target in rats and the skeletal muscle an additional target in dogs. Liver enzyme induction (specifically CYP3A) and liver hypertrophy were noted in short-term repeated-dose studies in rats. A notable feature of this compound (and some of its metabolites) is its ability to reduce blood glucose levels.

In a 30-day range-finding study in mice, which tested dietary concentrations of 0, 300, 600 and 1200 ppm flupyradifurone (equal to 0, 40, 78 and 207 mg/kg bw per day for males and 0, 47, 98 and 192 mg/kg bw per day for females, respectively), reduced body weight gain occurred in males at 1200 ppm (equal to 207 mg/kg bw per day).

In a 90-day study in mice, which tested dietary concentrations of 0, 100, 500 and 2500 ppm flupyradifurone (equal to 0, 15.6, 80.6 and 407 mg/kg bw per day for males and 0, 18.8, 98.1 and 473 mg/kg bw per day for females, respectively), the NOAEL was 500 ppm (equal to 80.6 mg/kg bw per day), based on lower body weight and body weight gain, changes in clinical chemistry parameters, increased liver weights and an increase in the severity of hepatocellular vacuolation at 2500 ppm (equal to 407 mg/kg bw per day).

In a 30-day range-finding study in rats, which tested gavage flupyradifurone doses of 0, 75, 200 and 350 mg/kg bw per day, CYP3A was induced at every dose in males and at 200 and 350 mg/kg bw per day in females. Deaths and clinical signs (females), reduced glucose levels (males), increased triglyceride levels, increased alanine aminotransferase and alkaline phosphatase activities (females), increased liver weights, liver hypertrophy and thyroid follicular cell hypertrophy occurred at 200 and 350 mg/kg bw per day.

In a second 30-day range-finding study conducted only in male rats, which tested dietary flupyradifurone concentrations of 0, 410 and 5000 ppm (equal to 0, 33.6 and 385 mg/kg bw per day, respectively), CYP3A was induced at 5000 ppm. Lower body weight, body weight gain, feed consumption and blood glucose levels, increased plasma urea and cholesterol levels, increased liver weights, liver hypertrophy and thyroid hypertrophy occurred at 5000 ppm (equal to 385 mg/kg bw per day).

In a 90-day study in rats that incorporated an assessment of neurotoxicity, dietary concentrations of 0, 100, 500 and 2500 ppm flupyradifurone (equal to 0, 6.0, 30.2 and 156 mg/kg bw per day for males and 0, 7.6, 38.3 and 186 mg/kg bw per day for females, respectively) were tested. The NOAEL was 500 ppm (equal to 30.2 mg/kg bw per day), based on lower body weight and body weight gain and thyroid follicular cell hypertrophy at 2500 ppm (equal to 156 mg/kg bw per day).

In a 28-day range-finding study in dogs, which tested dietary flupyradifurone concentrations of 0, 500, 2000 and 4000 ppm (equal to 0, 16, 62 and 118 mg/kg bw per day for males and 0, 18, 77 and 131 mg/kg bw per day for females, respectively), body weight loss and reduced glycogen accumulation in hepatocytes occurred at 4000 ppm (equal to 118 mg/kg bw per day).

In a 90-day study in dogs, which tested dietary flupyradifurone concentrations of 0, 400, 1200 and 3600/2400 ppm (equal to 0, 12, 33 and 102/85 mg/kg bw per day for males and 0, 12, 41 and 107/78 mg/kg bw per day for females, respectively), the NOAEL was 400 ppm (equal to 12 mg/kg bw per day), based on increased creatine phosphokinase, aspartate aminotransferase and alanine aminotransferase activities and skeletal muscle degeneration at 1200 ppm (equal to 33 mg/kg bw per day).

In a 1-year toxicity study in dogs, which tested dietary flupyradifurone concentrations of 0, 150, 300 and 1000 ppm (equal to 0, 4.6, 7.8 and 28.1 mg/kg bw per day for males and 0, 4.1, 7.8 and 28.2 mg/kg bw per day for females, respectively), the NOAEL was 300 ppm (equal to 7.8 mg/kg bw per day), based on reduced body weight gain (females) and skeletal muscle degeneration (both sexes) at 1000 ppm (equal to 28.1 mg/kg bw per day).

The overall NOAEL in the 90-day and 1-year dog studies was 400 ppm (equal to 12 mg/kg bw per day), with an overall LOAEL of 1000 ppm (equal to 28.1 mg/kg bw per day).

In a 24-month chronic toxicity and carcinogenicity study in mice, which tested dietary flupyradifurone concentrations of 0, 70, 300 and 1500 ppm (equal to 0, 10, 43 and 224 mg/kg bw per day for males and 0, 12.2, 53 and 263 mg/kg bw per day for females, respectively), the NOAEL was 300 ppm (equal to 43 mg/kg bw per day), based on reduced body weight and body weight gain at 1500 ppm (equal to 224 mg/kg bw per day). No treatment-related tumours were observed up to the highest dietary concentration of 1500 ppm (equal to 224 mg/kg bw per day).

In a 2-year chronic toxicity and carcinogenicity study in rats, which tested dietary flupyradifurone concentrations of 0, 80, 400 and 2000 ppm (equal to 0, 3.16, 15.8 and 80.8 mg/kg bw per day for males and 0, 4.48, 22.5 and 120 mg/kg bw per day for females, respectively), the NOAEL was 400 ppm (equal to 15.8 mg/kg bw per day), based on reduced body weight and body weight gain, liver enlargement with accompanying histopathological changes, and histopathological changes in the lungs and thyroid at 2000 ppm (equal to 80.8 mg/kg bw per day). No treatment-related tumours were observed up to the highest dietary concentration of 2000 ppm (equal to 80.8 mg/kg bw per day).

The Meeting concluded that flupyradifurone is not carcinogenic in mice or rats.

Flupyradifurone was tested for genotoxicity in an adequate range of assays, both in vitro and in vivo. No evidence of genotoxicity was found.

The Meeting concluded that flupyradifurone is unlikely to be genotoxic.

In view of the lack of genotoxicity and the absence of carcinogenicity in mice and rats, the Meeting concluded that flupyradifurone is unlikely to pose a carcinogenic risk to humans.

In a one-generation range-finding reproductive toxicity study in rats, which tested dietary flupyradifurone concentrations of 0, 200, 700 and 2000 ppm (equal to 0, 14.5, 50.1 and 147.5 mg/kg bw per day for males and 0, 17.5, 60.0 and 168.9 mg/kg bw per day for females, respectively), the NOAEL for reproductive toxicity was 2000 ppm (equal to 147.5 mg/kg bw per day), the highest dose tested. The NOAEL for both parental toxicity and offspring toxicity was 700 ppm (equal to 50.1 mg/kg bw per day), based on reduced body weight at 2000 ppm (equal to 147.5 mg/kg bw per day).

In a two-generation reproductive toxicity study, which tested dietary flupyradifurone concentrations of 0, 100, 500 and 1800 ppm (equal to 0, 6.5, 32.3 and 119.8 mg/kg bw per day for males and 0, 7.8, 39.2 and 140.2 mg/kg bw per day for females, respectively), the NOAEL for reproductive toxicity was 500 ppm (equal to 39.2 mg/kg bw per day), based on decreases in estrous cycle length, the number of implantation sites and litter size at 1800 ppm (equal to 140.2 mg/kg bw per day). The NOAEL for parental toxicity was 100 ppm (equal to 7.8 mg kg bw per day), based on decreased body weight in females at 500 ppm (equal to 39.2 mg/kg bw per day). The NOAEL for offspring toxicity was 100 ppm (equal to 7.8 mg kg bw per day), based on decreased female pup weight and weight gain at 500 ppm (equal to 39.2 mg/kg bw per day).

In a developmental toxicity study in rats, which tested gavage flupyradifurone doses of 0, 15, 50 and 150 mg/kg bw per day from days 6 to 20 of gestation, the NOAEL for maternal toxicity was 50 mg/kg bw per day, for clinical signs (salivation) and body weight loss at 150 mg/kg bw per day. The NOAEL for embryo and fetal toxicity was 50 mg/kg bw per day, for slightly delayed ossification at 150 mg/kg bw per day.

In a follow-up developmental toxicity study in rats, which tested doses of 0, 20 and 30 mg/kg bw per day, the NOAEL for maternal toxicity and embryo and fetal toxicity was 30 mg/kg bw per day, the highest dose tested.

The overall NOAEL for both maternal and embryo/fetal toxicity from both developmental toxicity studies was 50 mg/kg bw per day.

In a developmental toxicity study in rabbits, which tested gavage flupyradifurone doses of 0, 7.5, 15 and 40 mg/kg bw per day, the NOAEL for maternal toxicity was 15 mg/kg bw per day, based on body weight loss and reduced feed consumption over the first few days of dosing at 40 mg/kg bw per day. The NOAEL for embryo and fetal toxicity was 40 mg/kg bw per day, the highest dose tested.

The Meeting concluded that flupyradifurone is not teratogenic.

In an acute neurotoxicity study in rats, which tested flupyradifurone doses of 0, 50, 200 and 800 mg/kg bw per day, piloerection occurred at every dose. In a follow-up study, which tested flupyradifurone doses of 0, 20 and 35 mg/kg bw, no systemic toxicity or neurotoxicity was observed at any dose.

In a 90-day neurotoxicity study in rats, which tested dietary flupyradifurone concentrations of 0, 100, 500 and 2500 ppm (equal to 0, 5.7, 29.4 and 143 mg/kg bw per day for males and 0, 6.9, 34.8 and 173 mg/kg bw per day for females, respectively), reduced body weight, body weight gain and feed consumption were observed at 2500 ppm (equal to 143 mg/kg bw per day). No neurotoxicity was observed at any dose.

In a developmental neurotoxicity study in rats, which tested dietary flupyradifurone concentrations of 0, 120, 500 and 1200 ppm (equal to 0, 10.3, 42.4 and 102 mg/kg bw per day, respectively), the NOAEL for maternal toxicity and offspring toxicity was 500 ppm (equal to 42.4 mg/kg bw per day), based on lower body weight and body weight gain in dams, reduced body weight gain in pups during lactation, and an increase in the auditory startle reflex in pups at 1200 ppm (equal to 102 mg/kg bw per day). No neurotoxicity was observed at any dose.

The Meeting concluded that flupyradifurone is not neurotoxic.

In a 28-day immunotoxicity study in rats, which tested dietary flupyradifurone concentrations of 0, 125, 600 and 3000 ppm (equal to 0, 10, 50 and 230 mg/kg bw per day, respectively), no effects on the immune system were noted up to the highest dose tested. Reduced body weight gain and feed consumption were observed at 3000 ppm (equal to 230 mg/kg bw per day).

The Meeting concluded that flupyradifurone is not immunotoxic.

Toxicological data on metabolites and/or degradates

Toxicity tests were conducted on six flupyradifurone metabolites: (1) difluoroacetic acid (DFA), which is a major soil, water and plant metabolite and is also detected in rat urine at approximately 6% of the administered dose; (2) difluoroethyl-amino-furanone, which is a minor plant metabolite also present in rat urine at approximately 10% of the administered dose; (3) (6-chloro-3-pyridyl)methanol and (4) 6-chloronicotinic acid, which are plant metabolites not detected in rat metabolism studies and metabolites common to other pesticides; and (5) amino-furanone and (6) flupyradifurone-acetic acid, which are plant metabolites not detected in rat metabolism studies.

The LD_{50}s in rats were greater than 300 and less than 2000 mg/kg bw for DFA, greater than 2000 mg/kg bw for difluoroethyl-amino-furanone, 1483 mg/kg bw for (6-chloro-3-pyridyl)methanol and greater than 5000 mg/kg bw for 6-chloronicotinic acid. Amino-furanone and flupyradifurone-acetic acid were not tested for acute toxicity.

In a 14-day range-finding study in rats, which tested dietary DFA concentrations of 0, 500, 2000 and 8000 ppm (equal to 0, 48, 187 and 745 mg/kg bw per day for males and 0, 51, 201 and 800 mg/kg bw per day for females, respectively), reduced blood glucose levels were observed at every dose.

In a 90-day toxicity study in rats, which tested dietary DFA concentrations of 0, 200, 1000 and 6000 ppm (equal to 0, 12.7, 66.2 and 380 mg/kg bw per day for males and 0, 15.6, 78.7 and 472 mg/kg bw per day for females, respectively), the NOAEL was 200 ppm (equal to 12.7 mg/kg bw per day), based on reduced body weight, reduced blood glucose levels associated with increased urine volume and ketones, and the presence of black foci and glandular erosion in the stomach at 1000 ppm (equal to 66.2 mg/kg bw per day).

In a 14-day range-finding study in rats, which tested dietary difluoroethyl-amino-furanone concentrations of 0, 1280, 3200, 8000 and 20 000 ppm (equal to 0, 135, 339, 736 and 1226 mg/kg bw per day for males and 0, 135, 335, 741 and 2254 mg/kg bw per day for females, respectively), reduced body weight gain, feed conversion efficiency and blood glucose levels occurred at and above 3200 ppm (equal to 335 mg/kg bw per day).

In a 28-day follow-up study in rats, which tested dietary difluoroethyl-amino-furanone concentrations of 0, 200, 800 and 3000 ppm (equal to 0, 17, 68 and 243 mg/kg bw per day for males and 0, 19, 76 and 273 mg/kg bw per day for females, respectively), the NOAEL was 3000 ppm (equal to 243 mg/kg bw per day), the highest dose tested.

In a 13-week toxicity study in rats, which tested dietary (6-chloro-3-pyridyl)methanol concentrations of 0, 160, 800, 4000 and 20 000 ppm (equal to 0, 9.9, 48.9, 250.1 and 1246.6 mg/kg bw per day for males and 0, 11.1, 55.9, 275.9 and 1173.7 mg/kg bw per day for females, respectively), the NOAEL was 800 ppm (equal to 48.9 mg/kg bw per day), based on decreased body weight gain and feed consumption, increased alkaline phosphatase activity and the presence of eosinophilic intranuclear inclusions in the proximal tubular epithelium of the kidney at 4000 ppm (equal to 250.1 mg/kg bw per day).

The six flupyradifurone metabolites were tested for genotoxicity in an adequate range of assays, both in vitro and in vivo. No evidence of genotoxicity was found, with the exception of difluoroethyl-amino-furanone, which was clastogenic in vitro in the absence of metabolic activation. However, when further in vivo testing was undertaken, no evidence of genotoxicity was found. On this basis, none of the six metabolites tested is likely to be genotoxic in vivo.

As limited toxicological data were provided for two of the metabolites, amino-furanone and flupyradifurone-acetic acid, supplementary analysis was undertaken using JMPR's Plant and Animal Metabolite Assessment Scheme. On the basis of this assessment and the fact that negligible levels of these metabolites are present in plant commodities, the Meeting concluded that neither of these metabolites poses a safety concern.

The Meeting concluded that difluoroethyl-amino-furanone, (6-chloro-3-pyridyl)methanol, 6-chloronicotinic acid, amino-furanone and flupyradifurone-acetic acid are of no greater toxicity than flupyradifurone, and therefore the ADI and ARfD established for flupyradifurone would adequately cover dietary exposure to these metabolites.

Based on a comparison of the NOAELs in rats over 90 days of dietary exposure (12.7 mg/kg bw per day for DFA versus 30.2 mg/kg bw per day for flupyradifurone), the Meeting concluded that DFA is approximately 2.5-fold more potent than flupyradifurone.

Human data

No information was provided on adverse health effects in workers involved in the manufacture or use of flupyradifurone. No information on accidental or intentional poisoning in humans is available.

The Meeting concluded that the existing database on flupyradifurone was adequate to characterize the potential hazards to the general population, including fetuses, infants and children.

Toxicological evaluation

The Meeting established an ADI of 0–0.08 mg/kg bw based on a NOAEL of 7.8 mg/kg bw per day for decreased maternal body weight, reduced female pup weight and pup weight gain at 39.2 mg/kg bw per day in a two-generation reproductive toxicity study in rats, with the application of a 100-fold safety factor. This NOAEL is supported by the NOAEL of 12 mg/kg bw per day for skeletal muscle degeneration in repeated-dose studies in the dog.

The Meeting established an ARfD of 0.2 mg/kg bw based on the maternal toxicity NOAEL of 15 mg/kg bw for body weight loss and reduced feed consumption over the first few days of exposure in a rabbit developmental toxicity study, with the application of a 100-fold safety factor.

The Meeting concluded that the metabolite DFA is 3-fold (rounded) more toxic than flupyradifurone over 90 days of dietary exposure in rats. On this basis, it was concluded that a 3-fold potency factor should be applied to the residue levels for use in both the acute and chronic dietary exposure estimates for DFA and that these should be added to the dietary exposures for flupyradifurone and compared with the ARfD and ADI for flupyradifurone, respectively.

Both the ADI and ARfD are established for the sum of flupyradifurone and its metabolites (difluoroethyl-amino-furanone, (6-chloro-3-pyridyl)methanol, 6-chloronicotinic acid, amino-furanone, flupyradifurone-acetic acid and 3× DFA) and expressed as the parent flupyradifurone.

A toxicological monograph was prepared.

Levels relevant to risk assessment of flupyradifurone

Species	Study	Effect	NOAEL	LOAEL
Mouse	Two-year study of toxicity and carcinogenicity[a]	Toxicity	300 ppm, equal to 43 mg/kg bw per day	1 500 ppm, equal to 224 mg/kg bw per day
		Carcinogenicity	1 500 ppm, equal to 224 mg/kg bw per day[b]	–
Rat	Acute neurotoxicity studies[c,d]	Toxicity	35 mg/kg bw per day	50 mg/kg bw per day
	Two-year study of toxicity and carcinogenicity[a]	Toxicity	400 ppm, equal to 15.8 mg/kg bw per day	2 000 ppm, equal to 80.8 mg/kg bw per day
		Carcinogenicity	2 000 ppm, equal to 80.8 mg/kg bw per day[b]	–

Species	Study	Effect	NOAEL	LOAEL
	Two-generation study of reproductive toxicity[a]	Reproductive toxicity	500 ppm, equal to 39.2 mg/kg bw per day	1 800 ppm, equal to 140.2 mg/kg bw per day
		Parental toxicity	100 ppm, equal to 7.8 mg/kg bw per day	500 ppm, equal to 39.2 mg/kg bw per day
		Offspring toxicity	100 ppm, equal to 7.8 mg/kg bw per day	500 ppm, equal to 39.2 mg/kg bw per day
	Developmental toxicity studies[c,d]	Maternal toxicity	50 mg/kg bw per day	150 mg/kg bw per day
		Embryo and fetal toxicity	50 mg/kg bw per day	150 mg/kg bw per day
	Developmental neurotoxicity study[a]	Maternal toxicity	500 ppm, equal to 42.4 mg/kg bw per day	1 200 ppm, equal to 102 mg/kg bw per day
		Embryo and fetal toxicity	500 ppm, equal to 42.4 mg/kg bw per day	1 200 ppm, equal to 102 mg/kg bw per day
Rabbit	Developmental toxicity study[c]	Maternal toxicity	15 mg/kg bw per day	40 mg/kg bw per day
		Embryo and fetal toxicity	40 mg/kg bw per day[b]	–
Dog	Ninety-day and 1-year studies of toxicity[a,d]	Toxicity	400 ppm, equal to 12 mg/kg bw per day	1 000 ppm, equal to 28.1 mg/kg bw per day

[a] Dietary administration.
[b] Highest dose tested.
[c] Gavage administration.
[d] Two or more studies combined.

Estimate of acceptable daily intake (ADI) (for sum of flupyradifurone and metabolites,[1] expressed as flupyradifurone)

0–0.08 mg/kg bw

Estimate of acute reference dose (ARfD)

0.2 mg/kg bw

Information that would be useful for the continued evaluation of the compound

Results from epidemiological, occupational health and other such observational studies of human exposure

Critical end-points for setting guidance values for exposure to flupyradifurone

Absorption, distribution, excretion and metabolism in mammals

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[1] Difluoroethyl-amino-furanone, (6-chloro-3-pyridyl)methanol, 6-chloronicotinic acid, amino-furanone, flupyradifurone-acetic acid and 3× DFA.

Rate and extent of oral absorption	Rapid; > 80%
Dermal absorption	No data
Distribution	Rapid tissue distribution
Potential for accumulation	No potential for accumulation
Rate and extent of excretion	Rapid and complete
Metabolism in animals	Extensive; hydroxylation, conjugation and cleavage reactions
Toxicologically significant compounds in animals and plants	Flupyradifurone, DFA, difluoroethyl-amino-furanone
Acute toxicity	
Rat, LD_{50}, oral	> 300 and < 2 000 mg/kg bw
Rat, LD_{50}, dermal	> 2 000 mg/kg bw
Rat, LC_{50}, inhalation	> 4.67 mg/L
Rabbit, dermal irritation	Not irritating
Rabbit, ocular irritation	Not irritating
Mouse, dermal sensitization	Not sensitizing (local lymph node assay)
Short-term studies of toxicity	
Target/critical effect	Muscle degeneration
Lowest relevant oral NOAEL	12 mg/kg bw per day (dog)
Lowest relevant dermal NOAEL	No data
Lowest relevant inhalation NOAEC	No data
Long-term studies of toxicity and carcinogenicity	
Target/critical effect	Reduced body weight and body weight gain, liver toxicity
Lowest relevant NOAEL	15.8 mg/kg bw per day (rat)
Carcinogenicity	Not carcinogenic in mice or rats[a]
Genotoxicity	
	No evidence of genotoxicity[a]
Reproductive toxicity	
Reproduction target/critical effect	Reduced body weight, length of estrous cycle, implantation sites and litter size
Lowest relevant parental NOAEL	7.8 mg/kg bw per day (rat)
Lowest relevant offspring NOAEL	7.8 mg/kg bw per day (rat)
Lowest relevant reproduction NOAEL	39.2 mg/kg bw per day (rat)
Developmental toxicity	
Developmental target/critical effect	Slightly delayed ossification at maternally toxic doses
Lowest maternal NOAEL	15 mg/kg bw per day (rabbit)
Lowest embryo/fetal NOAEL	30 mg/kg bw per day (rat)
Neurotoxicity	
Acute neurotoxicity NOAEL	800 mg/kg bw (highest dose tested; rat)
Subchronic neurotoxicity NOAEL	143 mg/kg bw per day (highest dose tested; rat)

Developmental neurotoxicity NOAEL	102 mg/kg bw per day (highest dose tested; rat)
Other toxicological studies	
Immunotoxicity NOAEL	230 mg/kg bw per day (highest dose tested; rat)
Toxicological studies on DFA	
Oral LD_{50} (rat)	> 300 – < 2 000 mg/kg bw
Lowest relevant short-term NOAEL	12.7 mg/kg bw per day (90 days; rat)
Genotoxicity	No evidence of genotoxicity
Toxicological studies on difluoroethyl-amino-furanone	
Oral LD_{50} (rat)	> 2 000 mg/kg bw
Lowest relevant short-term NOAEL	243 mg/kg bw per day (28 days; rat)
Genotoxicity	Clastogenic in vitro; not genotoxic in vivo
Toxicological studies on (6-chloro-3-pyridyl)methanol	
Oral LD_{50} (rat)	1 483 mg/kg bw (females), 1 842 mg/kg bw (males)
Lowest relevant short-term NOAEL	48.9 mg/kg bw per day (90 days; rat)
Genotoxicity	No evidence of genotoxicity
Toxicological studies on 6-chloronicotinic acid	
Oral LD_{50} (rat)	> 5 000 mg/kg bw
Genotoxicity	No evidence of genotoxicity
Toxicological studies on amino-furanone	
Genotoxicity	No evidence of genotoxicity
Toxicological studies on flupyradifurone-acetic acid	
Genotoxicity	No evidence of genotoxicity
Medical data	
	No data

[a] Unlikely to pose a carcinogenic risk to humans from the diet.

Summary

	Value	Studies	Safety factor
ADI	0–0.08 mg/kg bw	Two-generation reproductive toxicity study (rat)	100
ARfD	0.2 mg/kg bw	Developmental toxicity study (rabbit)	100

5.16 FLUTRIAFOL (248)

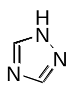
RESIDUE AND ANALYTICAL ASPECTS

Flutriafol is a triazole fungicide used in many crops for control of a broad spectrum of leaf and ear cereal diseases, particularly embryo borne diseases e.g., bunts and smuts. It was first evaluated for residues and toxicology by the 2011 JMPR. The ADI of flutriafol was 0–0.01 mg/kg bw and the ARfD was 0.05 mg/kg bw. The compound was listed by the Forty-sixth Session of CCPR for the JMPR to consider additional MRLs. The residue definition for compliance with MRL and for estimation of dietary intake (for animal and plant commodities) is flutriafol.

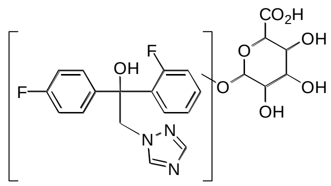
For the current evaluation the Meeting received new metabolism studies in lactating goats, storage stability data for animal commodities, residue trials on apples, pears, peaches/nectarines, plums, cherries, strawberries, Brassica vegetables (cabbage and broccoli), cucurbits (cucumbers, summer squash and muskmelons), tomatoes, peppers, leafy vegetables (lettuce, spinach, celery and mustard greens), sugar beet, maize, rice, sorghum, almonds, pecans, cotton, and rape, as well as a lactating cow feeding study (residue transfer study).

Metabolites referred to in the appraisal were addressed by their common names

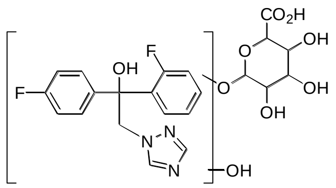
1,2,4-triazole (M1, T)



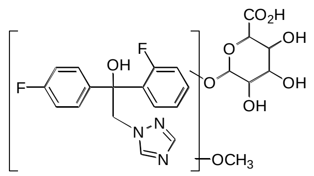
flutriafol glucuronide (M4)



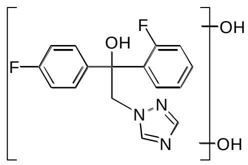
hydroxy flutriafol glucuronide (M3)



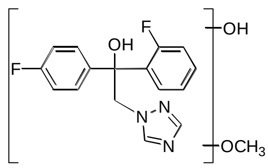
methoxy flutriafol glucuronide (M7)



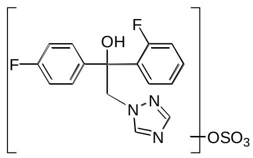
dihydroxy flutriafol (M3e)



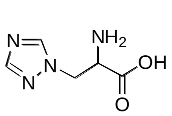
hydroxymethoxy flutriafol (M5)



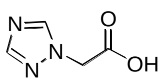
flutriafol sulfate (M10)



1,2,4-triazole analine (TA)



1,2,4-triazole acetic acid (TAA)



Animal metabolism

Metabolism of flutriafol in cattle involves hydroxylation of flutriafol to hydroxyflutriafol and a range of polar water soluble metabolites that are present at low levels, presumably additionally hydroxylated flutriafol compounds and their conjugates. The current Meeting received two additional studies on the metabolism of flutriafol in ruminants involving dosing lactating goats with triazole- or carbinol-labelled flutriafol at the equivalent of 12 or 30 ppm in the feed.

The majority of the ^{14}C residues were recovered in the excreta (urine 30–54% AD, faeces 35–55% AD). For tissues of goats dosed at 30 ppm, ^{14}C residues were highest in liver, (0.68–0.70 mg equiv/kg), followed by the kidney (0.11–0.31 mg equiv/kg) with only low levels detected in fat (0.011–0.018 mg equiv/kg) and muscle (0.02 mg equiv/kg). Residues in milk appeared to reach plateau levels by day three of dosing with significant differences in ^{14}C levels between milk collected in the morning (low levels) compared to evening milk (higher levels) suggesting flutriafol residues are rapidly eliminated following dosing. TRR in milk reached a maximum of 0.095 mg equiv/kg.

Acetonitrile and water extraction of liver, kidney, muscle, fat, skim milk and milk fat resulted in extraction efficiencies of 28.7–38.7% (liver), 66.7–86.5% (kidney) and > 82% (muscle), > 72% fat, 98% (skim milk) and 82–87% (milk fat).

Flutriafol was extensively metabolised and accounted for ≤ 2.5% TRR in liver, ≤ 0.7% TRR in kidney, ≤ 4.3% TRR in milk fat, not detected in muscle and ≤ 0.01 mg/kg in fat. Significant metabolites and the highest % TRR in tissues are 1,2,4-triazole (M1: 15% skim milk, 11% milk fat, 42% muscle, 27% fat), hydroxyflutriafol glucuronide (M3: 13% kidney, 23% skim milk, 44% milk fat, 10% muscle), di-hydroxy flutriafol (M3e: 35% skim milk), flutriafol glucuronide (M4: 25% kidney, 17% muscle) and methoxy flutriafol glucuronide (M7: 10% kidney).

The Meeting noted that in the lactating cow evaluated by the 2011 JMPR, animals were dosed orally twice daily at the equivalent of 2 ppm in the diet for seven days and sacrificed at 4 hours after the last dose. In the current studies, goats were dosed once daily at 12 or 30 ppm with sacrifice occurring 20–22 hours after the last dose. The difference in sacrifice times and the higher dose rates have allowed for increased identification of residue components. The major residues in kidney in both the lactating cow and goat studies is flutriafol glucuronide (M4) (reported as M1B in the lactating cow study) at 22% TRR in cows and 13–15% TRR in goats at the highest dose. With the longer interval between the last dose and sacrifice, flutriafol is no longer found as the major component of the residue in liver (cow 27% TRR; goat 1.0–2.5% TRR) and no metabolite was individually present at > 10% TRR in liver in the goat studies. The levels of radioactivity in milk from the cow study were too low to allow for adequate characterisation and identification of components. In the goat study, considering the levels found in skim milk and in milk fat, three components are likely to be present at more than 10% TRR in whole milk: hydroxyflutriafol glucuronide (M3), di-hydroxy flutriafol (M3e) and flutriafol sulphate (M10).

The major metabolic pathway involves oxidation of one of the phenyl rings followed by conjugation with glucuronic acid to form flutriafol glucuronide (M4). Further oxidation results in formation of dihydroxy flutriafol (M3e), of which there are a number of possible isomers. M3e is then further transformed via methylation to hydroxyl methyl flutriafol (M5) which can, in turn, be conjugated with glucuronic acid to form methoxy flutriafol glucuronide (M7). M3e was also conjugated with glucuronic acid to form hydroxy flutriafol glucuronide (M3). The lactating goat study extends the knowledge of flutriafol metabolism and is consistent with earlier studies in lactating cow as well as laboratory animals.

The new goat metabolism studies have identified potential marker residues that could be included in the residue definitions for compliance and dietary intake risk assessment. However, the Meeting noted at the current livestock dietary burdens, residues in animal commodities of these components are expected to be at the limit of quantification or below. The Meeting agreed that the residue definitions for animal commodities did not need to be revised although this may change in the future if there are significant increases in the estimated livestock dietary burdens.

Stability of pesticide residues in stored analytical samples

The 2011 JMPR concluded that when stored, frozen flutriafol residues were stable for at least 5 months in soya bean seed, for at least 12 months in apple, barley grains and coffee beans, for at least 23 months in grapes, for at least 24 months in cabbage and oilseed rape, and for at least 25 months in wheat (grains and straw), pea seed, sugar beet root. Triazole metabolite residues were stable for at least 4 months in apple fruits and juice, and for at least 5 months in animal commodities.

The 2015 Meeting received information on the stability of flutriafol and triazole metabolites T, TA and TAA in samples of animal commodities stored frozen. Residues of flutriafol, TA and TAA in ruminant tissues (muscle, fat, liver and kidney) remain stable for at least 12 months, residues of T remains stable for at least 12 months in muscle and liver, and for a maximum 6.6 months in kidney and 10.7 months in fat when samples are stored under deep frozen conditions.

The periods of demonstrated stability cover the frozen storage intervals used in the residue studies.

Results of supervised trials on crops

Pome fruit

Field trials involving apples and pears conducted in the USA were made available to the Meeting. The cGAP for pome fruit in the USA is four applications at 119 g ai/ha (7–10 day interval between sprays, PHI 14 days). None of the trials on apples and pears submitted matched cGAP. However, the number of sprays in the trials was six and available decline data suggest the additional two sprays do not significantly contribute to the final residues and trials conducted at the maximum application rate but with six sprays were considered to approximate cGAP.

Apples

Residues in trials evaluated by the 2015 JMPR approximating *c*GAP were (n=4): 0.02, 0.02, 0.06 and 0.11 mg/kg.

The 2011 JMPR reported residues from sixteen trials on apples that also approximated *c*GAP (n=16): 0.03, 0.04, 0.05 (3), 0.06 (3), 0.08 (2), 0.09, 0.10 (2), 0.12 (2) and 0.16 mg/kg.

Pears

Residues in trials on pears approximating *c*GAP were: 0.04, 0.09, 0.13, 0.18, 0.21 and 0.24 mg/kg.

The GAP in the USA is for the group Pome fruit. The median residues in apples and pears differed by less than a factor of five and the Meeting decided to recommend a group maximum residue level. In deciding which data set to use for the recommendation, as a Mann Whitney U-test indicated that the residue populations were not different it was decided to combine the data sets.

The combined apple and pear dataset is: 0.02 (2), 0.03, 0.04 (2), 0.05 (3), 0.06 (4), 0.08 (2), 0.09 (2), 0.10 (2), 0.11, 0.12 (2), 0.13, 0.16, 0.18, 0.21 and 0.24 mg/kg

The Meeting estimated a maximum residue level of 0.4 mg/kg for pome fruit together with an STMR of 0.08 mg/kg and an HR 0.26 mg/kg (highest individual analytical result from duplicate samples) and agreed to replace the previous recommendation of 0.3 mg/kg.

Stone fruit

Field trials involving applications to cherries, peaches and plums were made available from the USA.

The cGAP for stone fruit in the USA is four applications at 128 g ai/ha (maximum application per year 511 g ai/ha, 7day interval between sprays, PHI 7 days).

Residues in cherries (sweet and tart) from trials matching GAP were: 0.16, 0.24, 0.25, 0.26, 0.30, 0.30, 0.32, 0.33, 0.34, 0.38, 0.39, 0.40, 0.42, 0.46, 0.47 and 0.59 mg/kg.

Residues in peaches from trials matching cGAP were: 0.05, 0.12, 0.13, 0.14, 0.15, 0.16, 0.18, 0.18, 0.19, 0.24, 0.24 and 0.41 mg/kg

Residues in plums from trials matching cGAP were: 0.02, 0.03, 0.04, 0.06, 0.09, 0.10, 0.12 and 0.22 mg/kg.

The Meeting noted the use in the USA is for the group stone fruit and that a group MRL recommendation might be possible. Although the median residues differed by less than a factor of five the Meeting decided to recommend maximum residue levels for all the sub-groups of stone fruit as there are sufficient trials available for each sub-group.

The Meeting estimated a maximum residue level of 0.8 mg/kg for the sub-group cherries together with an STMR of 0.335 mg/kg and an HR 0.66 (highest individual analytical result from duplicate samples) mg/kg.

The Meeting estimated a maximum residue level of 0.6 mg/kg for sub-group peaches together with an STMR of 0.17 mg/kg and an HR 0.42 (highest individual analytical result from duplicate samples) mg/kg.

The Meeting estimated a maximum residue level of 0.4 mg/kg for sub-group plums together with an STMR of 0.075 mg/kg and an HR 0.25 (highest individual analytical result from duplicate samples) mg/kg.

Strawberries

Trials were available from Spain and the USA. The cGAP for <u>strawberries</u> in the USA is four applications at 128 g ai/ha (maximum application per year 511 g ai/ha, 7 day interval between sprays, PHI 0 days).

Residues in strawberries from trials matching cGAP were (n=10): 0.14, 0.24, 0.30, 0.36, <u>0.42</u>, <u>0.44</u>, 0.45, 0.55, 0.63 and 0.72 mg/kg.

The Meeting estimated a maximum residue level of 1.5 mg/kg for strawberries together with an STMR of 0.43 mg/kg and an HR 0.78 (highest individual analytical result from duplicate samples) mg/kg.

Brassica vegetables

Residue trials were available from the USA. The cGAP for <u>Brassica</u> (Cole) leafy vegetables in the USA is four applications 128 g ai/ha (maximum application per year 511 g ai/ha, 7 day interval between sprays, PHI 7 days). Residues in trials matching cGAP were cabbage (n=6) 0.08, 0.09, <u>0.10, 0.20</u>, 0.44, 0.74 mg/kg and broccoli (n=5) 0.06, 0.08, <u>0.14</u>, 0.18, 0.35 mg/kg.

The GAP in the USA is for the group Brassica vegetables. The median residues in cabbage and broccoli differed by less than a factor of five and the Meeting decided to recommend a group maximum residue level. In deciding which data set to use for the recommendation, as a Mann Whitney U-test indicated that the residue populations were not different it was decided to combine the data sets.

The combined data set is (n=11): 0.06, 0.08, 0.08, 0.09, 0.10, <u>0.14</u>, 0.18, 0.20, 0.35, 0.44 and 0.74 mg/kg.

The Meeting estimated a maximum residue level of 1.5 mg/kg for Brassica (Cole or cabbage) vegetables together with an STMR of 0.14 mg/kg and an HR 0.80 mg/kg (highest individual analytical result from duplicate samples).

Fruiting vegetables, cucurbits

Residue trials were available from the USA. The Meeting noted that there are GAPs in the USA that cover the whole group <u>fruiting vegetables, cucurbits</u> and that the cGAP is the same for all crops that are members of the group. It was agreed to consider the trials on melons and other cucurbits together. The cGAP for the muskmelons and cucurbit vegetables (except muskmelons) in the USA is four applications at 128 g ai/ha (maximum application per year 511 g ai/ha, 7 day interval between sprays, PHI 0 days).

Residues matching cGAP were muskmelons, whole fruit (n=8), 0.02, 0.04, 0.07, 0.08, 0.10, 0.10, 0.12 and 0.12 mg/kg (whole fruit); muskmelons, flesh (n=4), < 0.01, <u>≤ 0.01</u>, <u>0.02</u> and

0.02 mg/kg; cucumbers, (n=8), 0.02, 0.02, 0.03, 0.04, 0.04, 0.04, 0.06 and 0.06 mg/kg; summer squash, (n=7), 0.04, 0.04, 0.04, 0.05, 0.05, 0.06 and 0.06 mg/kg.

The GAP in the USA covers the whole group cucurbit vegetables. The median residues in cucumbers, muskmelons and summer squash datasets differed by less than a factor of five and the Meeting decided to recommend a group maximum residue level. In deciding which data set to use for the recommendation, as a Kruskal-Wallis H-test indicated that the residue populations were different it was decided to use the muskmelon dataset which has the highest residues.

The Meeting estimated a maximum residue level of 0.3 mg/kg for fruiting vegetables, cucurbits, together with an HR 0.13 mg/kg (highest individual analytical result from duplicate samples from muskmelons) and an STMR of 0.09 mg/kg.

Tomatoes

Flutriafol is approved in the USA for use on tomatoes. The cGAP for tomatoes in the USA is four applications at 128 g ai/ha (maximum application per year 511 g ai/ha, 7 day interval between sprays, PHI 0 days). Residues from trials matching cGAP were (n=18): 0.04, 0.05, 0.06, 0.06, 0.06, 0.06, 0.07, 0.08, 0.10, 0.12, 0.12, 0.12, 0.15, 0.18, 0.33, 0.40, 0.42 and 0.55 mg/kg.

The Meeting estimated a maximum residue level of 0.8 mg/kg for tomatoes together with an STMR of 0.11 mg/kg and an HR 0.63 (highest individual analytical result from duplicate samples) mg/kg.

Peppers

Residue trials were available from the USA. The cGAP for fruiting vegetables (USA group 8–10) which includes peppers in the USA is four applications at 128 g ai/ha (maximum application per year 511 g ai/ha, 7 day interval between sprays, PHI 0 days).

Residues in trials matching USA GAP were peppers, sweet (n=9), 0.03, 0.06, 0.06, 0.08, 0.10, 0.11, 0.14, 0.15 and 0.16 mg/kg, and chilli, (n=4), 0.12, 0.20, 0.26 and 0.31 mg/kg.

Residues in peppers and chilli, from trials submitted to the 2015 JMPR are covered by maximum residue levels recommended by the 2011 JMPR of 1 mg/kg for peppers, sweet however, the Meeting noted the commodity description from the 2011 JMPR should have been VO 0051 Peppers (subgroup including Peppers, Chilli and Peppers, Sweet) and not VO 0445 Peppers, Sweet (including pimento or pimiento). To resolve this Meeting recommends a maximum residue level of 1 mg/kg, STMR of 0.28 mg/kg and an HR of 0.41 mg/kg for peppers (VO 0051) to replace the previous recommendation of 1 mg/kg for peppers, sweet (VO 0445).

Leafy vegetables

Residue trials were available from the USA. The *c*GAP for leafy vegetables (except Brassica leafy vegetables) in the USA is four applications at 128 g ai/ha (maximum application per year 511 g ai/ha, 7 day interval between sprays, PHI 7 days). Brassica (Cole) leafy vegetables in the USA have the same *c*GAP as for other leafy vegetables and as mustard greens are considered leafy vegetables under Codex, the Meeting agreed to evaluate all leafy vegetables together.

Residues in trials matching *c*GAP were, head lettuce, (n=7), 0.04, 0.05, 0.14, 0.22, 0.46, 0.52 and 0.66 mg/kg; leaf lettuce, (n=5), 0.30, 0.32, 0.36, 1.45 and 2.64 mg/kg; Cos lettuce (Romaine), (n=2), 0.20 and 0.28 mg/kg; spinach, (n=8), 0.55, 0.94, 1.32, 1.55, 1.78, 2.1, 5.05 and 5.45 mg/kg; and mustard greens, (n=8), 1.20, 1.49, 2.02, 2.12, 2.12, 2.15, 2.78 and 3.42 mg/kg.

GAP in the USA is for leafy vegetables and a group maximum residue level recommendation may be possible. However, as the median residue levels in the datasets differed by more than 5×, residues in the individual commodities cannot be considered similar and the Meeting decided to recommend levels for the individual leafy vegetables for which data are available.

The Meeting estimated a maximum residue level of 1.5 mg/kg for head lettuce together with an STMR of 0.22 mg/kg and an HR 0.67 mg/kg (highest individual analytical result from duplicate samples).

The Meeting estimated a maximum residue level of 5 mg/kg for leaf lettuce together with an STMR of 0.36 mg/kg and an HR 2.95 mg/kg (highest individual analytical result from duplicate samples).

The Meeting agreed there were insufficient residue trials to estimate a maximum residue level for Cos lettuce.

The Meeting estimated a maximum residue level of 10 mg/kg for spinach together with an STMR of 1.665 mg/kg and an HR 5.5 mg/kg (highest individual analytical result from duplicate samples).

The Meeting estimated a maximum residue level of 7 mg/kg for mustard greens together with an STMR of 2.12 mg/kg and an HR 3.53 mg/kg (highest individual analytical result from duplicate samples).

The IESTI represented greater than 100% of the ARfD of 0.05 mg/kg bw in the case of leaf lettuce (110% children), mustard greens (350% children; 140% general population) and spinach (460% total or 160% raw spinach only, children; 130% general population). No alternative GAP was available.

Sugar beet

Residue trials were available from the countries of the EU and also the USA.

The *c*GAP for sugar beet in the USA is two applications at 128 g ai/ha (maximum application per year 256 g ai/ha, 14 day interval between sprays, PHI 21 days).

No trials matched cGAP as the number of sprays differed and there is insufficient data to conclude the additional spray does not significantly contribute to the terminal residue (three sprays in trials versus two sprays cGAP, PHI 14 day trials versus 21 days cGAP).

GAP in Russia is for two applications at 62.5 g ai/ha with a 30 day PHI. Residues in trials from northern Europe at approximately double the application rate were (n=8), < 0.01, < 0.01, < 0.01, < 0.01, < 0.01, 0.01, 0.02 and 0.03 mg/kg. The Meeting decided to apply proportionality to the residue data.

Trial application rate (2nd spray) g ai/ha	Scaling factor = 62.5/trial application rate	Trial residue (mg/kg)	Scaled residue =scaling factor × trial residue (mg/kg)
135	0.463	< 0.01	< 0.01
111	0.563	< 0.01	< 0.01
120	0.521	< 0.01	< 0.01
131	0.477	< 0.01	< 0.01
138	0.453	< 0.01	< 0.01
126	0.496	0.01	0.0050
130	0.481	0.02	0.0096
138	0.453	0.03	0.0136

Based on the residues from Europe scaled to cGAP for Russia, the Meeting estimated an STMR of 0.01 mg/kg, an HR of 0.0136 mg/kg and a maximum residue level of 0.02 mg/kg for sugar beet.

Celery

Celery is classified as a leafy vegetable in the USA but as a stalk and stem vegetable in Codex. Residues in celery (whole plant) conducted according to cGAP in the USA (4× 128 g ai/ha, PHI 7 days) were (n=7), 0.44, 0.48, 0.73, 0.78, 0.92, 1.08 and 1.40 mg/kg.

The Meeting estimated a maximum residue level of 3 mg/kg for celery together with an STMR of 0.78 mg/kg and an HR 1.41 mg/kg (highest individual analytical result from duplicate samples).

Cereal grains

Maize

Residue trials were available from the USA. The cGAP for maize (field corn, popcorn and seed corn) in the USA is two applications at 128 g ai/ha (maximum application per year 256 g ai/ha, 7 day interval between sprays, PHI 7 days). Residues in trials matching cGAP were: < 0.01 (20) mg/kg. At one site two applications were also made at an exaggerated rate of 640 g ai/ha with harvest of grain 7 days later. Residues in grain were < 0.01 mg/kg.

The Meeting estimated an STMR of 0 mg/kg and a maximum residue level of 0.01 (*) mg/kg for maize.

Rice

The Meeting received field trials performed in Italy on rice. The cGAP for Italy is for 2× 187.5 g ai/ha with a PHI of 28 days. In trials approximating critical GAP in the Italy total residues in rice grain (with husk) were (n=4), Paddy rice, 0.74, 1.06, 1.32 and 1.51 mg/kg.

The number of trials is insufficient to make a maximum residue level recommendation for rice.

Sorghum

Residue trials were available from the USA. The cGAP for sorghum in the USA is two applications at 128 g ai/ha (maximum application per year 256 g ai/ha, 7 day interval between sprays, PHI 30 days). Residues in trials matching *c*GAP were (n=12), 0.03, 0.16, 0.16, 0.20, 0.24, 0.26, 0.28, 0.34, 0.38, 0.40, 0.74 and 0.74 mg/kg.

The Meeting estimated an STMR of 0.27 mg/kg and a maximum residue level of 1.5 mg/kg for sorghum.

Tree nuts

Residue trials were available from the USA. The cGAP for almonds and walnuts as well as for pecans and other tree nuts in the USA is four applications at 128 g ai/ha (maximum application per year 511 g ai/ha, 7 day interval between sprays, PHI 14 days). No trials matched *c*GAP as the number of sprays differed and there is insufficient data to conclude the additional spray does not significantly contribute to the terminal residue.

Cotton seed

Residue trials were available from the USA. The cGAP for cotton in the USA is a pre-plant soil application at up to 290 g ai/ha followed by foliar applications at 128 g ai/ha (maximum application per year 547 g ai/ha, 7 day interval between sprays, PHI 30 days). Residues in trials matching cGAP were (n=11), < 0.01, 0.02, 0.04, 0.06, 0.07, 0.08, 0.09, 0.14, 0.16, 0.26 and 0.26 mg/kg.

The Meeting estimated an STMR of 0.08 mg/kg and a maximum residue level of 0.5 mg/kg for cotton seed.

Rape seed

Residue trials were available from the USA and member states of the European Union. The cGAP for rape in Russia is application at 125 g ai/ha (maximum two applications/year, interval 10–14 days, PHI 30 days). In trials conducted in member countries of the European Union approximating critical GAP in Russia, residues in rape seed were (n=8), mg/kg, Northern Europe, 0.04, 0.07, 0.13, 0.15 and 0.31 mg/kg, and Southern Europe, 0.03, 0.05 and 0.15 mg/kg.

The Meeting estimated an STMR of 0.1 mg/kg and a maximum residue level of 0.5 mg/kg for rape seed.

Animal feeds

Straw, forage and fodder of cereal grains and grasses

Maize forage and fodder

Residue trials were available from the USA. The cGAP for maize (field corn, popcorn and seed corn) in the USA is two applications at 128 g ai/ha (maximum application per year 256 g ai/ha, 7 day interval between sprays, PHI 7 days, 0 days for forage). Residues in forage from trials matching cGAP were (n=20), 0.53, 0.74, 0.91, 1.08, 1.14, 1.36, 1.45, 1.47, 1.53, 1.63, 1.65, 1.66, 1.75, 1.77, 1.85, 1.89, 2.19, 2.44, 2.66 and 2.74 mg/kg (as received basis). When corrected for measured moisture contents (33–70%) residues were , 1.86, 1.92, 3.17, 3.17, 3.82, 4.18, 4.53, 4.80, 4.88, 5.10, 5.52, 5.61, 5.66, 5.73, 5.78, 6.39, 6.89, 7.29, 8.30 and 8.47 mg/kg.

The Meeting estimated median residue of 5.31 mg/kg and a highest residue of 8.47 mg/kg for maize forage (dry weight basis).

Residues in maize fodder (stover) from trials matching cGAP were (n=20), < 0.02, 0.72, 0.88, 1.00, 1.04, 1.32, 1.40, 1.44, 1.46, 1.94, 2.07, 2.27, 2.38, 2.48, 2.64, 2.99, 2.99, 3.04, 3.98 and 5.44 mg/kg (as received basis). When corrected for measured moisture contents (54–73%) residues were 0.03, 1.62, 1.90, 3.00, 3.42, 3.72, 3.79, 3.99, 4.35, 4.84, 5.03, 5.04, 6.72, 6.92, 6.99, 7.21, 7.81, 8.12, 8.17 and 10.45 mg/kg.

The Meeting estimated median residue of 4.93 mg/kg, a highest residue of 10.45 mg/kg and a maximum residue level of 20 mg/kg for maize fodder (dry weight basis).

Sorghum

Residue trials were available from the USA. The *c*GAP for sorghum in the USA is two applications at 128 g ai/ha (maximum application per year 256 g ai/ha, 7 day interval between sprays, PHI 30 days for grain, forage and stover).

Sorghum forage (n=12), 0.08, 0.19, 0.20, 0.24, 0.26, 0.28, 0.52, 0.54, 0.64, 0.72, 0.78 and 1.0 mg/kg (fresh weight). Median and highest residues in sorghum forage are 0.40 and 1.0 mg/kg (fresh weight basis) or 1.1 and 2.85 mg/kg (dry weight basis) as forage contains 35% dry matter.

Sorghum fodder (n=12), 0.30, 0.42, 0.45, 0.52, 0.68, 0.80, 0.88, 0.92, 1.14, 1.46, 1.52 and 4.40 mg/kg (fresh weight). The Meeting estimated median and highest residues of 0.84 mg/kg and 4.4 mg/kg (fresh weight basis) or 0.95 and 5 mg/kg when expressed on a dry weight basis and assuming fodder contains 88% dry matter. The Meeting estimated a maximum residue level of 7 mg/kg for sorghum fodder (dry weight basis).

Miscellaneous fodder and forage crops

Sugar beet tops

The Meeting received trials performed in countries of the EU and also the USA.

The *c*GAP for sugar beet in the USA is two applications at 128 g ai/ha (maximum application per year 256 g ai/ha, 14 day interval between sprays, PHI 21 days). No trials matched GAP as the number of sprays differed and there is insufficient data to conclude the additional spray does not significantly contribute to the terminal residue (three sprays in trials vs two sprays cGAP).

GAP in Russia is for two applications at 62.5 g ai/ha with a 30 day PHI. Residues in trials from northern Europe at approximately double the application rate were (n=8), 0.1, 0.14, 0.14, 0.18, 0.18, 0.22, 0.22 and 0.75 mg/kg (on an as received basis). The Meeting decided to apply proportionality to the residue data.

Trial application rate (2nd spray) g ai/ha	Scaling factor = 62.5/trial application rate	Trial residue (mg/kg)	Scaled residue =scaling factor × trial residue (mg/kg)
131	0.477	0.10	0.048
128	0.488	0.14	0.068
126	0.496	0.14	0.069
120	0.520	0.18	0.094
111	0.563	0.18	0.101
135	0.463	0.22	0.102
130	0.481	0.22	0.106
138	0.453	0.75	0.340

Based on the residues from Europe scaled to cGAP for Russia, the Meeting estimated a median residue of 0.098 mg/kg and a highest residue of 0.340 mg/kg (on an as received basis). Sugar beet tops contain approximately 23% DM. The Meeting estimated a median residue of 0.424 mg/kg, a highest residue of 1.477 mg/kg and a maximum residue level of 3 mg/kg for sugar beet tops (on a dry weight basis).

Rape seed forage

Residue trials were available from the USA and member states of the European Union. The GAP for rape in Russia is application at 125 g ai/ha (maximum two applications/year, interval 10–14 days, PHI 30 days). The late application precludes the use of plant material as forage.

Cotton gin by-products

Residue trials were available from the USA. The cGAP for cotton in the USA is a pre-plant soil application at up to 290 g ai/ha followed by foliar applications at 128 g ai/ha (maximum application per year 547 g ai/ha, 7 day interval between sprays, PHI 30 days). Three trial matched cGAP with residues 1.12, 1.77 and 2.26 mg/kg (fresh weight basis). Three residue trials is insufficient to estimate a maximum residue level for cotton gin by-products.

Almond hulls

Residue trials were available from the USA. The cGAP for almonds, walnuts, pecans and other tree nuts in the USA is four applications at 128 g ai/ha (maximum application per year 511 g ai/ha, 7 day interval between sprays, PHI 14 days). No trials matched cGAP as the number of sprays differed and there is insufficient data to conclude the additional spray does not significantly contribute to the terminal residue (six sprays in trials versus four sprays for cGAP).

Fate of residues during processing

The Meeting received information on the nature of residues under simulated processing conditions on the fate of incurred residues of flutriafol during the processing of peaches, plums, grapes, strawberries, cabbages, tomatoes, lettuce, celery, sorghum, rice, and cotton seed. Flutriafol residues are stable under simulated processing conditions (pasteurization, baking/brewing/boiling and sterilisation).

Summary of selected processing factors for flutriafol

Raw commodity	Processed commodity	Individual PF	Best estimate PF	$STMR_{RAC}$ (mg/kg)	$STMR_{RAC}$ × PF (mg/kg)	HR_{RAC} (mg/kg)	HR_{RAC} × PF (mg/kg)
Apple	Juice [a]	0.50 0.45	0.48	0.08	0.038		
	Wet pomace [a]	1.9 1.9	1.9		0.152		
	Dry pomace [a]	10 8.5	9.3		0.744		
Peach	Juice	1.7 0.8	1.25	0.17	0.2125		
	Jam	0.7 1.0	0.85		0.1445		
Plum	Dried fruit	2.2	2.2	0.075	0.165	0.22	0.484

Raw commodity	Processed commodity	Individual PF	Best estimate PF	$STMR_{RAC}$ (mg/kg)	$STMR_{RAC}$ × PF (mg/kg)	HR_{RAC} (mg/kg)	HR_{RAC} × PF (mg/kg)
Grapes	Wet pomace	2.5 4.4	3.45	0.21	0.7245		
	Dry pomace	4.0 4.3 5.4 6.0 6.7 9.6 15, 17.8	8.6		1.806		
	Red wine	0.55 0.57 1.5 1.6	1.055		0.22155		
	White wine	0.79 0.84 1.7 3.4	1.68		0.3528		
Strawberry	Jam	0.75 0.87 0.92 0.96	0.875	0.43	0.3685		
Tomato	Purée	1.2	1.2	0.11	0.132		
	Paste	2.6	2.6		0.286		
Sorghum	Aspirated grain fraction	7.1 8.9	8.0	0.27	2.16		
Cottonseed	Hulls	0.33	0.33	0.08	0.0264		
	Meal	0.08	0.08		0.0064		
	Oil	0.08	0.08		0.0064		

[a] Values from 2011 JMPR

Residues concentrated in prunes (dried plums). Based on the estimated maximum residue level for plums of 0.4 mg/kg, the Meeting recommended a maximum residue level for prunes of 0.9 mg/kg (MRL × PF = 0.4 × 2.2 = 0.88 mg/kg rounded to 0.9 mg/kg).

Residues in animal commodities

Farm animal feeding studies

The Meeting received information on the residue levels arising in tissues and milk when dairy cows were fed a diet containing flutriafol at dietary levels of 5, 16 and 50 ppm for 28 consecutive days. Residues in whole milk were < 0.01 mg/kg. In cream, residues were < 0.01 mg/kg except for Day 21 where a residue of 0.01 mg/kg was detected. The highest residues (mean in brackets) in liver, kidney, fat and muscle from the 50 ppm dose group were 1.95 (1.83), 0.15 (0.10), 0.34 (0.19) and 0.07 (0.04) mg/kg respectively.

Animal commodity maximum residue levels

Dietary burden calculations for beef cattle and dairy cattle and poultry are provided below. The dietary burdens were estimated using the OECD diets listed in Appendix IX of the 2009 edition of the FAO Manual.

Potential cattle and poultry feed items include maize, peanut, soya bean and wheat commodities.

Summary of livestock dietary burden (ppm of dry matter diet)

	US-Canada		EU		Australia		Japan	
	max	mean	Max	mean	max	Mean	max	Mean
Beef cattle	1.8	1.07	20.7 [a]	9.76 [c]	76	32	0.161	0.161
Dairy cattle	19.0	8.3	19.1 [b]	8.7 [d]	49.8	21.2	4.3	2.8
Poultry Broiler	0.26	0.26	0.24	0.24	0.24	0.24	0.23	0.23
Poultry Layer	0.26	0.26	7.9 [e]	3.45 [f]	0.24	0.24	0.20	0.20

[a] Highest maximum beef or dairy cattle dietary burden suitable for MRL estimates for mammalian meat

[b] Highest maximum dairy cattle dietary burden suitable for MRL estimates for mammalian milk

[c] Highest mean beef or dairy cattle dietary burden suitable for STMR estimates for mammalian meat

[d] Highest mean dairy cattle dietary burden suitable for STMR estimates for milk

[e] Highest maximum poultry dietary burden suitable for MRL estimates for poultry meat and eggs

[f] Highest mean poultry dietary burden suitable for STMR estimates for poultry meat and eggs.

The maximum dietary burden for cattle exceeds the maximum dosing level used in the feeding studies. It was noted that the dietary burdens are driven by the residues in wheat forage from trials that matched GAP in the USA (selected with a 0 day PHI) and that it may be possible to further refine the dietary burdens. In Australia, flutriafol is approved for use on wheat but the anticipated residues in forage are much lower as GAP requires a 49 day interval between last application and grazing and on other cereals with a 70 day interval for grazing. At these intervals residues in forage and fodder are less than 3 mg/kg and the cattle dietary burdens for Australia listed in the table are overestimates. The Meeting decided to recalculate the cattle dietary burdens for Australia discounting cereal forages.

Additional refinement is also possible for the EU livestock burdens as in the EU uses on cereals are understood as "on cereal for grain production" and therefore, only residues in grains and straw are considered for the animal burden calculation and to utilise the cattle dietary burdens for the EU in estimating residues in cattle commodities (http://www.efsa.europa.eu/sites/default/files/event/140619-m.pdf). The maximum dietary burdens on refinement are 10.5 and 4.2 ppm for the maximum and mean burdens for beef and dairy cows in the Australian region. The refined poultry dietary burdens are 1.35 and 0.75 ppm for the maximum and mean burdens for laying hens in the EU region.

Animal commodity maximum residue levels

The calculations used to estimate highest total residues for use in estimating maximum residue levels, STMR and HR values are shown below.

Flutriafol feeding study	Feed level	Residues	Feed level	Residues (mg/kg) in			
	(ppm) for milk residues	(mg/kg) in milk	(ppm) for tissue residues	Muscle	Liver	Kidney	Fat
MRL and HR beef or dairy cattle							
Feeding study [a]	16	< 0.01	16	< 0.01	0.77	0.02	0.02
Dietary burden and high residue	10.5	< 0.0066	10.5	0.0066	0.505	0.013	0.013
STMR beef or dairy cattle							
Feeding study [b]	16	< 0.01	5	< 0.01	0.33	< 0.01	< 0.01
Dietary burden and median residue	4.2	< 0.0026	4.2	< 0.008	0.277	< 0.008	< 0.008

[a] Highest residues for tissues and mean residues for milk

[b] Mean residues for tissues and mean residues for milk

The Meeting estimated a maximum residue levels of 0.01 (*) mg/kg for milk, 0.02 mg/kg for mammalian meat [in the fat], 0.02 for mammalian fats (except milk fats) and 1 mg/kg for mammalian edible offal.

The refined maximum dietary burden for broiler and layer poultry is lower than that estimated by the 2011 JMPR at 1.35 ppm and is now lower than the highest dose level in the feeding study of 5.0 ppm. The Meeting utilised the refined estimates of poultry dietary burdens and estimated maximum residue levels of 0.01 (*) mg/kg for poultry meat, 0.02 mg/kg for poultry fats, 0.03 mg/kg for poultry edible offal and 0.01 (*) mg/kg for eggs.

Flutriafol feeding study	Feed level	Residues	Feed level	Residues (mg/kg) in			
	(ppm) for egg residues	(mg/kg) in eggs	(ppm) for tissue residues	Muscle	Liver		Fat
MRL and HR chickens							
Feeding study [a]	5	0.03	5	< 0.01	0.10		0.07
Dietary burden and high residue	1.35	0.0081	1.35	< 0.0027	0.027		0.0189
STMR chickens							
Feeding study [b]	5	0.03	5	< 0.01	0.07		0.06
Dietary burden and residue estimate	0.75	0.0045	0.75	0.0015	0.0105		0.009

[a] Highest residues for tissues and mean residues for eggs

[b] Mean residues for tissues and mean residues for eggs

RECOMMENDATIONS FURTHER WORK OR INFORMATION

On the basis of the data obtained from supervised residue trials the Meeting concluded that the residue levels listed in Annex 1 are suitable for establishing maximum residue limits and for IEDI and IESTI assessment.

Definition of the residue for compliance with MRL and for estimation of dietary intake (for animal and plant commodities): *flutriafol.*

Definition of the residue for compliance with MRL and estimation of dietary intake (for animal and plant commodities): flutriafol.

The residue is fat soluble.

DIETARY RISK ASSESSMENT

Long-term intake

The 2011 JMPR established an Acceptable Daily Intake (ADI) of 0–0.01 mg/kg bw for flutriafol.

The evaluation of flutriafol resulted in recommendations for MRLs and STMR values for raw and processed commodities. Where data on consumption were available for the listed food commodities, dietary intakes were calculated for the 17 GEMS/Food Consumption Cluster Diets. The results are shown in Annex X.

The IEDIs in the seventeen Cluster Diets, based on the estimated STMRs were 3–10% of the maximum ADI (0.01 mg/kg bw). The Meeting concluded that the long-term intake of residues of flutriafol from uses that have been considered by the JMPR is unlikely to present a public health concern.

Short-term intake

The 2011 JMPR established an Acute Reference Dose (ARfD) of 0.05 mg/kg bw for flutriafol. The International Estimated Short-term Intake (IESTI) for flutriafol was calculated for raw and processed commodities for which maximum residue levels, HR and STMR values were estimated. The results are shown in Annex X to the 2015 Report.

The IESTI represented greater than 100% of the ARfD of 0.05 mg/kg bw in the case of leaf lettuce (360% children; 120% general population), mustard greens (350% children; 140% general population) and spinach (490% children; 150% general population). No alternative GAP was available. On the basis of information provided to the JMPR, the Meeting concluded that the short-term intake of residues of flutriafol from consumption of leaf lettuce, mustard greens and spinach may present a public health concern.

Estimates of intake for the other commodities considered by the 2015 JMPR were within 0–90% of the ARfD. The Meeting concluded that the short-term intake of flutriafol for these other commodities considered is unlikely to present a public health concern when flutriafol is used in ways that considered by the Meeting.

5.17 FLUXAPYROXAD (256)

RESIDUE AND ANALYTICAL ASPECTS

Fluxapyroxad was first evaluated for residues and toxicological aspects by the 2012 JMPR. The 2012 Meeting established an ADI of 0–0.02 mg/kg bw and an ARfD of 0.3 mg/kg bw for fluxapyroxad. The 2012 Meeting recommended a number of maximum residue levels for fluxapyroxad.

The residue definition was established as *fluxapyroxad* for compliance with MRLs for both plant and animal commodities. For estimation of dietary intake, the residue definition was established as *sum of fluxapyroxad, 3-(difluoromethyl)-N-(3',4',5'-trifluoro-1,1'-biphenyl-2-yl)-1H-pyrazole-4-carboxamide (M700F008), and 3-(difluoromethyl)-1-(β-D-glucopyranosyl)-N-(3',4',5'-trifluoro-1,1'-biphenyl-2-yl)-1H-pyrazole-4-carboxamide (M700F048), expressed as fluxapyroxad* for plant commodities and *sum of fluxapyroxad and 3-(difluoromethyl)-N-(3',4',5'-trifluoro-1,1'-biphenyl-2-yl)-1H-pyrazole-4-carboxamide (M700F008),* expressed as *fluxapyroxad* for animal commodities.

Fluxapyroxad was scheduled by the Forty-sixth Session of the CCPR in 2014 for evaluation of residue data for additional crops by the 2015 JMPR.

Methods of analysis

No new methods of analysis were submitted to the Meeting.

Stability of residues in stored analytical samples

No new storage stability studies were submitted to the Meeting.

Results of supervised residue trials on crops

The Meeting received supervised trial data for foliar application of fluxapyroxad to citrus fruit, cherries, grapes, strawberries, blueberries, raspberries, bananas, papaya, mango, bulb vegetables, Brassica vegetables, cucurbits, leafy vegetables, carrots, radish, celery, rice, tree nuts, sugarcane and cotton, as well as data for seed treatment and in-furrow application to potatoes.

It is noted that a number of crops (bulb vegetables, Brassica vegetables, cucurbits, leafy vegetables, celery, rice, sorghum and cotton) for which the critical GAP considered is a foliar application use pattern in the USA also have seed treatment uses registered, and the same crops could be treated with both a seed treatment and foliar application of fluxapyroxad.

All residue data provided was for the foliar use pattern (no seed treatment data was available). The foliar use patterns involve application much closer to harvest, with multiple applications and much shorter pre-harvest intervals. The Meeting noted that residue data for seed treatment of cotton at rates up to 100 g ai/100 kg seed considered by the 2012 Meeting showed no detectable residues of fluxapyroxad in cottonseed or gin by-products at harvest. Seed treatment uses are therefore not expected to contribute significantly to the residues of fluxapyroxad in harvested commodities. The Meeting therefore considered that maximum residue levels recommended based on the foliar use patterns are sufficient to cover residues arising from seed treatment use alone, or combined seed treatment/foliar use.

For dietary intake assessment, the residues are expressed as the sum of fluxapyroxad, M700F008, and M700F048, expressed as fluxapyroxad (total residues). Residues of the metabolites are reported as parent equivalents.

The method LOQ was 0.01 mg/kg for each analyte as measured, or 0.01, 0.02, 0.01 and 0.01 mg/kg as parent equivalents for parent, M700F002, M700F008, and M700F048 respectively. The treatment of residues < LOQ for the purpose of summing residue components is illustrated in the table below.

Residues, mg/kg parent equivalents			Total (sum of fluxapyroxad, M700F008, and M700F048)
Fluxapyroxad	M700F008	M700F048	
0.10	< 0.01	< 0.01	0.10
< 0.01	< 0.01	< 0.01	< 0.01
< 0.01	0.03	< 0.01	0.03

Citrus fruits

The maximum GAP for the citrus fruit group is in Argentina, with 3× 0.0033 kg ai/hL applications, with a maximum spray volume of 5000 L/ha, giving a per hectare rate of 0.165 kg ai/ha, and a pre-harvest interval of 7 days. No trials matching that GAP were available.

The GAP in Brazil is 3× 0.0025 kg ai/hL applications at 7-day intervals, with a spray volume of 2000 L/ha (0.05 kg ai/ha), with a 14-day PHI.

Residue trials in oranges, lemons and limes in accordance with the Brazilian GAP were undertaken in Brazil and Argentina.

Residues of fluxapyroxad (parent only) in oranges (whole fruit) at a 14-day PHI were 0.03, 0.04, 0.05 (2), 0.06 (2), 0.07, 0.14 (2), 0.16, and 0.17 mg/kg.

Total residues in whole oranges were 0.03, 0.04, 0.05 (2), 0.06 (2), 0.07, 0.14 (2), 0.16, and 0.17 mg/kg.

Residue data in peel and pulp were available for some of the trials.

Total residues of fluxapyroxad in pulp (edible portion) in oranges (4 trials) and lemons (2 trials) were < 0.01 (6) mg/kg.

The Meeting concluded that there was sufficient edible portion data on which to estimate the STMR and HR for oranges.

The Meeting estimated a maximum residue level of 0.3 mg/kg for fluxapyroxad in oranges, sweet, sour, together with an STMR and an HR of 0.01 mg/kg (based on the edible portion data).

Residues of fluxapyroxad (parent only and total residues) in whole lemons at a 14-day PHI were 0.09 and 0.13 mg/kg.

Residues of fluxapyroxad (parent only and total residues) in limes at a 14-day PHI were 0.04 and 0.06 mg/kg.

The Meeting concluded that there were insufficient data available to estimate maximum residue levels for fruits other than oranges in the citrus fruit group.

Stone fruits

The critical GAP for the stone fruit group is in the USA, with 3× 0.123 kg ai/ha applications at 7-day intervals, and a 0-day pre-harvest interval.

Residue data in peaches, plums and cherries was considered by the 2012 Meeting in conjunction with the above GAP, and a group maximum residue level of 2 mg/kg was estimated for stone fruit.

A request was received by the present Meeting to reconsider the MRL for cherries, with a view to establishing a higher limit to facilitate trade, noting that the highest residue for stone fruit (in cherries) was 1.9 mg/kg. No new data for stone fruit were provided to the current Meeting: two cherry trials were submitted; however, these were considered by the 2012 Meeting. The 2012-submitted stone fruit data are reconsidered in accordance with the 2013 and 2014 JMPR general considerations relating to group MRLs.

Residues of fluxapyroxad (parent compound) in cherries from supervised trials in accordance with GAP were 0.26, 0.31, 0.55, 0.56, 0.59, 0.82, 1.1, and 1.9 mg/kg.

Total residues in cherries were 0.37, 0.50, 0.72, 0.73, 0.78, 1.1, 1.4, and 2.3 mg/kg.

Residues of fluxapyroxad (parent compound) in peaches from supervised trials in accordance with GAP were 0.28, 0.30, 0.32, 0.33, 0.34, 0.43, 0.45, 0.55, 0.57, 0.58, 0.59, and 0.63 mg/kg.

Total residues in peaches were 0.30, 0.31, 0.33, 0.34, 0.35, 0.45, 0.48, 0.58, 0.62, 0.63, and 0.66 (2) mg/kg.

Residues of fluxapyroxad (parent compound) in plums from supervised trials in accordance with GAP were 0.23, 0.24, 0.27, 0.37, 0.38, 0.49, 0.55, 0.56, 0.64, and 0.95 mg/kg.

Total residues in plums were 0.23, 0.24, 0.27, 0.38, 0.39, 0.49, 0.55, 0.56, 0.64, and 0.95 mg/kg.

The Meeting noted the use in the USA is for the stone fruit crop group. Although the median residues for each fruit differed by less than a factor of five, the Meeting decided to recommend maximum residue levels for the individual sub-groups of stone fruit as there are sufficient trials available for each sub-group. The Meeting estimated a maximum residue level for cherries of 3 mg/kg, together with an STMR and an HR of 0.755 and 2.3 mg/kg respectively. The Meeting estimated a maximum residue level of 1.5 mg/kg for the sub-group peaches, together with an STMR and HR of 0.465 and 0.66 mg/kg respectively. The Meeting estimated a maximum residue level of 1.5 mg/kg for the sub-group plums, together with an STMR and an HR of 0.44 and 0.95 mg/kg. The Meeting withdrew its previous recommendation of 2 mg/kg for stone fruit.

Berries and other small fruits (except grapes)

The critical GAP for bushberries, caneberries, low growing berries, and strawberries is in the USA, with 3× 0.2 kg ai/ha applications at 7-day intervals, and a 0-day pre-harvest interval.

A series of trials in blueberries (highbush type) was conducted in the USA. Residues of fluxapyroxad (parent only) immediately after the last of 3× 0.2 kg ai/ha applications were 1.3, 1.7, 2.4 (2), and 3.8 mg/kg.

Total residues were: 1.3, 1.7, 2.4 (2), and 3.8 mg/kg.

A trial in blackberries was conducted in the USA. Residues of fluxapyroxad (parent only and total residues) immediately after the last of 3× 0.2 kg ai/ha applications were 1.4 mg/kg.

A trial in raspberries was conducted in the USA. Residues of fluxapyroxad (parent only and total residues) immediately after the last of 3 × 0.2 kg ai/ha applications were: 2.0 mg/kg.

In a series of trials in strawberries conducted in the USA, residues of fluxapyroxad (parent only) immediately after the last of 3 × 0.2 kg ai/ha applications were: 0.21, 0.26, 0.76 (2), 0.87, 0.97, 1.0, and 2.3 mg/kg.

Total residues were: 0.22, 0.26, 0.76 (2), 0.87, 0.97, 1.0, and 2.4 mg/kg.

The Meeting noted that the GAPs for the subgroups bushberries, caneberries and low growing berries, and strawberries are the same, and noted that the medians for blueberries and strawberries differed by less than 5× (2.9×) and agreed to consider a group MRL. In determining which datasets to use for estimating the MRL, the Meeting noted that the datasets for blueberries and strawberries were not statistically similar (Mann-Whitney), and, based on the blueberries data set, estimated a maximum residue level of 7 mg/kg for berries and other small fruits (except grapes), together with an STMR and an HR of 2.4 and 3.9 mg/kg (based on the highest residue of duplicate samples) respectively.

Grapes

The critical GAP for grapes is in the USA, with 3× 0.2 kg ai/ha applications at 10-day intervals, and a 14-day pre-harvest interval.

A series of trials was conducted in the USA. Residues of fluxapyroxad (parent only) at a 14-day PHI after 3× 0.2 kg ai/ha applications were 0.11, 0.13, 0.23, 0.43, 0.51, 0.62, 0.71, and 1.4 mg/kg.

Total residues were: 0.11, 0.13, 0.23, 0.43, 0.51, 0.62, 0.71, and 1.4 mg/kg.

The Meeting estimated a maximum residue level of 3 mg/kg for fluxapyroxad in grapes, together with an STMR and an HR of 0.47 and 1.4 mg/kg respectively.

Tropical fruit—inedible peel

Banana

The critical GAP in bananas is 4× 0.15 kg ai/ha applications at 8-day intervals, with a 0-day pre-harvest interval, in Belize, Costa Rica, Dominican Republic, El Salvador, Guatemala, Honduras and Panama. Trials matching GAP and conducted in Brazil, Colombia, and Ecuador were available. Results were reported for both bagged and unbagged fruit for each trial plot; the results for unbagged bananas were considered for estimation of the maximum residue level and dietary risk assessment.

Residues of fluxapyroxad (parent compound) in unbagged bananas (whole fruit) after treatment in accordance with GAP were 0.06, 0.07, 0.08, 0.10, 0.14, 0.15, 0.16, 0.36, 0.66, 0.77, and 1.6 mg/kg.

Total residues of fluxapyroxad in banana pulp (edible portion) were 0.03 (2), 0.05, 0.06, 0.09, and 0.10 mg/kg.

The Meeting estimated a maximum residue level of 3 mg/kg for bananas, based on the whole fruit data, and an STMR and an HR of 0.055 and 0.10 mg/kg, based on the edible portion data.

Mango

The critical GAP for mango is in Brazil, with 4× 0.0067 kg ai/hL applications at 7-day intervals, a spray volume of up to 1000 L/ha (giving a maximum per-hectare rate of 0.067 kg ai/ha), and a pre-harvest interval of 7 days.

In trials conducted at GAP in Brazil, residues of fluxapyroxad (parent compound) at a 7-day PHI were 0.14, 0.16, 0.21, and 0.39 mg/kg. Total residues were 0.14, 0.16, 0.21, and 0.39 mg/kg.

The Meeting concluded that there was insufficient data to estimate a maximum residue level for mango.

Papaya

The critical GAP for papaya is in Mexico, with 2× 0.1 kg ai/ha applications at 14-day intervals, and a 7-day pre-harvest interval.

The Meeting concluded that the residue data did not match the GAP (maximum two sprays GAP versus four sprays in the trials).

Bulb vegetables

The critical GAP for the bulb vegetables group is in the USA (3× 0.2 kg ai/ha applications at 7-day intervals and a 7-day pre-harvest interval).

Residue trials were conducted in bulb onions (dry) and green onions.

Residues of fluxapyroxad (parent only) at a 7-day PHI in bulb onions were 0.03, 0.16, 0.23 (2), and 0.27 mg/kg.

Total fluxapyroxad residues were 0.03, 0.16, 0.23 (2), and 0.27 mg/kg.

The Meeting estimated a maximum residue level of 0.6 mg/kg for bulb onions, together with an STMR and an HR of 0.23 and 0.28 mg/kg respectively.

The Meeting agreed to extrapolate the maximum residue level, STMR and HR values estimated for bulb onions to garlic and shallot.

Residues of fluxapyroxad (parent only) at a 7-day PHI in green onions were 0.24 and 0.56 mg/kg.

Total fluxapyroxad residues were 0.24 and 0.56 mg/kg.

The Meeting concluded that there were insufficient data to estimate maximum residue levels for other crops in the bulb vegetables group.

Brassica vegetables

The critical GAP for Brassica vegetables is in the USA (3× 0.1 kg ai/ha applications, a re-treatment interval of 7 days, and a pre-harvest interval of 3 days).

Residue data in cabbage and broccoli from trials conducted in the USA in accordance with GAP were available to the Meeting.

Fluxapyroxad was accidentally applied at double the label application rate for one of the broccoli trials. The Meeting noted that the application rate was within the acceptable range of 0.3–4× GAP and that other parameters were in accordance with GAP. The Meeting agreed that this result could be scaled to GAP using proportionality.

Residues of fluxapyroxad (parent only) in broccoli (unscaled results) at a 3-day PHI were 0.17, 0.32, 0.35, 0.57, and 1.2 mg/kg. Total residues were 0.17, 0.34, 0.36, 0.61, and 1.5 mg/kg.

Residues of fluxapyroxad (parent only) in broccoli at a 3-day PHI were 0.17, 0.29 (s), 0.32, 0.35, and 1.2 mg/kg, where (s) indicates a result that was scaled to the proposed GAP.

Total residues in broccoli were 0.17, 0.31 (s), 0.34, 0.36, and 1.5 mg/kg.

Residues of fluxapyroxad (parent only) in cabbage (heads with wrapper leaves) at a 3-day PHI were 0.07, 0.11, 0.13, 0.14, 0.22, and 1.2 mg/kg.

Total residues in cabbage (head with wrapper leaves) were 0.07, 0.11, 0.14 (2), 0.22, and 1.3 mg/kg.

Total residues in cabbage heads (without wrapper leaves) were < 0.01, 0.01, 0.04 (2), 0.05, and 0.07 mg/kg.

The Meeting noted that the GAP was for the Brassica vegetables group and considered a group MRL. The Meeting further noted the similarity of the datasets (median for broccoli was 2.6× the median for cabbage, and agreed to consider a group MRL. In determining which datasets to use for estimating the MRL, the datasets were confirmed to be similar by the Mann-Whitney U test) and it was agreed to combine the datasets for the purpose of estimating a group maximum residue level.

Combined dataset for fluxapyroxad (parent only) in broccoli and cabbage (with wrapper leaves): 0.07, 0.11, 0.13, 0.14, 0.17, 0.22, 0.32, 0.35, 0.57, and 1.2 (2) mg/kg.

Combined dataset for total residues in broccoli and cabbage (with wrapper leaves): 0.07, 0.11, 0.14 (2), 0.17, 0.22, 0.31, 0.34, 0.36, 1.3, and 1.5 mg/kg.

The Meeting estimated a maximum residue level for Brassica vegetables of 2 mg/kg. Based on the data for total residues in cabbages with wrapper leaves removed, the Meeting estimated an STMR and an HR of 0.04 and 0.07 mg/kg respectively for cabbage. Based on the combined total residues data set, the Meeting estimated an STMR and an HR of 0.22 and 1.7 mg/kg respectively.

Fruiting vegetables, Cucurbits

The critical GAP for cucurbit fruiting vegetables is in the USA (3× 0.1 kg ai/ha, with a 7-day retreatment interval and a 0-day pre-harvest interval). Residue trials in excess of GAP (3× 0.2 kg ai/ha applications) were conducted in the USA in cucumber, melon (cantaloupe), and summer squash. Trials in melons, including watermelons were also conducted in Brazil, but these did not match the critical GAP (four applications rather than three, and the rate differed by more than ±30%).

Residue data for the crops at the appropriate PHI are summarised below.

Residues of fluxapyroxad (parent only and total residues) in cucumber: 0.03, 0.17 (2), and 0.24 mg/kg.

Residues of fluxapyroxad (parent only and total residues) in whole melons (other than watermelons): 0.05 (2), 0.08, 0.21, and 0.24 mg/kg.

Residues of fluxapyroxad (parent only and total residues) in summer squash: 0.05, 0.07, 0.10, 0.11, and 0.14 mg/kg.

Data for the three crops when scaled to the US GAP (divide by 2) are summarised below:

Residues of fluxapyroxad (parent only and total residues) in cucumber: 0.015, 0.085 (2), and 0.12 mg/kg.

Residues of fluxapyroxad (parent only and total residues) in melons (other than watermelons): 0.025 (2), 0.04, 0.105, and 0.12 mg/kg.

Residues of fluxapyroxad (parent only and total residues) in summer squash: 0.025, 0.035, 0.05, 0.055, and 0.07 mg/kg.

The Meeting noted that the GAP is for the cucurbit fruiting vegetables group and further noted that the datasets are similar (maximum difference in the median was 2.1×). In determining which datasets to use for estimating the MRL, the similarity of the datasets was confirmed by the Kruskal-Wallis test. The Meeting decided to combine the scaled datasets for the purpose of estimating a group maximum residue level.

The combined dataset for residues of fluxapyroxad (parent only) in cucumber, melon and summer squash is 0.015, 0.025 (3), 0.035, 0.04, 0.05, 0.055, 0.07, 0.085 (2), 0.105, and 0.12 (2) mg/kg.

The combined dataset for total residues in cucurbits (whole fruit) is 0.015, 0.025 (3), 0.035, 0.04, <u>0.05</u>, <u>0.055</u>, 0.07, 0.085 (2), 0.105, and 0.12 (2) mg/kg.

The Meeting estimated a maximum residue level of 0.2 mg/kg for fruiting vegetables, cucurbits, together with an STMR and an HR of 0.0525 and 0.13 mg/kg respectively.

Leafy vegetables

Brassica leafy vegetables

The critical GAP for <u>Brassica leafy vegetables</u> is in the USA (3× 0.1 kg ai/ha applications, a 7-day retreatment interval, and a 3-day pre-harvest interval).

Residue trials in <u>mustard greens</u> were conducted in the USA in accordance with GAP.

Residues of fluxapyroxad (parent only) at a 3-day PHI were 0.48, 0.57, 0.90, 1.7, and 1.9 mg/kg.

Total residues were 0.93, 1.3, <u>1.7</u>, 2.7, and 3.1 mg/kg.

The Meeting agreed to extrapolate the residue data for mustard greens to the Brassica leafy vegetables subgroup. The Meeting estimated a maximum residue level of 4 mg/kg for brassica leafy vegetables, together with an STMR and an HR of 1.7 and 3.1 mg/kg respectively.

Leafy vegetables (except Brassica leafy vegetables)

The critical GAP for <u>leafy vegetables other than Brassica leafy vegetables</u> is in the USA (3× 0.2 kg ai/ha applications with a retreatment interval of 7 days, and a 1-day pre-harvest interval).

Residue trials in <u>head lettuce,</u> <u>leaf lettuce</u>, and <u>spinach</u> were conducted in the USA in accordance with the cGAP for leafy vegetables (except Brassica leafy vegetables).

Residues of fluxapyroxad (parent only and total residues) at a 1-day PHI in head lettuce were 0.14, 0.47, <u>0.51</u>, 0.66, and 1.9 mg/kg.

Residues of fluxapyroxad (parent only) in leaf lettuce at a 1-day PHI were 2.7 and 4.4 mg/kg.

Total residues in leaf lettuce were 2.7 and 4.4 mg/kg.

Two of the residue trials reported as leafy lettuce were for cos lettuce varieties.

Residues of fluxapyroxad (parent only) in cos lettuce at a 1-day PHI were 3.3 and 6.2 mg/kg.

Total residues in cos lettuce were 3.4 and 6.2 mg/kg.

Residues of fluxapyroxad (parent only) in spinach at a 1-day PHI were 5.2, 6.0, 6.7, 8.3, and 11.5 mg/kg.

Total residues in spinach were 5.2, 6.3, 6.8, 8.8, and 12.2 mg/kg.

The Meeting estimated a maximum residue level of 4 mg/kg for head lettuce, together with an STMR and an HR of 0.51 and 2.0 mg/kg respectively.

The Meeting noted that there were insufficient leafy and cos lettuce data for estimation of maximum residue levels.

The Meeting estimated a maximum residue level of 30 mg/kg for spinach, together with an STMR and an HR of 6.8 and 13 mg/kg respectively.

Residue data for radish tops were also available from trials conducted on radish in the USA, in accordance with the GAP for root vegetables (3× 0.1 kg ai/ha, with a 7-day PHI).

Residues of fluxapyroxad (parent only) in radish tops at a 7-day PHI were 0.2 (2), 0.7, 1, and 4 mg/kg.

Total residues in radish tops were 0.4, 0.6, 1.2, 1.7, and 5 mg/kg.

The Meeting estimated a maximum residue level of 8 mg/kg for radish leaves, together with an STMR and HR of 1.2 and 6 mg/kg (based on the highest residue of duplicate samples) respectively.

Short term intake assessment showed that residues in spinach exceed the acute reference dose of 0.3 mg/kg bw, at 180% of the ARfD, for children.

Root and tuber vegetables

The 2012 Meeting considered residue data for potato and sugar beet, in accordance with GAP in the USA (3× 0.1 kg ai/ha foliar applications with 7-day retreatment interval and a 7-day PHI, and maximum residue levels of 0.03 and 0.15 mg/kg were estimated for potato and sugar beet respectively.

The current Meeting received residue data for potato (soil application at planting), carrots and radish (both for foliar applications).

Carrot

The critical GAP for carrots (for the group root and tuber vegetables except sugar beet) is in the USA, at 3× 0.1 kg ai/ha foliar applications, with a 7-day retreatment interval and a 7-day pre-harvest interval.

Trials were conducted in the USA in accordance with GAP.

Residues of fluxapyroxad (parent only and total residues) in carrots at a 7-day PHI were 0.04, 0.05, 0.06, 0.1, and 0.5 mg/kg.

Potato

A series of residue trials was conducted in northern and southern Europe involving a single, at planting, in-furrow application at 0.24 kg ai/ha. However, there are currently no registrations for that GAP. The Meeting therefore was unable to estimate a maximum residue level for potatoes based on at planting soil application.

The 2012 Meeting considered residue data for foliar application to potatoes from trials conducted in accordance with the US GAP for root and tuber vegetables (except sugar beet) group (3× 0.1 kg ai/ha foliar applications, with a 7-day pre-harvest interval).

Residues of fluxapyroxad (parent only and total residues) in potatoes at a 7-day PHI were < 0.01 (17), and 0.02 (2) mg/kg.

Radish

The critical GAP for radish (for the group root and tuber vegetables except sugar beet) is in the USA, at 3× 0.1 kg ai/ha foliar applications, with a 7-day retreatment interval and a 7-day pre-harvest interval.

Trials were conducted in the USA in accordance with GAP.

Residues of fluxapyroxad (parent only and total) in radish roots at a 7-day PHI were 0.03, 0.04, 0.05, and 0.1 (2) mg/kg.

Sugar beet

The critical GAP for sugar beet is in the USA, at 3× 0.1 kg ai/ha foliar applications, with a 7-day retreatment interval and a 7-day pre-harvest interval. Residue data for this GAP was considered by the 2012 Meeting.

Residues of fluxapyroxad (parent only and total residues) in sugar beet roots at a 7-day PHI were 0.01 (2), 0.03 (3), <u>0.04</u> (3), 0.05 (2), and 0.06 (2) mg/kg.

The Meeting noted that the critical GAPs for root and tuber vegetables (except sugar beet) and sugar beet were the same, and considered a group maximum residue level.

The Meeting noted that the median residue for potatoes differed from those carrot and radish by > 5-fold (> 6× and > 5× respectively) and concluded that a group maximum residue level was not appropriate. The Meeting confirmed the 2012 recommendation for a maximum residue level, STMR and HR of 0.03, 0.01 and 0.02 mg/kg respectively for fluxapyroxad in potatoes. The Meeting confirmed the 2012 recommendation for a maximum residue level, STMR and HR of 0.15, 0.04, and 0.06 mg/kg respectively for fluxapyroxad in sugar beet.

The Meeting estimated a maximum residue level of 1 mg/kg for fluxapyroxad in carrot, together with an STMR and an HR of 0.06 and 0.5 mg/kg respectively. The Meeting agreed to extrapolate these values to parsnips.

The Meeting estimated a maximum residue level of 0.2 mg/kg for fluxapyroxad in radish, together with an STMR and an HR of 0.05 and 0.1 mg/kg respectively.

Celery

The critical GAP for <u>celery</u> is in the USA, at 3× 0.2 kg ai/ha applications, with a 7-day retreatment interval, and a 1-day pre-harvest interval.

Residues of fluxapyroxad (parent only and total residues) in US trials matching GAP were 1.3, <u>1.4</u>, <u>1.8</u>, and 5.2 mg/kg.

The Meeting estimated a maximum residue level of 10 mg/kg for celery, together with an STMR and an HR of 1.6 and 5.5 mg/kg respectively.

Cereals

Rice

The critical GAP for <u>rice</u> is in the USA, with 2× 0.15 kg ai/ha applications, a 7-day retreatment interval, and a 28-day pre-harvest interval. Residue trials matching the GAP were conducted in the USA.

Residues of fluxapyroxad (parent only) in paddy rice (with husks) at a 28-day PHI were 0.26, 0.34, 0.37, 0.59, 0.60, 0.61, 0.80, 0.92 (2), 0.94, 1.1, 1.2 (2), 1.7, and 3.7 mg/kg.

Total residues were 0.35, 0.37, 0.49, 0.59, 0.61, 0.62, 0.83, 0.94, 0.95, 0.96, 1.1, 1.2 (2), 1.7, and 3.7 mg/kg.

The Meeting estimated a maximum residue level of 5 mg/kg for rice, together with an STMR of 0.94 mg/kg.

Sorghum

Residue data for sorghum were provided to the 2012 Meeting, however at the time no maximum residue level was estimated as the data did not match any label GAP. GAPs have now been provided to the Meeting for consideration against the previously submitted data.

The GAP for sorghum in Mexico is 2× 0.1 kg ai/ha applications 14 days apart, with a 10-day pre-harvest interval. No data matching that GAP is available to the Meeting.

The GAP for sorghum in the USA is 2× 0.1 kg ai/ha applications, with a 21-day pre-harvest interval. Data from trials conducted in the USA and submitted to the 2012 Meeting match the US GAP for sorghum.

Residues of fluxapyroxad (parent only) in sorghum at a 21-day PHI were 0.13, 0.15 (2), 0.17, 0.19, 0.21, 0.24, 0.31, and 0.40 mg/kg.

Total residues in sorghum were 0.13, 0.15, 0.17, 0.19, 0.20, 0.22, 0.30, 0.32, and 0.40 mg/kg.

The Meeting estimated a maximum residue level of 0.7 mg/kg for sorghum, together with an STMR of 0.2 mg/kg.

Sugar cane

The critical GAP for sugarcane is in the USA, with 2× 0.125 kg ai/ha applications, a 14-day retreatment interval, and a 14-day pre-harvest interval. Residue trials matching GAP were conducted in the USA.

Residues of fluxapyroxad (parent only) in sugarcane at a 14-day PHI were 0.06, 0.26, 0.56, and 1.3 mg/kg.

Total residues were 0.06, 0.26, 0.58, and 1.4 mg/kg.

The Meeting concluded that there was insufficient data to estimate a maximum residue level for sugarcane.

Tree nuts

The critical GAP for fluxapyroxad in tree nuts is in the USA, with 3× 0.125 kg ai/ha applications, a 7-day retreatment interval, and a 14-day PHI.

Residue trials conducted in the USA in almonds and pecans and matching the US GAP were available to the Meeting.

Residues of fluxapyroxad (parent compound and total residues) in almond kernels at a 14-day PHI were < 0.01 (3), 0.01 and 0.02 mg/kg.

Residues of fluxapyroxad (parent compound and total residues) in pecan kernels at a 14-day PHI were < 0.01 (4), and 0.03 mg/kg.

The Meeting noted that the US GAP was for the tree nuts group and noted the similarity of the datasets for almonds and pecans (the medians were identical at 0.01 mg/kg). The Meeting decided to combine the datasets for almonds and pecans for the purpose of estimating a group maximum residue level.

Parent compound and total residues in almond and pecan kernels were: < 0.01 (7), 0.01, 0.02, and 0.03 mg/kg.

The Meeting estimated a maximum residue level of 0.04 mg/kg for tree nuts, together with an STMR and an HR of 0.01 and 0.03 mg/kg respectively.

Cotton

The 2012 Meeting considered a USA GAP and residue trials for seed treatment application to cotton, and estimated a maximum residue level of 0.01* mg/kg, together with an STMR of 0.

Residue data for foliar application to cotton was presented to the current Meeting.

The GAP for foliar application of fluxapyroxad to cotton in Brazil is 4× 0.058 kg ai/ha applications, with a 12-day retreatment interval and a 14-day pre-harvest interval. No data matching that GAP was available to the Meeting.

The USA GAP for cotton is 3× 0.1 kg ai/ha, with a 7-day retreatment interval and a 30-day pre-harvest interval. A series of trials conducted in the USA in accordance with the GAP was available to the Meeting.

Residues of parent compound in cottonseed after treatment in accordance with GAP were < 0.01, 0.01 (2), 0.03, 0.07, 0.09, 0.11 (2), and 0.13 mg/kg.

Total residues in cottonseed were < 0.01, 0.01 (2), 0.03, 0.07, 0.09, 0.11, 0.12, and 0.13 mg/kg.

The Meeting estimated a maximum residue level of 0.3 mg/kg for cottonseed, together with an STMR of 0.07 mg/kg. The Meeting withdrew the previous maximum residue level recommendation of 0.01* mg/kg for fluxapyroxad in cottonseed.

Animal feeds

Rice straw

The critical GAP for rice is in the USA, with 2× 0.15 kg ai/ha applications, and a 28-day pre-harvest interval.

Residues of fluxapyroxad parent compound in rice straw after treatment in accordance with GAP were 1.5, 1.8, 1.9, 2.5, 2.9, 3.1, 3.6, 4.0, 4.2, 5.2, 6.8, 6.9, 7.3, 10, and 42 mg/kg (dry weight basis).

Total residues were 1.5, 1.9 (2), 2.6, 2.9, 3.2, 3.8, 4.2 (2), 5.4, 7.0 (2), 7.4, 10, and 42 mg/kg (dry weight basis).

The Meeting estimated a maximum residue level of 50 mg/kg for rice straw and fodder, dry, together with a median residue and a highest residue of 4.2 and 48 mg/kg respectively.

Sorghum forage and stover

Residue data for sorghum were provided to the 2012 Meeting, but the Meeting was unable to estimate any maximum residue levels due to the data not corresponding with any label GAP. GAPs have now been provided to the Meeting for consideration against the previously submitted data.

The GAP for sorghum in the USA is 2× 0.1 kg ai/ha applications, with a 21-day pre-harvest interval. Data from trials conducted in the USA and submitted to the 2012 Meeting match the US GAP for sorghum.

Residues of fluxapyroxad (parent only) in sorghum forage at a 7-day PHI were 1.5, 1.8, 2.3, 2.7, 2.9, 3.1, 3.5, 6.4, and 7.0 mg/kg (dry weight basis).

Total residues in sorghum forage were 1.6, 2.0, 2.4, 2.8, 3.1, 3.2, 3.5, 6.8, and 7.1 mg/kg (dry weight basis).

The Meeting estimated a median residue and a highest residue of 3.1 and 7.1 mg/kg (dry weight basis) respectively.

Residues of fluxapyroxad (parent only) in sorghum stover at a 21-day PHI were 0.72, 1.3, 1.6 (2), 2.1, 2.5 (2), 2.8, and 3.2 mg/kg (dry weight basis).

Total residues in sorghum stover were 0.72, 1.4,1.8 (2), 2.2, 2.6 (2), 2.9, and 3.3 mg/kg (dry weight basis).

The Meeting estimated a maximum residue level of 7 mg/kg, together with a median residue and a highest residue of 2.2 and 3.3 mg/kg respectively, for sorghum straw and fodder, dry (dry weight basis).

Almond hulls

The critical GAP for fluxapyroxad in tree nuts is in the USA, with 3× 0.125 kg ai/ha applications (maximum two consecutive applications), and a 14-day PHI.

Residues of fluxapyroxad (parent compound and total residues) in almond hulls were 0.88, 0.92, 1.1, 1.4 and 1.7 mg/kg.

The Meeting estimated a median residue of 1.1 mg/kg.

Cotton gin trash

The USA GAP for cotton is 3× 0.1 kg ai/ha, with a 30-day pre-harvest interval.

Residues in cotton gin trash (parent compound) were 6.9 and 8.0 mg/kg, while total residues were 6.9 and 8.1 mg/kg.

The Meeting concluded that there were insufficient data for estimation of a median residue and highest residue for cotton gin trash.

Processing studies

The Meeting received processing studies for oranges, grapes, sugarcane, and cottonseed. The 2012 Meeting received processing studies for plums, rice and sorghum. Processing factors, HR-P, STMR-P and maximum residue levels are summarised in the table below.

Plums

Based on the processing factor of 2.81 for prunes (which was the same for both parent compound and total residues), the STMR and HR of 0.44 and 0.95 mg/kg for plums, the 2012 Meeting estimated an STMR-P, HR-P and maximum residue level of 1.2, 2.7 and 5 mg/kg respectively for prunes. The current Meeting confirmed those recommendations.

Grapes

Based on the processing factor of 4.25 for raisins (for parent compound and total residues), the STMR of 0.47 mg/kg for grapes, and the HR of 1.4 mg/kg for grapes, the Meeting estimated an STMR-P, an HR-P and a maximum residue level of 2.0, 6.0, and 15 mg/kg respectively for dried grapes.

Using the parent compound and total residues processing factor of 5.25 for grape pomace (wet), the OECD guideline value of 15% for the dry matter content of wet grape pomace, and the above STMR value for grapes, the Meeting estimated a maximum residue level and STMR-P of 150 and 16.5 mg/kg respectively for grape pomace, dry.

Rice

Based on the processing factor of 0.07 for polished rice (which was the same for parent and total residues), the maximum residue level of 5 mg/kg for rice, and the STMR of 0.94 mg/kg, the Meeting estimated a maximum residue level and an STMR-P of 0.4 and 0.066 mg/kg respectively for rice, polished.

Based on the processing factor of 0.59 (for both parent and total residues) for rice, husked produced using the parboiling process, the maximum residue level and STMR of 5 and 0.94 mg/kg respectively, the Meeting estimated a maximum residue level and an STMR-P of 3 and 0.55 mg/kg respectively for rice, husked.

Sugarcane

Although a processing study was provided, there were insufficient data for sugarcane to estimate STMR and HR values, so values for processed commodities were not estimated.

RAC	Processed commodity	PF (parent)	RAC maximum residue level	Processed commodity maximum residue level	PF (total)	RAC STMR	Processed commodity STMR-P	RAC HR	Processed commodity HR-P
Orange	Dried pulp	0.095	0.3	–	0.095	0.06 (whole fruit)	0.006	0.17 (whole fruit)	0.016
	Oil	27.5		–	27.5		1.7		4.7
	Juice	0.045		–	0.045	0.01 (pulp)	0.00045	0.01 (pulp)	0.00045
Plum	Washed plums	0.77	1.5	–	0.77	0.44	0.34	0.95	0.73
	Puree	0.83		–	0.83		0.37		0.79
	Jam	0.41		–	0.41		0.18		0.39
	Dried prunes	2.81		5	2.81		1.23		2.66
Grape	Stalks	5.95	3	–	5.95	0.47	2.8	1.4	8.3
	Grape crush	0.83		–	0.83		0.39		1.2
	Must	0.23		–	0.23		0.11		0.32
	Wet pomace	5.25		–	5.25		2.5		7.4
	Dry pomace	35		150	35		16.5		105
	Must deposit	0.88		–	0.88		0.41		1.2
	Separated must	0.26		–	0.26		0.12		0.36
	Pasteurised juice	0.345		–	0.345		0.16		0.48
	Yeast deposit	2.75		–	2.75		1.3		3.9
	Red wine	0.20		–	0.20		0.094		0.28
	Rosé wine	0.23		–	0.23		0.11		0.32
	Raisins	4.25		15	4.25		2.0		6.0
Rice	Rice, polished (white rice)	0.07	5	0.4	0.07	0.94	0.066	–	–
	Hulls	4.3		–	4.3		4.04		–
	Bran	3.79		–	3.78		3.55		–
	Rice, husked (brown rice)	0.59		3	0.59		0.55		–
	Flour	0.08		–	0.08		0.08		–
Sorghum	Aspirated grain fractions	14.5	0.7	–	13.8	0.2	2.76	–	–
	Syrup	0.135		–	0.13		0.026		–
Sugar cane	Molasses	0.17	–	–	0.17	–	–	–	–
	Raw sugar	0.25		–	0.25		–		–
	Refined sugar	0.04		–	0.04		–		–
Cotton seed	Meal	0.055	0.3	–	0.055	0.07	0.004	–	–

RAC	Processed commodity	PF (parent)	RAC maximum residue level	Processed commodity maximum residue level	PF (total)	RAC STMR	Processed commodity STMR-P	RAC HR	Processed commodity HR-P
	Hulls	0.185		–	0.185		0.013		–
	Refined oil	0.045		–	0.045		0.003		–

Residues in animal commodities

Farm animal dietary burden

Dietary burden calculations incorporating all commodities considered by the current and 2012 Meetings for beef cattle, dairy cattle, broilers and laying poultry are presented in Annex 6. The calculations are made according to the livestock diets of the USA/Canada, the European Union, Australia and Japan as laid out in the OECD table.

	US/CAN		EU		AU		Japan	
	Max.	Mean	Max.	Mean	Max.	Mean	Max.	Mean
Beef cattle	4.73	2.64	22.8	6.81	45.2	12.7	27.3	3.25
Dairy cattle	19.7	4.63	23.3	7.95	40.9	11.9	14.1	2.43
Poultry—broiler	0.985	0.985	1.27	0.898	1.37	1.37	0.35	0.35
Poultry—layer	0.985	0.985	8.53	2.69	1.37	1.37	0.947	0.947

Animal commodity maximum residue levels

The animal commodity maximum residue levels were estimated by the 2012 Meeting based on the following maximum and mean dietary burdens:

Animal (commodities)	Dietary burden (ppm)	
	Maximum	Mean
Beef cattle (mammalian meat and offal)	40.7 (Australia)	11.4 (Australia)
Dairy cattle (milk)	39.2 (Australia)	9.37 (Australia)
Poultry–layers (poultry meat, offal and eggs)	7.14 (EU)	2.10 (EU)

The Meeting noted that the dietary burdens had not changed significantly from those determined by the 2012 Meeting and confirmed its previous recommendations for meat (from mammals other than marine mammals), edible offal (mammalian), milks, poultry meat, poultry, edible offal of, and eggs.

DIETARY RISK ASSESSMENT

Long-term intake

The International Estimated Dietary Intakes (IEDIs) of fluxapyroxad were calculated for the 17 GEMS/food cluster diets using STMRs/STMR-Ps estimated by the current Meeting and by the 2012 JMPR. The results are shown in Annex 3 to the 2015 Report.

The calculated IEDIs of fluxapyroxad were 4–20% of the maximum ADI (0.02 mg/kg bw). The Meeting concluded that the long-term intakes of residues of fluxapyroxad, resulting from the uses considered by the current Meeting and by the 2012 JMPR, are unlikely to present a public health concern.

Short-term intake

The 2012 Meeting estimated an ARfD of 0.3 mg/kg bw for fluxapyroxad. The International Estimated Short Term Intakes were calculated for fluxapyroxad using the recommendations for STMRs and HRs for raw and processed commodities in combination with consumption data for the corresponding food commodities. The results are shown in Annex 4 to the 2015 Report.

The IESTI for spinach represented 190% of the ARfD for children. On the basis of the information provided to the JMPR, the Meeting concluded that the short-term intake of fluxapyroxad from consumption of spinach may present a public health concern. The Meeting noted that no data for alternative GAPs in spinach were presented.

For the other commodities, the IESTI for fluxapyroxad calculated on the base of recommendations made by JMPR represented 0–60% of the ARfD for children, and 0–60% for the general population.

The Meeting concluded that except for spinach, the short term intake of residues of fluxapyroxad, from uses considered by the current Meeting is unlikely to present a public health concern.

5.18 IMAZAPIC (266)

RESIDUE AND ANALYTICAL ASPECTS

Imazapic is an imidazolinone herbicide for the control of grasses and broadleaf weeds. It was reviewed for the first time by JMPR in 2013 when the residue definition was established for plant and animal commodities to be imazapic for compliance with the MRL and for estimation of dietary intake (The residue is not fat soluble). The Meeting established an ADI of 0–0.7 mg/kg bw and that no ARfD was necessary.

The 2013 JMPR received and considered the plant metabolism study and supervised residue trials on transgenic soya beans; analytical methods, storage stability studies and processing studies on soya beans.

Imazapic was included in the priority list by the CCPR at its Forty-sixth Session in 2014 for evaluation for additional MRLs by this Meeting. The current Meeting received information on the registration of imazapic for application on soya bean cultivars tolerant to imidazolinone herbicides in Brazil. The information on supervised residue trials on imidazolinone-tolerant soya beans provided to the 2013 JMPR is reviewed by the current Meeting against the new GAP in Brazil.

Results of supervised residue trials on crops

The 2013 Meeting received supervised trial data for imazapic on transgenic soya beans. The current Meeting evaluated the data against the new GAP for soya bean cultivars tolerant to imidazolinone herbicides.

Soya bean (dry)

A total of 16 supervised trials were conducted on imidazolinone-tolerant soya beans (transgenic) in different years in Brazil.

The new GAP in Brazil allows a single application of a WG formulation of imazapic (also containing imazapyr) to imidazolinone-tolerant cultivars at the rate of 0.014–0.0175 kg ai/ha (in acid equivalents; for both ground and aerial application) with a PHI of 60 days. For ground applications, the water volume should be 100–200 L/ha and for the aerial application, 40–50 L/ha. The trials employed an application rate of 0.0175 kg ai/ha and the application volume of 200 L/ha.

In one trial in the 2007/2008 growing season, the samples were stored for about 600 days; imazapic was demonstrated to be stable for up to 10 months, the longest storage period tested for imazapic in soya bean. The result of this trial was < 0.01 mg/kg.

Residues arising from the independent supervised residue trials following the critical GAP in Brazil were, in rank order (n=12): < 0.01, < 0.01, < 0.05, < 0.05, 0.05, <u>0.07</u>, <u>0.07</u>, 0.10, 0.12, 0.15, 0.23 and 0.25 mg/kg.

The Meeting estimated a maximum residue level of 0.5 mg/kg and an STMR of 0.07 mg/kg.

Fate of residues during processing

Processing

The 2013 Meeting received information on processing of soya beans. The processing factor for imazapic in soya bean processed products is described below.

Processed commodity	N	Processing factor	Best estimate	STMR-P mg/kg
Soya bean				0.07 (STMR)
Oil	2	0.13, 0.14	0.14	0.01

The residues of imazapic concentrate marginally in defatted meal (processing factor of 1.29), and toasted defatted meal (1.14).

For the purpose of calculating the animal dietary burden, the Meeting calculated median residues for soya bean meal and hulls to be 0.09 mg/kg and 0.07 mg/kg, respectively, using the STMR of soya bean and the processing factors of 1.29 (highest of similar processed commodities) and 1.00, respectively.

Residues in animal products

Estimation of dietary burdens

The maximum and mean dietary burdens were calculated by the 2013 JMPR using the highest residues or median residues of imazapic estimated at that Meeting on a basis of the OECD Animal Feeding Table. As the highest maximum and mean dietary burden for estimating maximum residue levels and STMRs for foods of bovine origin were calculated on the basis of a ration of 100% grass forage, the inclusion of soya bean feed items, with significantly lower residue levels, would not have any measurable impact on the highest maximum and mean dietary burden.

The addition of soya bean feed items in the calculation of dietary burdens increases by approximatey 0.2% the highest maximum and mean dietary burden for poultry. The highest maximum dietary burden calculated at this Meeting (9.65 ppm in feed as compared to 9.63 ppm calculated in 2013) was still lower than the dose of 10.9 ppm in the diet used in the metabolism study in which the TRR in all edible tissues were below the LOQ of 0.01 mg/kg

RECOMMENDATIONS

On the basis of the data from supervised trials the Meeting concluded that the residue levels listed in Annex 1 are suitable for establishing maximum residue limits and for IEDI and IESTI assessment.

Definition of the residue for plant and animal commodities (for compliance with the MRL and for estimation of dietary intake): *Imazapic.*

Residue is not fat-soluble.

DIETARY RISK ASSESSMENT

Long-term intake

The International Estimated Dietary Intakes (IEDIs) of imazapic were calculated for the 17 GEMS/Food cluster diets using STMRs estimated by the 2013 JMPR and STMR/STMR-P for soya bean and soya bean oil estimated by the current Meeting (see Annex 3 to the 2015 Report). The ADI is 0–0.7 mg/kg bw and the calculated IEDIs were in the same range as those calculated by the 2013 JMPR using the 13 GEMS/Food Cluster Diet (0% of the maximum ADI). The Meeting confirmed its conclusion in 2013 that the long-term intake of residues of imazapic resulting from the uses considered by the current JMPR is unlikely to present a public health concern.

Short-term intake

The 2013 JMPR decided that an ARfD is unnecessary. The current Meeting therefore concluded that the short-term intake of residues of imazapic is unlikely to present a public health concern.

5.19 IMAZAPYR (267)

RESIDUE AND ANALYTICAL ASPECTS

Imazapyr is a broad-spectrum herbicide in the imidazolinone family. It was evaluated in the 2013 JMPR for the first time for toxicology and for residues. The 2013 JMPR allocated an ADI of 0–3 mg/kg bw; an ARfD was unnecessary. It also determined that the definition of the residue was imazapyr for plant and animal commodities (for compliance with MRLs and for estimation of dietary intake). It recommended maximum residue levels for various commodities.

The 2013 JMPR received and considered the plant metabolism study and supervised residue trials on imidazolinone-tolerant soya beans; analytical methods, storage stability studies and processing studies on soya beans. However, at the time of the 2013 JMPR, no GAP had been approved for soya beans, transgenic or not. Due to the lack of an approved GAP, it was not possible for the Meeting to estimate maximum residue level for soya beans.

Imazapyr was included on the priority list by the CCPR at its Forty-sixth Session in 2014 for evaluation for additional MRLs by this Meeting. The current Meeting received information on analytical methods, use pattern and supervised residue trials to support estimation of maximum residue levels for soya beans and grasses.

Methods of analysis

The Meeting received information on the analytical method used for the determination of imazapyr residues in grass forage and hay. Samples were fortified with imazapyr at 0.5–50 mg/kg and analysed by capillary electrophoresis or LC-MS. The analytical method was validated; the LOQ was 0.5 mg/kg.

The freezer storage stability studies were reported on maize (grain, forage and fodder) and soya bean (seeds and processed fractions) samples in 2013. Storage stability results indicated that imazapyr residues were stable for at least 10 months in soya bean seed, at least 3 months in soya bean processd fractions (laminated soya bean, meal and oil) and at least 27 months in maize (grain, forage and fodder).

Residues resulting from supervised residue trials on crops

The 2013 Meeting received supervised trial data for the foliar application of imazapyr on soya bean (imidazolinone-tolerant) from Brazil and the current Meeting received supervised trial data on grasses from the USA.

Labels were available from Brazil and the USA describing the registered uses of imazapyr.

Soya bean (dry)

Supervised trials were conducted on imidazolinone-tolerant soya bean in Brazil.

The GAP on imidazolinone-tolerant soya bean of Brazil is a foliar application at a maximum rate of 0.053 kg ai/ha with a PHI of 60 days.

Imazapyr residues in soya bean seeds from independent trials in Brazil matching GAP were (n=12): < 0.05, 0.07, 0.11, 0.35, 0.48, 0.55, 0.83, 1.0, 1.3 (3) and 3.0 mg/kg.

Based on the residues for soya bean from trials in Brazil, the Meeting estimated a maximum residue level and an STMR value for imazapyr in soya bean seeds of 5 and 0.69 mg/kg respectively.

Animal feedstuffs

Straw, fodder and forage of grasses

Data were available from supervised trials on grasses in the USA.

The GAP on grasses in the USA is a spot application at a maximum rate of 0.84 kg ai per treated hectare with a PHI of 7 days for hay and no PHI for forage. The spot applications must not exceed more than 1/10 of the area to be grazed or cut for hay.

The trials were conducted with the broadcast foliar application to the whole trial area but the application does not correspond to the GAP. Therefore, the Meeting decided to use a factor of 0.1 to account for the difference between the application in the trials and that in the GAP for the estimation of a maximum residue level.

Calculated residues of imazapyr in forage of grasses were: 2.8, 3.3, 3.6, 3.7, 3.8, 4.4, 5.0, 5.4, 6.1, 6.5, 6.6, 6.8, 7.5 and 9.7 mg/kg.

Based on the calculated residues for forage grasses, the Meeting estimated a median residue value and a highest residue value for imazapyr in forage of grasses of 5.2 and 9.7 mg/kg, respectively on an “as received” basis.

Calculated residues of imazapyr in hay of grasses were: 0.15, 1.0, 1.1, 1.2 (3), 1.3 (2), 1.8, 1.9, 2.0, 2.2, 2.4 and 2.5 mg/kg.

Based on the calculated residues in hay grasses, the Meeting estimated a median residue value of 1.3 mg/kg, a highest residue value of 2.5 mg/kg on an as received basis and after correction for an average 88% dry matter content, estimated a maximum residue level of 6 mg/kg for imazapyr in hay of grasses.

Fate of residues during processing

Residues in processed commodities

The fate of imazapyr residues has been examined in soya bean seeds in processing studies. Estimated processing factors and the derived STMR-Ps are summarized in the Table below.

Processing factors, STMR-P for food and feed

Raw agricultural commodity (RAC)	Processed commodity	Calculated processing factors*	PF (Mean or best estimate)	RAC STMR (mg/kg)	STMR-P (mg/kg)
Soya bean seeds	Crude oil	<0.005, <0.006, <0.008, <0.01, <0.06, <0.07	<0.009	0.69	0
	Meal	0.91, 1.0, 1.2, 1,2, 1.3, 1.3, 1.5, 1.8	1.3		0.897
	Aspirated grain fractions	0.04	0.04		0.0276
	Hulls	0.54, 0.79	0.67		0.462

* Each value represents a separate study. The factor is the ratio of the residue in processed commodity divided by the residue in the RAC.

Residue in animal commodities

Farm animal dietary burden

The Meeting estimated the dietary burden of imazapyr in farm animals on the basis of the diets listed in Appendix IX of the FAO Manual 2009. Calculations derived from highest residue, STMR (some bulk commodities) and STMR-P values provide estimations of levels in feed suitable for estimating MRLs, while calculations from STMR and STMR-P values for feed is suitable for estimating STMR values for animal commodities. The percentage dry matter is taken as 100% when the highest residue levels and STMRs are already expressed on a dry weight basis.

Estimated maximum and mean dietary burdens of farm animals

Dietary burden calculations for beef cattle, dairy cattle, broilers and laying poultry are provided in Appendix IX of the FAO manual. The calculations were made according to the animal diets from US-Canada, EU, Australia and Japan in the Table (Appendix IX of the FAO manual).

Since the GAP for grasses is only registered in the USA, median residue value and highest residue value in forage of grasses are used only for the calculation of dietary burden in US-Canada.

Livestock dietary burden, imazapyr, ppm of dry matter diet								
	US-Canada		EU		Australia		Japan	
	Max	Mean	Max	Mean	Max	Mean	Max	Mean
Beef cattle	0.61	0.40	1.7	1.0	2.8	1.5	1.7	1.2
Dairy cattle	18a	9.6bc	2.0	1.2	2.0	1.2	2.3	1.3
Poultry – broiler	0.43	0.43	0.57	0.57e	0.37	0.37	0.38	0.38
Poultry – layer	0.43	0.43	0.68d	0.54	0.37	0.37	0.33	0.33

[a] Highest maximum cattle dietary burden suitable for MRL estimates for mammalian meat, fat, edible offal and milk

[b] Highest mean cattle dietary burden suitable for STMR estimates for mammalian meat, fat and edible offal

[c] Highest mean dairy cattle dietary burden suitable for STMR estimates for milk

[d] Highest maximum poultry dietary burden suitable for MRL estimates for poultry meat, fat, edible offal and eggs

[e] Highest mean poultry dietary burden suitable for STMR estimates for poultry meat, fat, edible offal and eggs

Farm animal feeding studies

The 2013 JMPR received a lactating dairy cow feeding studies using imazapyr, which provided information on likely residues resulting in animal commodities and milk from imazapyr residues in the animal diet.

A poultry feeding study was not submitted as the expected residues of imazapyr in poultry feed were low. A poultry metabolism study at a dose rate of 9.7 ppm imazapyr in feed demonstrated that there was very low transfer to eggs and tissues with all residues of imazapyr less than 0.01 mg/kg.

Animal commodities maximum residue levels

For MRL estimations, the residue in the animal commodities is imazapyr.

Residues in tissues and milk at the expected dietary burden for dairy cattle are shown in the Table below. The mean estimated residue in milk was calculated using the residue values of day 3 to the final day.

	Feed level (ppm) for milk residues	Residues (mg/kg) in milk	Feed level (ppm) for tissue residues	Residues (mg/kg) in			
				Muscle	Liver	Kidney	Fat
MRL beef or dairy cattle							
Feeding study	58	0.013	58	< 0.05	< 0.05	0.36	< 0.05
Dietary burden and residue estimate	18	0.004	18	< 0.05	< 0.05	0.11	< 0.05
STMR beef or dairy cattle							
Feeding study	58	0.010	58	< 0.05	< 0.05	0.25	< 0.05
Dietary burden and residue estimate	9.6	0.001	9.6	< 0.05	< 0.05	0.041	< 0.05

For beef and diary cattle, the calculated maximum dietary burden is 18 ppm dry weight of feed.

Based on the highest estimated residue in milk (0.004 mg/kg), the Meeting estimated a maximum residue level of 0.01 (*) mg/kg in milk. The Meeting confirmed the previous recommendation for milks.

Based on the highest estimated residue in kidney (0.11 mg/kg), the Meeting estimated a maximum residue level of 0.2 mg/kg in mammalian edible offal to replace the previous recommendation for mammalian edible offal of 0.05 (*) mg/kg.

Based on the mean estimated residues in kidney, the Meeting estimated an STMR value of 0.041 mg/kg in edible offal.

In the lactating dairy cow feeding study, imazapyr residues in meat and fat were less than the LOQ (0.05 mg/kg) at the dose level of 58 and 157 ppm. The mean cattle dietary burden of 9.6 ppm is still lower than the both dose level.

The Meeting confirmed the previous recommendations for mammalian meat and fat.

The maximum dietary burden for broiler and layer poultry is 0.68 ppm and is lower than the dose level in the laying hen metabolism study of 9.7 ppm. In the metabolism study, in which imazapyr equivalent to 9.7 ppm in the diet was dosed to laying hens for 7 consecutive days, no residues of imazapyr exceed 0.01 mg/kg were detected in tissues and eggs.

The Meeting confirmed the previous recommendations for poultry meat, fat, edible offal and eggs.

RECOMMENDATIONS

On the basis of the data from supervised trials, the Meeting concluded that the residue levels listed in Annex 1 are suitable for estimating maximum residue limits and for IEDI and IESTI assessment.

Definition of the residue for plant and animal commodities (for compliance with the MRL and for estimation of dietary intake): *Imazapyr*

The residue is not fat soluble

DIETARY RISK ASSESSMENT

Long-term intake

The International Estimated Daily Intakes (IEDIs) of imazapyr were calculated for the 17 GEMS/Food cluster diets using STMRs/STMR-Ps estimated by the 2013 JMPR and the current Meeting (Annex 3 to the 2015 Report). The ADI is 0-3 mg/kg bw and the calculated IEDIs were 0% of the maximum ADI (3 mg/kg bw). The Meeting concluded that the long-term intakes of residues of imazapyr, resulting from the uses considered by current JMPR, are unlikely to present a public health concern.

Short-term intake

The 2013 JMPR decided that an ARfD is unnecessary. The Meeting therefore concluded that the short-term intake of residues of imazapyr is unlikely to present a public health concern.

5.20 IMIDACLOPRID (206)

RESIDUE AND ANALYTICAL ASPECTS

Imidacloprid is a systemic insecticide which has been used widely in many crops for years. It was first evaluated by JMPR in 2001 (T) and 2002 (R). An ADI of 0–0.06 mg/kg bw and an ARfD of 0.4 mg/kg bw were established. The compound was evaluated for residues in 2006, 2008 and 2012. In 2002 the Meeting agreed that the residue definition for compliance with MRLs and for estimation of dietary intake for plant and animal commodities should be the sum of imidacloprid and its metabolites containing the 6-chloropyridinyl moiety, expressed as imidacloprid. It was listed by the Forty-sixth Session of CCPR (2014) for the evaluation of 2015 JMPR for additional MRLs.

The residue studies were submitted by the manufacturer and member countries for additional MRLs for stone fruit, olive, curly kale, soya bean, tea, goji berry (China) and basil (Thailand).

Methods of analysis

The Meeting received information on analytical methods used for the determination of imidacloprid residues in samples derived from supervised trials on olive, kale and soya bean (dry). Samples were fortified with imidacloprid and its metabolites desnitro-imidacloprid and 6-chloronicotinic acid. Imadacloprid and all metabolites containing 6-chloropyridinyl moiety were oxidised with alkaline $KMnO_4$ to yield 6-chloronicotinic acid. The 6-chloronicotinic acid was extracted from the aqueous solution using *tert*-butylmethylether (MTBE) and analysed by HPLC-MS/MS. The LOQ was 0.05 mg/kg (expressed in parent equivalents) for the commodities mentioned above.

The analytical method was developed for the determination of residues of imidacloprid, its 2 metabolites 5-hydroxy imidacloprid and olefin imidacloprid, and for the total residue of imidacloprid determined as 6-chloronicotinic acid in tea. Imidacloprid and its metabolites were extracted from tea (green tea and black tea) with methanol/water (3/1, v/v). For the individual analytes, an aliquot of the extracts was cleaned-up with liquid/liquid SPE. For the common moiety analysis, an aliquot of the extracts was made by alkaline oxidation under reflux and liquid/liquid partition. Final extracts of both branches were subjected to reversed phase HPLC-MS/MS. The LOQ (expressed as imidacloprid equivalents) for the total residue of imidacloprid was 0.05 mg/kg.

The Meeting received information on the analytical method for the determination of imidacloprid residues in fresh and dried goji berries. Imidacloprid was extracted from goji berries with acetonitrile. After adding sodium chloride, an aliquot was concentrated and purified by solid phase extraction using amino cartridges. Imidacloprid residues were analyzed by reversed-phase HPLC-UV (275 nm). The LOQ was 0.02 mg/kg for both matrices.

The Meeting received data on the storage stability of imidacloprid, 5-hydroxy imidacloprid and olefin imidacloprid in various plant matrices. Storage stability results indicated that residues of imidacloprid and its metabolites 5-hydroxy imidacloprid and olefin imidacloprid were stable for at least 36 months under freezer conditions at about -18 °C or below in wheat (grain), orange (fruit), tomato (fruit), bean (seed) and rape seed.

Residues resulting from supervised residue trials on crops

The Meeting received supervised trial data for the foliar application of imidacloprid on cherries, plum, peach, olive, kale, goji berry, soya bean, basil and tea. Residue trial data was made available from Canada, China, India, Southern Europe, Thailand and the USA.

Labels were available from China, Italy, Japan, Spain, Thailand and the USA describing the registered uses of imidacloprid.

Stone fruits

The 2002 JMPR evaluated residue supervised trials data for imidacloprid on sweet cherries, plums, peaches and nectarines conducted in southern Europe. New residue data were submitted to the current Meeting for cherries, plums and peaches.

Cherries

Data were available from supervised trials on cherries in the USA.

The GAP of the USA is foliar applications of 0.056-0.11 kg ai/ha at a maximum rate of 0.56 kg ai/ha per year with a PHI of 7 days.

Imidacloprid residues in whole fruits of cherries from independent trials in the USA matching GAP were (n=8): 0.24, 0.36, 0.41, 0.53, 0.57, 0.63, 1.4 and 2.5 mg/kg.

Based on the residues for cherries from trials in the USA, the Meeting estimated a maximum residue level of 4 mg/kg, an STMR value of 0.55 mg/kg and an HR value of 2.5 mg/kg for the cherries subgroup. The Meeting withdrew the previous recommendation for Cherry, Sweet.

Plums

Data were available from supervised trials on plums in the USA.

The GAP of the USA is foliar applications of 0.056–0.11 kg ai/ha at a maximum rate of 0.56 kg ai/ha per year with a PHI of 7 days.

Imidacloprid residues in fruits without stone of plums from independent trials in the USA matching GAP were (n=8): 0.082, 0.095, 0.15, 0.22, 0.34, 0.39, 0.42 and 0.67 mg/kg.

Since the weight of stone does not significantly affect the residue level in plum fruits, the Meeting agreed to use the residues in the edible portion of plums to estimate a maximum residue level.

Based on the residues in the edible portion of plums from trials in the USA, the Meeting estimated a maximum residue level of 1.5 mg/kg, an STMR value of 0.28 mg/kg and an HR value of 0.70 mg/kg (based on a highest residue of duplicate samples) for imidacloprid in the plums (including prunes) subgroup, to replace the previous recommendation for plums (including prunes).

Peaches

Data were available from supervised trials on peaches in the USA.

The GAP in the USA is foliar applications of 0.056-0.11 kg ai/ha at a maximum rate of 0.34 kg ai/ha per year with a PHI of 0 days.

Imidacloprid residues in whole fruit peaches from trials in the USA, matching GAP, were (n=8): 0.10, 0.25, 0.28, 0.34, 0.37, 0.38 (2) and 0.77 mg/kg.

Based on the residues for peaches from trials in the USA, the Meeting estimated a maximum residue level of 1.5 mg/kg, an STMR value of 0.355 mg/kg and an HR value of 0.77 mg/kg for imidacloprid in the Peaches (including nectarine and apricots) subgroup. The Meeting withdrew the previous recommendations for peach, nectarine and apricot.

Olives

Data were available from supervised trials on olives from Southern Europe.

The GAP of Italy is for a foliar application at a maximum concentration of 0.013 kg ai/hL, with a PHI of 28 days. Imidacloprid residues in olives, from trials in Southern Europe matching GAP, were (n=8): 0.12, 0.23, 0.26, 0.28, 0.43, 0.61, 0.77 and 0.81 mg/kg.

The GAP of Spain is a maximum of four foliar applications at a maximum rate of 0.02 kg ai/ha with a PHI of 7 days. Imidacloprid residues in olive from independent trials in Southern Europe matching GAP were (n=8): < 0.05, 0.11, 0.14, 0.22, 0.49, 0.63, 0.71 and 1.1 mg/kg.

Based on the residues for olive from trials with the highest residue levels matching Spanish GAP, the Meeting estimated a maximum residue level of 2 mg/kg, an STMR value of 0.355 mg/kg and an HR value of 1.1 mg/kg for imidacloprid in olives.

Kale

Data were available from supervised trials on curly kale in Italy and Spain.

The GAP of Italy is a maximum two foliar applications at a maximum rate of 0.094 kg ai/ha with a PHI of 7 days.

Imidacloprid residues in curly kale from independent trials in Italy and Spain matching GAP were (n=4): 1.0, 1.1, 1.5 and 2.0mg/kg.

Based on the residues for curly kale from trials in Italy and Spain, the Meeting estimated a maximum residue level of 5 mg/kg, an STMR value of 1.3 mg/kg and an HR value of 2.0 mg/kg for imidacloprid in kale.

Goji berry

The GAP of China is a maximum three foliar applications at a maximum concentration of 0.005 kg ai/hL with a PHI of 3 days. Six trials were conducted on goji berries in China in 2010 with foliar treatment by 3 × 0.005 kg ai/hL. Samples were taken at 1–21 days after the last treatment. The data were submitted as separate trials but the analyte was parent imidacloprid only.

As the residue definition of imidacloprid is the sum of imidacloprid and its metabolites containing the 6-chloropyridinyl moiety, expressed as imidacloprid, the Meeting could not estimate a maximum residue level for imidacloprid in goji berry.

Soya bean (dry)

Data were available from supervised trials on soya bean in the USA.

The GAP on soya bean of the USA is seed treatment at a maximum rate of 0.125 kg ai/100 kg seed, and/or maximum three foliar applications at a maximum rate of 0.053 kg ai/ha with a PHI of 21 days.

Imidacloprid residues in soya bean seeds from independent trials in the USA matching GAP were (n=20): 0.035, 0.050, 0.052 (2), 0.094, 0.11, 0.18, 0.19, 0.21, 0.38 (2), 0.43, 0.48, 0.61, 0.62, 0.63, 0.67, 0.73 and 1.5 (2) mg/kg.

Based on the residues for soya bean from trials in the USA, the Meeting estimated a maximum residue level of 3 mg/kg and an STMR value of 0.38 mg/kg for imidacloprid in soya bean seed (dry).

Basil

Data were available from supervised trials on basil in Thailand.

The GAP of Thailand is foliar applications when the crop is infested at a maximum concentration of 0.042 kg ai/hL with a PHI of 7 days.

Imidacloprid residues in fresh basil from independent trials in Thailand matching GAP were (n=4): 4.3, 4.9, 5.1 and 6.5 mg/kg.

Based on the residues for basil from trials in Thailand, the Meeting estimated a maximum residue level of 20 mg/kg, an STMR value of 5.0 mg/kg and an HR value of 7.3 mg/kg (based on a highest residue of replicate samples) for imidacloprid in basil.

Tea, Green, Black

Data were available from supervised trials on tea in India.

The GAP on tea of Japan is a foliar application at a maximum concentration of 0.01 kg ai/hL with a PHI of 7 days.

Imidacloprid residues in green tea from independent trials in India matching Japanese GAP were (n=8): 2.9 (2), 3.0, 5.5, 7.3, 11, 12 and 23 mg/kg.

Imidacloprid residues in black tea from independent trials in India matching Japanese GAP were (n=8): 2.7 (2), 3.3, 5.1 (2), 12 (2) and 28 mg/kg.

The samples of green tea and black tea were produced from fresh tea leaves harvested 7 days after application at the same plot.

The Meeting recognized that the residue populations from trials on green tea and black tea were not different according to statistical tests (Mann-Whitney U-test). The Meeting agreed to use highest residues of green tea and black tea samples in each trial to estimate a maximum residue level for tea, green and black.

The residues in green tea and black tea were in rank order (n=8): 2.9, 3.0, 3.3, 5.5, 7.3, 12 (2) and 28 mg/kg.

Based on the residues for green tea and black tea from trials in India, the Meeting estimated a maximum residue level of 50 mg/kg and an STMR value of 6.4 mg/kg for imidacloprid in tea, green and black.

Animal feedstuffs

Soya bean fodder and forage (green)

Data were available from supervised trials on soya bean in the USA.

The GAP on soya bean in the USA isa seed treatment at a maximum rate of 0.125 kg ai/100 kg seed, and/or maximum three foliar applications at a maximum rate of 0.053 kg ai/ha for forage grass for hay.

Imidacloprid residues in soya bean forage from independent trials in the USA matching GAP were (n=21): 1.1, 1.6, 1.8, 2.1 (2), 2.4, 2.6, 2.7, 3.0, 3.1, 3.2, 3.5 (2), 3.8 (2), 3.9, 4.1, 4.2, 4.4, 4.6 and 6.5 mg/kg.

Based on the trials for soya bean forage from trials in the USA, the Meeting estimated a median residue value and a highest residue value for imidacloprid in soya bean forage of 3.2 and 6.5 mg/kg, respectively as received basis.

Imidacloprid residues in soya bean hay from independent trials in the USA matching GAP were (n=21): 4.0, 4.5, 5.7, 6.5, 7.5, 8.5, 9.1, 9.2, 9.4, 9.6, 9.9, 11, 13 (2), 14, 15 (2), 18, 21 (2) and 22 mg/kg.

Based on the residues in soya bean hay from trials in the USA, the Meeting estimated a median residue value of 9.9 mg/kg, a highest residue value of 22 mg/kg on an as received basis and after correction for an average 85% dry matter content, estimated a maximum residue level of 50 mg/kg for imidacloprid in soya bean hay.

Fate of residues during processing

Residues in processed commodities

The fate of imidacloprid residues has been examined in plum, olive, soya bean seeds and tea processing studies. Estimated processing factors and the derived STMR-Ps are summarized in the Table below.

Processing factors, STMR-P for food and feed

Raw agricultural commodity (RAC)	Processed commodity	Calculated processing factors*	PF (Mean or best estimate)	RAC STMR (mg/kg)	STMR-P (mg/kg)	RAC HR (mg/kg)	HR-P (mg/kg)
Cherry	Canned fruit	< 0.56, < 0.56, < 0.63 < 0.63	<0.60	0.55	<0.33	2.5	<1.5
Plum	Dried (prunes)	3.1	3.1	0.28	0.87	0.70	2.2
Peach	Canned fruit	< 0.38	<0.38	0.32	<0.12	0.77	<0.092
	Jam	< 0.38	<0.38		<0.12		

Raw agricultural commodity (RAC)	Processed commodity	Calculated processing factors*	PF (Mean or best estimate)	RAC STMR (mg/kg)	STMR-P (mg/kg)	RAC HR (mg/kg)	HR-P (mg/kg)
Olive	Crude oil	< 0.19, < 0.36, < 0.23, < 1.0, 0.12	0.12	0.36	0.04		
Soya bean seeds	Refined oil	< 0.24	<0.24	0.38	<0.09		
	Meal	0.86	0.86		0.33		
	Aspirated grain fractions	160	160		61		
	Hulls	0.72	0.72		0.27		
Green tea	Infusion	0.024, 0.025	0.025	6.4	0.16		
	Instant	0.24, 0.25	0.25		1.6		
Black tea	Infusion	0.017, 0.023	0.02	6.4	0.13		
	Instant	0.19, 0.28	0.24		1.5		

* Each value represents a separate study. The factor is the ratio of the residue in processed commodity divided by the residue in the RAC.

The Meeting estimated a maximum residue level of 5 mg/kg (1.5 × 3.1 = 4.65 mg/kg) for dried plums.

Residue in animal commodities

The 2015 JMPR evaluated residues of imidacloprid in soya bean (dry), which is listed in the OECD feeding table. The Meeting noted that the estimation did not result in a significant change of the dietary burdens of farm animals. The previous recommendations of maximum residue level for animal commodities were maintained.

RECOMMENDATIONS

On the basis of the data from supervised trials, the Meeting concluded that the residue levels listed in Annex 1 are suitable for estimating maximum residue limits and for IEDI and IESTI assessment.

Definition of the residue for plant and animal commodities (for compliance with the MRL and for estimation of dietary intake): *Sum of imidacloprid and its metabolites containing the 6-chloropyridinyl moiety, expressed as imidacloprid*

DIETARY RISK ASSESSMENT

Long-term intake

The International Estimated Daily Intakes (IEDIs) of imidacloprid were calculated for the 17 GEMS/Food cluster diets using STMRs/STMR-Ps estimated by the 2002, 2006, 2008, 2012 and current Meeting (Annex 3). The ADI is 0–0.06 mg/kg bw and the calculated IEDIs were 2–5% of the maximum ADI (0.06 mg/kg bw). The Meeting concluded that the long-term intake of residues of imidacloprid, resulting from the uses considered by the current JMPR, were unlikely to present a public health concern.

Short-term intake

The International Estimated Short-Term Intakes (IESTI) of imidacloprid were calculated for food commodities and their processed commodities using HRs/HR-Ps or STMRs/STMR-Ps estimated by the current Meeting (Annex 4). The ARfD is 0.4 mg/kg bw and the calculated IESTIs were a maximum of 10% of the ARfD. The Meeting concluded that the short-term intake of residues of imidacloprid, when used in ways that have been considered by the JMPR, is unlikely to present a public health concern.

5.21 LAMBDA-CYHALOTHRIN (146)

RESIDUE AND ANALYTICAL ASPECTS

Lambda-cyhalothrin consists of two of the four enantiomers of cyhalothrin. It was first evaluated by JMPR in 1984 (T, R) and subsequently under the periodic re-evaluation programme in 2007 (T) and 2008 (R). A group ADI for cyhalothrin and lambda-cyhalothrin was established at 0–0.02 mg/kg bw and a group ARfD, 0.02 mg/kg bw. In 2008 the Meeting agreed that the residue definition for compliance with the MRL and for estimation of dietary intake for plant and animal commodities should be cyhalothrin, sum of isomers. It was listed by the Forty-sixth Session of the CCPR (2014) for the evaluation by the 2015 JMPR for additional MRLs.

The residue studies were submitted by the manufacturer and member countries for additional MRLs for basil (Thailand) and coffee.

Methods of analysis

The Meeting received new information on the analytical method (POPIT MET.044 Rev.31) for the determination of residues of lambda-cyhalothrin in plant materials including coffee beans. Lambda-cyhalothrin is extracted from samples with acetone/hexane (1:1 v/v). For coffee beans, deionised water is added to achieve phase separation and the upper (organic) phase is removed and evaporated to dryness. The evaporated residue is diluted with hexane and purified with a silica SPE column. The solvent is evaporated and the residue is dissolved in the internal standard (dicyclohexyl phthalate) and quantification is achieved by GC-ECD. The LOQ is 0.01 mg/kg for lambda-cyhalothrin in coffee beans.

For the determination of lambda-cyhalothrin in basil, a method[1] available from the scientific literature was used. The recoveries for lambda-cyhalothrin in basil tested concurrently with the analysis of trial samples ranged between 85 and 114%. The LOQ is 0.01 mg/kg for lambda-cyhalothrin in basil.

Residues resulting from supervised residue trials on crops

The Meeting received supervised trial data for the foliar application of lambda-cyhalothrin on coffee and basil. Residue trial data was made available from Brazil and Thailand.

Labels were available from Brazil and Thailand describing the registered uses of lambda-cyhalothrin.

Coffee beans

Data were available from supervised trials on coffee in Brazil.

The GAP of Brazil is maximum two foliar applications at a maximum rate of 0.005 kg ai/ha with a PHI of 1 day.

Lambda-cyhalothrin residues in green coffee beans from independent trials in Brazil matching GAP were (n=4): < 0.01 (4) mg/kg.

Based on the residues for coffee beans from trials in Brazil, the Meeting estimated a maximum residue level of 0.01 (*) mg/kg and an STMR value of 0.01 mg/kg for lambda-cyhalothrin in coffee beans.

Basil

Data were available from supervised trials on basil in Thailand.

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[1] H. Steinwandter, 1985, Universal 5-min on-line method for extracting and isolating pesticide residues and industrial chemicals

The GAP of Thailand is foliar applications when crop is infested at a maximum concentration of 0.0025 kg ai/hL with a PHI of 7 days.

Lambda-cyhalothrin residues in basil from independent trials in Thailand matching GAP were (n=4): 0.08, 0.17, 0.20 and 0.37 mg/kg.

Based on the residues for basil from trials in Thailand, the Meeting estimated a maximum residue level of 0.7 mg/kg, an STMR value of 0.19 mg/kg and an HR value of 0.40 (based on a highest residue of replicate samples) mg/kg for lambda-cyhalothrin in basil.

RECOMMENDATIONS

On the basis of the data from supervised trials, the Meeting concluded that the residue levels assessed were suitable for estimating maximum residue limits and for IEDI and IESTI assessment.

Definition of the residue for plant and animal commodities (for compliance with the MRL and for estimation of dietary intake): *Cyhalothrin, sum of isomers*

The residue is fat soluble

DIETARY RISK ASSESSMENT

Long-term intake

The International Estimated Daily Intakes (IEDIs) of lambda-cyhalothrin were calculated for the 17 GEMS/Food cluster diets using STMRs/STMR-Ps estimated by the 2008 JMPR and the current Meeting (Annex 3). The ADI is 0-0.02 mg/kg bw and the calculated IEDIs were 2-9% of the maximum ADI (0.02 mg/kg bw). The Meeting concluded that the long-term intakes of residues of lambda-cyhalothrin, arising from the uses considered by the current Meeting, are unlikely to present a public health concern.

Short-term intake

The International Estimated Short-Term Intakes (IESTI) of lambda-cyhalothrin were calculated for food commodities and their processed commodities using HRs/HR-Ps or STMRs/STMR-Ps estimated by the current Meeting (Annex 4). The ARfD is 0.02 mg/kg bw and the calculated IESTIs were a maximum of 2% of the ARfD. The Meeting concluded that the short-term intake of residues of lambda-cyhalothrin, when used in ways that have been considered by the JMPR, is unlikely to present a public health concern.

5.22 LINDANE (048)

RESIDUE AND ANALYTICAL ASPECTS

Lindane was first evaluated by the Joint Meeting in 1966 (T, R). It had been last re-evaluated within the periodic review programme in 2002 (T) and 2003 (R). The Meeting established an ADI of 0-0.005 mg/kg bw and ARfD of 0.06 mg/kg bw. The Meeting agreed that the definition of the residue for compliance with MRLs and for estimation of dietary intake should be: lindane for both plant and animal commodities. The residue is fat-soluble.

Since lindane is currently listed in Annex A of the Stockholm Convention by which Parties must take measures to eliminate the production and use of the chemical, and there was no information on existing national registrations for lindane uses, the Forty-sixth Session of the CCPR (2014) requested a periodic review in 2015 to convert the CXLs into Codex EMRLs.

Monitoring data were submitted by the European Food Safety Authority (EFSA) for the period of 2009-2013 and from the GEMS/Food programme (2000-2011) to the Meeting. In addition, individual residue studies were provided by the Netherlands in processed maize and wheat, and summarised results from India and the USA.

Methods of residue analysis

Lindane can be recovered using numerous multi residue procedures. The sensitivity of the detection depends on the extraction and cleanup procedures, and the instrumentation available for qualitative and quantitative determination. No information was provided on the methods of analyses of samples for which lindane residues were reported. However, in the screening procedures, the objective is to detect residues which are around the legal limit, and to achieve the lowest concentration is not the primary goal. The reported LOQ values varied significantly in cases of individual commodities and among different commodities. The median reported LOQ values reported by EFSA and GEMS/Food were: cereal grains (0.01 mg/kg), mammalian and poultry meat (0.001 mg/kg), mammalian and poultry edible offal (0.001 mg/kg), milks (0.0004 mg/kg) and eggs (0.001 mg/kg). The Meeting assumed that these values can be realistically achieved applying current instrumental detection techniques and they were taken into consideration in estimation of EMRL values. If the LOQ exceeded the present CXL values, the reported <LOQ values were considered as non-detected.

Residues reported from monitoring programmes

The EFSA submitted the results of analyses of about 25,000 individual samples relevant to the present evaluation. The results originated from 60 different countries with the majority (96%) from the EU Member States, Iceland and Norway. In addition the Netherlands reported detected residues in some samples.

The GEMS/Food data package contained 4,110 individual results collected in Australia, New-Zealand, China HK SAR, Germany, Slovakia and Denmark. The data package included several commodities for which no CXL had been established. When sufficient numbers of results were available, these data were also considered for estimation of EMRLs.

India provided the summarised results of analyses of 7,650 cereal grain samples, including rice and wheat, and 2,361 meat and egg samples.

The summary results of the US FDA Pesticide Data Programme (2007-2012) were provided, which included over 80,000 residue measurements obtained from a large variety of commodities. None of the samples analysed between 2007 and 2012 contained lindane residues above the LOQ in the commodities relevant to the present evaluation.

The above data sets including the results of analyses of large numbers of samples did not indicate differences among geographical regions; therefore it was assumed that they provide information on the lindane concentration resulting from environmental contamination present around the world. Consequently, they were considered together for estimating EMRLs. According to previous practice of the JMPR, EMRLs should cover a minimum of 99 percentile of the relevant residue data population with a 99% probability (FAO Manual sub-chapter 6.11.2). To meet this criterion a minimum of 459 valid results are required. For covering 99.9 percent of the likely residues present with 99 percent probability, 4,603 results would be needed.

Sweet corn

None of the 424 samples, reported by EFSA originating from 27 different countries, contained detectable lindane residues.

Using the mature maize residue data (642) as supporting evidence, the Meeting concluded that the database is sufficient to recommend an EMRL of 0.01 mg/kg for sweet corn kernels.

The Meeting withdraws its previous recommendation of 0.01(*) mg/kg.

Cereal grains

Individual residue analyses are available from European countries for barley (630), maize (642) oat (898), rye (1,658), sorghum (36), and wheat (4,942). Quantified residues were reported by France in wheat (0.078 mg/kg), and The Netherlands in whole maize flour (0.003 mg/kg), maize grits (0.012 mg/kg), and whole wheat flour (0.003 and 0.006 mg/kg). Of a total of 8,806 raw cereal grain samples, only one wheat sample (0.078 mg/kg) and one maize grit sample (0.012 mg/kg) contained residues above the current CXL of 0.01 mg/kg (0.022%). Based on this result it can be stated that at least 99.8% of the expectable residues are below the current CXL with a 99% probability. This conclusion is supported by the large number of results reported by India and USA.

The Meeting recommended an EMRL of 0.01 mg/kg for cereal grains.

The Meeting withdraws its previous recommendations of 0.01 (*) mg/kg for maximum residue levels in barley, maize, oats, rye, sorghum and wheat.

Straw and fodder of cereal grains

Based on the results reported by the 2003 JMPR (Pesticide Residues in Food - 2003 Evaluations Part I P583, pp 177) indicating similar, generally non-detected, residues in wheat grains, hay and straw, supported by the summarised US FDA data package, the Meeting concluded that residues above 0.01 mg/kg are unlikely to occur in straw and fodder, dry, from environmental contamination.

The Meeting recommended an EMRL of 0.01 mg/kg for straw and fodder of cereal grains.

The Meeting withdraws its previous recommendation of 0.01 (*) mg/kg.

Meat (from mammals other than marine mammals)

Overall, 3,360 samples of meat and 2,657 samples of fat of mammals (pig, cattle, sheep, goat and horse) were analysed for lindane residues. These samples, reported by EFSA, originated from 42 different countries. Overall, 40 samples contained residues at or above the LOQ. However, only one sheep fat sample contained residue (0.53 mg/kg) above the current CXL of 0.1 mg/kg (0.016%). The next two highest values were in swine meat (fat) 0.017 mg/kg and 0.015 in beef fat.

Sixteen mammalian meat samples reported from the GEMS/Food database contained non-detected residues

The Meeting concluded that the residue level reported is much lower than that which was reported at the time of the estimation of the current CXL of 0.1 mg/kg.

The Meeting recommended an EMRL of 0.01 mg/kg (fat) for meat (from mammals other than marine mammals)

The Meeting withdraws its previous recommendation of 0.1 mg/kg (fat).

Edible offal (mammalian)

Overall, 680 samples of mammalian edible offal of different species (pig, cattle, sheep, goat and horse) were analysed for lindane residues. These samples originated from 25 different countries.

Four samples contained residues but none of them exceeded the current CXL of 0.01 mg/kg. Three cattle liver samples contained residues (0.0008 mg/kg, 0.001 mg/kg, 0.002 mg/kg on a fat basis), and one sheep edible offal (0.018 mg/kg on a fat basis). The residues expressed on a whole product basis would be about 20 times lower.

The Meeting concluded that there was sufficient information to recommend an EMRL of 0.001 mg/kg for edible offal (mammalian).

The Meeting withdraws its previous recommendation of 0.01 (*) mg/kg.

Milks

Altogether 4,319 lindane residues in unprocessed, frozen and pasteurised milk samples of different species (cattle, sheep, goat and horses) were reported by EFSA. Overall, detected residues were ≥ LOQ (0.00004 (3), 0.00008, 0.0001, 0.0003, 0.0006 and 0.002 mg/kg on a whole product basis and 0.0006 mg/kg on a fat basis. None of them exceeded the current CXL.

Cattle (341) and goat (1) samples obtained from GEMS/Food database contained non-detected residues (< 0.002 mg/kg).

Based on the extensive data base, the Meeting recommended an EMRL of 0.001 mg/kg for milks.

The Meeting withdraws its previous recommendation of 0.01 (*) mg/kg.

Poultry meat

Overall, 700 samples of poultry fat and 1,060 samples of poultry meat (chicken, geese, duck, turkey, and Guinea fowl) were derived from 32 countries. The LOQ was 0.0005 when the following residues [mg/kg] were detected on a fat basis: 0.0006 (2), 0.0007 (3), 0.0008, 0.0009, 0.001 (5), 0.002 (11), 0.004 (2). The residues measured on a whole product basis were recalculated assuming 10% fat. The values were: 0.001, 0.002 and 0.004 mg/kg.

One chicken meat (fat) sample of the 15 poultry meat samples obtained from GEMS/Food database contained residues of 0.0034 mg/kg lindane. None of the samples contained residues above the current CXL. The results indicate that 99.5% of the samples would unlikely contain residues above 0.004 mg/kg (fat) in 99.9% of the cases.

Based on the data available the Meeting concluded that 0.005 mg/kg residue level would sufficiently cover the residues carried over from environmental contamination, and recommended it as the EMRL for poultry meat (on fat basis).

The Meeting withdraws its previous recommendation of 0.05 mg/kg.

Poultry, edible offal of

In total, 406 results of poultry offal were reported by EFSA of which 402 were poultry liver. Four samples contained detected residues. They were on a fat basis: 0.0009, 0.001, 0.0045, 0.1 mg/kg. The residues expressed on a whole product basis would be at least 20 times lower.

Based on the 406 residue dataset, it can be assumed that 99% of the sampled lot would contain less than 0.01 mg/kg lindane residues with at least 98% probability.

Based on the available data the Meeting recommended an EMRL of 0.005 mg/kg for poultry, edible offal.

The Meeting withdraws its previous recommendation of 0.01 (*) mg/kg.

Eggs

Altogether 2,665 residue determinations were conducted in eggs on a whole product or fat basis as reported by EFSA and obtained from the GEMS Food database. The samples originated from more than 26 countries. Of the 2,665 samples only 2 (0.075%) contained residues (0.25 and 0.3 mg/kg) above the current CXL.

Based on the available data the Meeting recommended an EMR of 0.001 mg/kg for eggs.

The Meeting withdraws its previous recommendation of 0.01 mg/kg.

Fish and diadromous fish

Lindane residues were reported from the GEMS/Food data base. Residues were detected in 41 of 2,649 samples. They were in rank order: 0.0019, 0.0028, 0.0029 (6), 0.003, 0.0031, 0.0032 (6), 0.0033, 0.0036 (5), 0.0037 (2), 0.0038 (2), 0.004, 0.0042 (2), 0.0043 (2), 0.0045 (2), 0.0051 (2), 0.0063 (4), 0.0083 and 0.0095 mg/kg.

The Meeting considered that the residues in fish are a suitable indicator of environmental contamination. The Meeting concluded that the residue data on fish derived from the GEMS/Food database would provide sufficient basis (99.8% of residues with 99.5% probability) for estimation of likely maximum residue levels of lindane in fish.

Based on the data available the Meeting recommended an EMRL of 0.01 mg/kg for fish and diadromous fish.

RECOMMENDATION

The Meeting noted that there are no authorised uses of lindane for crop protection and withdraws its previous recommendations for maximum residue levels and recommends the following extraneous residue levels for use as EMRLs.

Definition of residue is unchanged.

Definition of reside for compliance with EMRLs and for estimation of dietary intake: lindane.

The residue is fat soluble.

Estimation of dietary intake

Cereal grains

The median LOQ value reported for barley, maize, oats, rye, sorghum and wheat is 0.01 mg/kg. For dietary intake calculations the 2003 JMPR estimated an STMR and HR of 0.005 mg/kg based on the results of supervised trials. As the estimated EMRL is at the same level as the previous CXL value, the Meeting concluded that the best estimates of the STMR and HR for these commodities and sweet corn are those recommended by the 2003 JMPR.

Animal commodities

Based on animal feeding studies taking into account the expected residue levels in feed commodities deriving from the use of lindane, the 2003 JMPR recommended HR and STMR values for muscle (0.005 mg/kg and 0.0007 mg/kg), fat (0.06 mg/kg and 0.005 mg/kg) edible offal (0.002 mg/kg and 0.0002 mg/kg) from mammals other than marine mammals, and STMR of 0.0003 mg/kg for milks.

Based on the monitoring data, the current residue level in mammalian meat and poultry meat is 10 times lower; the Meeting applied the 10 times lower factor in the corresponding commodities, compared with those estimated by the 2003 JMPR.

The Meeting estimated highest and median residue values for muscle (0.0005 mg/kg and 0.00007 mg/kg), fat (0.006 mg/kg and 0.0005 mg/kg) edible offal (0.0002 mg/kg and 0.00002 mg/kg) from mammals other than marine mammals, and a median residue of 0.00003 mg/kg for milks.

The 2003 Meeting recommended HR and STMR values for poultry meat (0.001 mg/kg and 0.0006 mg/kg), poultry fat (0.016mg/kg and 0.008 mg/kg), eggs (0.002 mg/kg and 0.0007 mg/kg) and edible offal (0.001 mg/kg and 0.0004 mg/kg).

For poultry meat and edible offal the residue levels are about 5−10 times lower, respectively, than those estimated in 2003.

The Meeting estimated highest and median residue values for poultry meat (0.0001 mg/kg and 0.00006 mg/kg), poultry fat (0.0016 mg/kg and 0.0008 mg/kg), poultry edible offal (0.0002 mg/kg and 0.00008 mg/kg) and eggs (0.0002 mg/kg and 0.00007 mg/kg

The fish consumption data was provided by the GEMS/Food database. The long-term intake is 0.43 g/kg bw and the short-term intake (97.5th percentile of 1,043 consumption days) is 10 g/kg bw. The short-term intake was calculated with the highest residue observed in fish (0.0095 mg/kg) and the long term intake was calculated with the median of LOQ values (0.0036 mg/kg) reported for analyses of fish samples.

Long-term intake

The International Estimated Daily Intakes (IEDIs) of lindane were calculated for the 17 GEMS/Food cluster diets using STMRs estimated by the Meeting. The results are shown in Annex 3 to the 2015 Report.

The ADI is 0–0.005 mg/kg bw and the calculated IEDIs were 0–1% of the maximum ADI. The fish consumption contributes to < 0.001% of the max ADI. The Meeting concluded that the long-term intake of residues of lindane from the environmental contamination of commodities considered by the JMPR is unlikely to present a public health concern.

Short-term intake

The ARfD is 0.06 mg/kg bw. The short-term intake calculated using the HR and STMR values estimated by the Meeting were 0% of the ARfD for children and the general population. The fish consumption contributes to 0.016% of the ARfD. The Meeting concluded that the short-term intake of residues of lindane from the environmental contamination of commodities considered by the JMPR is unlikely to present a public health concern.

5.23 LUFENURON (286)

TOXICOLOGY

Lufenuron is the ISO-approved common name for (*RS*)-1-[2,5-dichloro-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl]-3-(2,6-difluorobenzoyl)urea (IUPAC), for which the CAS number is 103055-07-8.Lufenuron is an insecticide initially registered for use on a wide range of crops for the control of larvae of many insect pests. Lufenuron inhibits chitin synthesis, probably through enzymatic interference, and prevents the larvae from moulting.

Lufenuron has not been evaluated previously by JMPR and was reviewed by the present Meeting at the request of CCPR.

All critical studies contained statements of compliance with GLP.

Biochemical aspects

Lufenuron is only partially absorbed following a single oral dose, with the extent of absorption being dose related; approximately 20% of a single 100 mg/kg bw dose appears to be absorbed, compared with about 70% of a single 0.1 or 0.5 mg/kg bw dose. A large proportion of the absorbed dose partitions into fat, with very much lower uptake by other tissues, including the brain. All tissue concentrations of radioactivity increased to a maximum 1 day after the last of 14 repeated low doses. The results suggest that most tissue concentrations would plateau within 2–3 weeks of similar repeated dosing. The fat depot is slowly released, with a terminal half-life of up to 5–13 days at 0.5 mg/kg bw and 10–37 days at 100 mg/kg bw, leading to an increase in concentrations of lufenuron in the brain over long periods (see below). Excretion of the absorbed dose is predominantly via faeces, with only about 1% of the dose being excreted in urine, independent of the dose. Metabolism of lufenuron is minimal, with only about 1% of an oral dose being metabolized by deacylation followed by cleavage of the ureido group. There is no marked sex difference in absorption, tissue distribution or excretion. The pattern of excretion and metabolism is not affected by repeated dosing.

Toxicological data

Lufenuron has low acute toxicity when administered orally or dermally (LD_{50} > 2000 mg/kg bw) or via inhalation (LC_{50} > 2.35 mg/L, maximal attainable concentration) to rats. Lufenuron produced very slight skin and eye irritation in rabbits and is considered to be a skin sensitizer in the guinea-pig.

The most significant toxicological end-point for lufenuron is convulsions, observed after prolonged treatment at high dose levels. Convulsions are observable in all species treated with lufenuron at daily doses of more than 20 mg/kg bw per day for extended periods (2–3 months in rodents, > 3 months in dogs). As lufenuron is a very lipophilic compound (log K_{ow} = 5.12), it has the potential to accumulate in fatty tissues. It has been shown in toxicity studies with rats, mice and dogs that following prolonged exposure to high doses of 20 mg/kg bw per day or more, fat compartments may become saturated. If exposure is continued after saturation occurs, concentrations in the brain increase, leading to tonic-clonic convulsions.

In a dose range–finding study, lufenuron was fed to mice at a concentration of 0, 1000, 3000 or 9000 ppm (equal to 0, 151, 449 and 1470 mg/kg bw per day for males and 0, 189, 517 and 1440 mg/kg bw per day for females, respectively) for up to 65 days. As a result of mortality and neurotoxic effects of the test substance (tonic-clonic seizures) at all dose levels, it was concluded that the maximum tolerated dose was exceeded even at 1000 ppm (equal to 151 mg/kg bw per day).

In a second dose range–finding study, intended for test substance residue and blood level determination, lufenuron was fed to female mice at a concentration of 0, 4/8, 20, 100 or 1000 ppm (equal to 0, 0.47/1.1, 2.94, 14.5 and 143 mg/kg bw per day, respectively) for up to 91 days (only 71 days for the high dose). From day 57 onwards, the diet of the low-dose group inadvertently contained 8 ppm instead of 4 ppm. The NOAEL was 100 ppm (equal to 14.5 mg/kg bw per day), based on mortality and neurotoxicity (tonic-clonic seizures) at 1000 ppm (equal to 143 mg/kg bw per day).

In a 28-day range-finding study, rats were administered lufenuron in the diet at a concentration of 0, 50, 400, 3000 or 20 000 ppm (equal to 0, 4.10, 30.8, 254 and 1692 mg/kg bw per day for males and 0, 4.07, 32.6, 254 and 1741 mg/kg bw per day for females, respectively). The NOAEL was 400 ppm (equal to 30.8 mg/kg bw per day), based on decreased thymus weight at 3000 ppm (equal to 254 mg/kg bw per day).

In a 90-day toxicity study, rats were fed diets containing 0, 25, 150, 1500 or 15 000 ppm lufenuron (equal to 0, 1.6, 9.68, 101 and 998 mg/kg bw per day for males and 0, 1.7, 10.2, 103 and 1050 mg/kg bw per day for females, respectively). The NOAEL was 150 ppm (equal to 9.68 mg/kg bw per day), based on clinical signs (tonic-clonic seizures), decreased body weight gain and feed consumption, slight changes in haematology and clinical chemistry parameters and increased adrenal weights at 1500 ppm (equal to 101 mg/kg bw per day).

In a 4-week range-finding study, dogs received lufenuron in their diet at a concentration of 2000 or 50 000 ppm (equal to 8.43 and 2200 mg/kg bw per day for males and 10.1 and 2648 mg/kg bw per day for females, respectively). The NOAEL was 50 000 ppm (equal to 2200 mg/kg bw per day), the highest dose tested.

In a 90-day toxicity study, dogs received lufenuron in their diet at a concentration of 0, 200, 3000 or 50 000 ppm (equal to 0, 7.8, 121.6 and 2023 mg/kg bw per day for males and 0, 7.9, 122.5 and 1933 mg/kg bw per day for females, respectively). The NOAEL was 200 ppm (equal to 7.8 mg/kg bw per day), based on increases in blood cholesterol levels and absolute and relative liver weights, reductions in blood potassium and phosphorus levels and an increase in serum alkaline phosphatase activity for some animals at 3000 ppm (equal to 121.6 mg/kg bw per day).

In a 1-year toxicity study, dogs received lufenuron in their diet at a concentration of 0, 100, 2000 or 50 000 ppm (equal to 0, 3.97, 65.4 and 1879 mg/kg bw per day for males and 0, 3.64, 78.3 and 1977 mg/kg bw per day for females, respectively). The main target organs were the brain, adrenals, liver, thyroid and lungs. The NOAEL was 100 ppm (equal to 3.64 mg/kg bw per day), based on mortality, neuromuscular signs, including convulsions, reduced body weight gains, changes in clinical pathology parameters and histopathological lesions in adrenals, liver, thyroid and lungs observed at 2000 ppm (equal to 65.4 mg/kg bw per day).

In another 1-year toxicity study, dogs received lufenuron in their diet at a concentration of 0, 10, 50, 250 or 1000 ppm (equal to 0, 0.31, 1.42, 7.02 and 29.8 mg/kg bw per day for males and 0, 0.33, 1.55, 7.72 and 31.8 mg/kg bw per day for females, respectively). The NOAEL was 250 ppm (equal to 7.02 mg/kg bw per day), based on treatment-related mortality and clinical findings, including convulsions, effects on body weight and effects on the liver and adrenals, with associated histopathology and/or clinical chemistry changes, at 1000 ppm (equal to 29.8 mg/kg bw per day).

An overall NOAEL of 250 ppm (equal to 7.02 mg/kg bw per day) can be identified on the basis of the two 1-year dog studies. The 90-day dog study should not be included in the overall NOAEL, as the observed effects (blood parameters and liver weights) are far less severe than the effects in the 1-year dog studies (e.g. mortality) at similar dose levels. This can be explained by the fat accumulation, which is not yet saturated in the 90-day study; this leads to higher concentrations of the parent compound in the brain in the longer-term studies.

In an 18-month dietary toxicity and carcinogenicity study, mice received lufenuron at a concentration of 0, 2, 20, 200 or 400 ppm (equal to 0, 0.222, 2.25, 22.6 and 62.9 mg/kg bw per day for males and 0, 0.217, 2.12, 22.0 and 61.2 mg/kg bw per day for females, respectively). As a result of high mortality in the high-dose group, surviving animals in this dose group were terminated in weeks 9 and 10. The NOAEL was 20 ppm (equal to 2.12 mg/kg bw per day), based on increased mortality, clinical signs (tonic-clonic convulsive episodes), increased incidences of fatty liver (in females accompanied by necrotic changes) and a higher incidence of inflammatory changes in the prostate at 200 ppm (equal to 22.0 mg/kg bw per day). No treatment-related tumours were observed.

In a 2-year dietary toxicity and carcinogenicity study, rats received lufenuron at a concentration of 0, 5, 50, 500 or 1500 ppm (equal to 0, 0.19, 1.93, 20.4 and 108 mg/kg bw per day for males and 0, 0.23, 2.34, 24.8 and 114 mg/kg bw per day for females, respectively). As a result of overt toxicity at 1500 ppm, all animals in this group were terminated in week 14. The NOAEL was 50 ppm (equal to 1.93 mg/kg bw per day), based on clinical signs (tonic-clonic convulsions), decreased body weight and (histo)pathological effects on lungs, liver, non-glandular stomach, intestines and urinary tract at 500 ppm (equal to 20.4 mg/kg bw per day). No treatment-related tumours were observed.

The Meeting concluded that lufenuron is not carcinogenic in mice or rats.

Lufenuron was tested for genotoxicity in an adequate range of assays, both in vitro and in vivo. No evidence of genotoxicity was found.

The Meeting concluded that lufenuron is unlikely to be genotoxic.

In view of the lack of genotoxicity and the absence of carcinogenicity in mice and rats, the Meeting concluded that lufenuron is unlikely to pose a carcinogenic risk to humans.

In a two-generation study on reproductive toxicity, rats received lufenuron in their diet at a concentration of 0, 5, 25, 100 or 250 ppm (equal to 0, 0.41, 2.1, 8.3 and 20.9 mg/kg bw per day for males and 0, 0.44, 2.2, 8.9 and 22.2 mg/kg bw per day for females, respectively, based on mean intakes for combined P and F1 generations during the premating period). The NOAEL for parental and reproductive effects was 250 ppm (equal to 20.9 mg/kg bw per day), the highest dose tested. The NOAEL for offspring toxicity was 100 ppm (equal to 8.3 mg/kg bw per day), based on the slight delay in righting reflex in pups at 250 ppm (equal to 20.9 mg/kg bw per day).

In a study of developmental toxicity, rats were administered lufenuron via gavage at a dose of 0, 100, 500 or 1000 mg/kg bw per day. The NOAEL for maternal toxicity was 500 mg/kg bw per day, based on a transient reduction in body weight gain at GDs 7–9 and feed consumption on GDs 6–9 at 1000 mg/kg bw per day. The NOAEL for embryo/fetal toxicity was 1000 mg/kg bw per day, the highest dose tested.

In a study of developmental toxicity, rabbits were dosed at 0, 100, 500 or 1000 mg/kg bw per day with lufenuron via gavage. The NOAEL for maternal toxicity and embryo/fetal toxicity was 1000 mg/kg bw per day, the highest dose tested.

The Meeting concluded that lufenuron is not teratogenic.

In a repeated-dose neurotoxicity study, male rats received lufenuron in their diet at 0, 5, 25, 100 or 500 ppm (equal to 0, 0.26, 1.22, 5.43 and 27.0 mg/kg bw per day, respectively) for 4 months. No systemic toxicity was observed. The NOAEL for neurotoxicity was 100 ppm (equal to 5.43 mg/kg bw per day), based on spontaneous tonic-clonic convulsions or fasciculations and facilitated pentylenetetrazol-induced generalized convulsions at 500 ppm (equal to 27.0 mg/kg bw per day), observed in weeks 13–18.

Convulsions are observed in all species after prolonged treatment with lufenuron, due to saturation of the accumulation in fatty tissues, with subsequent increased lufenuron levels in the brain. The neurotoxic effects are not expected to occur after a single dose. The Meeting concluded that lufenuron is not acutely neurotoxic, but is neurotoxic after prolonged treatment.

A study was performed to determine the effects of treatment of lufenuron for 3 weeks on the estrous cycle in female rats and various plasma hormone levels (estradiol, progesterone, corticosterone, aldosterone, prolactin, luteinizing hormone, follicle stimulating hormone, adrenocorticotrophic hormone and testosterone) in male and female rats administered a dietary concentration of 0, 500 or 1500 ppm (equal to 0, 30.5 and 92.5 mg/kg bw per day for males and 0, 39.4 and 120.1 mg/kg bw per day for females, respectively). The results of this investigation, focused on the pituitary, adrenal and genital organs, suggest that there is no effect of lufenuron on the endocrine system in rats of either sex. This conclusion is supported by the reproductive toxicity studies in rats, which showed no effect of lufenuron on any reproductive end-point.

No specific studies on immunotoxicity were submitted. The available repeated-dose studies do not indicate an immunotoxic potential for lufenuron following exposure by the oral route.

Toxicological data on metabolites and/or degradates

No metabolites of concern were identified.

Human data

In reports on manufacturing plant personnel, no adverse health effects were noted. Several incident reports indicate no significant toxicity in humans.

The Meeting concluded that the existing database on lufenuron was adequate to characterize the potential hazards to the general population, including fetuses, infants and children.

Toxicological evaluation

An ADI of 0–0.02 mg/kg bw was established on the basis of the NOAEL of 1.93 mg/kg bw per day for tonic-clonic seizures and findings in lungs, gastrointestinal tract, liver and urinary tract in the 2-year dietary study in rats, using a safety factor of 100.

The Meeting concluded that it was not necessary to establish an ARfD for lufenuron in view of its low acute oral toxicity and the absence of developmental toxicity and any other toxicological effects that would be likely to be elicited by a single dose.

A toxicological monograph was prepared.

Levels relevant to risk assessment of lufenuron

Species	Study	Effect	NOAEL	LOAEL
Mouse	Eighteen-month study of toxicity and carcinogenicity[a]	Toxicity	20 ppm, equal to 2.12 mg/kg bw per day	200 ppm, equal to 22.0 mg/kg bw per day
		Carcinogenicity	400 ppm, equal to 61.2 mg/kg bw per day[b]	–
Rat	Two-year study of toxicity and carcinogenicity[a]	Toxicity	50 ppm, equal to 1.93 mg/kg bw per day	500 ppm, equal to 20.4 mg/kg bw per day
		Carcinogenicity	1 500 ppm, equal to 108 mg/kg bw per day[b]	–
	Two-generation study of reproductive toxicity[a]	Reproductive toxicity	250 ppm, equal to 20.9 mg/kg bw per day[b]	–
		Parental toxicity	250 ppm, equal to 20.9 mg/kg bw per day[b]	–
		Offspring toxicity	100 ppm, equal to 8.3 mg/kg bw per day	250 ppm, equal to 20.9 mg/kg bw per day
	Developmental toxicity study[c]	Maternal toxicity	500 mg/kg bw per day	1 000 mg/kg bw per day
		Embryo and fetal toxicity	1 000 mg/kg bw per day[b]	–
	Four-month neurotoxicity study[a]	Neurotoxicity	100 ppm, equal to 5.43 mg/kg bw per day	500 ppm, equal to 27.0 mg/kg bw per day

Species	Study	Effect	NOAEL	LOAEL
Rabbit	Developmental toxicity study[c]	Maternal toxicity	1 000 mg/kg bw per day[b]	–
		Embryo and fetal toxicity	1 000 mg/kg bw per day[b]	–
Dog	One-year studies of toxicity[a,d]	Toxicity	250 ppm, equal to 7.02 mg/kg bw per day	1 000 ppm, equal to 29.8 mg/kg bw per day

[a] Dietary administration.
[b] Highest dose tested.
[c] Gavage administration.
[d] Two or more studies combined.

Estimate of acceptable daily intake (ADI)

0–0.02 mg/kg bw

Estimate of acute reference dose (ARfD)

Unnecessary

Information that would be useful for the continued evaluation of the compound

Results from epidemiological, occupational health and other such observational studies of human exposure

Critical end-points for setting guidance values for exposure to lufenuron

Absorption, distribution, excretion and metabolism in mammals	
Rate and extent of oral absorption	~70% within 24 h at 0.1 or 0.5 mg/kg bw; ~20% within 24 h at 100 mg/kg bw
Dermal absorption	No data
Distribution	Widely distributed; highest concentrations in fat; a plateau within 2–3 weeks of dosing is suggested for all tissues. Brain levels are initially low, but rise after prolonged exposure due to saturation of fat storage.
Potential for accumulation	High fat accumulation, with slow release (terminal half-life 5–13 days at 0.5 mg/kg bw and 10–37 days at 100 mg/kg bw)
Rate and extent of excretion	Predominantly in faeces, with < 1% in urine, independent of dose
Metabolism in animals	Minimal
Toxicologically significant compounds in animals and plants	Parent compound
Acute toxicity	
Rat, LD_{50}, oral	> 2 000 mg/kg bw
Rat, LD_{50}, dermal	> 2 000 mg/kg bw
Rat, LC_{50}, inhalation	> 2.35 mg/L, maximal attainable concentration
Rabbit, dermal irritation	Mildly irritating
Rabbit, ocular irritation	Mildly irritating

Guinea-pig, dermal sensitization	Sensitizing (Magnusson and Kligman maximization test)
Short-term studies of toxicity	
Target/critical effect	Mortality and neurotoxicity (tonic-clonic convulsions)
Lowest relevant oral NOAEL	7.02 mg/kg bw per day (1 year; dog)
Lowest relevant dermal NOAEL	1 000 mg/kg bw per day (28 days; rat)
Lowest relevant inhalation NOAEC	No data
Long-term studies of toxicity and carcinogenicity	
Target/critical effect	Neurotoxicity (tonic-clonic convulsions), (histo)pathological findings in lungs, liver, non-glandular stomach, intestines and urinary tract
Lowest relevant NOAEL	1.93 mg/kg bw per day (2 years; rat)
Carcinogenicity	Not carcinogenic in mice or rats[a]
Genotoxicity	
	No evidence of genotoxicity[a]
Reproductive toxicity	
Target/critical effect	Slight delay in righting reflex in pups
Lowest relevant parental NOAEL	20.9 mg/kg bw per day (highest dose tested; rat)
Lowest relevant offspring NOAEL	8.3 mg/kg bw per day (rat)
Lowest relevant reproductive NOAEL	20.9 mg/kg bw per day (highest dose tested; rat)
Developmental toxicity	
Target/critical effect	Transient reduction in maternal body weight gain and feed consumption (rat)
Lowest relevant maternal NOAEL	500 mg/kg bw per day (rat)
Lowest relevant embryo/fetal NOAEL	1 000 mg/kg bw per day (rat, rabbit; highest dose tested)
Neurotoxicity	
Acute neurotoxicity NOAEL	No evidence of acute neurotoxicity
Subchronic neurotoxicity NOAEL	5.43 mg/kg bw per day (4 months; rat)
Developmental neurotoxicity NOAEL	No data
Other toxicological studies	
Immunotoxicity	No data
Studies on toxicologically relevant metabolites	No metabolites of concern were identified
Medical data	
	No evidence of adverse effects in personnel exposed to lufenuron; several incident reports indicate no significant toxicity in humans

[a] Unlikely to pose a carcinogenic risk to humans from the diet.

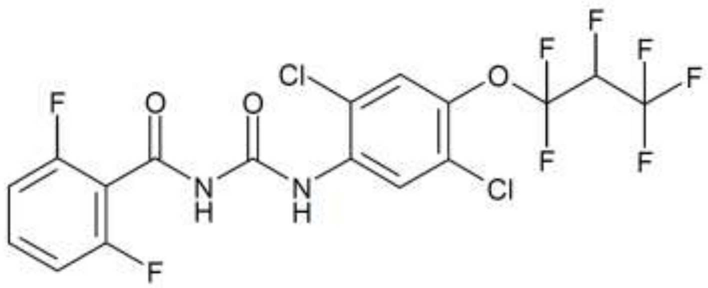
Summary

	Value	Study	Safety factor
ADI	0–0.02 mg/kg bw	Two-year toxicity and carcinogenicity study (rat)	100

	Value	Study	Safety factor
ARfD	Unnecessary	–	–

RESIDUE AND ANALYTICAL ASPECTS

Lufenuron (ISO common name) is an insect growth inhibitor that is active against larvae of Lepidoptera and Coleoptera. When ingested, lufenuron interferes with chitin synthesis, and prevents larvae from moulting. It was considered for the first time by the 2015 JMPR for toxicology and residues.



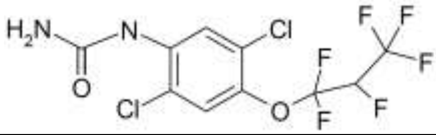
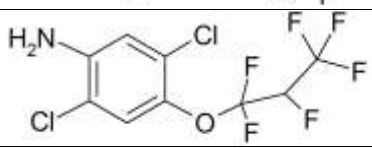
The IUPAC name of lufenuron is (RS)-1-[2,5-dichloro-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl]-3-(2,6-difluorobenzoyl)urea and the CA name is N-[[[2,5-dichloro-4-(1,1,2,3,3,3-hexafluoropropoxy)phenyl]amino]carbonyl]-2,6-difluorobenzamide.

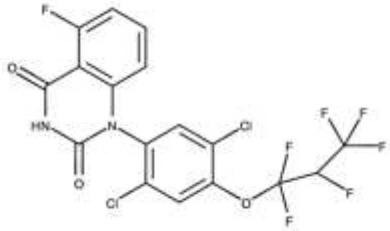
Lufenuron consists of a pair of enantiomers. A chiral centre exists at the 2-position of the hexafluoropropoxy side-chain. Lufenuron technical active ingredient is manufactured under non-stereospecific conditions giving a racemate (R:S 50:50).

The physical-chemical properties of lufenuron indicate low volatility and no accelerated photochemical degradation in water. The octanol-water partition coefficient, log $P_{ow,}$ is 5.12.

Lufenuron radio-labelled either in the dichlorophenyl- or difluorophenyl-moiety was used in the metabolism and environmental fate studies.

The following abbreviations are used for the metabolites discussed below:

CGA149776	2,6-Difluoro-benzoic acid	
CGA149772	2,6-Difluoro-benzamide	
CGA238277	2,5-Dichloro-4-(1,1,2,3,3,3-hexafluoropropoxy)-phenyl-urea	
CGA224443	N-[2,5-dichloro-4-(1,1,2,3,3,3-hexafluoropropoxy)-benzenamine	

CGA301018	no chemical name submitted	

Environmental fate in soil

The Meeting received information for lufenuron on soil photolysis, aqueous hydrolysis, aerobic soil metabolism and soil degradation.

Soil photolysis using [dichlorophenyl-^{14}C]-lufenuron and [difluorophenyl-^{14}C]-lufenuron revealed no significant degradation (84–99% parent remaining after 17 days of continuous irradiation).

Hydrolysis in aqueous solutions representative of environmental conditions (25 °C) showed virtually no degradation at pH 5, 7 and 9 within 5 days. Under more extreme conditions the parent substance was stable at pH 1 and 70°C, representing more than 90% of the radioactivity. At pH 9 an accelerated degradation was observed at 50 °C and 70 °C with 0–53% of the parent remaining after 1–5 days. Depending on the label the cleavage products CGA224443 and CGA238277 and its counterparts CGA149776 and 2,6-difluorobenzamide (CGA149772) were observed. In addition both labelled compounds produced CGA301018 by loss of fluoride and ring closure.

In the aerobic soil metabolism studies lufenuron was degraded with half-lives of 9–24 days in microbial active soil and 17–83 days in sterilised soil. Cleavage of the parent molecule was the primary degradation step, leaving CGA238277 and CGA224443 for [dichlorophenyl-^{14}C]-lufenuron. For [difluorophenyl-^{14}C]-lufenuron no metabolites were identified. Unextracted residues in soil at the end of the studies were between 25–79% of the AR. Mineralisation ranged up to 59% AR.

2,6-difluorobenzamide (CGA149772), which is a common soil metabolite to other active substances, e.g., diflubenzuron, was investigated separately for its behaviour in soil. Within 120 days it was completely degraded, leaving CGA149776 as its main degradate within the first two weeks. Afterward the radioactivity was further degraded and remained unextracted (up to 41% AR) or was mineralized (up to 65% AR).

The soil degradation of lufenuron and its metabolites CGA238227 and CGA224443 was also investigated on three different soils under laboratory conditions. Following 1st-order kinetic, DT_{50} and DT_{90} values of 13.7 d and 81.1d for lufenuron, 12.8 d and 42.5 d for CGA238277 and of 35.8 d and 119 d for CGA224443 were calculated, respectively.

In summary the Meeting concluded that lufenuron is moderately quickly degraded in soil under laboratory conditions, presumably by microbial activity. To assess the degradation behaviour under field conditions, field dissipation studies would be required. The residue is stable against photolysis and hydrolysis under environmental conditions, however at high temperature and basic conditions cleavage of the parent molecule was observed.

Plant metabolism

The Meeting received plant metabolism studies for lufenuron following foliar application of either [dichlorophenyl-^{14}C]-lufenuron or [difluorophenyl-^{14}C]-lufenuron in cabbage, tomato and cotton.

For cabbage the metabolism of lufenuron was investigated with [dichlorophenyl-^{14}C]-lufenuron only. Greenhouse plants received three spray applications equivalent to 0.02 kg ai/ha each in two week intervals. Samples were taken one hour after the first and last application, and at crop maturity, 28 days after the last application.

In mature cabbage heads TRR levels were 0.195 mg eq/kg (up to 1.8 mg eq/kg in withered leaves). 97.5% of the TRR (0.19 mg eq/kg) was recovered as unchanged lufenuron. In the head cabbage as well as in withered leaves, CGA238277 was identified at estimated levels of 0.6% and 3.3% of the TRR, respectively. The actual amounts were not measured in the TLC system used. No further metabolites were found.

For tomatoes the metabolism of lufenuron was investigated with [dichlorophenyl-^{14}C]-lufenuron only. Fruit bearing plants kept in a protected environment were treated with three sprayings equivalent to 0.03 kg ai/ha per application with one week intervals. Samples were collected directly after the first application and up to 28 DALA. In parallel 34µg lufenuron was directly injected into single fruits, which were sampled after 18 and 33 days.

Directly after the last foliar application, TRR levels in fruits were 1.2 mg eq/kg, degrading to 0.69 mg eq/kg after 28 days. TRR levels found in additional samples at 28 DAT were 0.47 mg eq/kg for leaves and 0.44 mg eq/kg in mature fruits. Newly developed green fruits had much lower total radioactive residues of 0.03 mg eq/kg. In all fruits receiving a foliar treatment > 89% of the residue was recovered in the surface wash. Unextracted residues were generally low (< 0.6% TRR).

The identification of the radioactivity (combined surface wash and extract) showed unchanged lufenuron as the major residue in fruits and leaves (93–98% TRR). Only in one fruit sample collected 28 DAT, minor amounts of CGA238277 (0.2% TRR, 0.0013 mg eq/kg) were found.

In mature fruits receiving a direct injection of lufenuron, the results from the extracts were comparable to foliar treated fruits. 90–95% of the radioactivity was identified as unchanged lufenuron. CGA238277 was identified in minor amounts up to 2% of the TRR. 5% of the TRR remained unextracted.

For cotton grown under glasshouse conditions the metabolism was investigated in two studies using [dichlorophenyl-^{14}C]-lufenuron or [difluorophenyl-^{14}C]-lufenuron.

For [dichlorophenyl-^{14}C]-lufenuron cotton plants received three foliar sprayings equivalent to 0.03 kg ai/ha each at 14 day interval, beginning at flowering. Sampling of leaves took place 1 hour, 1 day, 3 and 7 days after the first application and 14 days, 28 and 84 days (maturity) after the last application. In addition, four cotton plants received three stem injections (100 µg lufenuron each) made at 14-day intervals.

TRR levels found were up to 4.9 mg eq/kg in the leaves, < 0.001 mg eq/kg in seeds, 0.092 mg eq/kg in hulls and 0.001 mg eq/kg in green bolls. In leaves the amount of radioactivity in the surface wash decreased from 98% TRR after application 1 to 43% TRR at maturity (84 DALA).

The identification of the radioactivity (combined surface wash and extracts) showed 89–100% of the TRR as unchanged lufenuron. No metabolites were identified. In seeds and green bolls TRR levels were too low for further identification. Unextracted residues did not exceed 3.3% of the TRR.

The stem injection showed that most of the applied radioactivity remained at the injection site (81.2% AR). Minor translocation was observed into adjected stalks (13.3% AR) and leaves (1.6–3.9% AR). In all samples the unchanged parent was the only residue identified (~95–98% TRR).

For [difluorophenyl-^{14}C]-lufenuron the use pattern was comparable to the other label, but only the foliar treatment experiment was conducted. Samples of mature plant parts were collected 52 DALA.

TRR levels found were up to 5.95 mg eq/kg in leaves (52 DALA), 0.69 mg eq/kg in hulls and 0.003 mg eq/kg in seeds. In the leaves the surface wash contained most of the residue with 96% TRR directly after treatment and 49–58% TRR at maturity (52 DALA).

The identification again revealed unchanged lufenuron exclusively, representing >92% of the TRR in leaves and 79–83% TRR in other matrices. The TRR found in seeds was too low for identification. No further metabolites were detected.

Two confined rotational crop studies for lufenuron were submitted

In the first study [difluorophenyl-^{14}C]-lufenuron was applied under protected conditions to bare soil at a rate equivalent to 0.15 kg ai/ha. Lettuce, spring wheat, maize and carrots were planted in the treated soil 63 days after test substance application. The transfer of radioactivity into succeeding crops was very limited. In mature lettuce (126 d after treatment) the highest TRR level of 0.047 mg eq/kg was found. 53% of the TRR was identified as unchanged parent (0.025 mg/kg). In other matrices only wheat straw (0.023 mg eq/kg, 0.007 mg lufenuron/kg) and immature carrots roots (0.023 mg eq/kg, no identification conducted) showed total radioactive residues above 0.01 mg eq/kg. No further identification was conducted for these matrices. In soil samples, nearly the entire extracted radioactivity was attributed to lufenuron. No residue of CGA149772 or CGA149776 could be identified in any sample.

In a second confined study conducted under field conditions [dichlorophenyl-^{14}C]-lufenuron was applied to bare soil once at a rate equivalent to 0.13 kg ai/ha. After different plant-back intervals (PBI) lettuce (PBI 76 d), winter wheat (PBI 126 d), sugar beets (PBI 306 days) and maize (PBI 331 d) were planted/sown and grown to maturity. TRR levels in all plant samples was between < 0.001 mg eq/kg and 0.004 mg eq/kg, which was too low for further identification.

In summary lufenuron is deposited on the plant surface and slowly adsorbed by leaves following direct treatment. On the surface and in plant tissue, the active substance is the only residue present in major amounts. Minor amounts of CGA238277 were identified in cabbage and tomato (up to 3.3% TRR). All plant metabolism studies for lufenuron were conducted under protected conditions. However, since lufenuron is not subject to photolysis the residue pattern in plants grown under field conditions is expected to be similar. Also, two of three studies were conducted with [dichlorophenyl-^{14}C]-lufenuron only. Since nearly the entire applied radioactivity was recovered as unchanged parent compound in these studies, no investigations with a second label are considered necessary.

For rotational crops the transfer of residues into succeeding crops from soil is very limited and mostly resulted in TRR levels too low for identification. In soil and in crop samples subject to identification parent lufenuron was the major residue. No further metabolites were identified.

Animal metabolism

Information was available on metabolism of lufenuron in laboratory animals, lactating goats and laying hens. Studies on rats, mice and dogs were evaluated by the WHO Core Assessment Group.

For lactating goats two studies were conducted involving daily administration of either ^{14}C-difluorophenyl-labelled lufenuron at 5.4 ppm (0.135 mg/kg bw) or ^{14}C-dichlorophenyl-lufenuron at 6.0 ppm (0.15 mg/kg bw) for ten consecutive days. The animals were slaughtered approximately 24h after the last dose.

The total recovery of the administered radioactivity was 95% for both labels. The majority of the radioactivity (73–74%) was found in the faeces. Radioactive residues in the edible tissues were 0.8–1.6% AR in muscle (0.038–0.08 mg eq/kg), 4.2–5.4% AR in fat (0.82–2.4 mg eq/kg), 0.28–0.3% AR in liver (0.37–0.42 mg eq/kg), 0.01–0.02% AR in kidney (0.11–0.12 mg eq/kg) and 5.8–6.8% AR in milk (up to 1.0 mg eq/kg). A plateau in milk was observed after approximately one week.

In tissues and milk unchanged parent was the only residue identified for both radiolabels, representing 73–94% of the TRR. The remaining radioactivity remained unresolved in the TLC-System used (6.6–19% TRR) or was not extracted from the sample (0.6–8.9% TRR).

Also for laying hens two studies were conducted involving daily administration of either ^{14}C-difluorophenyl-labelled lufenuron at 3.4 ppm (2.6 mg/kg bw) or ^{14}C-dichlorophenyl-lufenuron at 5.2 ppm (3.5 mg/kg bw) for fourteen consecutive days. The animals were slaughtered approximately 24h after the last dose.

The total recovery of the administered radioactivity was 75–79%. The majority of the radioactivity (54–62%) was found in the excreta. Radioactive residues in the edible tissues were 0.55–1.2% AR in lean meat (0.1–0.24 mg eq/kg), 5.1–9.9% AR in fat (7.2–13 mg eq/kg), 0.4–0.58% AR in liver (0.83–1.5 mg eq/kg), 0.07–0.09% AR in kidney (0.52–0.74 mg eq/kg) and 8.7–9.6% AR in eggs (up to 0.016 mg eq/kg in egg white and 8.5 mg eq/kg in egg yolk). In eggs a plateau was observed after one week for ^{14}C-difluorophenyl-lufenuron while residues for ^{14}C-dichlorophenyl-lufenuron showed a slight increase until the end of dosing.

In tissues and eggs unchanged parent lufenuron was the predominant residue, representing 79–94% TRR in all matrices except egg white. For the difluorophenyl-label the cleavage product CGA149772 was the only metabolite detected, being present in egg white at 0.001 mg eq/kg (17.3% TRR). For the dichlorophenyl-label its counterpart CGA238277 was found in minor amounts in kidney (0.028 mg eq/kg, 5.3% TRR) and egg white (< 0.001 mg eq/kg, 7.0% TRR). The remaining radioactivity remained unresolved in the TLC-System used (3–42% TRR) or was not extracted from the sample (2–11% TRR).

In summary the metabolic degradation of lufenuron in livestock animals is very limited, showing parent as the predominant residue in all matrices. Minor amounts of the cleavage products CGA149772 and CGA238277 were found in poultry kidney and egg white.

Methods of residue analysis

The Meeting received analytical methods for the analysis of lufenuron in plant and animal matrices. The basic principle employs extraction by homogenisation with methanol or water and partitioning against hexane: ethyl ether (9:1,v:v). Clean-up is normally achieved by C18 solid-phase extraction. Residues are determined by liquid chromatography (LC) in combination with UV (255 nm) or tandem mass spectroscopy (MS/MS). Mass-transitions are m/z 509.1 → 326 for quantification and m/z 509→ 175 for confirmation. The methods submitted are suitable for measuring residues with a LOQ of 0.01 mg/kg in high water, high oil and high starch matrices while acidic matrices were validated with a LOQ of 0.02 mg/kg.

For animal matrices the analytical methods were comparable, however silica gel SPE was used for clean-up instead. Validated LOQs were 0.001 mg eq/kg for milk, 0.01 mg/kg for liver and kidney, 0.02 mg/kg for meat and 0.1 mg/kg for fat.

The application of multi-residue methods was tested with DFG S19 for both plant and animal matrices. The method was shown suitable with a general LOQ of 0.02 mg/kg for lufenuron.

Stability of residues in stored analytical samples

The Meeting received information on the storage stability of lufenuron in plant and animal matrices stored at -18°C.

In plant matrices with high water, high acid and high oil content parent lufenuron was stable for at least 24 months. High starch matrices were not tested.

In animal matrices (bovine tissues and milk) no significant degradation was observed within 9 months. No storage stability data were provided for poultry matrices and eggs.

Definition of the residue

The fate of lufenuron in plants was investigated after foliar application to tomatoes, cabbage and cotton. In all crop samples investigated unchanged lufenuron was the only major residue present, representing 79–100% TRR. The residue was mainly present as a surface residue. No significant transfer into untreated plant parts was observed.

In confined rotational crop studies the overall uptake of radioactivity was very limited. Only parent lufenuron could be detected in collected plant samples.

The Meeting concluded that lufenuron is the relevant residue in all plant matrices for compliance with MRLs and for dietary intake purposes. Analytical multi-residue methods are capable of measuring lufenuron in all plant matrices.

Livestock animal metabolism studies were conducted on lactating goats (5.4–6.0 ppm) and laying hens (3.4–5.2 ppm).

In both species unchanged parent lufenuron was the only residue identified in major amounts, representing 73–94% of the TRR in all matrices. In goat matrices and milk no other metabolites could be detected. In poultry matrices minor amounts of the cleavage products CGA149772 and CGA238277 were found, representing up to 17% TRR in egg white but at low levels (0.001 mg eq/kg) and 5.3% TRR in kidney (0.028 mg eq/kg). No further metabolites were found in poultry matrices or eggs.

The Meeting concluded that parent lufenuron is the relevant residue in all animal matrices for compliance with MRLs and for dietary intake purposes. Analytical multi-residue methods are capable of measuring lufenuron in all animal matrices.

In all species residue concentrations in fat tissues or egg yolk were at least one order of magnitude higher than in muscle tissues or egg white. The log P_{ow} of lufenuron is 5.12. The Meeting decided that residues of lufenuron are fat soluble.

Definition of the residue for compliance with MRL and for dietary intake for plant and animal commodities: *lufenuron*

The residue is fat-soluble.

Results of supervised residue trials on crops

The Meeting received supervised trial data for applications of lufenuron on various vegetables crops as well as for soya beans, maize, sugarcane, cotton and coffee conducted in Brazil, China and Europe.

Cucumber

Lufenuron is registered in Spain for cucumbers under protected conditions at rates of 2 × 0.1 kg ai/ha with a PHI of 7 days. Supervised field trials from France, Greece and Spain according to this GAP and at rates up to +50% higher were submitted.

In protected cucumbers residues of lufenuron following GAP treatment (±25%) were (n=4): 0.01, 0.02, 0.06, 0.06 mg/kg.

The Meeting concluded that four supervised trials on cucumber approximating GAP are insufficient for an evaluation and decided to explore the proportionality approach using trials at +50% GAP rate. Since some of the trials according to GAP were also conducted at slightly elevated rates, all data are proportionally adjusted to the Spanish GAP rate of 0.1 kg ai/ha:

In protected cucumbers treated with 0.1 kg ai/ha lufenuron residues were (no scaling factor): 0.06 mg/kg.

In protected cucumbers treated with 0.11 kg ai/ha lufenuron residues were (scaling factor 0.91): 0.018 mg/kg (0.91×0.02 mg/kg).

In protected cucumbers treated with 0.12 kg ai/ha lufenuron residues were (scaling factor 0.83): 0.0083 and 0.05 mg/kg (0.83×0.01 mg/kg and 0.83×0.06 mg/kg).

In protected cucumbers treated with 0.15 kg ai/ha lufenuron residues were (scaling factor 0.66): 0.013(3), 0.02(3), 0.026 mg/kg (0.66×0.02 mg/kg(3), 0.66×0.03 mg/kg(3) and 0.66×0.04. mg/kg)

The combined total dataset for lufenuron in protected cucumbers was (n=11): 0.0083, 0.013(3), 0.018, 0.02(3), 0.026, 0.05 and 0.06 mg/kg.

The Meeting estimated a maximum residues level of 0.09 mg/kg and a STMR of 0.02 mg/kg for lufenuron in cucumber.

Melons, except watermelons

Lufenuron is registered in Spain for melons under protected conditions at rates of 3 × 0.1 kg ai/ha with a PHI of 7 days. Supervised field trials from Spain according to this GAP were submitted.

All samples were segmented and in some trials already separated into pulp and peel in the field, which is against the current Codex sampling procedure. However, lufenuron was not metabolized in plant metabolism studies, even after direct injection into tomato fruits. In addition simulated hydrolysis indicated no degradation at pH 7 or lower, which is representive of fruits and vegetables. The Meeting therefore concluded that segmentation of samples in the field did not influence the magnitude of residues. The Meeting also noted that no contamination of melon pulp with peel residues during separation occurred and decided to use the data for its assessment.

Some trials submitted involved a last sampling at 3 DALA which is shorter than the PHI of the Spanish GAP of 7 days. In plant metabolism studies lufenuron was a surface residue not subject to degradation or metabolism. Also, melons near maturity have already finalized their growth and are only subject to ripening. Therefore the Meeting concluded that no different residue populations have to be expected for melons within the last week before harvest when sampled at 3 or 7 DALA and decided to take samples collected after three days also into account for the assessment. This conclusion is supported by several decline studies from 0 to 10 DALA, indicating no constant decrease of the residue concentration but the usual sampling variation within the results.

In protected melons (whole fruits) residues of lufenuron were (n=6): 0.02, 0.03, 0.06, 0.09, 0.13, 0.19 mg/kg.

In the corresponding pulp samples, if measured, residues of lufenuron were (n=4): < 0.0<u>2</u>(4) mg/kg.

For melon, except watermelons, the Meeting estimated a maximum residues level of 0.4 mg/kg, based on whole melon fruits, except watermelons and an STMR of 0.02 mg/kg, based on pulp data.

Peppers, sweet

Lufenuron is registered in Spain for sweet peppers under protected conditions at rates of 3 × 0.1 kg ai/ha with a PHI of 7 days. Supervised field trials on sweet peppers from Greece, Italy and Spain according to this GAP were submitted.

In protected sweet peppers residues of lufenuron following GAP treatment (±25%) were (n=6): 0.08, 0.13, <u>0.13</u>, <u>0.17</u>, 0.18 and 0.54 mg/kg.

The Meeting estimated a maximum residues level of 0.8 mg/kg and an STMR of 0.15 mg/kg for lufenuron in sweet peppers.

Tomato

Lufenuron is registered in Spain for tomatoes under protected conditions at rates of 3 × 0.1 kg ai/ha with a PHI of 7 days. Supervised field trials on tomatoes from Greece, Spain and Switzerland according to this GAP were submitted.

In protected tomatoes residues of lufenuron following GAP treatment were (n=13): 0.02, 0.04, 0.04, 0.05, 0.06, <u>0.08</u>(4), 0.09, 0.1, 0.11 and 0.24 mg/kg.

The Meeting estimated a maximum residues level of 0.4 mg/kg and an STMR of 0.08 mg/kg for lufenuron in tomatoes.

Sweet corn

The Meeting received supervised field trail information on sweet corn, however no corresponding GAP was made available to the Meeting and therefore no recommendation was made.

Soya beans

Lufenuron is registered in Brazil for soya beans at maximum rates of 2 × 0.02 kg ai/ha with a PHI of 35 days. Supervised field trials on soya beans from Brazil at exaggerated rates (3.8 times higher) and a higher number of treatments (four instead of two) were submitted.

In soya beans residues of lufenuron after exaggerated treatment were (n=3): < 0.01(3) mg/kg

The Meeting concluded that under consideration of the exaggerated treatment regime involved, the seeds being protected by the pod during applications and the non-systemic properties of the active substance observed in plant metabolism studies, no finite residue following treatment at GAP rate have to be expected. The Meeting estimated a maximum residues level of 0.01* mg/kg and an STMR of 0 mg/kg for lufenuron in soya beans (dry).

Potatoes

Lufenuron is registered in Brazil for potatoes at rates of 4 × 0.04 kg ai/ha with a PHI of 14 days. Supervised field trials from Brazil matching the GAP were submitted.

In potato tubers residues of lufenuron after treatment according to GAP were (n=4): < 0.01(4) mg/kg

Taking into account the non-systemic properties of the active substance, the Meeting concluded that residues in tuber above the LOQ are unlikely to occur and estimated a maximum residues level of 0.01* mg/kg and an STMR of 0.01 mg/kg for lufenuron in potatoes.

Maize

Lufenuron is registered in Brazil for maize at maximum rates of 2 × 0.01 kg ai/ha with a PHI of 35 days. All supervised field trials on maize submitted were sampled at significantly longer DAT intervals than the PHI.

The Meeting concluded that the data submitted for lufenuron in maize is insufficient for a recommendation.

Sugar cane

Lufenuron is registered in Brazil for sugar cane at rates of 2 × 0.02 kg ai/ha with a PHI of 14 days. Supervised field trials from Brazil matching the GAP were submitted.

In sugar cane residues of lufenuron after treatment according to GAP were (n=4): < 0.01 and 0.02(3) mg/kg

The Meeting concluded that the data submitted for lufenuron in sugar cane is insufficient for a recommendation.

Cotton

Lufenuron is registered in China for cotton at rates of 2 × 0.045 kg ai/ha with a PHI of 28 days. Supervised field trials from China according to this GAP were submitted, however the trial description did not included information on the stage of boll opening for cotton plants.

In cotton seeds residues of lufenuron after treatment according to GAP were (n=4): < 0.05(4) mg/kg

The Meeting concluded that the stage of boll opening is a sensitive parameter for residues following foliar application. Without this type of information, a set of four field trials in not considered sufficient for estimating maximum residue levels in cotton seed. Supportive information from plant metabolism studies cannot be taken into account as the active substance was applied before boll opening in these studies.

Coffee

Lufenuron is registered in Brazil for coffee at rates of 2 × 0.04 kg ai/ha with a PHI of 7 days. Supervised field trials from Brazil matching the GAP were submitted.

In coffee beans (dry processed) residues of lufenuron after treatment according to GAP were (n=4): < 0.01(3) and 0.01 mg/kg

The Meeting concluded that the data submitted for lufenuron in coffee is insufficient for a recommendation.

Fate of residues during processing

The Meeting received information on the hydrolysis of radio-labelled lufenuron as well as processing studies using unlabelled material in tomatoes.

In a hydrolysis study using [dichlorophenyl-^{14}C]-lufenuron or [difluorophenyl-^{14}C]-lufenuron, typical processing conditions were simulated (pH 4,5 and 6 with 90°C, 100°C and 120°C for 20, 60 and 20 minutes). No significant degradation of the parent was observed. For pH5 with 100°C for 60min a minor formation of CGA224443 and CGA149772 (up to 6.9% of the applied radioactivity) was observed.

The fate of lufenuron residues has been examined simulating household and commercial processing of tomatoes. Estimated processing factors for the commodities considered at this Meeting are summarised below.

Raw commodity	Processed commodity	Lufenuron		
		Individual processing factors	Mean or best estimate processing factor	STMR-P in mg/kg
Tomato (STMR: 0.08 mg/kg)	Juice, raw	<0.17, 0.17	0.17	0.014
	Puree	0.79, 0.83, 0.86.0.9	0.85	0.068
	Paste	0.83, 1.1	0.97	0.078
	Canned/preserve	<0.17(4)	0.17	0.014
	pomace, wet	7.9, 7.9, 8.6, 9.7	8.3	0.66

Residues in animal commodities

Farm animal feeding studies

The Meeting received feeding studies involving lufenuron on lactating cows and steers.

Three groups of lactating cows were dosed daily at levels of 0.82, 4.3 and 8.6 ppm in the diet for 28 consecutive days. Milk was collected throughout the whole study and tissues were collected on day 29 within 24 hrs after the last dose.

In milk residues of lufenuron were 0.16 mg/kg, 0.99 mg/kg and 2.5 mg/kg for the low, middle and high dose group, respectively. Skim milk and cream were analysed individually, showing residues of 0.006, 0.038 and 0.054 mg/kg for skim milk and 3.1, 24 and 32 mg/kg for cream.

In tissues mean concentrations of lufenuron with increasing dose rate were 0.03, 0.17 and 0.43 mg/kg in muscle, 0.06, 0.37 and 0.77 mg/kg in liver, 0.03, 0.22 and 0.36 mg/kg in kidney and 0.73, 4.5 and 8.0 mg/kg in fat.

In the steer study three groups of Angus steers were dosed 0.02 or 1 ppm in the diet for 28 consecutive days. Animals were sacrificed 24h after the last administrations (day 28).

Mean lufenuron residues in the low and high-dose animals were < 0.01 and < 0.01 mg/kg in muscle, < 0.01 and 0.023 mg/kg in liver, < 0.01 and 0.026 mg/kg in kidney and 0.036 and 0.23 mg/kg in fat, respectively.

Estimated maximum and mean dietary burdens of livestock and animal commodities maximum residue levels

Dietary burden calculations for beef cattle, dairy cattle, broilers and laying poultry are presented in Annex 6. The calculations were made according to the livestock diets from US-Canada, EU, Australia and Japan in the OECD Table (Annex 6 of the 2006 JMPR Report).

	Livestock dietary burden, lufenuron, ppm of dry matter diet							
	US-Canada		EU		Australia		Japan	
	max.	mean	max.	mean	max.	mean	max.	mean
Beef cattle	0.02	0.02	0.34	0.34	0.02	0.02	none	none
Dairy cattle	0.02	0.02	0.34 [a]	0.34 [b]	0.02	0.02	none	none
Poultry - broiler	none	none	0.01	0.01	none	none	none	none
Poultry - layer	none	none	0.01 [c]	0.01 [d]	none	none	none	none

[a] Highest maximum beef or dairy cattle burden suitable for MRL estimates for mammalian meat and milk

[b] Highest mean beef or dairy cattle burden suitable for STMR estimates for mammalian meat and milk

[c] Highest maximum broiler or laying hen burden suitable for MRL estimates for poultry products and eggs

[d] Highest mean broiler or laying hen burden suitable for STMR estimates for poultry products and eggs

none - no relevant feed items

Animal commodities maximum residue levels

For beef and dairy cattle a maximum and mean dietary burden of 0.34 ppm was estimated. Two feeding studies on lactating cows and steers were submitted. Since no accumulation of residues in steers compared to dairy cows was observed, the Meeting decided to base its recommendations for mammalian products on the lactating cow feeding study, generally showing higher residues at identical intake levels.

Lufenuron feeding study	Feed level	Total residue				
	(ppm)	(mg/kg) in milk	(mg/kg) in muscle	(mg/kg) in kidney	(mg/kg) in liver	(mg/kg) in fat
Maximum residue level: dairy cattle						
Feeding study (HR for each dose group, except for milk)	0.82	0.16 (cream: 3.1)	0.04	0.04	0.07	1.2
Dietary burden and residue estimate	0.34	0.066 (cream: 1.2)	0.017	0.017	0.029	0.5
STMR dairy cattle						
Feeding study (Mean for each dose group)	0.82	0.16 (cream: 3.1)	0.03	0.03	0.06	0.73
Dietary burden and residue estimate	0.34	0.066 (cream: 1.2)	0.012	0.012	0.025	0.3

The Meeting estimated STMR values of 0.012 mg/kg for muscle, 0.025 mg/kg for edible offal (based on liver) and 0.3 for fat. Corresponding maximum residue levels were estimated at 0.04 mg/kg for edible offal, mammalian (based on liver) and 0.7 mg/kg for meat (based on the fat) and mammalian fat.

For milk, an STMR and a MRL of 0.066 mg/kg and 0.1 mg/kg were estimated, respectively. Based on the data for cream, the Meeting also estimated an STMR and MRL of 1.2 mg/kg and 2 mg/kg for lufenuron in milk fat, respectively.

For poultry a maximum and mean dietary burden of 0.01 ppm was estimated. No farm animal feeding studies were provided for poultry. Therefore the Meeting decided to make its recommendations based on the ^{14}C-difluorophenyl-labelled poultry metabolism study which showed higher residues than the corresponding ^{14}C-dichlorophenyl-labelled experiment.

Lufenuron feeding study	Feed level	Total residue				
	(ppm)	(mg/kg) in eggs	(mg/kg) in muscle	(mg/kg) in kidney	(mg/kg) in liver	(mg/kg) in fat
Mean and maximum residue level: poultry						
^{14}C-difluorophenyl-labelled metabolism study	3.4	2.5 [a]	0.196	0.588	1.34	9.15
Dietary burden and residue estimate	0.01	0.01	0.0006	0.0017	0.004	0.027

[a] In the metabolism study egg white and egg yolk were analysed separately. To estimate residues in whole eggs, an average ratio of 65% egg white and 35% egg yolk was taken into account: 0.65 × 0.003 mg eq/kg in egg white + 0.35 × 7.18 mg eq/kg in egg yolk = 2.5 mg eq/kg in whole eggs

The Meeting estimated STMR values of 0.01 mg/kg for eggs, 0.0006 mg/kg for poultry meat, 0.004 mg/kg for poultry edible offal of (based on liver) and 0.027 mg/kg for poultry fat. Corresponding maximum residue levels for lufenuron were estimated at 0.02 mg/kg for eggs, poultry meat and edible offal of and at 0.04 mg/kg for poultry fat.

RECOMMENDATIONS

On the basis of the data from supervised trials, the Meeting concluded that the residue levels listed in Annex 1 were suitable for estimating maximum residue limits and for IEDI assessment.

Definition of the residue for compliance with MRL and for dietary intake purposes for plant and animal commodities: *Lufenuron*

FURTHER WORK OR INFORMATION

- Poultry feeding study

DIETARY RISK ASSESSMENT

Long-term intake

The evaluation of lufenuron has resulted in recommendations for MRLs and STMRs for raw and processed commodities. The International Estimated Daily Intakes for the 17 GEMS/Food cluster diets, based on this years estimated STMRs, were in the range 0–4% of the maximum ADI of 0.02 mg/kg bw. The results are shown in Annex 3 to the 2015 Report.

The Meeting concluded that the long-term intake of residues of lufenuron from uses that have been considered by the JMPR is unlikely to present a public health concern.

Short-term intake

For short-term intake, an ARfD was considered unnecessary. The Meeting concluded that the short-term intake of lufenuron residues from uses considered by the Meeting is unlikely to present a public health concern.

5.24 PENCONAZOLE (182)

TOXICOLOGY

Penconazole is the ISO-approved common name for 1-(2,4-dichloro-β-propylphenethyl)-1*H*-1,2,4-triazole (IUPAC), which has the CAS number 66246-88-6. Penconazole is a systemic triazole fungicide with preventive and curative properties for the control of powdery mildew. It stops the development of fungi by interfering with the biosynthesis of sterols in cell membranes and is used on grapes, pome and stone fruit, cucurbits and strawberries.

Penconazole was previously evaluated for toxicology by JMPR in 1992, when the Meeting established an ADI of 0–0.03 mg/kg bw on the basis of a NOAEL of 3 mg/kg bw per day in a 1-year study in dogs.

In 2008, a group of manufacturers of triazole fungicides formed a task force known as the "Triazole Derivative Metabolite Group" and made a joint submission of toxicological data on the common metabolites 1,2,4-triazole, triazole acetic acid and triazole alinine to JMPR. Triazole alanine and triazole acetic acid residues are primarily associated with plant commodities, whereas 1,2,4-triazole is mainly associated with animal commodities, lesser amounts of this compound being found in plant commodities.

In 2008, the Meeting established an ADI of 0–0.2 mg/kg bw for 1,2,4-triazole, based on a NOAEL of 16 mg/kg bw per day in a two-generation reproductive toxicity study in rats. The Meeting established an ARfD of 0.3 mg/kg bw for 1,2,4-triazole, based on a NOAEL of 30 mg/kg bw per day in a developmental toxicity study in rabbits.

In 2008, the Meeting established a group ADI of 0–1.0 mg/kg bw for triazole alanine and triazole acetic acid (alone or in combination), based on a NOAEL of 100 mg/kg bw per day in a developmental toxicity study in rats on triazole alanine. The 2008 Meeting concluded that it was unnecessary to establish an ARfD for triazole alanine and triazole acetic acid.

Penconazole was re-evaluated by the present Meeting as part of the periodic review programme of CCPR. Both the new data and previously submitted studies with penconazole were considered by the present Meeting. New data on the common rat and plant metabolites 1,2,4-triazole, triazole acetic acid and triazole alanine were considered by the present Meeting to evaluate whether a revision of the ADIs or ARfDs for these compounds was necessary.

All critical studies contained statements of compliance with GLP. The Meeting considered that the database was adequate for the risk assessment.

Biochemical aspects

Absorption was rapid and extensive following the administration of a single oral dose (0.5 or 25 mg/kg bw) of [^{14}C]penconazole to rats. At 50 mg/kg bw, maximum blood concentrations were reached in 4 hours in males and 6 hours in females. At this dose, peak tissue concentrations, observed at about 6 and 4 hours after dosing in males and females, respectively, were generally higher in males; the half-life of elimination was also longer in males than in females. Highest tissue concentrations of radioactivity were found in penis (probably related to contamination with urinary radioactivity), liver, lungs and kidneys. A sex difference was apparent in excretion profiles, with females excreting 73–85% of a 0.5 or 25 mg/kg bw dose of penconazole in urine and 14–32% in faeces over a 6-day period, whereas males excreted 62% of the same dose levels in urine and 37–39% in faeces over the same period. Excretion was more rapid in females, irrespective of dose level or position of radiolabel. Biliary elimination was greater in males than in females (55% and 40% of the administered dose, respectively). Less than 5% of the dose was excreted in faeces in bile duct–cannulated rats, indicating enterohepatic circulation of biliary metabolites. The excretion profiles in males and females were not affected by dose or predosing the rats with unlabelled penconazole for 14 or 90 days.

Primary metabolic reactions involved in the biotransformation of penconazole included cleavage of the triazole ring (estimated 15% of the dose), oxidation of the ω-position of the alkane chain to form the respective carboxylic acid (30% of the dose), oxidation of the 3- or 4-position of the alkane chain to form monohydroxy and dihydroxy derivatives (2.5% of the dose) and oxidation of the triazole ring in the 3- or 5-position (0.7% of the dose). Cleavage of the penconazole molecule to free triazole was more extensive in males than in females. Secondary metabolic reactions include α-oxidation of the carboxylic acids to form α-hydroxy carboxylic acids (4.4% of the dose), decarboxylation following oxidation to α-ketocarboxylic derivative (9% of the dose), oxidation of the 3,4-dihydroxy derivatives to produce the corresponding 3- or 4-keto derivatives (0.5% of the dose) and conjugation of all alkanol derivatives with glucuronic acid (2.5% of the dose). A small amount of parent penconazole was identified in faeces and was considered to represent unabsorbed dose.

Toxicological data

The acute toxicity of penconazole is low (rat: oral LD_{50} > 2000 mg/kg bw; dermal LD_{50} > 3000 mg/kg bw; inhalation LC_{50} > 4.0 mg/L). Penconazole was not irritating to the skin or the eyes of rabbits. Penconazole was not a skin sensitizer in a Magnusson and Kligman test in guinea-pigs.

In repeated-dose oral toxicity studies with penconazole in mice, rats and dogs, the main adverse effects were body weight changes and liver toxicity.

In a 90-day study in mice using dietary penconazole concentrations of 0, 10, 100, 300, 500, 1000 and 2400 ppm (equal to 0, 1.7, 17, 52, 85, 163 and 423 mg/kg bw per day for males and 0, 2.5, 24, 72, 116, 237 and 614 mg/kg bw per day for females, respectively), the NOAEL was 500 ppm (equal to 85 mg/kg bw per day), based on lower total protein and cholesterol levels and focal coagulative necrosis in the liver of both sexes at 1000 ppm (equal to 163 mg/kg bw per day).

In a second 90-day study in mice using dietary concentrations of 0, 100, 500, 1500, 3000 and 5000 ppm (equal to 0, 14, 69, 229, 437 and 837 mg/kg bw per day for males and 0, 18, 87, 274, 545 and 983 mg/kg bw per day for females, respectively), the NOAEL was 500 ppm (equal to 69 mg/kg bw per day), based on reductions in cholesterol levels in both sexes, a reduction in total protein and albumin levels in females and a reduction in body weight gain and increased nuclear pleomorphism in hepatocytes in males at 1500 ppm (equal to 229 mg/kg bw per day).

In a 28-day gavage study in rats using penconazole doses of 0, 100 and 500 mg/kg bw per day, a NOAEL could not be identified. The LOAEL was 100 mg/kg bw per day, based on changes in clinical chemistry and haematology parameters and minimal hypertrophy of the follicle epithelium of the thyroid.

In a 13-week study in rats using dietary penconazole concentrations of 0, 30, 300 and 3000 ppm (equal to 0, 2.0, 19 and 202 mg/kg bw per day for males and 0, 2.1, 21 and 209 mg/kg bw per day for females, respectively), the NOAEL was 300 ppm (equal to 19 mg/kg bw per day), based on reduced body weight gain and feed consumption in females and increased testes weight observed at 3000 ppm (equal to 202 mg/kg bw per day).

In a second 13-week dietary study in rats using penconazole concentrations of 0, 10, 30 and 100 ppm (equal to 0, 0.77, 2.1 and 7.1 mg/kg bw per day for males and 0, 0.78, 2.1 and 7.3 mg/kg bw per day for females, respectively), the NOAEL was 100 ppm (equal to 7.1 mg/kg bw per day), the highest dose tested.

In a third 13-week dietary study in rats using penconazole concentrations of 0, 10, 100, 300, 500, 100 and 2400 ppm (equal to 0, 0.81, 7.5, 23, 38, 72 and 179 mg/kg bw per day for males and 0, 0.96, 9.1, 28, 45, 86 and 209 mg/kg bw per day for females, respectively), the NOAEL was 300 ppm (equal to 23 mg/kg bw per day), based on an increased incidence of hepatocellular vacuolation and hypertrophy at 500 ppm (equal to 38 mg/kg bw per day).

In a 1-year study, dogs received a dietary penconazole concentration of 0, 100, 500 or 5000 ppm (equal to 0, 3.1, 16.9 and 133 mg/kg bw per day for males and 0, 3.3, 16.7 and 139 mg/kg bw per day for females, respectively). During week 20, the highest dose was reduced to 2500 ppm (equal to 86 mg/kg bw per day for males and 89 mg/kg bw per day for females, respectively), because of excessive reduction in feed consumption and body weight gain. The NOAEL was 100 ppm (equal to 3.1 mg/kg bw per day), based on reduced body weight gain, increased absolute and relative liver weights and slight histopathological changes in the liver (hepatocyte necrosis associated with inflammatory cell infiltration) in males and females at 500 ppm (equal to 16.7 mg/kg bw per day).

In a 2-year carcinogenicity study in mice using dietary concentrations of 0, 5, 75, 150 and 300 ppm (equal to 0, 0.75, 9.8, 19 and 41 mg/kg bw per day for males and 0, 0.67, 8.8, 17 and 36 mg/kg bw per day for females, respectively), the NOAEL was 300 ppm (equal to 36 mg/kg bw per day), the highest dose tested. No treatment-related tumours were observed in mice in this study.

In an 80-week carcinogenicity study in mice using dietary concentrations of 0, 25, 200 and 1500 ppm (equal to 0, 2.7, 22 and 178 mg/kg bw per day for males and 0, 3.5, 28 and 222 mg/kg bw per day for females, respectively), the NOAEL was 200 ppm (equal to 22 mg/kg bw per day), based on decreased body weight gain and absolute and relative spleen weights and increased incidence and severity of hepatocellular vacuolation in both sexes and increased absolute and relative liver weights in males at 1500 ppm (equal to 178 mg/kg bw per day). No treatment-related tumours were observed in mice in this study.

The overall NOAEL for the long-term toxicity studies in mice was 300 ppm (equal to 36 mg/kg bw per day), and the overall LOAEL was 1500 ppm (equal to 178 mg/kg bw per day).

In a 27-month toxicity and carcinogenicity study in rats using dietary concentrations of 0, 5, 75, 150 and 300 ppm (equal to 0, 0.30, 3.8, 7.3 and 15 mg/kg bw per day for males and 0, 0.31, 4.0, 8.1 and 17 mg/kg bw per day for females, respectively), the NOAEL was 150 ppm (equal to 8.1 mg/kg bw per day), based on increased absolute and relative liver weights and an increase in gamma-glutamyltransferase levels at 1 year in females at 300 ppm (equal to 17 mg/kg bw per day). No treatment-related tumours were observed in rats in this study.

The Meeting concluded that penconazole is not carcinogenic in mice or rats.

Penconazole was tested for genotoxicity in an adequate range of assays, both in vitro and in vivo. There was no evidence of genotoxicity.

The Meeting concluded that penconazole is unlikely to be genotoxic.

In view of the lack of genotoxicity and the absence of carcinogenicity in mice and rats, the Meeting concluded that penconazole is unlikely to pose a carcinogenic risk to humans.

In a two-generation reproductive toxicity study in rats using penconazole at dietary concentrations of 0, 80, 400 and 2000 ppm (equal to 0, 5.5, 29 and 146 mg/kg bw per day for males and 0, 7.5, 40 and 202 mg/kg bw per day for females of the F_0 generation and 0, 6.5, 31 and 166 mg/kg bw per day for males and 0, 8.5, 43 and 227 mg/kg bw per day for females of the F_1 generation, respectively), the NOAEL for parental toxicity was 400 ppm (equal to 43 mg/kg bw per day), based on increased relative liver weights and the observation of hepatocellular necrosis in F_1 parental females at 2000 ppm (equal to 227 mg/kg bw per day). The NOAEL for offspring toxicity was 2000 ppm (equal to 146 mg/kg bw per day), the highest dose tested. The NOAEL for reproductive toxicity was 400 ppm (equal to 40 mg/kg bw per day), based on a lower gestation index and a longer gestation duration in F_0 and F_1 females at 2000 ppm (equal to 202 mg/kg bw per day).

In a second two-generation reproductive toxicity study in rats using dietary penconazole concentrations of 0, 25, 250 and 2500 ppm, premating dietary intakes were equal to 0, 2.0, 20 and 191 mg/kg bw per day for males and 0, 2.4, 24 and 238 mg/kg bw per day for females of the F_0 generation and 0, 2.2, 22 and 219 mg/kg bw per day for males and 0, 2.5, 25 and 246 mg/kg bw per day for females of the F_1 generation, respectively. The NOAEL for parental toxicity was 250 ppm (equal to 24 mg/kg bw per day), based on reduced body weight gain and feed consumption during the premating period in F_0 and F_1 females at 2500 ppm (equal to 238 mg/kg bw per day). The NOAEL for offspring toxicity was 250 ppm (equal to 20 mg/kg bw per day), based on an increased number of pups that were born dead or died during PNDs 0–4 and a decreased body weight gain of pups during lactation at 2500 ppm (equal to 191 mg/kg bw per day). The NOAEL for reproductive toxicity was 250 ppm (equal to 20 mg/kg bw per day), based on a decreased mating index at 2500 ppm (equal to 191 mg/kg bw per day).

In a developmental toxicity study in rats using gavage penconazole doses of 0, 30, 100 and 300 mg/kg bw per day, the NOAEL for maternal toxicity was 100 mg/kg bw per day, based on mortality and reduced body weight gain observed at the end of gestation at 300 mg/kg bw per day. The NOAEL for embryo and fetal toxicity was 100 mg/kg bw per day, based on delayed ossification observed at 300 mg/kg bw per day.

In a second developmental toxicity study in rats using gavage penconazole doses of 0, 5, 100 and 500 mg/kg bw per day, the NOAEL for maternal toxicity was 100 mg/kg bw per day, based on mortality observed after 5 and 6 days of treatment, clinical signs observed early during treatment, a reduction in net body weight gain and feed consumption on GD 6, stomach lesions and an increased incidence of late resorptions at 500 mg/kg bw per day. The NOAEL for embryo and fetal toxicity was 100 mg/kg bw per day, based on a slight increase in the occurrence of cervical ribs and an increase in the total number of fetuses/litters with abnormal findings at 500 mg/kg bw per day.

The overall NOAEL for maternal and embryo and fetal toxicity in the two developmental toxicity studies in rats was 100 mg/kg bw per day, and the overall LOAEL was 300 mg/kg bw per day.

In a developmental toxicity study in Chinchilla-type rabbits administered penconazole doses of 0, 25, 75 and 150 mg/kg bw per day by gavage (vehicle was 0.5% aqueous sodium carboxymethyl cellulose), the NOAEL for maternal toxicity was 75 mg/kg bw per day, based on reduction of body weight gain and feed consumption during treatment at 150 mg/kg bw per day. The NOAEL for embryo and fetal toxicity was 75 mg/kg bw per day, based on the increased incidences of microphthalmia and hydroencephalus at 150 mg/kg bw per day.

In a second developmental toxicity study in New Zealand White rabbits administered penconazole doses of 0, 10, 50 and 200 mg/kg bw per day by gavage (vehicle was 3% aqueous corn starch), the NOAEL for maternal toxicity was 200 mg/kg bw per day, the highest dose tested. The NOAEL for embryo and fetal toxicity was 50 mg/kg bw per day, based on the reduced number of live fetuses at 200 mg/kg bw per day.

The Meeting concluded that penconazole is teratogenic in rabbits, but not in rats.

No neurotoxicity studies with penconazole were provided. In view of the absence of evidence of neurotoxicity in other acute and repeated-dose toxicity studies, the Meeting concluded that penconazole is unlikely to be neurotoxic.

A special study in rats and mice indicates that penconazole at gavage doses of 10, 80, 160 and 320 mg/kg bw per day for 14 days induces liver enzyme induction, liver enlargement and proliferation of smooth endoplasmic reticulum and shares some characteristics with a phenobarbital class of monooxygenase inducers.

Toxicological data on metabolites and/or degradates

1,2,4-Triazole

In a 12-month toxicity study in rats using dietary 1,2,4-triazole concentrations of 0, 125, 375, 1000 and 2000 ppm (equal to 0, 6.9, 21, 58 and 113 mg/kg bw per day for males and 0, 8.3, 26, 71 and 136 mg/kg bw per day for females, respectively), the NOAEL was 375 ppm (equal to 21 mg/kg bw per day), based on a reduction in body weight gain at 1000 ppm (equal to 58 mg/kg bw per day).

Triazole acetic acid

In a 28-day toxicity study in mice using dietary triazole acetic acid concentrations of 0, 1000, 3000 and 7000 ppm (equal to 0, 159, 483 and 1067 mg/kg bw per day for males and 0, 183, 542 and 1357 mg/kg bw per day for females, respectively), the NOAEL was 7000 ppm (equal to 1067 mg/kg bw per day), the highest dose tested.

In a 29-day toxicity study in rats using triazole acetic acid at dietary concentrations of 0, 3250, 6500 and 13 000 ppm (equal to 0, 243, 483 and 993 mg/kg bw per day for males and 0, 260, 519 and 940 mg/kg bw per day for females, respectively), the NOAEL was 13 000 ppm (equal to 940 mg/kg bw per day), the highest dose tested.

In a 13-week combined toxicity and neurotoxicity study in rats, dietary triazole acetic acid concentrations were adjusted weekly based on body weight and feed consumption in order to obtain target test substance intakes of 0, 100, 500 and 1000 mg/kg bw per day. Actual mean intakes were 0, 94, 495 and 1002 mg/kg bw per day for males and 0, 119, 627 and 1181 mg/kg bw per day for females, respectively. The NOAEL was 1002 mg/kg bw per day, the highest dose tested.

In a one-generation reproductive toxicity study in rats, dietary triazole acetic acid concentrations were adjusted weekly based on body weight and feed consumption in order to obtain target test substance intakes of 0, 100, 300 and 1000 mg/kg bw per day. Actual premating test substance intakes were 0, 96, 287 and 959 mg/kg bw per day for males and 0, 98, 293 and 976 mg/kg bw per day for females of the F_0 generation and 0, 93, 280 and 926 mg/kg bw per day for males and 0, 78, 246 and 770 for females of the F_1 generation, respectively. The NOAEL for parental toxicity was 287 mg/kg bw per day, based on reduced body weight gain and feed consumption in males at 959 mg/kg bw per day. The NOAEL for offspring toxicity was 770 mg/kg bw per day, the highest dose tested. The NOAEL for reproductive toxicity was 959 mg/kg bw per day, the highest dose tested.

In a developmental toxicity study in rats administered triazole acetic acid at a dose of 0, 100, 300 or 1000 mg/kg bw per day by gavage (vehicle was 0.5% carboxymethyl cellulose), the NOAEL for maternal toxicity was 300 mg/kg bw per day, based on mortality, clinical signs, and reduced body weight gain and feed consumption observed early during treatment at 1000 mg/kg bw per day. Although there are indications that the findings may be due to a local effect on the gastrointestinal tract, no signs of local irritation of the stomach or gut were reported. Therefore, the Meeting could not discount the possibility that the findings were due to a systemic effect of the compound. The NOAEL for embryo and fetal toxicity was 300 mg/kg bw per day. As severe clinical signs in the dams at 1000 mg/kg bw per day necessitated early termination, the effect of triazole acetic acid on fetal development could not be assessed at this dose.

In a developmental toxicity study in rabbits using gavage triazole acetic acid doses of 0, 100, 750 and 1000 mg/kg bw per day, the NOAEL for maternal toxicity was 100 mg/kg bw per day, based on mortality (first observed on day 4 of treatment), clinical signs, and reduced body weight gain and feed consumption (first observed at/after 1 day of treatment) at 750 mg/kg bw per day. As most of these animals had stomach lesions, generally described as numerous discoloured (black) erosions/ulcerations (pinpoint to 1.0 cm in diameter) on the mucosal surface, these effects are probably caused by a local effect on the gastrointestinal tract. The NOAEL for embryo and fetal toxicity was 100 mg/kg bw per day, based on decreased fetal weights at 750 mg/kg bw per day.

Triazole alanine

In a 12-month toxicity study in rats using dietary triazole alanine concentrations of 0, 600, 2000, 6000 and 20 000 ppm (equal to 0, 28, 93, 278 and 916 mg/kg bw per day for males and 0, 36, 120, 375 and 1273 mg/kg bw per day for females, respectively), the NOAEL was 20 000 ppm (equal to 916 mg/kg bw per day), the highest dose tested.

In a developmental toxicity study in rabbits using gavage triazole alanine doses of 0, 30, 100 and 250 mg/kg bw per day, the NOAEL for maternal toxicity was 100 mg/kg bw per day, based on increased incidences of soft or liquid faeces (first observed after 5 days of treatment) and decreased body weight gain and feed consumption observed at 250 mg/kg bw per day. The NOAEL for embryo and fetal toxicity was 100 mg/kg bw per day, based on decreased fetal weight and increased incidences of hyoid, angulated ala and thickened ribs observed at 250 mg/kg bw per day.

Human data

No adverse health effects in plant personnel during the manufacture or formulation of penconazole-containing products over a 20-year period were reported. In incidents related to intentional misuse, occupational and accidental exposure, generally no or only minor symptoms were reported.

The Meeting concluded that the existing database on penconazole was adequate to characterize the potential hazards to the general population, including fetuses, infants and children.

Toxicological evaluation

Penconazole

The Meeting reaffirmed the ADI of 0–0.03 mg/kg bw for penconazole on the basis of a NOAEL of 3.1 mg/kg bw per day for reduced body weight gain, increased absolute and relative liver weights and slight histopathological changes in the liver (hepatocyte necrosis associated with inflammatory cell infiltration) in a 1-year study in dogs, using a safety factor of 100.

The Meeting established an ARfD of 0.8 mg/kg bw for penconazole, on the basis of a NOAEL of 75 mg/kg bw per day for increased incidences of microphthalmia and hydrocephalus in a developmental toxicity study in rabbits. The Meeting concluded that this ARfD applies to the general population on the basis of the NOAEL of 100 mg/kg bw per day for early clinical signs, reduced body weight gain and mortality, which might be due to systemic effects, observed in dams in a developmental toxicity study in rats. A safety factor of 100 was applied.

1,2,4-Triazole

The present Meeting reaffirmed the ADI of 0–0.2 mg/kg bw, established by JMPR in 2008, based on a NOAEL of 16 mg/kg bw per day for testicular effects (sperm abnormalities, sperm counts) observed at 30.9 mg/kg bw per day in a two-generation study of reproductive toxicity in rats, using a safety factor of 100. This ADI is supported by a new 12-month dietary toxicity study in rats with a NOAEL of 21 mg/kg bw per day, based on a reduction in body weight gain at 58 mg/kg bw per day.

The present Meeting reaffirmed the previously established ARfD of 0.3 mg/kg bw for 1,2,4-triazole, based on a NOAEL of 30 mg/kg bw per day for alterations of the urogenital system that occurred in several fetuses at 45 mg/kg bw per day and clinical signs of neurotoxicity in the dams in a study of developmental toxicity in rabbits, and using a safety factor of 100.

Triazole alanine and triazole acetic acid

The present Meeting reaffirmed the group ADI for triazole alanine and triazole acetic acid (alone or in combination) of 0–1 mg/kg bw, established by JMPR in 2008, based on a NOAEL of 100 mg/kg bw per day for delayed ossification in a developmental toxicity study in rats given triazole alanine, a NOAEL of 100 mg/kg bw per day for increased incidences of soft or liquid faeces and decreased body weight gain and feed consumption in a new developmental toxicity study with triazole alanine in rabbits, a NOAEL of 100 mg/kg bw per day for decreased fetal weight and an increased in hyoid, angulated ala and thickened ribs in a new developmental toxicity study with triazole alanine in rabbits, a NOAEL of 100 mg/kg bw per day for mortality, clinical signs, reduced body weight gain and feed consumption in a new developmental toxicity study in rabbits with triazole acetic acid and a NOAEL of 100 mg/kg bw per day based on decreased fetal weights in a new developmental toxicity study in rabbits with triazole acetic acid. A safety factor of 100 was used. This group ADI is expressed as triazole alanine.

The present Meeting established an ARfD of 3 mg/kg bw for triazole alanine and triazole acetic acid, based on a NOAEL of 300 mg/kg bw per day on the basis of mortality, clinical signs, reduced body weight gain and feed consumption observed early during treatment at 1000 mg/kg bw per day in a new developmental toxicity study with triazole acetic acid in rats. A safety factor of 100 was used.

A toxicological monograph was prepared.

Levels relevant to risk assessment of penconazole

Species	Study	Effect	NOAEL	LOAEL
Mouse	Two-year and 80-week studies of toxicity and carcinogenicity[a,b]	Toxicity	300 ppm, equal to 36 mg/kg bw per day	1 500 ppm, equal to 178 mg/kg bw per day
		Carcinogenicity	1 500 ppm, equal to 178 mg/kg bw per day[c]	–
Rat	Twenty-seven-month study of toxicity and carcinogenicity[a]	Toxicity	150 ppm, equal to 8.1 mg/kg bw per day	300 ppm, equal to 17 mg/kg bw per day
		Carcinogenicity	300 ppm, equal to 15 mg/kg bw per day[c]	–
	Two-generation study of reproductive toxicity[a]	Reproductive toxicity	250 ppm, equal to 20 mg/kg bw per day	2 500 ppm, equal to 191 mg/kg bw per day
		Parental toxicity	250 ppm, equal to 24 mg/kg bw per day	2 500 ppm, equal to 238 mg/kg bw per day
		Offspring toxicity	250 ppm, equal to 20 mg/kg bw per day	2 500 ppm, equal to 191 mg/kg bw per day
	Developmental toxicity studies[b,d]	Maternal toxicity	100 mg/kg bw per day	300 mg/kg bw per day
		Embryo and fetal toxicity	100 mg/kg bw per day	300 mg/kg bw per day
Rabbit	Developmental toxicity study[d]	Maternal toxicity	75 mg/kg bw per day	150 mg/kg bw per day
		Embryo and fetal toxicity	75 mg/kg bw per day	150 mg/kg bw per day
	Developmental toxicity study[d]	Maternal toxicity	200 mg/kg bw per day[c]	–
		Embryo and fetal toxicity	50 mg/kg bw per day	200 mg/kg bw per day
Dog	One-year study of toxicity[a]	Toxicity	100 ppm, equal to 3.1 mg/kg bw per day	500 ppm, equal to 16.7 mg/kg bw per day

[a] Dietary administration.
[b] Two or more studies combined.
[c] Highest dose tested.
[d] Gavage administration.

Levels relevant to risk assessment of 1,2,4-triazole

Species	Study	Effect	NOAEL	LOAEL
Mouse	Ninety-day study of toxicity[a]	Toxicity	1 000 ppm, equal to 161 mg/kg bw per day	3 000 ppm, equal to 487 mg/kg bw per day
Rat	**One-year study of toxicity[a]**	**Toxicity**	**375 ppm, equal to 21 mg/kg bw per day**	**1 000 ppm, equal to 58 mg/kg bw per day**
	Multigeneration study of reproductive toxicity[a]	Parental toxicity	250 ppm, equal to 16 mg/kg bw per day	500 ppm, equal to 31 mg/kg bw per day
		Offspring toxicity	500 ppm, equal to 31 mg/kg bw per day[c]	–
	Developmental toxicity[b]	Maternal toxicity	30 mg/kg bw per day	100 mg/kg bw per day

		Embryo and fetal toxicity	30 mg/kg bw per day	100 mg/kg bw per day
Rabbit	Developmental toxicity[b]	Maternal toxicity	30 mg/kg bw per day	45 mg/kg bw per day
		Embryo and fetal toxicity	30 mg/kg bw per day	45 mg/kg bw per day

Studies in bold are new studies. All other studies are derived from the 2008 JMPR evaluation.

[a] Dietary administration.
[b] Gavage administration.
[c] Highest dose tested.

Levels relevant to risk assessment of triazole acetic acid

Species	Study	Effect	NOAEL	LOAEL
Rat	**Thirteen-week study of toxicity and neurotoxicity[a]**	**Toxicity**	**1 002 mg/kg bw per day[b]**	**–**
		Neurotoxicity	**1 002 mg/kg bw per day[b]**	**–**
	One-generation study of reproductive toxicity[a]	Parental toxicity	287 mg/kg bw per day	959 mg/kg bw per day
		Offspring toxicity	770 mg/kg bw per day[b]	–
		Reproductive toxicity	959 mg/kg bw per day[b]	–
	Developmental toxicity study[c]	Maternal toxicity	300 mg/kg bw per day	1 000 mg/kg bw per day
		Embryo and fetal toxicity	300 mg/kg bw per day[b]	–
Rabbit	Developmental toxicity study[c]	Maternal toxicity	100 mg/kg bw per day	750 mg/kg bw per day
		Embryo and fetal toxicity	100 mg/kg bw per day	750 mg/kg bw per day

Studies in bold are new studies. All other studies are derived from the 2008 JMPR evaluation.

[a] Dietary administration.
[b] Highest dose tested.
[c] Gavage administration.

Levels relevant to risk assessment of triazole alanine

Species	Study	Effect	NOAEL	LOAEL
Rat	**Twelve-month study of toxicity[a]**	**Toxicity**	**916 mg/kg bw per day[c]**	**–**
	Multigeneration study of reproductive toxicity[a]	Parental toxicity	10 000 ppm, equal to 929 mg/kg bw per day[c]	–
		Offspring toxicity	2 000 ppm, equal to 192 mg/kg bw per day	10 000 ppm, equal to 929 mg/kg bw per day
	Developmental toxicity study[b]	Maternal toxicity	1 000 mg/kg bw per day[c]	–
		Embryo and	100 mg/kg bw per day	300 mg/kg bw per day

		fetal toxicity		
Rabbit	**Developmental toxicity study**[b]	**Maternal toxicity**	**100 mg/kg bw per day**	**250 mg/kg bw per day**
		Embryo and fetal toxicity	**100 mg/kg bw per day**	**250 mg/kg bw per day**
Dog	Ninety-day study of toxicity[b]	Toxicity	8 000 ppm, equal to 345 mg/kg bw per day	20 000 ppm, equal to 850 mg/kg bw per day

Studies in bold are new studies. All other studies are derived from the 2008 JMPR evaluation.

[a] Dietary administration.
[b] Gavage administration.
[c] Highest dose tested.

Penconazole

Estimate of acceptable daily intake (ADI)

0–0.03 mg/kg bw

Estimate of acute reference dose (ARfD)

0.8 mg/kg bw

1,2,4-Triazole

Estimate of acceptable daily intake (ADI)

0–0.2 mg/kg bw

Estimate of acute reference dose (ARfD)

0.3 mg/kg bw

Triazole alanine and triazole acetic acid

Estimate of acceptable daily intake (group ADI), expressed as triazole alanine

0–1 mg/kg bw

Estimate of acute reference dose (ARfD)

3 mg/kg bw

Information that would be useful for the continued evaluation of the compound

Results from epidemiological, occupational health and other such observational studies of human exposure

Critical end-points for setting guidance values for exposure to penconazole

Absorption, distribution, excretion and metabolism in mammals	
Rate and extent of oral absorption	Rats: Rapid; > 95% in both sexes at 0.5 mg/kg bw
Dermal absorption	No data
Distribution	Rats: Widespread distribution, highest concentrations found in liver and kidney

Potential for accumulation	Low potential for accumulation
Rate and extent of excretion	Rapid; 67% and 94% in male and female rats, respectively, in 24 h. Higher urinary excretion in females (73–85%) than in males (62%). Higher biliary excretion in males (55%) than in females (40%).
Metabolism in animals	Extensively metabolized (14 metabolites identified)
Toxicologically significant compounds in animals and plants	Penconazole, 1,2,4-triazole, triazole acetic acid, triazole alanine
Acute toxicity	
Rat, LD_{50}, oral	> 2 000 mg/kg bw
Rat, LD_{50}, dermal	> 3 000 mg/kg bw
Rat, LC_{50}, inhalation	> 4.0 mg/L
Rabbit, dermal irritation	Not irritating
Rabbit, ocular irritation	Not irritating
Guinea-pig, dermal sensitization	Not sensitizing (maximization test)
Short-term studies of toxicity	
Target/critical effect	Reduced body weight gain, liver
Lowest relevant oral NOAEL	3.1 mg/kg bw per day (dog)
Lowest relevant dermal NOAEL	2 000 mg/kg bw per day (rabbit)
Lowest relevant inhalation NOAEC	No data
Long-term studies of toxicity and carcinogenicity	
Target/critical effect	Liver
Lowest relevant NOAEL	8.1 mg/kg bw per day (rat)
Carcinogenicity	Not carcinogenic in mice or rats[a]
Genotoxicity	
	Unlikely to be genotoxic in vivo[a]
Reproductive toxicity	
Target/critical effect	Decreased mating index
Lowest relevant parental NOAEL	24 mg/kg bw per day (rat)
Lowest relevant offspring NOAEL	20 mg/kg bw per day (rat)
Lowest relevant reproductive NOAEL	20 mg/kg bw per day (rat)
Developmental toxicity	
Target/critical effect	Reduced number of live fetuses
Lowest relevant maternal NOAEL	75 mg/kg bw per day (rabbit)
Lowest relevant embryo/fetal NOAEL	50 mg/kg bw per day (rabbit)
Neurotoxicity	
Acute neurotoxicity NOAEL	No data
Subchronic neurotoxicity NOAEL	No data
Developmental neurotoxicity NOAEL	No data
Other toxicological studies	

Studies on toxicologically relevant metabolites	1,2,4-Triazole Reproductive toxicity: NOAEL 16 mg/kg bw per day (rat) One-year toxicity: NOAEL 21 mg/kg bw per day (rat) Triazole acetic acid No toxicity up to 1 002 mg/kg bw per day in a 13-week study of toxicity and neurotoxicity in rats Acute toxicity: NOAEL 300 mg/kg bw per day for mortality, clinical signs, reduced body weight gain and feed consumption observed early during treatment at 1 000 mg/kg bw per day in a developmental toxicity study in rats No evidence of reproductive or offspring toxicity in rats at highest doses tested (959 and 770 mg/kg bw per day, respectively) No evidence of developmental toxicity in rats at 300 mg/kg bw per day Triazole alanine No toxicity up to 916 mg/kg bw per day in a 12-month study of toxicity in rats Embryo and fetal toxicity: NOAEL 100 mg/kg bw per day (rat, rabbit)
Medical data	
	Generally no or only minor symptoms after intentional, accidental or occupational exposure incidents

[a] Unlikely to pose a carcinogenic risk to humans from the diet.

Summary

	Value	Study	Safety factor
Penconazole			
ADI	0–0.03 mg/kg bw	One-year study of toxicity (dog)	100
ARfD	0.8 mg/kg bw	Developmental toxicity study (rabbit)	100
1,2,4-Triazole			
ADI	0–0.2 mg/kg bw	Multigeneration reproduction toxicity study (rat), one-year study of toxicity (rat)	100
ARfD	0.3 mg/kg bw	Developmental toxicity study (rabbit)	100
Triazole alanine and triazole acetic acid			
Group ADI	0–1 mg/kg bw	Developmental toxicity studies (rat, rabbit)	100
ARfD	3 mg/kg bw	Developmental toxicity study (rat)	100

5.25 PYRIMETHANIL (226)

RESIDUE AND ANALYTICAL ASPECTS

Pyrimethanil, an anilinopyrimidine fungicide, was evaluated for the first time by the 2007 JMPR, where an ADI of 0–0.2 mg/kg bw was established and an ARfD was deemed unnecessary. It was listed by the Forty-sixth Session of the CCPR (2014) for the evaluation by the 2015 JMPR for additional MRLs. New GAP information, freezer storage stability studies and supervised residue trials on cane berries, bush berries and greenhouse cucumbers were provided to the current Meeting

Residue definitions are:

- For compliance with the MRL and for dietary intake estimation for plant commodities: pyrimethanil
- For compliance with the MRL and for dietary intake estimation for milk: sum of pyrimethanil and 2-anilino-4,6-dimethylpyrimidin-5-ol, expressed as pyrimethanil
- For compliance with the MRL and for dietary intake estimation for livestock tissues (excluding poultry): sum of pyrimethanil and 2-(4-hydroxyanilino)-4,6-dimethylpyrimidine, expressed as pyrimethanil

The residue is not fat-soluble.

Stability of pesticide residues in stored analytical samples

Based on the storage stability data submitted, the Meeting concluded that no significant dissipation of pyrimethanil residues was observed in almond nutmeat after 12 months of storage or in wheat straw, forage and grain after 24 months of storage.

Results of supervised residue trials on crops

The Meeting received new supervised trial data for foliar applications of pyrimethanil (SC formulations) on cane berries (blackberries and raspberries), bush berries (blueberries), and greenhouse cucumbers.

Berries and other small fruits

Results from supervised field trials on blackberries, raspberries, and blueberries conducted in North America were provided to the Meeting, including raspberry data from Germany.

Cane berries (blackberries and raspberries)

Results from supervised field trials on blackberries and raspberries conducted in the USA and trials on raspberries conducted in Germany were provided to the Meeting.

A total of four independent supervised trials were conducted in the USA on blackberries and raspberries according to the critical GAP of Canada for cane berries (blackberries and raspberries) which allows a maximum of 2 applications of 0.8 kg ai/ha/application, and a PHI of 0 day.

Residues of pyrimethanil matching the Canadian GAP were: 1.86, <u>2.13, 2.62</u> and 8.38 mg/kg.

A total of five independent supervised trials were conducted in Germany on raspberries according to the Poland critical GAP for raspberries which allows a maximum of 3 applications of 0.8 kg ai/ha/application, and a PHI of 3 days.

Residues of pyrimethanil in raspberries matching the Poland GAP were: 0.78; 2.40; <u>3.02</u>; 3.37 and 6.95 mg/kg.

The Meeting agreed to use the data set according to the Canadian GAP and estimated a maximum residue level of 15 mg/kg and an STMR of 3.02 mg/kg from the German trials for cane berries.

Bush berries (blueberries)

Results from supervised field trials on highbush blueberries conducted in the USA were provided to the Meeting.

A total of eight independent supervised trials were conducted in the USA on highbush blueberries according to the critical GAP in Canada for bush berries which allows a maximum of 2 applications of 0.8 kg ai/ha/application, and a PHI of 0 day.

Residues of pyrimethanil in highbush blueberries conducted in North America matching the GAP were: 1.12, 1.40, 1.89, 2.00, 2.11, 2.14, 2.27, and 5.13 mg/kg.

The Meeting estimated a maximum residue level of 8 mg/kg and an STMR 2.06 mg/kg for pyrimethanil on blueberries.

Greenhouse cucumbers

Results from supervised field trials on greenhouse cucumbers conducted in North America and Southern Europe were provided to the Meeting.

In the absence of a North American GAP for greenhouse cucumbers, the Meeting did not consider the USA and Canada trials in estimating a maximum residue level.

A total of nine independent supervised trials were conducted in Southern Europe on greenhouse cucumbers according to the critical GAPs in Greece, Italy, and Spain which allow a maximum of 3 applications of 0.8 kg ai/hL/application, and a PHI of 3 days.

Residues of pyrimethanil in greenhouse cucumbers matching the Southern EU GAP were: 0.10; 0.12; 0.16; 0.19; 0.24; 0.25; 0.29; 0.32; and 0.37 mg/kg.

The Meeting estimated a maximum residue level of 0.70 mg/kg and an STMR of 0.24 mg/kg for residues of pyrimethanil in greenhouse cucumbers.

RECOMMENDATIONS

On the basis of the data from supervised trials the Meeting concluded that the residue levels listed in Annex 1 are suitable for establishing maximum residue levels and for IEDI assessment.

Definition of the residue for compliance with the MRL and for the estimation of dietary intake for plant commodities: *pyrimethanil.*

Definition of the residue for compliance with the MRL and for dietary intake estimation for milk: sum of pyrimethanil and 2-anilino-4,6-dimethylpyrimidin-5-ol, expressed as pyrimethanil.

Definition of the residue for compliance with the MRL and for dietary intake estimation for livestock tissues (excluding poultry): sum of pyrimethanil and 2-(4-hydroxyanilino)-4,6-dimethylpyrimidine, expressed as pyrimethanil.

The residue is not fat soluble.

DIETARY RISK ASSESSMENT

Long-term intake

The International Estimated Daily Intakes of Pyrimethanil for the GEMS/Food 17 cluster diets, based on estimated STMRs were 0% of the maximum ADI of 0.2 mg/kg bw. The Meeting concluded that the long-term intake of residues of pyrimethanil from uses considered by the current Meeting is unlikely to contribute to the overall intake and will not present a public health concern.

Short-term intake

The 2007 JMPR determined that no ARfD was considered necessary. Therefore the short-term intake of pyrimethanil residues from uses considered by the current Meeting is unlikely to present a public health concern.

5.26 QUINCLORAC (287)

TOXICOLOGY

Quinclorac is the ISO-approved common name for 3,7-dichloroquinoline-8-carboxylic acid (IUPAC), with CAS number 84087-01-4. It is a herbicide of the quinoline carboxylic acid class. The pesticidal mode of action is as a mimic of the plant hormone auxin.

Quinclorac has not been evaluated previously by JMPR and was reviewed by the present Meeting at the request of CCPR.

All critical studies contained statements of compliance with GLP.

Initial production batches of quinclorac contained cinnoline impurities that were associated with positive results in genotoxicity studies. Improved production methods have reduced the levels of these impurities, and current batches are reported to contain cinnolines at concentrations below 1 ppm. The sponsor has confirmed that current technical quinclorac has a purity of greater than 99% and that the material tested in the submitted toxicity studies adequately covers the impurities in current production material.

Biochemical aspects

The toxicokinetics and biotransformation of quinclorac were investigated in rats administered (2,3,4-^{14}C)-labelled quinclorac at single doses of 15, 100, 600 or 1200 mg/kg bw by gavage or at 15 000 ppm in the diet (equivalent to 1200 mg/kg bw); 7 daily doses of 15 or 600 mg/kg bw per day by gavage or at 15 000 ppm in the diet (equivalent to 1200 mg/kg bw per day); or 14 daily doses of 15 mg/kg bw per day of unlabelled quinclorac followed by a single labelled dose of 15 mg/kg bw. Absorption was rapid, with maximal blood concentrations achieved between 0.25 and 1 hour for single doses of 600 mg/kg bw and below. The extent of oral absorption was high (> 90%) at all dose levels, based on urinary and biliary data, with some of the biliary component being reabsorbed. Quinclorac was widely distributed in the body, with highest concentrations of radiolabel present in the blood, kidney and plasma. The labelled material was excreted primarily via urine (50–90% in 24 hours). Clearance from the blood was slower following repeated dosing with 600 mg/kg bw and a single dose of 1200 mg/kg bw, resulting in non-proportionate increases in AUC with dose. Absorbed quinclorac was metabolized to only a limited extent, with unchanged parent compound representing approximately 80% of the excreted radiolabel. The major biotransformation product was quinclorac–glucuronide conjugate at approximately 5% of the administered dose. The excretion pattern, tissue distribution of radioactivity and/or metabolite profile were similar across administered dose levels and with single or repeated administration.

Toxicological data

Quinclorac was of low acute toxicity in rats via the oral route (LD_{50} = 2680 mg/kg bw) or dermal route (LD_{50} > 2000 mg/kg bw) and by inhalation (LC_{50} > 5.15 mg/L air). Quinclorac was not irritating to the skin of rabbits, but was transiently and mildly irritating to the eyes of rabbits. Modern material of a high purity (99.4%) was not a skin sensitizer in guinea-pigs, but a positive result was seen with older, less pure quinclorac (97.4%).

In repeated-dose toxicity studies in mice, rats and dogs, the predominant effect was reduced body weight gain, often associated with reductions in feed consumption. The only organ showing consistency of effects was the kidney, with increases in organ weight and histopathological changes (e.g. interstitial nephritis) at high dose levels.

In a 90-day study of toxicity in mice, dietary concentrations of quinclorac were 0, 4000, 8000 and 16 000 ppm (equal to 0, 1001, 1992 and 4555 mg/kg bw per day for males and 0, 1466, 2735 and 5953 mg/kg bw per day for females, respectively). The NOAEL was 4000 ppm (equal to 1001 mg/kg bw per day), based on increases in blood urea levels and water consumption at 8000 ppm (equal to 1992 mg/kg bw per day). Slight changes in body weight and mean red blood cell volume were considered not to be adverse. In a subsequent 90-day dietary study of toxicity in mice administered

500 ppm quinclorac (equal to 85 mg/kg bw per day for males and 130 mg/kg bw per day for females), there were no treatment-related effects; the NOAEL was 500 ppm (equal to 85 mg/kg bw per day), the only dose tested.

In a 90-day study of toxicity in rats, dietary concentrations of quinclorac were 0, 1000, 4000 and 12 000 ppm (equal to 0, 77, 302 and 930 mg/kg bw per day for males and 0, 87, 358 and 1035 mg/kg bw per day for females, respectively). The NOAEL was 4000 ppm (equal to 302 mg/kg bw per day), on the basis of a range of clinical chemistry and haematology changes in both sexes and urothelial hyperplasia and interstitial nephritis in males at 12 000 ppm (equal to 930 mg/kg bw per day).

In a 28-day dietary study in which dogs were administered quinclorac at 0, 1000, 3000, 9000 or 27 000 ppm (equal to 0, 31, 95, 278 and 912 mg/kg bw per day for males and 0, 36, 108, 315 and 956 mg/kg bw per day for females, respectively), the NOAEL was 9000 ppm (equal to 278 mg/kg bw per day), based on body weight loss and kidney lesions at 27 000 ppm (equal to 912 mg/kg bw per day).

In a 1-year study in dogs in which quinclorac was administered in the diet at 0, 1000, 4000 or 12 000 ppm (equal to 0, 35, 139 and 490 mg/kg bw per day for males and 0, 35, 141 and 472 mg/kg bw per day for females, respectively), the NOAEL was 1000 ppm (equal to 35 mg/kg bw per day), on the basis of an increase in relative kidney weights in males at 4000 ppm (equal to 139 mg/kg bw per day).

In a 78-week toxicity and carcinogenicity study in mice, dietary concentrations of quinclorac were 0, 1000, 4000 and 8000 ppm (equal to 0, 170, 711 and 1444 mg/kg bw per day for males and 0, 213, 869 and 1828 mg/kg bw per day for females, respectively). No NOAEL could be identified, as reductions in body weight were observed in females at all doses. Quinclorac did not produce any increase in the incidences of benign or malignant tumours.

A subsequent 78-week toxicity study in mice used a single dietary level of 250 ppm (equal to 42 mg/kg bw per day for males and 52 mg/kg bw per day for females). There were no adverse effects.

The Meeting concluded that the overall NOAEL for the 78-week toxicity studies in mice was 250 ppm (equal to 52 mg/kg bw per day), based on reductions in body weight in females at 1000 ppm (equal to 213 mg/kg bw per day).

In a 2-year toxicity and carcinogenicity study in rats, dietary concentrations of quinclorac were 0, 1000, 4000 and 8000 ppm (equal to 0, 55, 221 and 444 mg/kg bw per day for males and 0, 66, 262 and 529 mg/kg bw per day for females, respectively) for evaluation of carcinogenic potential. Satellite groups received diets containing quinclorac at 0, 1000, 4000, 8000 or 12 000 ppm (equal to 0, 55, 221, 444 and 675 mg/kg bw per day for males and 0, 66, 262, 529 and 832 mg/kg bw per day for females, respectively) for the evaluation of toxicity. The only significant effect was a decrease in the body weight of top-dose females in the satellite groups. The NOAEL was 8000 ppm (equal to 529 mg/kg bw per day), on the basis of reductions in body weight in females at 12 000 ppm (equal to 832 mg/kg bw per day). Quinclorac did not increase the incidence of benign or malignant tumours.

The Meeting concluded that quinclorac is not carcinogenic in mice or rats.

Quinclorac was tested for genotoxicity in an adequate range of assays, both in vitro and in vivo. The majority of studies produced negative results. Positive results were seen at high concentrations in a cytogenicity assay in human lymphocytes. In vivo assays of bone marrow micronucleus induction and UDS in hepatocytes gave negative results.

The Meeting concluded that quinclorac is unlikely to be genotoxic in vivo.

In view of the fact that quinclorac is unlikely to be genotoxic in vivo and the absence of carcinogenicity in mice and rats, the Meeting concluded that quinclorac is unlikely to pose a carcinogenic risk to humans from the diet.

In a two-generation study of reproductive toxicity in rats, with two matings in the F_1 generation and one in the F_2 generation, dietary concentrations of quinclorac were 0, 1000, 4000 and

12 000 ppm (equivalent to mean intakes of 0, 96, 381 and 1180 mg/kg bw per day, respectively). The NOAEL for reproductive effects was 12 000 ppm (equivalent to 1180 mg/kg bw per day), the highest dose tested. The NOAEL for parental toxicity was 4000 ppm (equivalent to 381 mg/kg bw per day), based on an increase in the incidence of interstitial nephritis at 12 000 ppm (equivalent to 1180 mg/kg bw per day) in females of both generations. The NOAEL for effects on offspring was 4000 ppm (equivalent to 381 mg/kg bw per day), based on reduced pup weight during lactation at 12 000 ppm (equivalent to 1180 mg/kg bw per day).

In a study of developmental toxicity in rats dosed with quinclorac at 0, 24.4, 146 or 438 mg/kg bw per day by gavage in 0.5% carboxymethyl cellulose, there were no effects on any measured fetal parameters. The NOAEL for maternal toxicity was 146 mg/kg bw per day, on the basis of deaths, reduced feed intake, increased water intake and severe ulceration of the glandular stomach at 438 mg/kg bw per day. The NOAEL for embryo and fetal toxicity was 438 mg/kg bw per day, the highest dose tested.

In a study of developmental toxicity in rabbits dosed with quinclorac at 0, 70, 200 or 600 mg/kg bw per day by gavage in 0.5% carboxymethyl cellulose, severe maternal toxicity, including deaths, was observed at 600 mg/kg bw per day. Live pup numbers were reduced at 600 mg/kg bw per day. At the top dose level, there was an increase in the number of pups with skeletal variations, although there was no significant increase in any specific variation. There was no increase in the number of pups with malformations. The NOAEL for maternal toxicity was 200 mg/kg bw per day, based on mortality and body weight loss at 600 mg/kg bw per day. The NOAEL for embryo and fetal toxicity was 200 mg/kg bw per day, based on an increase in fetuses with skeletal variations, reduced numbers of viable fetuses and reduced fetal weights at 600 mg/kg bw per day.

The Meeting concluded that quinclorac is not teratogenic in rats or rabbits.

The acute neurotoxicity of quinclorac was investigated in rats administered dose levels of 0, 150, 500 or 1500 mg/kg bw by gavage in 1% carboxymethyl cellulose. Dose-related reductions in locomotor activity were seen at 4–5 hours post-dosing, but not subsequently, in the mid- and high-dose groups. Motor activity reductions in males in the low-dose group were considered not to be treatment related, as the background activity in this group was consistently lower than in the other groups. There were no indications of neuropathy. The NOAEL was 150 mg/kg bw, based on reduced motor activity at 500 mg/kg bw.

In a subchronic (90-day) neurotoxicity study in rats, dietary concentrations of quinclorac were 0, 1500, 5000 and 15 000 ppm (equal to 0, 96, 301 and 976 mg/kg bw per day for males and 0, 112, 368 and 1142 mg/kg bw per day for females, respectively). No adverse effects were reported. The NOAEL for neurotoxicity was 15 000 ppm (equal to 976 mg/kg bw per day), the highest dose tested.

The reduced motor activity seen in the acute neurotoxicity study is a relatively general finding, not specific to a neurotoxic mode of action; there was no evidence of specific neurotoxic findings in other studies. The Meeting concluded that quinclorac is not neurotoxic.

In a 28-day immunotoxicity study in female mice, dietary concentrations were 0, 500, 1500 and 5000 ppm (equal to 0, 176, 439 and 1760 mg/kg bw per day, respectively). No adverse effects were reported. The NOAEL for immunotoxicity was 5000 ppm (equal to 1760 mg/kg bw per day), the highest dose tested.

The Meeting concluded that quinclorac is not immunotoxic.

Biochemical and toxicological data on metabolites and/or degradates

[3-^{14}C]Quinclorac methyl ester, a plant metabolite, administered to rats at 15, 50 or 600 mg/kg bw by gavage was rapidly and extensively absorbed and excreted via urine and bile. The proportion of radiolabel in the bile increased from 30% at 15 mg/kg bw to 51% at 600 mg/kg bw, with a corresponding decrease in radiolabel in urine (51% and 32%, respectively). The initial steps in biotransformation involved extensive demethylation to release free quinclorac (approximately 50% of the administered dose). Other metabolic steps, identified from biliary metabolites, were arene oxide formation and conjugation with glutathione, with subsequent transformation of the glutathione moiety, hydroxylation of the quinoline structure and dimerization.

Quinclorac methyl ester has a low acute oral toxicity to rats (LD_{50} > 2000 mg/kg bw); clinical signs (poor general state, dyspnoea and piloerection) were noted.

In a repeated-dose study of toxicity in rats, quinclorac methyl ester was administered in the diet at 0, 2000, 4000 and 8000 ppm (equal to 0, 128, 252 and 518 mg/kg bw per day for males and 0, 145, 274 and 509 mg/kg bw per day for females, respectively) for 3 months. The main findings were reduced body weight, increased relative organ weights and histopathological changes of the liver, thyroid and kidney. A NOAEL could not be identified, as increased relative liver weights, hepatocellular hypertrophy, increased relative thyroid gland weights, thyroid hypertrophy/hyperplasia and "nuclear crowding" of the kidney were observed at 2000 ppm (equal to 128 mg/kg bw per day), the lowest dose tested.

The pattern of toxicity seen with the methyl ester is not the same as that seen with quinclorac; therefore, a comparison of relative toxic potency is not straightforward. A comparison of the 90-day studies of toxicity in rats for quinclorac and quinclorac methyl ester results in a ratio of 2.4 (302/128) between the NOAEL for quinclorac and the LOAEL for the ester and a ratio of 7.3 (930/128) between the LOAEL for quinclorac and the LOAEL for the ester. The main metabolic step of the methyl ester is demethylation to quinclorac, which suggests that some aspects of the toxicity of the methyl ester will have been addressed by studies with quinclorac. In acute oral toxicity studies, similar clinical signs (poor general state, dyspnoea, piloerection) were reported at a dose of 2000 mg/kg bw for the methyl ester and a similar dose of 1780 mg/kg bw used in the oral LD_{50} study with quinclorac. The Meeting concluded that quinclorac methyl ester was likely to be less than 10-fold more toxic than quinclorac.

Several quinclorac conjugates were identified as plant metabolites. No specific toxicity data were available on these conjugates, but a structure–activity relationship analysis identified no alerts that were not also present for quinclorac. The Meeting concluded that these conjugates were likely to be of lower or equivalent toxicity to the parent compound, because they are expected to be readily hydrolysed to the parent in the gastrointestinal tract.

Human data

No adverse effects have been reported in quinclorac production and formulation plant workers, and no significant effects have been reported in exposed users of quinclorac-based products.

The Meeting concluded that the existing database on quinclorac was adequate to characterize the potential hazards to the general population, including fetuses, infants and children.

Toxicological evaluation

The Meeting established an ADI for quinclorac of 0–0.4 mg/kg bw, on the basis of the NOAEL of 35 mg/kg bw per day for increased relative kidney weights from the 1-year dog study. A safety factor of 100 was applied.

The Meeting established an ARfD for quinclorac of 2 mg/kg bw, on the basis of the NOAEL of 150 mg/kg bw per day for reductions in motor activity in the acute neurotoxicity study in rats. A safety factor of 100 was applied.

The plant metabolite quinclorac methyl ester is not found in rats administered quinclorac. The main metabolic step for the methyl ester in rats is demethylation to quinclorac. Similar clinical signs were seen at similar doses in the acute oral toxicity studies with quinclorac and the methyl ester. In a 90-day study of toxicity in rats, the methyl ester produced a pattern of liver, kidney and thyroid effects that differed from that seen in the equivalent study with quinclorac, and the LOAEL for the methyl ester was below the NOAEL for quinclorac.

The Meeting concluded that the methyl ester is 10-fold more toxic than quinclorac and that a 10-fold potency factor should be applied to the residue levels for use in both the acute and chronic dietary exposure estimates for quinclorac and that these should be added to the dietary exposures for quinclorac and compared with the ARfD and ADI for quinclorac, respectively.

The Meeting concluded that the quinclorac conjugates were of no greater toxicity than the parent.

Both the ADI and ARfD are established for the sum of quinclorac and its conjugates, and quinclorac methyl ester (×10), expressed as quinclorac.

A toxicological monograph was prepared.

Levels relevant to risk assessment of quinclorac and quinclorac methyl ester

Species	Study	Effect	NOAEL	LOAEL
Mouse	Seventy-eight-week studies of toxicity and carcinogenicity[a,b]	Toxicity	250 ppm, equal to 52 mg/kg bw per day	1 000 ppm, equal to 213 mg/kg bw per day
		Carcinogenicity	8 000 ppm, equal to 1 444 mg/kg bw per day[c]	–
Rat	Acute neurotoxicity study[d]	Neurotoxicity	150 mg/kg bw	500 mg/kg bw
	Two-year study of toxicity and carcinogenicity[a]	Toxicity	8 000 ppm, equal to 529 mg/kg bw per day	12 000 ppm, equal to 832 mg/kg bw per day
		Carcinogenicity	8 000 ppm, equal to 444 mg/kg bw per day[c]	–
	Two-generation study of reproductive toxicity[a]	Reproductive toxicity	12 000 ppm, equivalent to 1 180 mg/kg bw per day[c]	–
		Parental toxicity	4 000 ppm, equivalent to 381 mg/kg bw per day	12 000 ppm, equivalent to 1 180 mg/kg bw per day
		Offspring toxicity	4 000 ppm, equivalent to 381 mg/kg bw per day	12 000 ppm, equivalent to 1 180 mg/kg bw per day
	Developmental toxicity study[d]	Maternal toxicity	146 mg/kg bw per day	438 mg/kg bw per day
		Embryo and fetal toxicity	438 mg/kg bw per day[c]	–
Rabbit	Developmental toxicity study[d]	Maternal toxicity	200 mg/kg bw per day	600 mg/kg bw per day
		Embryo and fetal toxicity	200 mg/kg bw per day	600 mg/kg bw per day
Dog	One-year study of toxicity[a]	Toxicity	1 000 ppm, equal to 35 mg/kg bw per day	4 000 ppm, equal to 139 mg/kg bw per day
Metabolite: Quinclorac methyl ester				
Rat	Ninety-day study of	Toxicity	–	2 000 ppm, equal to

Species	Study	Effect	NOAEL	LOAEL
	toxicity			128 mg/kg bw per day[e]

[a] Dietary administration.
[b] Two or more studies combined.
[c] Highest dose tested.
[d] Gavage administration.
[e] Lowest dose tested.

Estimate of acceptable daily intake (ADI) for the sum of quinclorac and its conjugates, and quinclorac methyl ester (×10), expressed as quinclorac

0–0.4 mg/kg bw

Estimate of acute reference dose (ARfD) for the sum of quinclorac and its conjugates, and quinclorac methyl ester (×10), expressed as quinclorac

2 mg/kg bw

Information that would be useful for the continued evaluation of the compound

Results from epidemiological, occupational health and other such observational studies of human exposure

Critical end-points for setting guidance values for exposure to quinclorac

Absorption, distribution, excretion and metabolism in mammals	
Rate and extent of oral absorption	Rapid (T_{max} = 0.25–1 h) and extensive (> 90%)
Dermal absorption	No data
Distribution	Widely distributed; highest levels in blood, kidney and plasma
Potential for accumulation	None
Rate and extent of excretion	Rapid (up to 90% excreted in urine within 24 h)
Metabolism in animals	Limited; 80% excreted unchanged; some glucuronidation
Toxicologically significant compounds in animals and plants	Quinclorac; quinclorac methyl ester; conjugates
Acute toxicity	
Rat, LD_{50}, oral	2 680 mg/kg bw
Rat, LD_{50}, dermal	> 2 000 mg/kg bw
Rat, LC_{50}, inhalation	> 5.15 mg/L
Rabbit, dermal irritation	Not irritating
Rabbit, ocular irritation	Mildly, transiently irritating
Guinea-pig, dermal sensitization	Negative (maximization test)
Short-term studies of toxicity	
Target/critical effect	Reduced body weights; increased kidney weight, interstitial nephritis, urothelial hyperplasia
Lowest relevant oral NOAEL	35 mg/kg bw per day (12 months; dog)

Lowest relevant dermal NOAEL	1 000 mg/kg bw per day (rabbit; highest dose tested)
Lowest relevant inhalation NOAEC	No data
Long-term studies of toxicity and carcinogenicity	
Target/critical effect	Reduced body weight
Lowest relevant NOAEL	52 mg/kg bw per day (mouse)
Carcinogenicity	Not carcinogenic in mice or rats[a]
Genotoxicity	
	Unlikely to be genotoxic in vivo[a]
Reproductive toxicity	
Target/critical effect	No effects on reproduction; reduced pup weight during lactation
Lowest relevant parental NOAEL	381 mg/kg bw per day (rat)
Lowest relevant offspring NOAEL	381 mg/kg bw per day (rat)
Lowest relevant reproductive NOAEL	1 180 mg/kg bw per day (rat)
Developmental toxicity	
Target/critical effect	No effects in rats; reduction in viable fetuses, decreased fetal weight, increase in skeletal variations (rabbit)
Lowest relevant maternal NOAEL	146 mg/kg bw per day (rat)
Lowest relevant embryo/fetal NOAEL	200 mg/kg bw per day (rabbit)
Neurotoxicity	
Acute neurotoxicity NOAEL	150 mg/kg bw (decreased motor activity; rat)
Subchronic neurotoxicity NOAEL	976 mg/kg bw per day (highest dose tested; rat)
Developmental neurotoxicity NOAEL	No data
Other toxicological studies	
Immunotoxicity NOAEL	1 760 mg/kg bw per day (highest dose tested; mouse)
Studies on toxicologically relevant metabolites	Quinclorac methyl ester Rapidly and extensively absorbed. Initial step in metabolism is demethylation to quinclorac. Acute oral LD_{50} > 2 000 mg/kg bw LOAEL in 90-day rat study = 128 mg/kg bw per day, based on kidney, liver and thyroid effects
Medical data	
	No adverse effects reported in humans

[a] Unlikely to pose a carcinogenic risk to humans from the diet.

Summary

	Value	Study	Safety factor
ADI	0–0.4 mg/kg bw	One-year toxicity study (dog)	100
ARfD	2 mg/kg bw	Acute neurotoxicity study (rat)	100

RESIDUE AND ANALYTICAL ASPECTS

Quinclorac is a systemic herbicide with uptake through roots and foliage and used to control annual grass and broadleaf weeds. Quinclorac mode of action is similar to phenyl herbicides as it imitates the plant growth hormone auxin. The use of quinclorac results in the rupture of the cell membranes due to overstimulation of the growth of the plant.

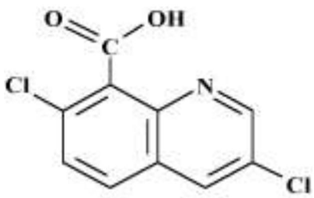
It was scheduled by the Forty-sixth Session of the CCPR (2014) as a new compound for consideration by the 2015 JMPR. The manufacturer submitted studies on metabolism, analytical methods, supervised trials, processing, storage stability, environmental fate in soil and rotational crop studies.

Quinclorac is registered for uses in berries and other small fruits stalk and stem vegetables, cereal grains and rape seed in Australia, Canada, China, Republic of Korea, South America and USA. Information on GAP with supporting labels from Canada and USA was provided to the Meeting.

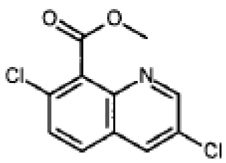
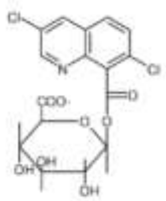
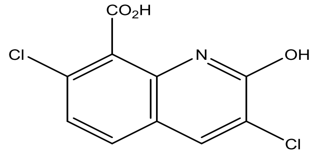
Chemical name

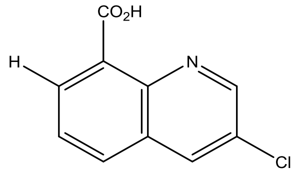
Quinclorac: 3,7-dichloroquinoline-8-carboxylic acid

Structural formula:



Metabolites referred to in the appraisal with codes:

BH 514-Me Quinclorac methyl ester SES218	 methyl-3,7-dichloroquinoline-8-carboxylate
BAS 514 H M1 glucuronide (glucuronic acid) conjugate	
BH 514-2-OH 2 -hydroxyquinclorac	 3,7-dichloro-2-hydroxyquinoline-8-carboxylic acid

BH 514-1 3-chloroquinoline-8-carboxylic acid	 3-chloroquinoline-8-carboxylic acid

Animal metabolism

The Meeting received metabolism studies on laboratory animals, poultry and lactating goats using 2, 3, 4-[^{14}C]-quinclorac (quinoline label).

In rats quinclorac is widely distributed in the body, with highest concentrations of radiolabel present in the blood, kidney and plasma. The labelled material was excreted primarily via urine (50-90% in 24 hours). Absorbed quinclorac was metabolized to only a limited extent, with unchanged parent compound representing approximately 80% of the excreted radiolabel. The major bio-transformation product was quinclorac glucuronide conjugate at approximate 5% of the administrated dose.

One lactating goat received five daily doses of ^{14}C- quinclorac at a rate equivalent to 800 ppm in the diet (34 mg/kg bw). The animal was sacrificed approximately 6 h after the last dose.

A total 67% of the applied radioactivity was recovered. Excretion of radioactivity in urine and faeces accounted for 63 and 3.7% respectively of the total dose. In milk 0.003%, in liver 0.12% and kidney 0.1% of the administrated dose was recovered. The extraction efficiency using 1 M HCl) was generally > 80% TRR in muscle and liver. In milk and kidney it was above 95% TRR.

In milk the TRR levels reached a plateau after 48 hrs. Residues found in tissues at sacrifice were 0.16 to 0.19 mg eq/kg in muscle, 0.14 and 0.78 mg eq/kg in fat (omental and subcutaneous respectively), 10 mg eq/kg in kidney and 2.1 mg eq/kg in liver. Muscle and fat were not analysed further. In milk, liver and kidney, parent quinclorac was the major residue at 86, 81 and 86% TRR respectively. Metabolite (M1) identified as the glucuronic acid conjugate of the parent was found at 4.0% TRR in milk and at 4.7% TRR in kidney.

Seven laying hens (1.8–2.4 kg) were orally dosed once daily for five days with 33–44 mg radiolabelled quinclorac per kg body weight per day corresponding to 800 ppm in the diet. The animals were sacrificed after 6 hours after the last dose. The major part of the radioactivity was recovered in the excreta (93%).

Extraction efficiency (including 1 M HCl) was generally above 80% for excreta, liver, breast muscle and skin. In eggs the TRR levels increased from < 0.06 mg eq/kg one day after first administration up to a plateau of 1.2 mg eq/kg after three days; however levels of TRR showed wide variation in eggs. TRR levels in tissues were 1.1–1.8 mg eq/kg in muscle (breast and leg respectively), 2.0 mg eq/kg in skin/fat, 3.7 mg eq/kg in kidney and 20 mg eq/kg in liver. The unextracted residues were from 2.0–21.1% of TTR.

Parent quinclorac was the major residue in poultry tissues and eggs (78–92% of the TRR). The only metabolite identified was M1, present up to 3% TRR in a combined concentration with two other fractions.

In summary from data presented quinclorac is not significantly metabolised in animals. Parent quinclorac is the major residue found in tissues, milk and eggs, making up from 78–92% TRRs, with the only identified metabolite being M1 present at low levels (< 5% TRR) and also identified in the rat. Since the extraction methods used for lactating goat and poultry tissues included 1 M HCl, it is not clear whether parent compound represents parent only or includes parent released from conjugates and whether the M1 is the fraction of conjugates that remained uncleaved.

Plant metabolism

The Meeting received plant metabolism studies for quinclorac following pre- and/or post-emergent foliar application of 2,3,4-^{14}C-quinclorac to rice, or with 3-^{14}C-quinclorac to wheat, rape seed sorghum and strawberry.

Rice plants were treated in the growth chamber with one foliar application at 1.5 kg ai/ha, and with one application at 0.84 kg ai/ha in the field at the 4 and 3-5 leaf stage, respectively. Samples were collected from whole plant (28 days after application), straw (97 days after application) and grain (97 and 118 days after application from growth chamber and field respectively). Total radioactive residues were 0.49 mg eq/kg from whole plant, 13 mg eq/kg from straw and 1.5 mg eq/kg and 0.12 mg eq/kg from grain in growth chamber and field respectively. Extraction rates were in general above 80% TRR.

Quinclorac was the major residue identified (85–94% TRR) in rice straw, whole plant, and grain in growth chamber and the field. Since rice grain was extracted by reflux with 1 M HCl, the quinclorac detected in rice grain might be released from conjugates. Metabolites present at low levels were not identified.

Wheat plants were treated in the greenhouse with one foliar application of 0.125 kg ai/ha or 0.5 kg ai/ha at the 3–5 leaf stage. Samples were collected of forage (early to late boot stage, 37 days before harvest), straw and grain (92 days after application). Total radioactive residues following the low application rate were 3.3 mg eq/kg (forage), 1.9 mg eq/kg (straw) and 1.1 mg eq/kg (grain) and following the high application rate were 13 mg eq/kg (forage), 8.2 mg eq/kg (straw) and 3.9 mg eq/kg in grain. Extraction with acetone/water and subsequent treatment with NaOH for forage, grain and straw in general was above 80% TRR.

In all plant parts parent quinclorac was the major residue identified at 24% and 45% TRR in forage, 12 and 22% TRR in straw and 62 and 68% TRR in grain from low and high application rate respectively. Metabolites characterized as hydroxyquinclorac conjugates were present in forage at 6.8% TRR (0.22 mg/kg) in the low application rate and 6.4% TRR (0.84 mg/kg) in the high application rate, straw at 14% TRR (0.26 mg eq/kg) and 13% TRR (1.83 mg eq/kg), in grain at 4% TRR (0.05 mg eq/kg) and 4%TRR (0.14 mg eq/kg) in low and high rate application respectively. Other metabolites identified in forage and straw were quinclorac conjugates and hydroxyquinclorac, each < 5% TRR.

Sorghum plants were grown outdoor and treated with a pre-emergence spray application to the soil followed by a foliar treatment (post-emergence) when sorghum plants were 15–25 cm tall. The pre-emergence treatment was 0.525 kg ai/ha and the post-emergence at 0.504 kg ai /ha (total 1.03 kg ai/ha. Residue analysis was done on forage (whole plants) collected at 25 days after the last treatment and on mature fodder and grain collected at 95 days after last treatment.

Extraction with acetone/water and subsequent treatment with HCl were in general above 80% TRR for forage, grain and straw. In all plant samples, unchanged parent quinclorac was the major residue being present at levels of 73% TRR (2.9 mg eq/kg) in forage, 22% TRR (0.19 mg eq/kg) and 74% (0.61 mg eq/kg) in grain. This residue included the quinclorac that was released from remaining solids (4% in grains to 9% TRR in forage and fodder) under hydrolysis conditions. The only other metabolite identified was quinclorac methyl ester present at 3.6% TRR in forage, 5.9% in fodder and 1.7% in grain. A large amount of unidentified residues was present in forage and fodder in organic and aqueous fractions, maximum 19% TRR (0.75 mg eq/kg in forage and 52% TRR (0.46 mg eq/kg) in fodder.

Rape seed plants were grown in a growth chamber and treated with one foliar post emergence application of 0.2 kg ai/ha at 30 days after sowing at 5th true leaf stage. Whole plants were sampled 1 and 29 days after treatment. Seed and straw were sampled 60 days after treatment. Extraction with acetone/ phosphate buffer and subsequent treatment with 0.1M NaOH was above 90% TRR in seed and straw.

Residues in seed were identified as parent quinclorac at 37% TRR (0.18 mg eq/kg) and the quinclorac methyl ester 37% TRR (0.18 mg eq/kg). Metabolites characterized as 'aqueous soluble' were present at 8.7% TRR (0.042 mg eq/kg) and those characterized as 'organo soluble' were found at 8.6% TRR (0.041 mg eq/kg). Residues in straw (0.64 mg eq/kg) and forage (0.68 mg eq/kg) were not further identified

Strawberry plants were grown outdoor and treated with one foliar post-emergence application at growth stage BBCH 73 (seeds clearly visible). The treatment rate was 1.12 kg ai/ha. Foliage and fruits were sampled at three harvest times 21, 37 and 61 days after treatment.

In foliage, unchanged parent quinclorac accounted for 67% TRR (10 mg eq/kg) at first harvest 21 DAT and at 57% TRR (4.4 mg eq/kg) at the last harvest 61 DAT. Conjugated quinclorac released by acid hydrolysis ranged from 27%TRR (4.2 mg eq/kg) at first harvest to 29%TRR (2.3 mg eq/kg) in the last harvest. Extraction efficiency was above 90% TRR in fruit and foliage.

In fruit, unchanged parent quinclorac accounted for 79% TRR (9.1 mg eq/kg) at first harvest and at 51% TRR (1.7 mg eq/kg) at third harvest 61 DAT. Conjugated quinclorac released by acid hydrolysis increased from 11%TRR (1.3 mg eq/kg) at first harvest to 47%TRR (1.6 mg eq/kg) in the last harvest. Quinclorac methyl ester accounted for 9.6% TRR (1.1 mg eq/kg) at first harvest, to 4.9% TRR (0.42 mg eq/kg) at second harvest and was not detected at the last harvest.

In summary the Meeting concluded that in cereals (rice, wheat and sorghum), and in strawberry quinclorac is not significantly metabolized and parent quinclorac including conjugates is the major residue > 80% TRR in both food and feed matrices. A number of identified quinclorac conjugates were identified in amounts below 5% TRR in cereals and up to 47% TRR in fruit. Quinclorac levels reported in cereal metabolism studies may already include the quinclorac released from conjugates. Other metabolites were not found in tested crop matrices above 10% TRR except quinclorac methyl ester which was found at 37% TRR (0.18 mg eq/kg) in rape seed. Quinclorac methyl ester was found as a minor metabolite in strawberry fruit at a maximum of 9.6% TRR (1.1 mg eq/kg), in sorghum at a maximum of 1.7% TRR (0.014 mg eq/kg) and in forage at 3.6% TRR (0.14 mg eq/kg).

Environmental fate in soil

The Meeting received studies on hydrolysis, photolysis, terrestrial and aquatic soil metabolism and field dissipation for the investigation of the environmental fate.

In the photolysis study it was shown that quinclorac degraded slowly with a half-life of 162 days. The soil hydrolysis study showed that quinclorac was stable during the testing period 30 days and at the temperature 25 °C.

In aerobic soil metabolism studies in silt loam soils under laboratory conditions and an application rate of 0.375 kg ai/ha, quinclorac degraded slowly; no degradation was indicated 120 days after treatment. In another study at an application rate of 3.9 to 4.1 kg/ha, the half-life (DT_{50}) for quinclorac was estimated at 391 days in loamy sand and 168 days in a clay soil. In this study two major soil metabolites were detected; 2-hydroxyquinclorac, at a maximum of 12% AR and quinclorac methyl ester at a maximum of 7.8% AR. Other metabolites were present at levels below 10% AR.

In one tested aerobic aquatic system (rice field) at an application rate 3.75 kg ai/ha, quinclorac degraded to the metabolite 3-chloro-8-quinolilne carboxylic acid (BH 514-1) up to a maximum of 55.7% AR. Three additional fractions were present (not characterized) but present at less than 10% AR. The half-life of quinclorac in this system was 4.7 months and for the metabolite 3-chloroquinoline-8-carboxylic acid, 7.4 months. Under anaerobic conditions at the same application rates the same metabolites were formed but at a slower rate; there was 50% conversion of quinclorac to 3-chloroquinoline-8-carboxylic acid.

In one field dissipation study using a loamy sand soil, quinclorac was applied to bare soil with two applications of 2.8 kg ai/ha. DT_{50} and DT_{90} values for parent quinclorac were 126 days and > 360 days respectively following the first application (autumn), and DT_{50} and DT_{90} of 8 days and 26 days respectively following the second application (summer). The maximum of the two metabolites were less than 5% TRR. The results indicate that quinclorac is tightly bound to the loamy sand soil.

One confined rotational metabolism study from crops rotated after flooded and non-flooded rice grown on silty clay was available. Quinclorac [2, 3, 4-^{14}C] was applied to flooded and non-flooded rice (primary crop) at a rate of 0.84 kg ai/ha in Mississippi, USA. After harvest of mature rice, the first rotational crops (wheat, mustard green and turnips) were planted 120 DAT followed by the second crops (sorghum, mustard green, soya beans and turnip) 360 DAT. The extractable radioactive residues were analysed for quinclorac and the metabolite 3-chloroquinoline-8-carboxylic acid (BH 514-1).

For the first rotational crops, maximum TRRs were 0.028 mg eq/kg for mustard plant, wheat seed, 0.025 mg eq/kg and turnip plant, 0.012 mg eq/kg. For the annual rotational crops, maximum TRRs were 0.014 mg eq/kg for mustard top, soya bean seed 0.017 mg eq/kg and for root and turnip root, 0.02 mg eq/kg. The metabolism of quinclorac by soya bean was qualitatively similar, although up to 62% TRR (0.01 mg eq/kg) was not extractable.

Quinclorac was the only major residue (>10% TRR but less than 0.05 mg eq/kg) detected in the examined rotational crops. Furthermore in the first rotational crops as well as the second rotational crops, TRRs were higher from crops grown under non-flooded conditions.

Another confined rotational metabolism study with one interval (120 days) was also available from crops planted after sorghum. Treatment levels to sorghum plants with 3-^{14}C-quinclorac were 0.53 kg ai/ha pre-emergence and 0.50 kg ai/ha post-emergence giving a total of 1.03 kg ai/ha (2 times GAP). The rotational crops mustard green, turnip and barley were planted 120 days after the last treatment of sorghum. The parent quinclorac was the major (up to 0.1 mg/kg) residue in all matrices. Quinclorac methyl ester was a minor metabolite below 5% in mustard green, turnip roots, and barley.

One field rotational crop study with rape seed planted after barley treated at 0.2 kg ai/ha the previous year was available. The application rate was below -25% critical GAP for cereals (0.29 kg ai/ha, wheat). The residues in rape seed at harvest analysed for parent quinclorac were below the LOQ of 0.05 mg/kg.

In the confined rotational studies, uptake of quinclorac and quinclorac methyl ester was observed in both first and second rotational crops. Residues were no more than 0.01 mg/kg (0.012 mg eq/kg) at the GAP rate.

In summary quinclorac is persistent in some soils and the amount, dependent on the season; residues from quinclorac in rotational crops may be found but generally at levels <.05 mg/kg.

Methods of residue analysis

The Meeting received analytical methods for the analysis of quinclorac residues in plant and animal matrices.

The extraction in lactating goat and laying hen was with acetone/0.1M NaOH. After clean-up, residues of parent quinclorac are determined by GC-ECD. The method is suitable for measuring residues of quinclorac in animal commodities with a LOQ of 0.05 mg/kg. It is not clear whether identified quinclorac represents quinclorac only or also includes quinclorac released from conjugates by the alkaline extraction method used.

The extraction in strawberry was with 1% acetic acid, in rice and wheat with acetone/0.1 M NaOH, in rape seed with acetone. After clean-up, residues of parent quinclorac in wheat, sorghum, rape seed, and strawberry were determined by HPLC-MS/MS or GC-ECD. Methods used for analysis of quinclorac in cereals may hydrolyse any quinclorac conjugates present. The LOQ ranged between 0.01–0.05 mg/kg.

The metabolite quinclorac methyl ester identified as a metabolite in rape seed and sorghum matrices is extracted with acetone and after clean-up determined by HPLC-MS/MS. The LOQ was 0.05 mg/kg.

A radiovalidation study showed that extraction with acetone/0.1 M NaOH converts quinclorac methyl ester partly into parent compound. For this reason, the parent is overestimated in samples containing quinclorac methyl ester. Methods D9708/1 (quinclorac) and R0036 (quinclorac) use acetone/0.1 M NaOH and are therefore not suitable of the determination of parent compound in oilseed rape seed and possibly other pulses and oilseeds, where the quinclorac methyl ester can be expected to be present.

In summary analytical methods are available for determining parent quinclorac in plant (cereals and fruit) and animal (lactating goat and hen) matrices and for the quinclorac methyl ester in plant (fruit and sorghum) matrices. However the methods for animal and cereal commodities use a hydrolysis step; indicating that the quinclorac residues measured may actually include quinclorac released from conjugates. Current analytical methods presented for oil seed rape are likely to overestimate quinclorac residues as the determination of quinclorac may also include some of its methyl ester.

Stability of residues in stored analytical samples

The Meeting received information on the storage stability of quinclorac and quinclorac methyl ester in plant matrices. Quinclorac (> 80% of spiked levels remained) was stable in rice and sorghum matrices for 38 months, in wheat grain for 26 months, and in cranberry fruit for 14 months. For quinclorac and quinclorac methyl ester no significant degradation was observed within 22 months in oilseed meal and oil.

For animal matrices no storage stability studies were provided.

Definition of the residue

In wheat and rice the parent quinclorac is the major residue present (above 80% TRR). Glucose conjugates, hydroxylated conjugates of quinclorac and hydroxyquinclorac were identified as minor metabolites (< 10% TRR) in wheat. In sorghum parent was also the major (> 73% TRR) residue present. The metabolite quinclorac methyl ester was also present (< 6% TRR) in sorghum.

In rape seed besides the parent, the metabolite quinclorac methyl ester was found as a significant metabolite (37%TRR).

In strawberry the parent quinclorac was the major residue present (> 98% TRR). Quinclorac methyl ester accounted for 9.6% TRR in fruit at the first harvest and was not detected in the third harvest

In rotational crop studies including mustard, barley and turnip in first rotation, uptake of residues identified as quinclorac (major) and quinclorac methyl ester (minor) was observed when analyzed and resulted in residues near the LOQ at GAP rate.

Thus based on available metabolism data parent quinclorac is the major residue in examined crops. The metabolite quinclorac methyl ester was a significant residue in rape seeds and was a minor residue in other primary and subsequent rotational crops analysed.

Analytical methods are available for determining parent quinclorac in plant (cereals and fruit) and quinclorac methyl ester in fruit and sorghum matrices.

Current analytical methods determining quinclorac and quinclorac methyl ester in rape seed is not suitable as they overestimate the level of parent present.

Taking into account that the methodology measuring quinclorac is also accounting for conjugates derived from hydrolysis during the extraction process, and that quinclorac is the major residue measured in plants, the Meeting decided that the residue definition should be as follows:

Definition of the residue for compliance with MRL for plant commodities: Quinclorac plus quinclorac conjugates

The Meeting noted that quinclorac methyl ester has a toxicological potency up to 10 times that of quinclorac and decided to include it in the residue definition for dietary intake.

Definition of the residue for estimating dietary intake for plant commodities: Quinclorac plus quinclorac conjugate plus quinclorac methyl ester expressed as quinclorac

In calculating residue values for dietary intake estimation the Meeting agreed to use the following formula: residues = (quinclorac +conjugate) + 10 × quinclorac methyl ester.

In lactating goat the major residue was quinclorac and the highest residues were found in liver and kidney with small amounts of other metabolite also found (less than 5% TRR).

For laying hen, the available data show that quinclorac is the only major residue in tissues and eggs.

In both species, measurement of the parent in the metabolism studies probably also includes conjugates of quinclorac as the extraction method used strong acid or alkali. This conclusion is supported by partitioning of residues in the animal feeding studies where quinclorac residues are more than ten times higher in fat tissue compared to muscle tissue.

The Meeting noted however that quinclorac residue was more than ten times higher in fat tissue compared to muscle tissue.

For quinclorac, a log Kow of -0.72 at pH 7 was reported suggesting residues of free quinclorac are water soluble.

The fact that the residue is generally found in the fat suggests that the actual tissue residue is not the parent molecule but may be a fatty acid conjugate of quinclorac.

Based on the above the Meeting decided the residue definition for compliance with MRLs and estimating the dietary intake should be as follows:

Definition of the residue for compliance with MRL and estimating the dietary intake for animal commodities: Quinclorac plus quinclorac conjugates.

The residue is fat soluble

Results of supervised residue trials on crops

Quinclorac is registered for use as a herbicide in many countries. The Meeting received supervised trial data for foliar application of quinclorac to rice, wheat, rape seed, sorghum, cranberry and rhubarb. The trials were conducted in USA and Canada. Frozen samples from the trials presented are covered by storage stability studies. The residue trials did not measure the methyl ester required for estimating dietary intakes.

The Meeting noted quinclorac methyl ester in oilseed equal level to quinclorac in the rape metabolism study and for cereals and fruit at levels up to10 percent of the parent, and agreed to use to the following formula to estimate levels for use in dietary intake calculations:

Plants except oilseed:

HR/STMR = (quinclorac + conjugate) + 10 x 0.1 (quinclorac + conjugate) = 2 × (quinclorac + conjugate)

Oil seed:

HR/STMR = (quinclorac + conjugate) + 10 x (quinclorac + conjugate) = 11 × (quinclorac + conjugate)

Cranberry

Data from supervised trials on cranberry from USA were presented to the Meeting. The critical GAP in USA is two foliar post-emergent applications of 0.28 kg ai/ha, with a 30 day interval and a PHI of 60 days.

In four independent trials from USA matching the critical GAP residues of quinclorac in cranberry fruit for MRL estimation were (n=4): 0.16, 0.17, 0.18, 0.67 mg/kg. The highest residue of 0.68 mg/kg was measured in an individual cranberry sample.

Residues for dietary intake estimation in cranberry fruit were (n=4): 0.32, 0.34, 0.36 and 1.34 mg/kg

Based on a data set from USA the Meeting estimated a maximum residue level, an STMR value and an HR value for quinclorac in cranberry fruit of 1.5 mg/kg, 0.35 mg/kg and 1.36 mg/kg, respectively.

Rhubarb

Data from supervised trials on rhubarb from USA were presented to the Meeting. The critical GAP in USA is two foliar post-emergence applications of 0.42 kg ai/ha, with a 30 day interval and a PHI of 30 days.

In three independent trials from USA matching the critical GAP residues in rhubarbs for MRL estimation were (n=3) 0.11, 0.18, 0.21 mg/kg. The highest residue of 0.23 mg/kg was measured in an individual rhubarb sample.

Residues for dietary intake estimation in rhubarbs were (n=3): 0.22, 0.36 and 0.42 mg/kg.

Based on a data set from USA the Meeting estimated a maximum residue level, an STMR value and an HR value for quinclorac in rhubarb of 0.5 mg/kg, 0.36 mg/kg and 0.46 mg/kg, respectively.

Rice

Data from supervised trials on rice from USA were presented to the Meeting. The critical GAP in USA is one application of 0.29-0.54 kg ai/ha and a PHI of 40 days. The use can be soil application, pre-planting or pre-emergence (dryland rice) or post-emergence broadcast application after the 2-leaf stage (but before heading) on dryland and water seeded rice. Only six trials matched the GAP and an estimation of maximum residue level was not made.

Wheat

Data from supervised trials on wheat from USA and Canada were presented to the Meeting. The critical GAP in Canada is one post-emergent foliar application of 0.135 kg ai/ha and a PHI of 80 days. Only six trials matched the GAP and an estimation of maximum residue level was not made.

Sorghum grain

Data from supervised trials from USA were presented to the Meeting. The critical GAP is one application pre- and /or post-emergence (at maximum 12 cm height limit) as long as the seasonal maximum amount of 0.7 kg ai/ha is not exceeded. The maximum post-emergent application rate is 0.56 kg ai/ha. The trials did not match the critical GAP and an estimation of maximum residue level was not made.

Rape seed (canola)

A registered use with a supporting label from Canada was presented with one foliar application at 2-6 leaf stage of 0.1 kg ai/ha and a PHI of 60 days. Data from seventeen independent supervised trials from Canada (16) and USA (1) supporting this GAP were presented to the Meeting.

The analytical method used in the trials method D9708/1 for determining quinclorac and method D9806 for determining quinclorac methyl ester (BH514-Me) overestimates the level of the parent. Therefore the trials cannot be used for estimating the maximum residue level.

Animal feeds

Strawberry and rhubarbs are not used as animal feeds.

Fate of residues during processing

The Meeting received information on the fate of incurred residues of quinclorac during the processing of rice, wheat, rape seed and sorghum. Supporting trials with matching GAPs were not available and therefore the studies were not considered by the current Meeting.

Residues in animal commodities

Farm animal feeding studies

The Meeting received feeding studies on residue levels of quinclorac plus quinclorac conjugates in laying hens and lactating cows.

For lactating cows three groups of were dosed daily at levels of 1, 10, 50, or 500 ppm in the diet (0.002, 0.02, 0.09 and 0.9 mg/kg bw) for 28 consecutive days.

In milk residues were only detected in the 500 ppm group. A plateau level was reached in this group after 4 days (mean: 0.032 mg/kg).

In muscle residues were only detected in the 500 ppm group, 0.01–0.037 mg/kg (mean: 0.027 mg/kg).

In fat two different tissues were analyzed (peritoneal and subcutaneous fat). The highest residues were found in subcutaneous fat with < 0.01–0.013 (mean: 0.005 mg/kg) for the 1 ppm group, < 0.01 mg/kg for the 10 ppm group. In peritoneal fat with < 0.01–0.01 mg/kg for the 1 ppm group, < 0.01–0.023 mg/kg for the 10 ppm group.

In liver residues were < 0.01–0.01 mg/kg for the 1 ppm group, 0.01-0.02 mg/kg for the 10 ppm group.

In kidney residues were < 0.01–0.016 mg/kg for the 1 ppm group, 0.062-0.082 mg/kg for the 10 ppm group.

For laying hens three groups of animals were dosed with rates of 1, 10 and 100 ppm by dry weight in the feed (0.07, 0.7 and 7 mg/kg bw/day) for 28 consecutive days. Eggs were collected throughout the whole study and tissues were collected on day 29 after the last dose.

In eggs a clear plateau level was not reached in any dosing group. For the 1 and 10 ppm the residues were below 0.01 mg/kg during the whole experiment.

In dark and light muscle residues were 0.0–0.005 mg/kg (max mean: 0.002 mg/kg) for the 1 ppm group.

In skin + fat total residues in fat for the 1 ppm group was 0.0–0.018 mg/kg.

In liver residues were: 0.0–0.009 mg/kg for the 1 ppm group. In kidney residues were 0.002–0.059 mg/kg for the 1 ppm group.

Animal commodities residue levels estimation

Strawberry and rhubarbs are not used as animal feed and therefore estimation of residue levels was not made for animal commodities.

RECOMMENDATIONS

On the basis of the data from supervised residue trials the Meeting concluded that the residue levels listed in Annex 1 are suitable for establishing maximum residue limits and for the IEDI and IESTI assessment.

Definition of the residue for compliance with MRL for plant commodities: quinclorac plus quinclorac conjugates

Definition of the residue for estimating dietary intake: quinclorac plus quinclorac conjugate plus quinclorac methyl ester expressed as quinclorac

Definition of the residue for compliance with MRL and estimating the dietary intake for animal commodities: quinclorac plus quinclorac conjugates

The residue is fat soluble.

DIETARY RISK ASSESSMENT

Long-term intake

The International Estimated Daily Intake of quinclorac for the 17 GEMS/Food regional diets based on estimated STMRs were 0% of the maximum ADI of 0.4 mg/kg bw for the sum of quinclorac, its conjugates plus 10× quinclorac methyl ester, expressed as quinclorac (see Annex 3 of the 2015 Report). The Meeting concluded that the long-term dietary intake of residues of quinclorac is unlikely to present a public health concern.

Short-term intake

The International Estimated Short Intake (IESTI) for quinclorac was calculated for commodities for which STMRs or HRs were estimated and for which consumption data were available. The results are shown in Annex 4 to the 2015 Report. The ARfD for quinclorac, its conjugates plus 10 × quinclorac methyl ester, expressed as quinclorac is 2 mg/kg bw and the IESTIs varied from 0–1% of the ARfD for children and the general population.

The Meeting concluded that the short-term intake of residues of quinclorac when used in ways that have been considered by the JMPR is unlikely to present a public health concern.

5.27 SPIROTETRAMAT (234)

RESIDUE AND ANALYTICAL ASPECTS

The compound was evaluated by the JMPR for the first time in 2008. The Meeting established an ADI of 0–0.05 mg/kg bw per day and an ARfD of 1 mg/kg/bw and defined the residues as follow:

Residue for enforcement plant commodities: spirotetramat plus spirotetramat enol, expressed as spirotetramat.

Residue for dietary intake plant commodities: *spirotetramat plus the metabolites enol, ketohydroxy, enol glucoside, and monohydroxy, expressed as spirotetramat*.

Residue for enforcement and dietary intake animal commodities: *spirotetramat enol, expressed as spirotetramat*.

The residue is not fat soluble.

Additional residue data were evaluated by the 2011 JMPR.

Siprotetramat was listed by the Forty-sixth Session of CCPR (2014) for the evaluation by the 2015 JMPR for additional MRLs. Supervised trials data were submitted for evaluation on avocado, guava and sweet corn for the evaluation by the 2015 JMPR.

Analytical methods

Analytical methods were evaluated by the 2008 and 2011 Meetings. Recovery data obtained from the analysis of avocado, guava and sweet corn and sweet corn fodder. The limit of quantification was 0.01 mg/kg for individual residues. The residues of individual analyte were expressed as spirotetramat equivalents and summed up to yield the total residue of spirotetramat plus enol (LOQ 0.02 mg/kg) and spirotetramat plus 4 metabolites (LOQ 0.05 mg/kg). The recoveries for individual residue components in the matrices tested 0.01 and 0.1 mg/kg or 1.0 and 10 mg/kg spike level and their relative standard deviations were within acceptable range.

Stability of analytes

Individual data on storage stability of spirotetramat and its metabolites were evaluated by the JMPR in 2008. The Meeting concluded that spirotetramat including its enol metabolite was stable (≥ 80% remaining) for about 2 years in tomato, potato, lettuce, almond nutmeat, climbing French beans and tomato paste. No new information was provided.

Residues resulting from supervised trials in crops

Results of new trials and some of the previously submitted ones on guava, avocado and sweet corn were evaluated by the present meeting. The sum of respective residues was expressed in spirotetramat equivalent.

Assorted tropical and sub-tropical fruits – edible peel

Guava

In 2008 and 2011, four residue trials in guava were conducted (including 13 plots) in Mexico. The trials were performed either with the OD 150 or the SC 240 formulation. The trials were conducted at two different application rates: 3x 0.288 kg a.i./ha or 3x 150 kg a.i./ha at spray intervals of 14 days. The US GAP permits 3 applications at 0.179 kg a.i./ha rate at 14 days intervals with a PHI of 1 day. The results of supervised trials conducted in Mexico are evaluated against the US GAP.

The results indicate that the type of formulation and concentration of the spray solution did not affect the residue level. Therefore, the highest residues were selected from each set of trials.

The sum of residues of spirotetramat and its enol metabolite deriving from the 3 times 0.288 kg ai/ha nominal application rates at 1-3 days after last application were: 0.429, 0.660, 0.906 and 1.30 mg/kg.

Taking into account the nominal application rate of 288 g a.i./ha and the USA GAP rate of 179 g a.i./ha, the scaling factor is 179/228=0.6215. The residues scaled to match US GAP are in rank order: 0.27, 0.41, 0.56, and 0.81 mg/kg.

The sum of residues of spirotetramat and 4 metabolites are: 0.474, 0.79, 0.965 and 1.37 mg/kg.

The residues scaled to US GAP are: 0.29, 0.49, 0.60, and 0.85 mg/kg.

The Meeting estimated maximum residue level of 2 mg/kg, an HR of 0.85 mg/kg and an STMR residue of 0.55 mg/kg.

Assorted tropical and sub-tropical fruits – inedible peel

Avocado

The uses on avocado and the corresponding residue trials were previously submitted in 2010, but no recommendation could be made at that time. Subsequently, the GAPs of Chile and Mexico have been changed.

The use of spirotetramat in/on avocado is registered in the USA (3 applications of maximum 0.179 kg ai/ha at 14 days interval with a maximum seasonal rate of 0.44 kg ai/ha and PHI of 1 day), Chile (2 applications with a maximum seasonal rate of 0.8 kg ai/ha and PHI of 3 days) and Mexico (1 applications at maximum rate of 0.168 kg ai/ha and PHI of 1 day.

Five trials were conducted in USA, Chile and Mexico with nominal application rates of 0.288 kg ai/ha.

The critical GAP is from USA. The results of trials were evaluated based on the US GAP.

The highest sum of spirotetramat and enol from each replicate plots corresponding to this GAP are: 0.045, 0.11, 0.17, 0.20, 0.29 mg/kg.

Taking into account the targeted application rates of 0.288 and the maximum authorised rate of 0.179, the scaling factor is 0.179/0.288=0.6215.

The scaled residues in avocado fruits were in rank order: 0.028, 0.067, 0.106, 0.125, and 0.183 mg/kg.

For dietary intake assessment the sum of residues of spirotetramat and 4 metabolites was considered. They are in rank order: 0.055, 0.13, 0.20, 0.24, and 0.31 mg/kg.

The scaled residues in rank order are: 0.034, 0.080, 0.126, 0.147, and 0.193 mg/kg.

The highest residue observed in any single sample was 0.23 mg/kg.

The Meeting estimated a maximum residue level an STMR and HR of 0.4 mg/kg, 0.126 mg/kg and 0.23 mg/kg, respectively.

Sweet corn

Seven trials were conducted in Australia between 2008 and 2010 with applications close to Australian maximum GAP (2 times 0.072 kg a.i./ha at 7 day intervals with a PHI of 7 days). One sample was taken from each plot.

In Australian trials the sum of spirotetramat and enol in ear without husk were: 0.056, 0.056, 0.1, 0.12, 0.12, 0.24 and 0.40 mg/kg.

For dietary intake assessment the sum of residues of spirotetramat and 4 metabolites was considered. They were in rank order: 0.12, 0.12, 0.18, 0.18, 0.18, 0.3 and 0.62.

Eight trials were conducted in Canada approximating maximum GAP which permits treatments with 3 × 0.088 kg ai/ha at 7 days intervals and a PHI of 7 days. Duplicate samples were taken in each trial.

Some Canadian trials were carried out at the same location, timing, dosage and equipment. The highest sum of spirotetramat and enol in ear without husk from the independent trials were: 0.040, 0.061, 0.235, 0.48 and 0.545 mg/kg.

For dietary intake assessment the sum of residues of spirotetramat and 4 metabolites was considered. They were in rank order: 0.071, 0.125, 0.31, 0.60 and 0.695 mg/kg.

The maximum residue in a single sample was 0.75 mg/kg.

Based on the Canadian trials reflecting maximum GAP, the Meeting estimated a maximum residue level of 1.5 mg/kg, and for dietary risk assessment an STMR residue of 0.31 mg/kg and an HR of 0.75 mg/kg.

Animal feed

Residue data on sweet corn forage and stover derived from supervised trials conducted in Australia and Canada were made available for evaluation. The trial conditions, reflecting maximum GAP are described under sweet corn.

The independent Canadian trials resulted in the following highest average residues:

Sum of spirotetramat and enol:

Sweet corn forage 7 days after last application: 0.027, 0.18, 0.18, 0.25 and 1.8 mg/kg.

Sum of residues of spirotetramat and 4 metabolites:

Sweet corn forage 7 days after last application: 0.06, 0.29, 0.32, 0.35 and 1.9 mg/kg.

The meeting estimated 0.32 mg/kg median and 1.9 mg/kg high residue for animal burden calculation.

In the independent Canadian trials 47–85 days after last application the residues in sweet corn stover were:

Sum of spirotetramat and enol: < 0.02, 0.023, 0.046, 0.11 and 0.41 mg/kg

Sum of residues of spirotetramat and 4 metabolites: < 0.05, 0.078, 0.10, 0.11, and 0.58 mg/kg.

In Australian trials 7 days after last application the sum of residues in/on sweet corn fodder was:

Spirotetramat and enol: 0.18, 0.2, 0.31, 0.28, 0.33, 0.5, 0.58 mg/kg.

Spirotetramat and 4 metabolites: 0.39, 0.47, 0.54, 0.57, 0.63, 1.0, and 1.36 mg/kg,

The Australian trials resulted in higher residues in sweet corn stover and fodder. Based on the Australian trials the Meeting estimated highest and median residues of 1.36 mg/kg and 0.57 mg/kg for sweet corn stover and fodder.

Farm animal feeding studies

Based on a dairy cattle feeding study and poultry metabolism study the 2008 JMPR estimated residue levels in animal commodities. No new information was provided.

Residues in animal commodities

The residues in sweet corn forage and stover do not increase the maximum animal burden that would affect the maximum, HR and median residue values estimated by the 2008 Meeting.

RECOMMENDATIONS

On the basis of the data from supervised trials the Meeting concluded that the residue levels listed below are suitable for establishing maximum residue limits and for dietary intake assessment.

DIETARY RISK ASSESSMENT

Long-term intake

The ADI is 0–0.05 mg/kgbw. The long-term intake calculated for the commodities considered by the present meeting is 0% of maximum ADI and did not affect the previously made long-term dietary estimates. Hence, a new risk assessment was not necessary.

Short-term intake

The ARfD is 1 mg/kgbw. The estimated short-term intakes of avocado, guava and sweet corn are up to 1% 2% of ARfD for the general population and children.

The Meeting concluded that the short-term intake of residues of spirotetramat from the uses

5.28 TEBUCONAZOLE (189)

RESIDUE AND ANALYTICAL ASPECTS

Tebuconazole a triazole fungicide was last evaluated for residues in 2011 within the periodic re-review programme. It was listed by the Forty-sixth Session of CCPR (2014) for the evaluation in the 2015 JMPR for additional data on residues. Data was submitted for banana, cucumber, ginseng, asparagus, sunflower, onion bulb; and onion, green. The residue definition for plant commodities for enforcement and risk assessment purposes is tebuconazole. The ADI for tebuconazole is 0-0.03 mg/kg bw and the ARfD is 0.3 mg/kg bw.

Method of analysis and stability of residues

A GC-NPD analytical method was satisfactorily validated for the analysis of tebuconazole in fresh ginseng at a LOQ of 0.03 mg/kg up to 0.5 mg/kg and for processed commodities at a LOQ of 0.06 mg/kg up to 1 mg/kg.

Tebuconazole residues were shown to be stable under frozen conditions (at -20 °C) in fresh ginseng for at least 52 days; in dried ginseng for at least 142 days; in red ginseng for at least 96 days; and in ginseng water extracts for at least 121 days.

The sample storage period used in the trials for ginseng and other commodities evaluated by the present Meeting was within the storage period that guaranteed that the residues in the samples were not degraded.

Residues resulting from supervised trials

Banana

In China, the critical GAPs for tebuconazole in banana is 3 × 0.28 kg ai/ha and 35 days PHI for unbagged banana and 3 × 0.25 kg ai/ha and 14 days PHI for bagged banana.

In eleven trials conducted with unbagged banana in China according to GAP, residues in the whole fruit were 0.10, 0.13 (2), 0.17, 0.19, 0.20, 0.21, 0.37, 0.53, 0.54 and 0.74 mg/kg. Residues in the pulp were 0.02, 0.03, 0.05, 0.06, <u>0.07</u> (4), 0.09, 0.15 and 0.16 mg/kg.

In eleven trials conducted with bagged banana according to GAP, residues in the whole fruit were < 0.01 (5), 0.01, 0.03 (2), 0.09, 0.15 and 0.42 mg/kg. Residues in the pulp were < 0.01 (9), 0.04 and 0.10 mg/kg.

Residues from trials conducted with unbagged banana gave the highest residues. The Meeting estimated a maximum residue level of 1.5 mg/kg, a STMR of 0.07 mg/kg and a HR of 0.16 mg/kg for tebuconazole in banana. These estimates replace the previous recommendations for tebuconazole in banana.

Onion, bulb and shallots

In the USA tebuconazole can be applied in onion and shallots at 4 foliar applications at 0.19 kg ai/ha or one furrow at 0.65 kg ai/ha plus 2 foliar at 0.19 kg ai/ha. The PHI is 7 days for both. In eight trials conducted in USA at the foliar GAP, residues were < <u>0.05</u> (5). <u>0.06</u>. 0.08 and 0.09 mg/kg. In five trials conducted using furrow plus foliar application, residues were < 0.02, 0.02, 0.04 (2), and 0.06 mg/kg.

The Meeting agreed that the foliar only trials gave the highest residues and estimated a maximum residue level of 0.15 mg/kg, an STMR of 0.055 mg/kg and an HR of 0.09 mg/kg for tebuconazole in onion, bulb. These estimates replace the previous recommendation for tebuconazole in onion bulb.

The Meeting agreed to extrapolate this estimate to shallots.

Spring onion (Onion, green)

In the USA, tebuconazole can be applied in onions, green witht 4 foliar applications at 0.19 kg ai/ha and a 7 day PHI. In three trials conducted in the USA and Canada in 1999 at GAP, residues were 0.06, 0.10 and 0.80 mg/kg.

The Meeting estimated a maximum residue level of 2 mg/kg, a STMR of 0.10 mg/kg and an HR of 0.8 mg/kg for tebuconazole in spring onion.

Cucumber

GAP for tebuconazole in cucumber in China is 3 × 0.12 kg ai/ha and 5 days PHI. In eight field trials conducted in the country according to GAP, residues were 0.02 (2), 0.03, 0.04, 0.06, 0.07, 0.09 and 0.11 mg/kg. In three protected trials residues were 0.03, 0.04 and 0.06 mg/kg.

Based on the residue data from field trials, the Meeting estimated a maximum residue level of 0.2 mg/kg, an STMR of 0.05 mg/kg and an HR of 0.11 mg/kg for tebuconazole in cucumber. These estimates replace the previous recommendations for tebuconazole in cucumber.

Ginseng

Six trials were conducted with tebuconazole in ginseng in Korea according to GAP (3 x 0.13 kg ai/ha; 21 days PHI). giving residues in fresh ginseng of 0.03 (2), 0.04, 0.06 (2) and 0.08 mg/kg. Three other trials conducted with 6 applications gave similar results.

The Meeting estimated a maximum residue level of 0.15 mg/kg, an STMR of 0.05 mg/kg and an HR of 0.08 mg/kg for tebuconazole in ginseng.

Asparagus

In the USA the critical GAP for tebuconazole in asparagus is to apply up to 3 × 0.19 kg ai/ha to the developing ferns after harvest of spears is completed; the PHI is 100 days. In three trials conducted in USA at GAP gave residues of < 0.02 (3) mg/kg.

The Meeting estimated a maximum residue level of 0.02* mg/kg and an STMR and HR of 0.02 mg/kg for tebuconazole in asparagus.

Sunflower

In the USA tebuconazole can be applied to sunflowers at a maximum rate of 0.49 kg ai/ha with a 50 day PHI. In seven trials conducted in the USA at GAP residues were < 0.04 (6) and 0.04 mg/kg.

The Meeting estimated a maximum residue level of 0.1 mg/kg and an STMR of 0.04 mg/kg for tebuconazole in sunflower seed.

Fate of residues in processing

Nine processing studies were conducted with ginseng yielding dried ginseng (≤ 14% water content). red ginseng (50–55% water content) and water extracts of dried and red ginseng. Median processing factors were 2.5 for dried ginseng, 1.0 for red ginseng, 3.35 for dried ginseng extract and 1.87 for red ginseng extract.

Using the estimated maximum residue level and STMR for ginseng (0.15 and 0.05 mg/kg, respectively) and the processing factor for dried ginseng (2.5), the Meeting estimated a maximum residue level of 0.4 mg/kg and an STMR of 0.125 mg/kg for ginseng, dried including red ginseng.

Using the processing factor for water extract of dried ginseng (3.35), the Meeting estimated a maximum residue level of 0.5 mg/kg and an STMR of 0.17 mg/kg for ginseng extracts.

DIETARY RISK ASSESSMENT

Long-term intake

The IEDI of tebuconazole based on the STMRs estimated by this and previous Meetings for the 17 GEMS/Food regional diets were 2–9% of the maximum ADI of 0.03 mg/kg bw (see Annex 3 of the 2015 Report). The Meeting concluded that the long-term dietary intake of residues of tebuconazole is unlikely to present a public health concern.

Short-term intake

An ARfD for tebuconazole is 0.3 mg/kg bw. The Meeting estimated the International Estimated Short-Term Intake (IESTI) of propiconazole for the commodities for which STMR, HR and maximum residue levels were estimated by the current Meeting. The results are shown in Annex 4. The IESTI represented a maximum of 5% of the ARfD. The Meeting concluded that the short-term intake of tebuconazole residues from uses considered by the current Meeting was unlikely to present a public health concern.

5.29 TRIFLOXYSTROBIN (213)

RESIDUE AND ANALYTICAL ASPECTS

Trifloxystrobin was first evaluated by the JMPR in 2004 (T, R) and in 2012 (R). The 2004 Meeting established an ADI of 0–0.04 mg/kg bw and decided that ARfD was not necessary. The Meeting agreed that the residue definition for enforcement purposes for plant commodities should be trifloxystrobin per se, for animal commodities and dietary intake assessment the residue definition should be parent compound and CGA 321113 (expressed as trifloxystrobin equivalents) for plant and animal commodities.

Trifloxystrobin was listed by the Forty-sixth Session of CCPR (2014) for the evaluation by the 2015 JMPR for additional MRLs. Supervised trials data were submitted for evaluation on dry soya bean, lentil, chick pea and pea.

Analytical methods used for supervised trials were also provided.

Analytical methods

The Meeting received descriptions and validation data for analytical methods for residues of trifloxystrobin, CGA 321113 and several other metabolites in different plant matrices.

The plant materials are generally extracted with a mixture of acetonitrile/water. After filtration and concentration to the aqueous remainder, the acidified crude extract is purified, where necessary, by liquid-liquid partition. The residues are quantified by reverse-phase HPLC with MS/MS-detection. The average recoveries of trifloxystrobin and CGA 321113 and their relative standard deviations from test portions spiked at 0.01–2 mg/kg levels were for peas (100–101%, 3.1–4.7%) and soya beans (86–91%, 6.4, 19%). The limits of quantification ranged between 0.01–0.02 mg/kg.

The DFG method S19, evaluated in 2004, is suitable for enforcement.

Rresidues resulting from supervised trials on crops

The sum of trifloxystrobin and CGA 321113 was calculated and expressed as trifloxystrobin on the basis of the relative molecular masses. A conversion factor of 1.036 is required to express CGA 321113 as trifloxystrobin. As CGA 321113 does not generally constitute a significant proportion of the residue in crops, when the levels of trifloxystrobin or CGA 321113 were below the LOQ, their sum was calculated according to the method used by the 2004 JMPR.

Trifloxystrobin (mg/kg)	CGA 321113 (mg/kg)	Total (expressed as trifloxystrobin) (mg/kg)
< 0.01	< 0.01	< 0.01
< 0.01	0.011	0.021
0.10	< 0.02	0.10
0.92	0.16	1.1

In field trials duplicate samples were taken from each treated plot. Of the duplicate results the non-detected residues were disregarded in the calculation of average residue. As a conservative approach, if the residues measured were 0.015 and < 0.01, the calculated average was taken as 0.015 mg/kg.

Pulses

Soya bean

The GAP in Canada allows maximum 2 times 0.0625 kg/ha treatment with a 20 day PHI. In 4 trials conducted according to GAP the residues in soya bean seeds were < 0.01 mg/kg (4).

The Brazilian GAP permits up to 4 treatments with 0.060 kg/ai/ha or 2 treatments with 0.075 kg ai/ha with a PHI of 20 days. Following treatment according to GAP the trifloxystrobin residues were below the LOQ (< 0.01 or < 0.02 mg/kg). CGA 321113 residues occurred in seven samples at 0.01–0.02 mg/kg level.

The US GAP permits 3 applications at rates between 0.0913–0.127 kg ai/ha and a PHI of 21 days. In 2003 a total of 20 trials were conducted in the USA applying trifloxystrobin three times at rates of 0.086–0.095 kg ai/ha. In addition, another 20 trials were performed in 2005 with application rates of 0.13 kg ai/ha and samples were taken at 21 days. Duplicate samples were taken from each site.

The US use patterns represent the critical GAP. The nominal application rates in US trials are within ± 25% of the GAP. The residues of parent compound in rank order were: < 0.01 (28), 0.01 (4), 0.012, 0.014, 0.016 (2), 0.021, 0.027, and 0.041mg/kg.

The sum of residues were in rank order: < 0.01 (24), 0.012 (4), 0.021 (2), 0.023 (2), 0.024, 0.025, .026, 0.027, 0.039, 0.043, 0.057 and 0.058 mg/kg.

The Meeting estimated a maximum residue level of 0.05 mg/kg for trifloxystrobin in soya beans, and an STMR residue of 0.01 mg/kg for the sum of trifloxystrobin and CGA 321113.

Beans and peas, dry

The use of trifloxystrobin in/on dry pea, chickpea and lentil is registered in Canada and the USA.

Nine trials were conducted on dry peas and nine trials on dry beans according the GAP in Canada (1-2 application with 0.132 kg ai/ha, the PHI is 30 days). Duplicate samples were taken at each sampling interval.

In beans, the average residues of trifloxystrobin at about 30 days were < 0.01 mg/kg in all (9) samples.

The sum of trifoxystrobin and CGA 321113 residues expressed as trifoxytrobin were in rank order: < 0.01 (5), 0.021 (2), 0.022, and 0.023 mg/kg.

In peas, the residues of trifloxystrobin at about 30 days were all < 0.01 mg/kg in all (9) samples.

The sum of residues of trifloxystrobin and CGA 321113 expressed as trifloxystrobin (mg/kg) at about 30 days were: < 0.01 (3), 0.021 (2), 0.022, 0.023, 0.027 and 0.033 mg/kg.

The use pattern is the same for beans and peas and the residues are not different. Consequently the residue datasets can be combined for mutual support.

The residues of trifloxystrobin in dry bean and pea seeds were < 0.01 mg/kg.

The sum of residues in beans and peas in rank order were: < 0.01 (8), 0.021 (4), 0.022, 0.023 (2), 0.025, 0.027 and 0.033 mg/kg.

As the use pattern for lentils is the same as for beans and peas, the Meeting decided that the database is sufficient for making recommendation for these three commodities.

The Meeting estimated a maximum residue level of 0.01* mg/kg and an STMR residue of 0.021 mg/kg for dry beans, lentils, and pea.

Animal feed

Soya bean forage and hay

Altogether 40 trials were conducted in USA in accordance with registered use patterns. Residues in forage and hay were measured and reported. However, grazing animals on soya bean fields or using forage and hay as animal feed are not permitted, therefore the results of trials were not evaluated.

Pea forage and hay

The average residues of trifloxystrobin and CGA 321113 measured in pea green materials (pea vine) obtained from trials conducted according to Canadian GAP are listed below.

Trifloxystrobin residues: 0.61, 0.78, 0.91, 0.92, 1.05, 1.10, 1.30, 1.50 and 1.95 mg/kg.

The sum of trifloxystrobin and CGA 321113 residues: 0.64, 0.81, 0.94, 0.95, 1.09, 1.15, 1.35, 1.54 and 1.98 mg/kg.

The Meeting estimated highest residue of 2 mg/kg and median residue of 1.1 mg/kg for the sum of trifloxystrobin and CGA321113 in pea vine for animal burden calculations.

The residues of trifloxystrobin and CGA 321113 (TFSA) measured in pea hay obtained from trials conducted according to Canadian GAP are listed below. Trifloxystrobin residues: 2.1, 3.0, 3.1, 3.3, 4.2, 5.3, 6.0, 6.7 and 6.8 mg/kg.

The sum of residues were in rank order: 2.2, 3.2, 3.3, 3.6, 4.5, 5.6, 6.3, 6.9 and 7.1 mg/kg

The Meeting estimated a maximum residue level of 17 mg/kg (dry weight) for peanut hay.

The Meeting estimated highest residue of 7.1 mg/kg and median residue of 4.5 mg/kg for the sum of trifloxystrobin and CGA321113 in pea hay for animal burden calculation.

Fate of Residues in Storage and Processing

Soya bean was treated with reifloxystrobin three times at a rate of 0.446–0.471 kg/ha and harvested 19 days after last application. The average total trifloxystrobin residue was 0.26 mg/kg in soya bean seed (raw agricultural commodity (RAC)), 18.2 mg/kg in soya bean aspirated grain fractions, 0.12 mg/kg in hulls, < 0.01 mg/kg in meal, and 0.03 mg/kg in refined oil. Concentration of the total trifloxystrobin residue was seen only in the soya bean aspirated grain fractions (processing factor about 70). No concentration of the total trifloxystrobin residue was seen in soya bean hulls, meal, or refined oil.

For the purpose of animal burden calculation, the Meeting estimated median residue of 0.7 mg/kg for aspirated grain fraction, 0.01 mg/kg for hull and < 0.0008 mg/kg for meal of soya bean.

Residues in animal commodities

Animal feeding studies were evaluated by the 2004 Meeting. Dairy cows were dosed with trifloxystrobin in capsules at the equivalent of 2, 5.9 or 21 ppm in the diet for 28–30 days. The residues measured in various samples are summarised below:

Sample	Day	Maximum trifloxystrobin residues (mg/kg)								
		Dose 2 ppm			Dose 5.9 ppm			Dose 21 ppm		
		Parent	321113	Total	Parent	321113	Total	Parent	321113	Total
Milk	26	-	-	-	-	-	-	< 0.01	< 0.01	< 0.02
Liver	28-30	< 0.02	< 0.02	< 0.04	< 0.02	< 0.02	< 0.04	< 0.02	0.09	0.11
Kidney	28-30	< 0.02	< 0.02	< 0.04	< 0.02	< 0.02	< 0.04	< 0.02	0.02	0.04
Perirenal fat	28-30	< 0.02	< 0.02	< 0.04				0,06	< 0.02	0.08
Omental fat	28-30	< 0.02	< 0.02	< 0.04	< 0.02	< 0.02	< 0.04	0.05	< 0.02	0.07
Round	28-30	-	-	-	-	-	-	< 0.02	< 0.02	< 0.04
Tenderloin	28-30	-	-	-	-	-	-	< 0.02	< 0.02	< 0.04

Laying hens were dosed at 1.5, 4.5 and 15 ppm level for 29 days. At the highest treatment level no residues (< 0.02 mg/kg) were detected in composite tissue samples of breast plus thigh, skin plus attached fat, peritoneal fat, liver and eggs.

The Meeting estimated the dietary burden of trifloxystrobin in farm animals on the basis of the diets listed in Annex 6 of the 2009 JMPR Report and using the estimated residues in livestock feed commodities evaluated by the present and previous Meetings.

	Trifloxystrobin animal dietary burden, ppm, of dry matter diet							
	US-Canada		EU		Australia		Japan	
	Max	Mean	Max	Mean	Max	Mean	Max	Mean
Beef cattle	2.17	1.15	26.6[a]	6.97[b]	8.24	5.00	4.53	0.84
Dairy cattle	2.79	1.27	23.2[c]	6.37[d]	8.21	4.11	2.11	0.43
Poultry - broiler	0.11	0.11	0.069	0.069	0.15	0.15	0.03	0.03
Poultry – layer	0.11	0.11	1.83[e]	0.78[f]	0.15	0.15	0.079	0.079

[a] Suitable for estimation maximum residue levels in meat

[b] Suitable for estimation of median residues in meat

[c] Suitable for estimation maximum residue levels in milk

[d] Suitable for estimation median residue levels in milk

[e] Suitable for estimation maximum residue levels in poultry meat and edible offal

[f] Suitable for estimation median residue levels in poultry meat and edible offal

The maximum dietary burden of beef cattle and dairy cattle is about 30% higher than the maximum feeding level of 21 ppm. The Meeting concluded that the residues observed at the highest feeding level can still be used as a basis for estimation of maximum residues in meat, offal and milk.

The Meeting concluded that the current Codex limits cover the residues derived from the uses of trifloxystrobin and maintains its previous recommendations.

RECOMMENDATIONS

On the basis of the data from supervised trials the Meeting concluded that the residue levels listed in Annex 1 are suitable for establishing maximum residue limits and for IEDI assessment.

DIETARY RISK ASSESSMENT

Long-term intake

The International Estimated Daily Intakes (IEDIs) of trifloxystrobin were calculated for the 17 GEMS/Food cluster diets using STMRs and STMR-Ps estimated by the JMPR in 2004, 2012 and the current meeting. The results are shown in Annex 3.

The ADI is 0–0.04 mg/kg bw and the calculated IEDIs were 1–4% of the maximum ADI. The Meeting concluded that the long-term intake of residues of trifloxystrobin from the uses considered by the JMPR is unlikely to present a public health concern.

Short-term intake

The 2004 JMPR decided that it was unnecessary to establish an ARfD. The present Meeting therefore concluded that the short-term intake of trifloxystrobin residues is unlikely to present a public health

5.30 SPICES - MAXIMUM RESIDUE LEVEL RECOMMENDATIONS

The Thirty-sixth Session of CCPR decided (Alinorm 04/24A) to schedule by the JMPR the review of the monitoring data available for the elaboration of MRLs on spices for pesticides already in the Codex system.

Subsequently the 2004 JMPR developed the general principles for evaluation of monitoring data for recommending maximum residue levels, median and high residues depending on the number of residue data available for a given pesticide residue and commodity combination.

In accordance with the decision of the Forty-sixth Session of the CCPR, India submitted monitoring data from 2009-2014 for several pesticide residues in cardamom, black pepper, cumin, fennel and coriander for review by the 2015 JMPR.

Sampling and analytical methods

Cumin, fennel and coriander seed samples (250–500 g) were collected from the retail outlets. No information was provided on sampling of cardamom and black pepper.

The residues in/on cardamom and black pepper were extracted with a mixture of acetonitrile/water. The dried extract was purified with a primary secondary amine (PSA) adsorbent in the presence of $MgSO_4$, and the residues were identified and quantified by GC-MS/MS or LC-MS/MS.

Seed spices were extracted with the mixture of acetonitrile/water and further determined with a modified QuEChERS multiresidue method using GC-MS/MS and/or LC-MS/MS.

For both methods, the recoveries were within the acceptable range, and reported LOQ was 0.1 mg/kg for all pesticide residue commodity combinations.

Agricultural practices for growing spice producing plants

Cumin, cardamom, coriander, pepper and fennel are minor crops which are mainly cultivated in the southern and western parts of India. The spices need to be protected against several pests and diseases which require repeated application of pesticides around the year.

The capsule of cardamom and unripe drupes for pepper are harvested up to 6 to 8 times a year. Cumin and coriander are harvested only once and fennel, up to 3 to 4 times.

No information was available on registered or approved uses or application conditions of the pesticides.

Principles of evaluation of residues derived from monitoring programmes

Principles for evaluation of monitoring data elaborated by the 2004 JMPR were followed:

- It is assumed that the laboratories reported only valid results. Therefore, all residue data are taken into account without excluding any value as an outlier.
- When residue values were reported as<LOQ, it does not necessarily mean that the sampled commodity was not treated with or exposed to the pesticide. While, it is unlikely that all the sampled commodities were treated with the pesticides looked for with the multi residue procedure, it cannot be assumed to be a 'nil' residue situation.
- When no sample contained detectable residues, the highest reported LOQ value is used as the maximum residue level. When justified based on the consumption, the high and median residue value are taken from the reported LOQ values.
- Distribution-free statistics are used in estimating the maximum residue level, covering the 95th percentile of the residue population at the 95% confidence level. Thus, the estimated maximum residue level encompasses at least 95% of the residues with 95% probability (in

95% of cases). To satisfy this requirement, a minimum of 58–59 samples is required. In such cases the uncertainty derived from the limited number of data points are taken into account in recommending maximum residue levels.

- When > 120 samples contain detected residues, the sample size is sufficiently large to calculate the upper 95% one-tailed confidence limit of the 95th percentile of the population of residues, which should be used for estimation of maximum residue level after rounding up to the next value of the scale of expressing residues according to the OECD MRL calculator.
- Monitoring results are not used for estimating maximum residue levels that reflect post-harvest use.

Furthermore, the Meeting decided that:

Maximum residue levels would only be estimated for those pesticide residues which were determined according to the definition of residues for enforcement purposes. Consequently, the reported residues of carbofuran and imidacloprid were not considered.

Residues resulting from monitoring programmes

Black pepper

Of the 284 samples analysed for acetamiprid, cypermethrin, lambda-cyhalothrin, profenofos, and triazophos, none were found to contain residues at or above the LOQ of 0.1 mg/kg.

The Meeting concluded that the reported LOQ values are higher than those which can be obtained with current analytical methods. Consequently, the Meeting agreed there was no reason to revise its previous recommendations for maximum residue levels for cypermethrin, lambda cyhalothrin, profenofos and triazophos.

The Meeting estimated a maximum residue level and median residue of 0.1 mg/kg for acetamiprid.

Cardamom seed

Results of analyses of 487 samples were reported for acetamiprid, cypermethrin, lambda-cyhalothrin, imidacloprid, profenofos and triazophos.

No residues (< 0.1 mg/kg) of acetamiprid were detected.

Based on the results, the Meeting estimated a maximum residue and median residue of 0.1 mg/kg for acetamiprid.

Out of 487 samples 133 contained <u>cypermethrin residues</u> which were in rank order: 0.10, 0.11 (3), 0.12, 0.13, 0.14 (4), 0.16, 0.18 (2), 0.19 (3), 0.20 (3), 0.21, 0.22 (2), 0.23 (3), 0.24 (2), 0.25, 0.26 (4), 0.27, 0.28 (2), 0.29 (2), 0.30 (2), 0.31 (2), 0.32 (6), 0.34 (5), 0.35(4), 0.36, 0.37 (3), 0.38, 0.39 (2), 0.41 (2), <u>0.43</u> (2), 0.44 (4), 0.45 (2), 0.46, 0.47, 0.49, 0.50 (2), 0.52, 0.53 (2), 0.54 (2), 0.55 (2),0.56, 0.58 (2), 0.59 (2), 0.60, 0.63, 0.64, 0.65, 0.66, 0.69 (2), 0.70 (3), 0.71 (2), 0.73, 0.75 (2), 0.76, 0.77, 0.79, 0.81, 0.86, 0.87(2), 0.91,0.92, 0.93, 0.99, 1.03, 1.12, 1.16, 1.34, 1.41, 1.54, 1.62, 1.65, 1.67, 1.76, 1.85, 1.94, 1.98, 2.00, 2.24, and 2.97(2) mg/kg.

The upper 95% confidence limit of the detected residues is 2.24 mg/kg.

The Meeting estimated a maximum residue level of 3 mg/kg and a median residue of 0.43 mg/kg for cypermethrin which replaces its previous recommendations.

Out of 487 samples 146 contained lambda <u>cyhalothrin residues</u> which were in rank order: 0.10 (5), 0.11 (4), 0.12 (7), 0.13 (5), 0.14, 0.15 (4), 0.16 (3), 0.18 (3), 0.19 (7), 0.20 (6), 0.21 (5), 0.22, 0.23 (4), 0.24 (6), 0.25 (2), 0.26 (5), 0.27 (3), <u>0.28</u> (4), 0.29, 0.31 (2), 0.32 (3), 0.34 (5), 0.35 (3), 0.36 (2), 0.37 (3), 0.38, 0.40 (2), 0.41 (2), 0.42 (3), 0.43, 0.44, 0.45, 0.46, 0.49 (2), 0.50 (2), 0.51, 0.52 (3), 0.53, 0.54, 0.55, 0.57, 0.58 (2), 0.59, 0.61, 0.62 (2), 0.63, 0.67, 0.68, 0.69, 0.71, 0.73, 0.74 (2), 0.79, 0.82 (2), 0.86, 0.96, 0.99, 1.02, 1.04, 1.06, 1.20, 1.33, 1.87, 1.94, and 3.06 mg/kg.

The upper 95% confidence limit of the residues is 1.87 mg/kg.

The Meeting estimated a maximum residue level of 2 mg/kg and a median residue of 0.28 mg/kg for cyhalothrin, which replaces its previous recommendations.

Out of 487 samples 68 contained profenofos residues which were in rank order: 0.10 (3), 0.11 (5), 0.12 (3), 0.13 (2), 0.14 (5), 0.16, 0.17, 0.19 (2), 0.21, 0.22 (3), 0.24 (2), 0.25, 0.27, 0.28, 0.29, 0.30 (3), 0.31, 0.32 (2), 0.34 (2), 0.36, 0.38, 0.39, 0.42 (2), 0.43, 0.44, 0.47 (2), 0.50 (2), 0.53 (2), 0.55, 0.63, 0.65, 0.66, 0.78, 0.79, 0.82, 0.91, 1.08, 1.19, 1.26, 1.54, 1.76, 1.9, and 3.06 mg/kg.

The 95th percentile of the residues is 1.4 mg/kg. The database is insufficient for calculation of the upper confidence limit.

Taking into account the limited database, the Meeting estimated a maximum residue level of 3 mg/kg and a median residue of 0.3 mg/kg for profenofos which replaces its previous recommendations.

Out of 487 samples 79 contained triazophos residues which were in rank order: 0.10, 0.11(2), 0.12(2), 0.14,0.15,0.16, 0.17 (4),0.19 (2), 0.21(5), 0.22, 0.23 (2), 0.25, 0.26, 0.28, 0.29 (3), 0.32, 0.33, 0.34, 0.37(2), 0.39(2), 0.40 (2), 0.43, 0.45 (3), 0.46, 0.47, 0.48, 0.49, 0.5 (2), 0.53 (2), 0.55 (2), 0.58, 0.59, 0.6, 0.61, 0.62, 0.63, 0.64, 0.69, 0.77, 0.82 (2), 0.84, 0.85 (2), 0.86, 1.06, 1.09, 1.11, 1.13, 1.34, 1.38,1.42, 1.49, 1.67, 1.68, 1.71, 2.30, and 3.64 mg/kg.

The 95th percentile of the residues is 1.7 mg/kg. The database is insufficient for calculation of the upper confidence limit.

Taking into account the limited database, the Meeting estimated a maximum residue level of 4 mg/kg and a median residue of 0.45 mg/kg for triazophos, which replaces the previous recommendations.

Coriander seed

Altogether 223 samples were analysed (positive results in brackets) for acetamiprid (0.02 mg/kg), profenofos (0), phorate (0) and triazophos (0). The reported LOQ was 0.1 mg/kg.

The residue data was not sufficient to estimate a maximum residue level for acetamiprid.

The Meeting estimated maximum and median residue levels of 0.1 mg/kg for profenofos, phorate and triazophos in coriander seed.

Cumin seed

The results of analyses of 447 samples were reported for acetamiprid, phorate and profenofos.

Out of 447 samples acetamiprid (33) and phorate (7) residues were detected above the LOQ of 0.1 mg/kg.

As the number of detected residues is lower than the minimum required (58), no recommendations could be made for maximum residue levels for acetamiprid and phorate.

Out of 447 samples 76 contained profenofos residues which were in rank order: 0.10 (2), 0.11 (2), 0.12, 0.13 (4), 0.14 (2), 0.15 (2), 0.16 (2), 0.17, 0.18, 0.19(2), 0.20, 0.22 (2), 0.24 (2), 0.25, 0.27, 0.31 (2), 0.32, 0.34, 0.38, 0.39, 0.41, 0.42, 0.44, 0.47, 0.56, 0.63, 0.64, 0.65 (2), 0.66, 0.68 (2), 0.73, 0.77, 0.80, 0.82, 0.85, 0.86, 0.94, 0.95, 0.99, 1.03, 1.05, 1.07, 1.10, 1.21, 1.22 (2), 1.26(2), 1.30, 1.38, 1.51, 1.52, 1.61, 1.85, 1.98, 2.11, 2.32, 2.47, 2.69, 2.90, 3.83, and 4.12 mg/kg.

The 95th percentile of the residues is 2.52 mg/kg. The database is insufficient for calculation of the upper confidence limit. Taking into account the limited database, the Meeting estimated a maximum residue level of 5 mg/kg and median residue of 0.635 mg/kg for profenofos.

Fennel, seed

Altogether 255 samples were analysed (positive results in brackets) for acetamiprid (0.023, 0.03 mg/kg), profenofos (0), phorate (0). and triazophos (0).

The Meeting estimated maximum and median residue levels 0.1 mg/kg for profenofos, phorate and triazophos.

DIETARY RISK ASSESSMENT

Long-term intake

The contribution of residues present in the pepper, black white to the long-term-intake of acetamiprid and lambda-cyhalothrin was addressed in the evaluation of these compounds. No consumption data is available for cardamom, coriander, cumin and fennel seeds in the 17 GEMS/Food Cluster diets to estimate the contribution of the residues present in these spices to the long-term-intake of acetamiprid, cypermethrin, lambda-cyhalothrin, profenofos, phorate and triazophos.

Short-term intake

The International Estimated Short-Term Intake (IESTI) of acetamiprid and lambda-cyhalothrin from the consumption of pepper, black white and cardamom seed was addressed in the evaluation of these compounds.

The IESTIs for profenofos, phorate and triazophos from the consumption of the spices considered by the current Meeting were estimated. The results are shown in Annex 4 to the 2015 Report. The IESTI represented 0% of the ARfD of cypermethrin and profenofos, a maximum of 10% of the ARfD of phorate and a maximum of 7% of the ARfD of triazofos. The Meeting concluded that the short-term intake of cypermethrin, profenofos, phorate and triazophos residues from the uses considered by the current Meeting was unlikely to present a public health concern.

6. RECOMMENDATIONS

The Meeting recommended that a WHO/FAO working group be established to compare the use of current and proposed IESTI equations and to present the outcome to the CCPR in due course.

The Meeting recommends that the Secretariat convene an expert working group in order to develop models to cover exposures longer than 1 day but shorter than lifetime, as needed. The Meeting also recommends that the applicability of these considerations to other categories of chemicals, such as veterinary drugs and contaminants, should be investigated.

The Meeting recommended that consideration be given to the need to include a section or revision of EHC 240 to take account of recent developments on adverse outcome pathways and their use in hazard characterization.

7. FUTURE WORK

The items listed below are tentatively scheduled to be considered by the Meetings in 2017. The compounds listed include those recommended as priorities by the CCPR at its Forty-sixth and earlier Sessions and compounds scheduled for re-evaluation within the CCPR periodic review programme.

Updated calls for data are available at least ten months before each JMPR meeting from the web pages of the Joint Secretariat:

http://www.fao.org/agriculture/crops/core-themes/theme/pests/jmpr/en/

http://www.who.int/ipcs/food/en/

NEW COMPOUNDS	**NEW COMPOUNDS**
TOXICOLOGY EVALUATIONS	**RESIDUE EVALUATIONS**
Bicyclopyrone [Syngenta]	Bicyclopyrone [Syngenta]
Fenazaquin [Gowan]	Fenazaquin [Gowan]
Fenpyrazamine [Sumitomo Chemical]	Fenpyrazamine [Sumitomo Chemical]
Isoprothiolane (India)	Isoprothiolane (India)
Natamycin [DSM Food Specialties]	Natamycin [DSM Food Specialties]
Phosphorous acid & fosetyl-aluminium [Nufarm]	Phosphorous acid & fosetyl-aluminium [Nufarm]
Quinalphos (India)	Quinalphos (India)
SYN545794 [Syngenta]	SYN545794 [Syngenta]
Tricyclazole (India)	Tricyclazole (India)
Triflumezopyrim (DuPont)	Triflumezopyrim (DuPont)

PERIODIC RE-EVALUATIONS	**PERIODIC RE-EVALUATIONS**
Carbendazim [Nippon Soda Co] (72)	Carbendazim (72)
Clethodim (187) (Arysta LifeScience)	Clethodim (187)
Metalaxyl (138) (Quimicas del Vallés - SCC Gmb)	Metalaxyl (138)
Fenpyroximate (193) [Nihon Nohyaku]	Fenpyroximate (193)
Kresoxim-methyl (199) (BASF)	Kresoxim-methyl (199)
Oxamyl (126) [Dupont]	Oxamyl (126)
Tolclofos-methyl (191) [Sumitomo Chemical]	Tolclofos-methyl (191)

	EVALUATIONS (Residues)
	2,4-D (020) Dow AgroSciences]
	Acephate (95) India

	EVALUATIONS (Residues)
	Acetamiprid (246) [Syngenta]
	Azoxystrobin (229) [Syngenta]
	Bifenthrin (178) India
	Captan (7) [Arysta]
	Carbendazim (72) (India)
	Chlorpyrifos (017) (India)
	Cyprodinil (207) [Syngenta]
	Diazinon (22) (India)
	Difenoconazole (224) [Syngenta]
	Dimethoate (27) (India)
	Ethion (34) (India)
	Flonicamid (282) [Ishihara Sangyo Kaisha]
	Fluopyram (243) [Bayer CropScience]
	Flupyradifurone (285) [Bayer CropScience]
	Hexaconazole (170)
	Imidacloprid (206) India
	Imazamox (276), imazapyr (267) [BASF]
	Isopyrazam (249) [Syngenta]
	Isoxaflutole(268) [Bayer CropScience]
	Lambda-cyhalothrin (146) (India)
	Methomyl (94) (India)
	Picoxystrobin(258) [Dupont]
	Pirimicarb (101) [Syngenta]
	Profenofos (171) India
	Propiconazole (160)
	Propylene oxide [Balchem] (250)
	Prothioconazole (232) [Bayer CropScience]
	Pyraclostrobin (210)

	EVALUATIONS (Residues)
	Pyriproxyfen (200) -Costa Rica
	Sedaxane (259) [Syngenta]
	Spinetoram (233) Thailand; (Dow AgroSciences USA)
	Spiromesifen (999) India
	Tebuconazole (189) [Bayer CropScience]
	Triazophos (143) India
	Trifloxystrobin (213) [Bayer CropScience]

8. CORRIGENDA

Pesticide Residues in Food—2014. Report of the Joint Meeting of the FAO Panel of Experts on Pesticide Residues in Food and the Environment and the WHO Core Assessment Group. FAO Plant Production and Protection Paper 221, 2014

Changes are shown in bold

5.12 Fenpropathrin (185)

Page 165, the table should read:

RAC/processed fraction	Processing factors					PF estimated	STMR-P (mg/kg)
RAC:Whole orange	-						
Juice	<0.02	<0.22				<0.02	0.007
Oil	78.7	21.56				50.1	16.5
Wet peel	0.6	0.78	2.76		2.86	2.82	0.93
Dried peel	1.6	2.67				2.1	0.70
Pulp			0.06		0.07	0.065	0.021
RAC: Plum							
Dried plum	2.56					2.56	0.639
RAC: Tomato							
Canned	0.077	0.071	0.077			<0.075	**0.014**
Wet pomace				9.9	~~**9.8**~~	9.8	**1.88**
Dry pomace				46	~~**45.0**~~	**46**	**8.74**
Tomato paste				0.78	~~**0.75**~~	**0.78**	**0.148**
Tomato juice				0.12	~~**0.1**~~	**0.12**	0.023

Page 165, paragraphs 6, 7 and 8 should read:

There is no concentration of residues in juice and molasses. Residues concentrate in oil (Pf=50.1), and dried peel (Pf=2.1). Only the peel residue data (2.76, 2.86) were taken into consideration as it was considered highly unlikely that the wet would peel contain less residue than the whole fruit, given the residue concentrates in the peel.

The Meeting estimated a maximum residue level of 100 mg/kg and STMR-P of 16.5 mg/kg for citrus oil,

Drying concentrates the residues of fenpropathrin in plums by a factor of 2.6×. The first trial where the residue in dried plum was the same as in the fresh was considered invalid. Consequently, the Meeting only considered the second trial resulting in a processing factor of 2.555. The Meeting estimated maximum residue level of 3 mg/kg, HR-P of 1.85 mg/kg and STMR-P of 0.65 mg/kg for dried plums (or prunes).

ANNEX 1: ACCEPTABLE DAILY INTAKES, SHORT-TERM DIETARY INTAKES, ACUTE REFERENCE DOSES, RECOMMENDED MAXIMUM RESIDUE LIMITS AND SUPERVISED TRIALS MEDIAN RESIDUE VALUES RECORDED BY THE 2015 MEETING

Pesticide (Codex reference number)	**CCN**	**Commodity**	**Recommended Maximum residue level (mg/kg)**		**STMR or STMR-P mg/kg**	**HR or HR-P mg/kg**
			New	**Previous**		
Abamectin (177)**	AN 0660	Almond hulls	0.2	0.1	0.036	
ADI: 0–0.001 mg/kg bw	TN 0660	Almonds	W	0.01*		
ARfD: 0.003 mg/kg bw	FP 0226	Apple	W	0.01*		
	FI 0326	Avocado	0.015		0.004	0.009
	VP0061	Beans, except broad bean and soya bean (immature beans with pods)	0.08		0.007	0.049
	VD 0771	Beans (dry)	0.005		0.002	
	FB 0264	Blackberries	0.005		0.002	0.003
	MF 0812	Cattle fat	W	0.1		
	MO 1280	Cattle kidney	W	0.05		
	MO 1281	Cattle liver	W	0.1		
	MM 0812	Cattle meat	W	0.01*		
	ML 0812	Cattle milk	W	0.005		
	VX 0578	Celery	0.03		0.005	0.016
	FS 0013	Cherries	0.07		0.009	0.058
	FC 0001	Citrus fruits	0.2	0.01*	0.005	0.015
	SO 0691	Cotton seed	0.015	0.01*	0.002	
	VC 0424	Cucumber	0.03	0.01	0.002	0.029
	VO 0440	Egg plant	0.05	0.02	0.004	0.017
	VA 0381	Garlic	0.005		0.002	0.003
	VC 0425	Gherkin	0.05		0.002	0.029
	MM 0814	Goat meat	W	0.01*		
	ML 0814	Goat milk	W	0.005		
	MO 0814	Goat, edible offal of	W	0.1		
	FB 0269	Grapes	0.01		0.002	0.01
	DF 0269	Dried grapes (= currants, raisins and sultanas)	0.03		0.0056	0.028
	JF 0269	Grape juice	0.015		0.0028	
	DH 1100	Hops, dry	0.15	0.1	0.038	
	VA 0384	Leek	0.005		0.002	0.003
	VL 0483	Lettuce, Leaf	W	0.05		
	VL 0482	Lettuce, head	0.15		0.0275	0.097
	FI 0345	Mango	0.01		0.002	0.004
	VC 0046	Melons, except Watermelon	0.01	0.01*	0.002	0.002
	VA 0385	Onion, Bulb	0.005		0.002	0.003
	FI 0350	Papaya	0.015		0	0
	FS 2001	Peaches	0.03		0.004	0.024
	SO 0697	Peanut	0.005*		0	
	FP 0230	Pear	W	0.02		
	VO 0444	Peppers, chili, dried	0.005*	0.2	0.005	0.005
	VO 0445	Peppers, sweet	0.07	0.02	0.009	0.051
	FS 0014	Plums (including prunes)	0.005		0.002	0.006
	FP 0009	Pome fruits	0.01		0.002	0.01
	VR 0589	Potato	0.005*	0.01*	0	0
	DF 5263	Raisins	0.05		0.0084	0.0224
	FB 0272	Raspberry, red, black	0.002		0.002	0.03
	GC 0649	Rice	0.002		0.001	
	AS 0646	Rice straw	0.001		0.001	0.001
	VA 0388	Shallot	0.005		0.002	0.003

Pesticide (Codex reference number)	CCN	Commodity	Recommended Maximum residue level (mg/kg)		STMR or STMR-P mg/kg	HR or HR-P mg/kg
			New	Previous		
	VL 0502	Spinach	0.15 [a]		0.024	0.091
	VC 0431	Squash, summer	W	0.01*		
	FB 0275	Strawberry	0.15	0.02	0.027	0.073mi
	VR 0508	Sweet potato	0.005*		0	0
	VO 0448	Tomato	0.05	0.02	0.004	0.017
	TN 0085	Tree nuts	0.005*		0	0
	TN 0678	Walnuts	W	0.01*		
	VC 0432	Watermelon	W	0.01*		
	VR 0600	Yams	0.005*		0	0
	OR 0691	Cotton seed oil, edible			0	

Definition of the residue (for compliance with the MRL and for estimation of dietary intake) for plant commodities: *Avermectin B_{1a}*
Definition of the residue (for compliance with the MRL and for estimation of dietary intake) for animal commodities: *Avermectin B_{1a}*

The residue is fat-soluble.

[a] On the basis of information provided to the JMPR it was concluded that the estimated short-term intake of abamectin for the consumption of spinach may present a public health concern

Pesticide (Codex reference number)	CCN	Commodity	New	Previous	STMR or STMR-P mg/kg	HR or HR-P mg/kg
Acetamiprid (246)	VS 0621	Asparagus	0.8		0.26	0.43
ADI: 0–0.07 mg/kg bw	VC 0424	Cucumber	0.3		0.057	0.17
ARfD: 0.1 mg/kg bw	MO 0105	Edible offal (mammalian)	1	0.05	0.11	0.89
	VC 0045	Fruiting vegetables, Cucurbits	W	0.2		
	VC 0045	Fruiting vegetables, Cucurbits (except Cucumber)	0.2		0.05	0.11
	MF 0100	Mammalian fats (except milk fats)	0.3	0.02	0.017	0.16
	MM 0095	Meat (from mammals other than marine mammals)	0.5	0.02	0.022 (m) 0.017 (f)	0.30 (m) 0.16 (f)
	ML 0106	Milks	0.2	0.02	0.019	
	VL 0485	Mustard greens	15 [a]		2.0	10
	VO 0447	Sweet corn (corn-on-the-cob)	0.01*		0.01	0.01
		Sweet corn, stover	40		2.8	20
		Sweet corn forage			1.4	9.1

Definition of the residue (for compliance with the MRL for plant commodities and for estimation of dietary intake for plant and animal commodities): *acetamiprid.*

Definition of the residue (for compliance with the MRL for animal commodities and for estimation of dietary intake for plant and animal commodities): *sum of acetamiprid and its desmethyl (IM-2-1) metabolite, expressed as acetamiprid*.

The residue is not fat soluble.

[a] On the basis of information provided to the JMPR it was concluded that the estimated short-term intake of acetamiprid for the consumption of mustard greens may present a public health concern.

Pesticide (Codex reference number)	CCN	Commodity	New	Previous	STMR or STMR-P mg/kg	HR or HR-P mg/kg
Acetochlor (280)*	GC 0640	Barley	0.04 *		0.035	0.036
ADI: 0–0.01 mg/kg bw	AS 0640	Barley straw and fodder, dry	0.3		0.039 dw[a]	0.282 dw
ARfD: 1 mg/kg bw	VP 0061	Beans, except broad bean and soya bean	0.02 *		0.02	0.02
	VD 0523	Broad bean (dry)	0.15		0.02	0.1
	GC 0641	Buckwheat	0.04 *		0.035	0.036
	AS 0641	Buckwheat fodder	0.3		0.039 dw	0.282 dw

Pesticide (Codex reference number)	CCN	Commodity	Recommended Maximum residue level (mg/kg)		STMR or STMR-P mg/kg	HR or HR-P mg/kg
			New	Previous		
	VD 0524	Chick-pea (dry)	0.15		0.02	0.1
	MO 0105	Edible offal (mammalian)	0.02 *		0.0004 liver 0.0006 kidney	0.003 liver 0.0056 kidney
	PE 0112	Eggs	0.02 *		0	0
	VD 0531	Hyacinth bean (dry)	0.15		0.02	0.1
	AL 0157	Legume animal feeds	3		0.225 dw	2.101 dw
	VD 0533	Lentil (dry)	0.15		0.02	0.1
	VP 0545	Lupin (dry)	0.15		0.02	0.1
	GC 0645	Maize	0.02		0.002	
	MF 0100	Mammalian fats (except milk fats)	0.02 *		0.0004	0.003
	MM 0095	Meat (from mammals other than marine mammals)	0.02 *		0.0004	0.003
	ML 0106	Milks	0.02 *		0.0012	0.008
	GC 0646	Millet	0.04 *		0.035	0.036
	AS 0646	Millet fodder, dry	0.3		0.039 dw	0.282 dw
	AS 0647	Oat straw and fodder, dry	0.3		0.039 dw	0.282 dw
	GC 0647	Oats	0.04 *		0.035	0.036
	VD 0072	Peas (dry)	0.02 *		0.02	0.02
	VD 0537	Pigeon pea (dry)	0.15		0.02	0.1
	VR 0589	Potato	0.04 *		0.04	0.04
	PF 0111	Poultry fats	0.02 *		0	0
	PM 0110	Poultry meat	0.02 *		0	0
	PO 0111	Poultry, Edible offal of	0.02 *		0	0
	GC 0650	Rye	0.04 *		0.035	0.036
	AS 0650	Rye straw and fodder, dry	0.3		0.039 dw	0.282 dw
	VR 0596	Sugar beet	0.15		0.018	0.086
	AV 0596	Sugar beet leaves or tops	3		0.178 dw	2.409 dw
	DM 0596	Sugar beet molasses	0.3		0.048	0.228
	AB 0596	Sugar beet pulp, dry	0.3		0.058	0.275
	SO 0702	Sunflower seed	0.04 *		0.04	0.04
	VO 0447	Sweet corn (corn-on-the-cob)	0.04 *		0.04	0.04
		Sweet corn fodder	1.5		0.084 dw	1.096 dw
	GC 0657	Teosinte	0.04 *		0.035	
	AS 0657	Teosinte fodder	0.3		0.039 dw	0.282 dw
	GC 0653	Triticale	0.04 *		0.035	
	GC 0654	Wheat	0.02 *		0.02	
	AS 0654	Wheat straw and fodder, dry	0.2		0.034 dw	0.114 dw
	GC 0655	Wild rice	0.04 *		0.035	
		Sugar beet, refined sugar			0.0068	
	OC 0702	Sunflower seed oil, edible			0.0088	
		Legume forage			0.333 dw	1.9 dw
	AF 0647	Oat forage (green)			0.13 dw	0.40 dw
	AF 0650	Rye forage (green)			0.13 dw	0.40 dw
		Sugar beet, refined sugar			0.0068	
		Sweet corn forage			0.25 dw	2.02 dw
		Wheat forage			0.24 dw	1.88 dw

Definition of the residue for compliance with MRL and for estimation of dietary intake (for animal and plant commodities): *Sum of compounds hydrolysable with base to 2-ethyl-6-methylaniline (EMA) and 2-(1-hydroxyethyl)-6-methylaniline (HEMA), expressed in terms of acetochlor*

The residue is not fat soluble.

[a] dw- dry weight basis

Pesticide (Codex reference number)	CCN	Commodity	Recommended Maximum residue level (mg/kg) New	Recommended Maximum residue level (mg/kg) Previous	STMR or STMR-P mg/kg	HR or HR-P mg/kg
Bifenthrin (178)	FB 0020	Blueberries	3		0.67	1.6
ADI: 0–0.01 mg/kg bw	FB 0269	Grapes	0.3		0.06	0.14
ARfD: 0.01 mg/kg bw	VL 0482	Lettuce, Head	4 [a]		0.51	1.9
	VS 0624	Celery	3 [a]		0.7	1.8
	VP 0063	Peas (pods and succulent=immature seed)	0.9		0.23	0.5
	VP 0064	Peas, shelled	0.05*		0	

Definition of the residue: For compliance with the MRL for plant and animal commodities and for estimation of dietary intake for plant and animal commodities): *bifenthrin (sum of isomers)*.
[a] On the basis of information provided to the JMPR it was concluded that the estimated short-term intake of bifenthrin for the consumption of head lettuce and celery may present a public health concern

The residue is fat-soluble.

Pesticide (Codex reference number)	CCN	Commodity	New	Previous	STMR or STMR-P mg/kg	HR or HR-P mg/kg
Chlorothalonil (081)	VS 0621	Asparagus	0.01*	-	Chlorothalonil: 0 SDS-3701: 0	Chlorothalonil: 0 SDS-3701: 0
ADI: 0–0.02 mg/kg bw	FS 0013	Cherries	3	-	Chlorothalonil: 0.39 SDS-3701: 0.01	Chlorothalonil: 1.8 SDS-3701: 0.035
ARfD: 0.6 mg/kg bw	DV 0604	Dried ginseng (including red ginseng)	2	-	Chlorothalonil: 0.35 SDS-3701: 0.3 [a]	Chlorothalonil: 1.0 SDS-3701: 0.61[a]
Chlorothalonil Metabolite SDS-3701	VR 0583	Horseradish	1	-	Chlorothalonil: 0.25 SDS-3701: 0.16 [b]	Chlorothalonil: 0.48 SDS-3701: 0.31 [b]
ADI: 0–0.008 mg/kg bw	VA 0385	Onion, bulb	1.5	-	Chlorothalonil: 0.4 SDS-3701: 0.02 [b]	Chlorothalonil: 0.69 SDS-3701: 0.068 [b]
ARfD: 0.03 mg/kg bw	FS 0247	Peaches (including nectarines and apricots)	1.5	-	Chlorothalonil: 0.12 SDS-3701: 0.01	Chlorothalonil: 1.1 SDS-3701: 0.011
	VO 0051	Peppers	7	-	Chlorothalonil: 1.5 SDS-3701: 0.045 [b]	Chlorothalonil: 4.4 SDS-3701: 0.09[b]
	VO 0440	Peppers, Chili (dry)	70	-	Chlorothalonil: 15 SDS-3701: 0.45 [b]	Chlorothalonil: 44 SDS-3701: 0.9[b]
	TN 0675	Pistachio nut	0.3	-	Chlorothalonil: 0.082 SDS-3701: 0.01	Chlorothalonil: 0.14 SDS-3701: 0.01
	VS 0627	Rhubarb	7	-	Chlorothalonil: 0.55 SDS-3701: 0.02	Chlorothalonil: 3.9 SDS-3701: 0.02
	VR 0075	Root and tuber vegetables	W	0.3	-	-
	VR 0075	Root and tuber vegetables, except horseradish	0.3	-	Chlorothalonil: 0.3 SDS-3701: 0.02 [c]	Chlorothalonil: 0.3 SDS-3701: 0.03 [c]
	VA 0388	Shallot	1.5	-	Chlorothalonil: 0.4 SDS-3701: 0.02 [b]	Chlorothalonil: 0.69 SDS-3701: 0.068 [b]
	VO 0448	Tomato	5	-	Chlorothalonil:	Chlorothalonil:

Pesticide (Codex reference number)	CCN	Commodity	Recommended Maximum residue level (mg/kg)		STMR or STMR-P mg/kg	HR or HR-P mg/kg
			New	Previous		
					1.1 SDS-3701: 0.0135	2.8 SDS-3701: 0.035
	JF 0048	Tomato juice			Chlorothalonil: 1.1 SDS-3701: 0.0135	
	MW 0448	Tomato purée			Chlorothalonil: 1.1 SDS-3701: 0.0185	
		Tomato canned			Chlorothalonil: 1.1 SDS-3701: 0.027	
		Tomato dry pomace			Chlorothalonil: 1.4 SDS-3701: 0.2	

[a] The contribution of SDS-3701 by uptake from soil cannot be estimated for dried ginseng.
[b] STMR and HR values represent the sum of SDS-3701 found after direct application and in crops grown as rotational crop (see Residues in rotational crops
[c] Based on 2010 Evaluation

Definition of the residue for compliance with MRL for plant commodities: *chlorothalonil*

Definition of the residue for estimation of dietary intake for plant commodities: *chlorothalonil SDS-3701 (2,5,6-trichloro-4-hydroxyisophthalonitrile), all considered separately*.

Definition of the residue for compliance with MRL and for estimation of dietary intake for animal commodities: *SDS-3701 (2,5,6-trichloro-4-hydroxyisophthalonitrile)*.

The residue is not fat-soluble.

Pesticide (Codex reference number)	CCN	Commodity	New	Previous	STMR or STMR-P mg/kg	HR or HR-P mg/kg
Cyantraniliprole (263)	VP 0526	Common bean (pods and/or immature seeds)	1.5		0.29	
ADI: 0–0.03 mg/kg bw	VP 0062	Beans, shelled	0.3		0.07	
ARfD: Unnecessary	VD 0071	Bean(dry)	0.3		0.01	
	AL 0061	Bean fodder	40(DM)[a]		8.5(DM)	19.1(DM)
	FC 0001	Citrus	0.7		0.041	
	OR 0001	Citrus oil, edible	4.5			
	SB 0716	Coffee beans	0.05	0.03	0.01	
	SO 0691	Cotton, seed	1.5		0.16	
	MO 0105	Edible offal(Mammalian)	1.5	0.05	0.38	
	PE 0112	Eggs	0.15	0.015	0.0426	
	GC 0645	Maize	0.01		0	
	MM 0069	Mammalian fat (except milk fats)	0.5	0.01	0.1	
	MM 0095	Meat (from mammals other than marine mammals)	0.2	0.01	0.041	
	ML 0106	Milks	0.6	0.02	0.21	
	VP 0063	Peas (pods and succulent = immature seeds)	2.0		0.7	
	VP 0063	Peas, shelled (succulent seeds)	0.3		0.07	
	AL 0072	Pea hay or pea fodder (dry)	60(DM)		9.7(DM)	28.5(DM)
	FI 0355	Pomegranate	0.01*		0.01	
	PO 0111	Poultry, edible offal of	0.15	0.01	0.0321	
	PF 0111	Poultry fat	0.04	0.01	0.0083	
	PM 0110	Poultry meat	0.02	0.01	0.0039	
	SO 0495	Rape seed	0.8		0.077	

Pesticide (Codex reference number)	CCN	Commodity	Recommended Maximum residue level (mg/kg) New	Previous	STMR or STMR-P mg/kg	HR or HR-P mg/kg
	VP 0541	Soya bean, immature seed	0.3		0.036	
	VD 4521	Soya bean (dry)	0.4		0.033	
	AL 0541	Soya bean fodder	80(DM)		13.7(DM)	46.4(DM)
	SO 0702	Sunflower seed	0.5		0.067	
	TN 0085	Tree nuts	0.04		0.01	
	AN 0660	Almond hulls			1.9	4.6
	AL 1030	Bean forage (green)			9.6(DM)	16.9(DM)
	AB 0001	Citrus pulp, dry			0.066	
	OR 0691	Cotton seed meal(cold press)			0.014	
	AB 1204	Cotton gin trash			3.1	5.0
	AL 0528	Pea vines (green)			9.0(DM)	47.1(DM)
	AL 1265	Soya bean, forage (green)			15.5(DM)	45.3(DM)

Definition of the residue (for compliance with the MRL, animal and plant commodities)*: cyantraniliprole.*
Definition of the residue (for estimation of dietary intake for unprocessed plant commodities): *cyantraniliprole.*
Definition of the residue (for estimation of dietary intake for processed plant commodities): *sum of cyantraniliprole and 2-[3-Bromo-1-(3-chloro-2-pyridinyl)-1H-pyrazol-5-yl]-3,4-dihydro-3,8-dimethyl-4-oxo-6-quinazolinecarbonitrile.*

Proposed definition of the residue (for estimation of dietary intake for animal commodities*: sum of:-*
cyantraniliprole
2-[3-Bromo-1-(3-chloro-2-pyridinyl)-1H-pyrazol-5-yl]-3,4-dihydro-3,8-dimethyl-4-oxo-6-quinazolinecarbonitrile
2-[3-Bromo-1-(3-chloro-2-pyridinyl)-1H-pyrazol-5-yl]-1,4-dihydro-8-methyl-4-oxo-6-quinazolinecarbonitrile
3-Bromo-1-(3-chloro-2-pyridinyl)-N-[4-cyano-2-(hydroxymethyl)-6-[(methylamino)carbonyl]phenyl]-1H-pyrazole-5-carboxamide 3-Bromo-1-(3-chloro-2-pyridinyl)-N-[4-cyano-2[[(hydroxymethyl)amino]carbonyl]-6-methylphenyl]-1H-pyrazole-5-carboxamide expressed as cyantraniliprole

The residue is not fat soluble

[a] DM – Dry matter

Pesticide (Codex reference number)	CCN	Commodity	New	Previous	STMR or STMR-P mg/kg	HR or HR-P mg/kg
Cyazofamid (281) * ADI: 0–0.2 mg/kg bw ARfD: Unnecessary	VP 0061	Beans, except broad bean and soya bean	0.4	--	0.125 [Cyaz] 0.01 [CC-R] 0.017 [CC-C]	-- 0.01 [CC-R] 0.042 [CC-C]
	VP 0062	Beans, shelled	0.07	--	0.025 [Cyaz] 0.01 [CC-R] 0.084 [CC-C]	-- 0.01 [CC-R] 0.16 [CC-C]
CCIM metabolite ADI: 0–0.2 mg/kg bw ARfD: 0.2 mg/kg bw	VB 0040	Brassica (cole or cabbage) vegetables, Head cabbages, Flowerhead brassicas	1.5	--	0.31 [Cyaz] 0.01 [CC-R] 0.22 [CC-C]	-- 0.025 [CC-R] 0.64 [CC-C]
	VL 0054	Brassica leafy vegetables	15	--	3.7 [Cyaz] 0.053 [CC-R] 2.4 [CC-C]	-- 0.19 [CC-R] 4.8 [CC-C]
	VO 0440	Egg plant	0.2		0.06 [Cyaz] 0.01 [CC-R] 0.044 [CC-C]	-- 0.02 [CC-R] 0.13 [CC-C]
	VC 0045	Fruiting vegetables, Cucurbits	0.09	--	0.04 [Cyaz] 0.01 [CC-R] 0.027 [CC-C]	-- 0.01 [CC-R] 0.057 [CC-C]
	FB 0269	Grapes	1.5	--	0.06 [Cyaz] 0.01 [CC-R] 0.044 [CC-C]	-- 0.01 [CC-R] 0.47 [CC-C]
	DH 1100	Hops, dry	15	--	3.6 [Cyaz] 3.4 [CC-C]	-- 5.4 [CC-C]

Pesticide (Codex reference number)	**CCN**	**Commodity**	**Recommended Maximum residue level (mg/kg)**		**STMR or STMR-P mg/kg**	**HR or HR-P mg/kg**
			New	**Previous**		
	VL 0053	Leafy vegetables (except Brassica leafy vegetables)	10	--	3.2 [Cyaz] 0.054 [CC-R] 2.2 [CC-C]	-- 0.15 [CC-R] 4.5 [CC-C]
	VO 0445	Peppers, sweet (including Pimento or pimiento)	0.4	--	0.072 [Cyaz] 0.01 [CC-R] 0.054 [CC-C]	-- 0.014 [CC-R] 0.2 [CC-C]
	VO 0444	Peppers, chili	0.8	--	0.27 [Cyaz] 0.014 [CC-R] 0.18 [CC-C]	-- 0.017 [CC-R] 0.23 [CC-C]
	VR 0589	Potato	0.01*	--	0.01 0.017 [CC-R, CC-C]	-- 0.017 [CC-R, CC-C]
	VO 0448	Tomato	0.2	--	0.06 [Cyaz] 0.01 [CC-R] 0.044 [CC-C]	-- 0.02 [CC-R] 0.13 [CC-C]
Cyazofamid + CCIM (long-term only)	DF 0269	Dried grapes (=currants, raisins and sultanas)			0.013	
		Grapes – Must			0.035	
		Grapes – Wine			0.03	
		Cabbage - raw			--	
		Cabbage – not raw			--	
	VW 0448	Tomato – Paste			0.043	
	MW 0448	Tomato – Purée			0.027	
		Head lettuce – raw			--	
		Head lettuce – not raw			--	
		Leaf lettuce – raw			--	
		Leaf lettuce – not raw			--	
		Potato – all forms			0.025	
	DH 1100	Hops, Dry			3.6	
		Hops – Beer			0.0072	
CCIM (short-term only)	DF 0269	Dried grapes (=currants, raisins and sultanas)			0.0028	0.03
		Grapes – Must			0.013	0.14
		Grapes – Wine			0.013	0.14
		Cabbage - raw			0.01	0.025
		Cabbage – not raw			0.22	0.64
	VW 0448	Tomato – Paste			0.024	0.065
	MW 0448	Tomato – Puree			0.012	0.032
		Head lettuce – raw			0.011	0.029
		Head lettuce – not raw			0.43	1.4
		Leaf lettuce – raw			0.027	0.05
		Leaf lettuce – not raw			1.2	3.1
		Potato – all forms			0.017	0.017
	DH 1100	Hops, Dry			3.4	5.4
		Hops – Beer			0.0048	0.0076

Cyaz = Residue based on cyazofamid + CCIM, expressed as cyazofamid
CC-R =Residues of CCIM from analysis of raw commodities
CC-C =Residues of CCIM + cyazofamid, expressed as CCIM to account for conversion of cyazofamid to CCIM during cooking
Definition of the residue for compliance with the MRLs for plant commodities: *Cyazofamid*.
Definition of the residue for estimating long-term dietary intake from plant commodities: *Cyazofamid plus CCIM, expressed as cyazofamid*.
Definition of the residue for estimating short-term dietary intake from plant commodities (to be compared to the ARfD for CCIM; an ARfD was determined to be unnecessary for cyazofamid): *CCIM*.

Pesticide (Codex reference number)	CCN	Commodity	Recommended Maximum residue level (mg/kg)		STMR or STMR-P mg/kg	HR or HR-P mg/kg
			New	Previous		
Definition of the residue for compliance with the MRLs and for dietary intake for animal commodities: *Not defined.*						
Cyprodinil (207)	SO 0495	Rape seed	0.02		0.02	
ADI:0–0.03 mg/kg bw						
ARfD: Unnecessary						
Definition of the residue for plant and animal commodities for compliance with MRLs and for estimation of dietary intake: *cyprodinil.*						
The residue is fat soluble						
Difenoconazole (224)	FI 0326	Avocado	0.6		0.05	0.26
ADI: 0–0.01 mg/kg bw	SO 0697	Peanut	0.1 *		0	
ARfD: 0.3 mg/kg bw	SO 0495	Rape seed	0.15	0.05	0.03	
	VD 0541	Soya bean (dry)	0.1	0.02 *	0.01	
	OR 0541	Soya bean oil, refined			0.08	
	OR 0495	Rape seed oil, edible			0.002	
	AB 0541	Soya bean hulls			0.02	
	AB 1265	Soya bean meal			0.004	
		Soya bean asp gr fn[a]			6.22	
Definition of the residue for compliance with the MRL and for estimation of dietary intake for plant commodities: *difenoconazole.*						
Definition of the residue for compliance with the MRL and for estimation of dietary intake for animal commodities: *sum of difenoconazole and 1-[2-chloro-4-(4-chloro-phenoxy)- phenyl]-2-(1,2,4-triazol)-1-yl-ethanol), expressed as difenoconazole.*						
Residue is fat-soluble.						
[a] aspirated grain fraction						
Ethephon (106)**	FP 0226	Apple	0.8	5	0.15	0.49
ADI: 0–0.05 mg/kg bw	GC 0640	Barley	1.5	1	0.13	
ARfD: 0.05 mg/kg bw	AS 0640	Barley straw and fodder, Dry	7 (dw)[b]	5	0.64[a]	3.6 [a]
	FB 0020	Blueberries	W	20		
	FC 4199	Cantaloupe	W	1		
	FS 0013	Cherries	5	10	0.65	2.7
	PE 0840	Chicken eggs	W	0.2*		
	SO 0691	Cotton seed	6	2	0.55	
	DF 0269	Dried grapes	W	5	0.23	
	MO 0105	Edible offal (mammalian)	0.4		Kidney 0.056 Liver 0.12	Kidney 0.069 Liver 0.29
	MO 0096	Edible offal of cattle, goats, horses, pigs and sheep	W	0.2*		
	PE 0112	Eggs	0.01*		0	0.00005
	FT 0297	Fig	3		0.73	0.75
	DF 0297	Figs, Dried or dried and candied	W	10		
	FB 0269	Grapes	0.8	1	0.19	0.52
	TN 0666	Hazelnuts	W	0.2		
	MF 0100	Mammalian fats (except milk fats)	0.01*		0.002	0.004
	MM 0095	Meat (from mammals other than marine mammals)	0.01 *		0.002	0.007

Pesticide (Codex reference number)	CCN	Commodity	Recommended Maximum residue level (mg/kg)		STMR or STMR-P mg/kg	HR or HR-P mg/kg
			New	Previous		
	MM 0096	Meat of cattle, goats, horses, pigs and sheep	W	0.1*		
	ML 0106	Milks	0.01 *		0.0004	
	ML 0107	Milk of cattle, goats and sheep	W	0.05*		
	FT 0305	Olives	7		1.9	4.3
	VO 0051	Peppers	W	5		
	HS 0444	Peppers Chili, dried	W	50		
	FI 0353	Pineapple	1.5	2	0.12	0.21
	PM 0110	Poultry meat	0.02	0.1*	0.01	0.016
	PO 0111	Poultry, Edible offal of	0.08	0.2*	0.037	0.072
	PF 0111	Poultry fats	0.04		0.015	0.034
	GC 0650	Rye	0.5	1	0.095	
	AS 0650	Rye straw and fodder, Dry	7 (dw)	5	0.64 [a]	1.7 [a]
	VO 0448	Tomato	2	2	0.52	0.79
	GC 0651	Triticale	0.5		0.095	
		Triticale straw and fodder, Dry	7 (dw)		0.64 [a]	1.7 [a]
	TN 0678	Walnut	W	0.5		
	GC 0654	Wheat	0.5	1	0.095	
	CM 0654	Wheat bran	1.5		0.29	
	CF 1201	Wheat germ	1		0.19	
	AS 0654	Wheat straw and fodder, Dry	7 (dw)	5	0.64 [a]	1.7 [a]
	JF 0226	Apple juice			0.075	
		Apple sauce			0.075	
	OC 0691	Cotton seed oil, edible			0.011	
	DF 0269	Dried grapes (=currants, Raisins and Sultanas)			0.23	
	JF 0269	Grape juice			0.14	
		Grape must			0.16	
		Olive oil, virgin and refined			0.038	
	DM 0305	Olives, processed			0.019	
		Pearl barley			0.12	
	JF 0048	Tomato juice			0.18	
	VW 0448	Tomato paste			0.31	
		Tomato preserves			0.1	
	MW 0448	Tomato puree			0.31	
	CF 1211	Wheat four			0.014	
		Wine			0.25	
	AB 1230	Apple pomace, wet			0.075	
		Barley forage			8.9	13
		Barley hulls			0.21	
	OR 0691	Cotton seed meal			0.016	
	AB 1204	Cotton gin trash			27	67
		Grape pomace wet			0.14	
	AF 0650	Rye forage (green)			9.1	13
		Tomato pomace wet			0.27	
		Wheat forage			7.1	18

Definition of the residue for plant commodities except cereal grains and straw (for compliance with the MRL and for estimation of dietary intake): *Ethephon*

Definition of the residue for cereal grains and straw (for compliance with the MRL and for estimation of dietary intake): *Ethephon and its conjugates, expressed as ethephon*

Definition of the residue for animal commodities (for compliance with the MRL and for estimation of dietary intake): *Ethephon*

Pesticide (Codex reference number)	CCN	Commodity	Recommended Maximum residue level (mg/kg)		STMR or STMR-P mg/kg	HR or HR-P mg/kg
			New	Previous		
The residue is not fat-soluble. [a] as received basis [b] dw – dry weight						
Flonicamid (282)*	TN 0660	Almonds	0.01*		0.01	
ADI: 0–0.07 mg/kg bw	VB 0040	Brassica (cole or cabbage) vegetables, Head cabbages, Flowerhead brassicas	2		0.36	
ARfD: Unnecessary	VL 0054	Brassica leafy vegetables	15		8.31	
	VS 0624	Celery	1.5		0.45	
	FS 0013	Cherries	0.9		0.28	
	SO 0691	Cotton seed	0.6		0.06	
	MM 032	Edible offal (mammalian)	0.06		0.05	
	PE 039	Eggs	0.03		0.02	
	VC 0045	Fruiting vegetables, Cucurbits	0.2		0.04	
	VO 0050	Fruiting vegetables, other than Cucurbits (except mushrooms and sweet corn)	0.4		0.09	
	DH 1100	Hops, dry	20		1.98	
	VL 0482	Lettuce, Head	1.5		0.51	
	VL 0483	Lettuce, Leaf	8		2.67	
	FB 2009	Low growing berries	1.5		0.37	
	MM 031	Mammalian fats	0.02		0.02	
	MM 030	Meat (from mammals other than marine mammals)	0.05		0.04	
	MM 033	Milks	0.04		0.04	
	HH 0738	Mints	6		1.92	
	AM 0660	Miscellaneous fodder and forage crops (fodder)	9		1.81	
	FS 2001	Peaches (including Nectarine and Apricot)	0.7		0.14	
	TN 0672	Pecan	0.01*		0.01	
	FS 0014	Plums (including Prunes)	0.1		0.03	
	FP 0009	Pome fruits	0.8		0.13	
	VR 0589	Potatoes	0.015		0.01	
	PF 037	Poultry fats	0.02		0.02	
	PM 036	Poultry meat (including Pigeon meat)	0.02		0.02	
	PO 038	Poultry, Edible offal of	0.02		0.02	
	VR 0494	Radish	0.4		0.1	
	VL 0494	Radish leaves	20		8.5	
	SO 0495	Rape seed	0.5		0.04	
	VL 0502	Spinach	20		5.72	
	AF 051	Straw, fodder and forage of cereal grains and grasses (including buckwheat fodder) (forage)	3		0.86	
	AS 051	Straw, fodder and forage of cereal grains and grasses (including buckwheat fodder) (straws and fodders dry)	0.3		0.04	
	VW 0448	Tomato paste	7		1.45	
	GC 0654	Wheat	0.08		0.01	
		Canned peaches			0.1	
	OC 0691	Cotton seed oil, crude			0.02	
	DF 0014	Prunes			0.04	
		Head cabbage without wrapper leaves			0.025	

Pesticide (Codex reference number)	CCN	Commodity	Recommended Maximum residue level (mg/kg) New	Previous	STMR or STMR-P mg/kg	HR or HR-P mg/kg
		Mint oil			0.06	
		Peach Jam			0.16	
		Peach Juice			1.8	
		Peach Puree			0.21	
		Potato chips			0.01	
		Potato flakes			0.03	
	OR 0495	Rape seed oil, edible			0.004	
	AB 0691	Cotton seed hulls			0.13	
	AB 1203	Cotton seed meal			0.14	
		Rape seed meal			0.004	

Definition of the residue for compliance with the MRL and for estimation of dietary intake for plant commodities: *Flonicamid*

Definition of the residue for compliance with the MRL and for estimation of dietary intake for animal commodities: *Sum of flonicamid, N-cyanomethyl-4-(trifluoromethyl)nicotinamide and the metabolite TFNA-AM, 4-(trifluoromethyl)nicotinamide*

The residue is not fat soluble.

Flumioxazin (284)*	AL 1020	Alfalfa fodder	3.0 (dw)[a]		0.38 (fw)	1.5 (fw)
ADI: 0–0.02 mg/kg bw	VS 0620	Artichoke, Globe	0.02 *		0.02	0.02
ARfD: 0. 03 mg/kg bw	VS 0621	Asparagus	0.02 *		0	0
(women of child bearing age)	VD 0071	Beans, dry	0.07		0.02	
Unnecessary (for the general population)	FB 2006	Bush berries	0.02 *		0	0
	VB 0041	Cabbages, Head	0.02 *		0	0
	VP 0524	Chick-pea (dry)	0.07		0.02	
	SO 0691	Cotton seed	0.01		0.01	
	MO 0105	Edible offal (Mammalian)	0.02*		0	0
	PE 0112	Eggs	0.02*		0.002	0.001
	VC 0045	Fruiting vegetables, Cucurbits	0.02*		0.02	0.02
	VO 0050	Fruiting vegetables, other than Cucurbits (except sweetcorn and mushrooms)	0.02 *		0.02	0.02
	FB 0269	Grapes	0.01*		0	0
	VD 0533	Lentil (dry)	0.07		0.02	
	VD 0545	Lupin (dry)	0.07		0.02	
	GC 0645	Maize	0.02 *		0	
	AS 0645	Maize fodder	0.02 *		0	0
	MM 0100	Mammalian fats (except milk fats)	0.02*		0	0
	MM 0095	Meat (from mammals other than marine mammals)	0.02*		0	0
	ML 0106	Milks	0.02*		0	
	HH 0738	Mints	0.02		0.01	0.01
	FT 0305	Olives	0.02(*)		0	0
	VA 0385	Onion, Bulb	0.02 *		0	0
	SO 0697	Peanut	0.02 *		0	
	VD 0072	Peas (dry)	0.07		0.02	
	FP 0009	Pome fruits	0.02 *		0	0
	FI 0355	Pomegranate	0.02 *		0	0
	VR 0589	Potato	0.02 *		0	0
	PF 0111	Poultry fat	0.02 *		0.004	0.007
	PM 0110	Poultry meat	0.02 *		0.001	0.001
	PO 0111	Poultry, Edible offal of	0.02 *		0.003	0.005
	VD 0541	Soya bean (dry)	0.02*		0	

Pesticide (Codex reference number)	CCN	Commodity	Recommended Maximum residue level (mg/kg)		STMR or STMR-P mg/kg	HR or HR-P mg/kg
			New	Previous		
	FS 0012	Stone fruits	0.02*		0	0
	SO 0702	Sunflower seed	0.5		0.11	
	VR 0508	Sweet potato	0.02*		0	0
	TN 0085	Tree nuts	0.02*		0	
	GC 0654	Wheat	0.4		0.1	
		Wheat hay	0.02(* (dw)		0 (fw)	0 (fw)
	AS 0654	Wheat straw and fodder, dry	7.0 (dw)		1.7 (fw)	3.7 (fw)
	OR 0702	Sunflower seed oil, edible			0.001	
	CF 0654	Wheat bran, Processed			0.094	
	CF 1211	Wheat flour			0.014	
	CF 1210	Wheat germ			0.103	
		Wheat forage			0	
		Wheat middling			0.022	
		Wheat shorts			0.031	

Definition of the residue (for MRL-compliance and estimation of dietary intake, plant and animal commodities): *flumioxazin*
The residue is not fat soluble

[a] fw – fresh weight dw- dry weight

Pesticide (Codex reference number)	CCN	Commodity	New	Previous	STMR or STMR-P mg/kg	HR or HR-P mg/kg
Fluopyram (243)	VP 0061	Beans, except broad bean and soya bean	1		0.2	0.69
ADI: 0–0.01 mg/kg bw	VP 0062	Beans, shelled	0.2		0.03	0.12
ARfD: 0.5 mg/kg bw	SO 0691	Cotton seed	0.01		0.01	
	PE 0112	Eggs	1	0.3	0.13	
	MO 0098	Kidney of cattle, goats, pigs and sheep	0.8	0.5	0.16	0.74
	MO 0099	Liver of cattle, goats, pigs and sheep	5	3	1	4.8
	MM 0095	Meat (from mammals other than marine mammals)	0.8	0.5	0.16	0.7
	ML 0106	Milks	0.6	0.3	0.12	
	VP 0064	Peas, Shelled	0.2		0.03	0.12
	AL 0072	Pea hay or pea fodder (dry)	40 (dw)[a]		3.5 (fw)	19 (fw)
	PO 0111	Poultry, Edible offal of	2	0.7	0.27	1.9
	PM 0110	Poultry meat	0.5	0.2	0.058	0.46
	VD 0541	Soya bean (dry)	0.05		0.01	
	AL 0528	Pea vines (green)			1.8 (fw)	9.6 (fw)
	AL 1030	Bean Forage (green)			0.7 (fw)	4.3 (fw)

Definition of the residue for compliance with the MRL and for estimation of dietary intake for plant commodities: *Fluopyram.*
Definition of the residue for compliance with the MRL for animal commodities: Sum of fluopyram and 2-(trifluoromethyl) benzamide, expressed as fluopyram.
Definition of the residue for estimation of dietary intake for animal commodities: *Sum of fluopyram, 2-(trifluoromethyl)benzamide and the combined residues N-{(E)-2-[3-chloro-5-(trifluoromethyl)pyridin-2-yl]ethenyl}-2-trifluoromethyl) benzamide and N-{(Z)-2-[3-chloro-5-(trifluoromethyl)pyridin-2-yl]ethenyl}-2-trifluoromethyl) benzamide, all expressed as fluopyram.*

The residue is not fat soluble.

[a] fw – fresh weight dw- dry weight

Pesticide (Codex reference number)	CCN	Commodity	Recommended Maximum residue level (mg/kg)		STMR or STMR-P mg/kg	HR or HR-P mg/kg
			New	Previous		
Flupyradifurone (285)* ADI: 0–0.08 mg/kg bw ARfD: 0.2 mg/kg bw						
Flutriafol (248)	VB 0040	Brassica (cole or cabbage) vegetables, Head cabbages, Flowerhead brassicas	1.5		0.14	0.80
ADI: 0–0.01 mg/kg bw	VS 0624	Celery	3		0.78	1.41
ARfD: 0.05 mg/kg bw	FS 0013	Cherries	0.8		0.335	0.66
	SO 0691	Cotton seed	0.5		0.08	
	MO 0105	Edible offal (mammalian)	1		0.277 liver 0.008 kidney	0.505 liver 0.013 kidney
		Eggs	0.01 *		0.0045	0.0081
	VC 0045	Fruiting vegetables, Cucurbits	0.3		0.09	0.13
	VL 0482	Lettuce, Head	1.5		0.22	0.67
	VL 0483	Lettuce, Leaf	5[a]		0.36	2.95
	GC 0645	Maize	0.01 *		0	
	AS 0645	Maize fodder (dry)	20		4.93 dw	10.45 dw
	MF 0100	Mammalian fats (except milk fats)	0.02		0.008	0.013
	MM 0095	Meat (from mammals other than marine mammals)	0.02 (fat)		0.008 fat 0.008 muscle	0.013 fat 0.007 muscle
	ML 0106	Milks	0.01 *		0.0026	0.0066
	VL 0485	Mustard greens	7[a]		2.12	3.53
	FS 2001	Peaches (including nectarine and apricots)	0.6		0.17	0.42
	VO 0051	Peppers (Subgroup including Peppers, Chili and Peppers, Sweet)	1		0.28	0.41
	VO 0445	Peppers, Sweet (including pimento or pimiento)	W	1		
	FS 0014	Plums (including prunes)	0.4		0.075	0.25
	FP 0009	Pome fruits	0.4	0.3	0.08	0.26
	PF 0111	Poultry fats	0.02		0.009	0.0189
	PM 0110	Poultry meat	0.01 *		0.0015	0.0027
	PO 0111	Poultry, Edible offal of	0.03		0.0105	0.027
	DF 0014	Prunes	0.9		0.165	0.484
	SO 0495	Rape seed	0.5		0.1	
	GC 0651	Sorghum	1.5		0.27	
	AS 0651	Sorghum straw and fodder, dry	7		0.95 dw[b]	5 dw
	VL 0502	Spinach	10[a]		1.665	5.5
	FB 0275	Strawberry	1.5		0.43	0.78
	VR 0596	Sugar beet	0.02		0.01	
	AV 0596	Sugar beet leaves or tops	3 dw		0.424 dw	1.477 dw
	VO 0448	Tomatoes	0.8		0.11	0.63
		Peach juice			0.2125	
		Peach jam			0.1445	
		Red wine			0.22155	
		Strawberry jam			0.3685	
	MW 0448	Tomato purée			0.132	
	VW 0448	Tomato paste			0.286	
		White wine			0.3528	
	AB 0691	Cotton seed hulls			0.0264	

Pesticide (Codex reference number)	CCN	Commodity	Recommended Maximum residue level (mg/kg) New	Recommended Maximum residue level (mg/kg) Previous	STMR or STMR-P mg/kg	HR or HR-P mg/kg
	AB 1203	Cotton seed meal			0.0064	
	AB 0269	Grape pomace, dry			1.806	
	AF 0645	Maize forage			5.31 dw	8.47 dw
	AB 0226	Apple pomace, dry			0.744	
	AF 0651	Sorghum forage (green)			1.1 dw	2.85 dw
		Sorghum asp gr fn[c]			2.16	

Definition of the residue (for compliance with the MRL for plant and animal commodities and for estimation of dietary intake for plant and animal commodities): *Flutriafol*.

The residue is fat-soluble.

[a] On the basis of information provided to the JMPR, the Meeting concluded that the short-term intake of residues of flutriafol from consumption of leaf lettuce, mustard greens and spinach may present a public health concern.

[b] fw – fresh weight dw- dry weight
[c] aspirated grain fractions

Pesticide (Codex reference number)	CCN	Commodity	Recommended Maximum residue level (mg/kg) New	Recommended Maximum residue level (mg/kg) Previous	STMR or STMR-P mg/kg	HR or HR-P mg/kg
Fluxapyroxad (256)	FI 0327	Banana	3		0.055[a]	0.10 [a]
ADI: 0–0.02 mg/kg bw	FB 0018	Berries and other small fruits (except grapes)	7		1.3	3.9
ARfD: 0.3 mg/kg bw	VB 0040	Brassica (cole or cabbage) vegetables, Head cabbages, Flowerhead brassicas	2		0.04 (cabbage) 0.22 (others)	0.07 (cabbage) 1.7 (others)
	VL 0054	Brassica leafy vegetables	4		1.7	3.1
	VR 0577	Carrot	1		0.06	0.5
	VS 0624	Celery	10		1.6	5.5
	FS 0013	Cherries	3		0.755	2.3
	SO 0691	Cotton seed	0.3	0.01*	0.07	
	DF 0269	Dried grapes (=Currants, Raisins and Sultanas)	15		2.0	6.0
	VC 0045	Fruiting vegetables, Cucurbits	0.2		0.0525	0.13
	VA 0381	Garlic	0.6		0.23	0.27
	FB 0269	Grapes	3		0.47	1.4
	AB 0269	Grape pomace, dry	150		16.5	
	VL 0482	Lettuce, head	4		0.51	2.0
	VA 0385	Onion (bulb)	0.6		0.23	0.28
	FC 0004	Oranges, Sweet, Sour	0.3		0.01[a]	0.01[a]
	VR 0588	Parsnip	1		0.06	0.5
	FS 2001	Peaches (including nectarine and apricots)	1.5		0.465	0.66
	FS 0014	Plums (including prunes)	1.5		0.44	0.95
	VL 0494	Radish leaves (including radish tops)	8		1.2	6
	VR 0494	Radish	0.2		0.05	0.1
	GC 0649	Rice	5		0.94	
	CM 0649	Rice, husked	3		0.55	
	CM 1205	Rice, polished	0.4		0.066	
	AS 0649	Rice straw and fodder, dry (dry weight)	50		4.2	48
	VA 0388	Shallot	0.6		0.23	0.27
	GC 0651	Sorghum	0.7		0.2	
	AS 0651	Sorghum straw and fodder, dry (dry weight)	7		2.3	3.3
	VL 0502	Spinach [b]	30		6.8	13
	FS 0012	Stone fruits	W	2		
	TN 0085	Tree nuts	0.04		0.01	0.03

Pesticide (Codex reference number)	**CCN**	**Commodity**	**Recommended Maximum residue level (mg/kg)**		**STMR or STMR-P mg/kg**	**HR or HR-P mg/kg**
			New	**Previous**		
	OR 0691	Cotton seed oil, edible			0.003	
	JF 0269	Grape juice			0.16	0.48
	JF 0004	Orange juice			0.00045	0.00045
	CM 1206	Rice bran, Unprocessed			3.55	
		Rice flour			0.08	
		Wine			0.11	0.23
	AB 0001	Citrus pulp, dry			0.006	0.016
	AB 0691	Cotton seed hulls			0.013	
	AB 1203	Cotton seed meal			0.004	
		Grape must			0.11	0.32
	CM 1207	Rice hulls			4.04	
	AF 1053	Sorghum forage (dry)			3.0	6.9

Definition of the residue (for compliance with the MRL for plant and animal commodities): *Fluxapyroxad.*

Definition of the residue (for estimation of dietary intake for plant commodities): *Sum of fluxapyroxad and 3-(difluoromethyl)- N-(3',4',5'-trifluoro[1,1'- biphenyl]-2-yl)-1H-pyrazole-4-carboxamide (M700F008) and 3-(difluoromethyl)-1-(ß-D-glucopyranosyl)-N-(3',4',5'-triflurobipheny-2-yl)-1H-pyrzaole-4- carboxamide (M700F048) and expressed as parent equivalents.*

Definition of the residue (for estimation of dietary intake for animal commodities): *Sum of fluxapyroxad and 3-(difluoromethyl)- N-(3',4',5'-trifluoro[1,1'- biphenyl]-2-yl)-1H-pyrazole-4-carboxamide (M700F008) expressed as parent equivalents.*

The residue is fat soluble.

[a] edible portion

[b] On the basis of information provided to the JMPR, , the Meeting concluded that the short-term intake of residues of fluxapyroxad from consumption of spinach for children may present a public health concern.

Imazapic (266)*	VD 0541	Soya bean (dry)	0.5		0.07	
ADI: 0–0.7 mg/kg bw						
ARfD: Unnecessary	OR 0541	Soya bean oil, refined			0.01	
	AB 1265	Soya bean meal			0.09	
	AB 0641	Soya bean hulls			0.07	

Definition of the residue for plant and animal commodities (for compliance with the MRL and for estimation of dietary intake): *Imazapic*

Residue is not fat-soluble.

Imazapyr (267)	MO 0105	Edible offal (mammalian)	0.2	0.05*	0.041	
ADI: 0–3 mg/kg bw	AS 0162	Hay or fodder (dry) of grasses	6		1.3	2.5
ARfD: Unnecessary	VD 0541	Soya bean (dry)	5		0.69	
	OC 0541	Soya bean oil, crude		0		
		Forage of grasses			5.2	9.7
		Soya bean asp gr fn [a]			0.028	
	AB 0541	Soya bean hulls			0.46	
	AB 1265	Soya bean meal			0.9	

Pesticide (Codex reference number)	CCN	Commodity	Recommended Maximum residue level (mg/kg)		STMR or STMR-P mg/kg	HR or HR-P mg/kg
			New	Previous		
Definition of the residue for plant commodities (for compliance with the MRL and for estimation of dietary intake): *Imazapyr*						
The residue is not fat soluble.						
[a] aspirated grain fractions						
Imidacloprid (206)	FS 0240	Apricot	W	0.5		
ADI: 0–0.06 mg/kg bw	HH 0722	Basil	20		5.0	7.3
ARfD: 0.4 mg/kg bw	FS 0013	Cherries	4		0.55	2.5
	FS 0244	Cherry, Sweet	W	0.5		
	DF 0014	Prunes	5		0.87	2.2
	VL 0480	Kale	5		1.3	2.0
	FS 0247	Nectarine	W	0.5		
	SO 0305	Olives for oil production	2		0.355	1.1
	FS 0247	Peach	W	0.5		
	FS 2001	Peaches (including nectarines and apricots)	1.5		0.355	0.77
	FS 0014	Plums (including Prunes)	1.5	0.2	0.28	0.7
	VD 0541	Soya bean (dry)	3		0.38	
	AL 0541	Soya bean fodder	50		9.9	22
	FT 0305	Table olives	2		0.355	1.1
	DT 1114	Tea, Green, Black (black, fermented and dried)	50		6.4	
		Apricot, canned			0.12	0.092
		Apricot jam			0.12	
		Cherries, canned			0.33	1.5
		Nectarine, canned			0.12	0.092
		Nectarine, jam			0.12	
	OC 0305	Olive oil, virgin oil			0.04	
		Peaches, canned			0.12	0.092
		Peaches, jam			0.12	
	OR 0541	Soya bean oil, refined			0.09	
		Tea, infusion			0.16	
		Tea instant			1.6	
	AL 1265	Soya bean forage (green)			3.2	6.5
		Soya bean asp gr fn[a]			61	
	AB 0541	Soya bean hulls			0.27	
	AB 1265	Soya bean meal			0.33	
Definition of the residue (for compliance with the MRL and for estimation of dietary intake) for plant and animal commodities: *Sum of imidacloprid and its metabolites containing the 6-chloropyridinyl moiety, expressed as imidacloprid*.						
[a] aspirated grain fractions						
Lambda-cyhalothrin (146)	HH 0722	Basil	0.7		0.19	0.40
ADI: 0–0.02 mg/kg bw	SB 0716	Coffee beans	0.01*		0.01	
ARfD: 0.02 mg/kg bw						
Definition of the residue for compliance with the MRL and for dietary risk assessment for plant and animal commodities: *Cyhalothrin (sum of all isomers)*.						
The residue fat soluble.						

Pesticide (Codex reference number)	CCN	Commodity	Recommended Maximum residue level (mg/kg)		STMR or STMR-P mg/kg	HR or HR-P mg/kg
			New	Previous		

	CCN	Commodity	*Estimated residue levels mg/kg*			Recommendation	
			EMRL [b]	*Median*	*Highest*	New	Previous
Lindane [a] (048)**	GC 0640	Barley				W	0.01*
ADI: 0–0.005 mg/kg bw	AS 0051	Cereal grains, except rice	0.01	*0.005*	*0.005*		
ARfD: 0.06 mg/kg bw	WD 0120	Diadromous fish	0.01	*0.0036*	*0.0095*		
	MO 0105	Edible offal (mammalian)	0.001	*0.00002*	*0.0002*	W	0.01*
	PE 0112	Eggs	0.001	*0.0007*	*0.002*	W	0.01*
	GC 0645	Maize				W	0.01*
	WS 0125	Marine fish	0.01	*0.0036*	*0.0095*		
	MM 0095	Meat (from mammals other than marine mammals)	0.01	*0.00007 (0.0005)*	*0.0005 (0.006)*	W	0.1
	ML 0106	Milks	0.001	*0.00003*		W	0.01*
	GC 0647	Oats				W	0.01*
	PM 0110	Poultry meat	0.005	*0.0006 (0.0008)*	*0.001 (0.016)*	W	0.05
	PO 0111	Poultry, edible offal of	0.005	*0.00008*	*0.0002*	W	0.01*
	GC 0650	Rye				W	0.01*
	GC 0651	Sorghum				W	0.01*
	AS 0161	Straw and fodder of cereal grains	0.01			W	0.01*
	VO 1275	Sweet corn (kernels)	0.01	*0.005*	*0.005*	W	0.01*
	GC 0655	Wheat				W	0.01*

Definition of the residue (for compliance with the MRL and for estimation of dietary intake for plant and animal commodities: *lindane*.

The residue is fat soluble

[a] Lindane was recently classified as 2A (Probably carcinogen) by IARC. Since lindane is listed in annex A of the Stockholm convention and should be eliminated from production and use no toxicological re-evaluation is requested.

[b] Extraneous Maximum Residue Limit (EMRL) is the maximum concentration of a pesticide residue arising from environmental sources due to former agricultural uses, not from the use of the pesticide directly or indirectly on the food or feed.

Pesticide (Codex reference number)	**CCN**	**Commodity**	**Recommended Maximum residue level (mg/kg)**		**STMR or STMR-P mg/kg**	**HR or HR-P mg/kg**
			New	Previous		
Lufenuron (286)*	VC 0424	Cucumbers	0.09		0.02	
ADI: 0–0.02 mg/kg bw	MO 0105	Edible offal (Mammalian)	0.04		0.025	
ARfD: Unnecessary	PE 0112	Eggs	0.02		0.01	
	MF 0100	Mammalian fats	0.7		0.3	
	MM 0095	Meat (from mammals other than marine mammals)	0.7 (F)		Muscle: 0.012 Fat: 0.3	
	VC 0046	Melon, except watermelons	0.4		0.02 (pulp)	
	ML 0106	Milks	0.1		0.066	

Pesticide (Codex reference number)	CCN	Commodity	Recommended Maximum residue level (mg/kg)		STMR or STMR-P mg/kg	HR or HR-P mg/kg
			New	Previous		
	FM 0183	Milk fats	2		1.2	
	VO 0445	Pepper, sweet	0.8		0.15	
	VR 0589	Potato	0.01*		0.01	
	PF 0111	Poultry fats	0.04		0.027	
	PM 0110	Poultry meat	0.02		0.0006	
	PO 0111	Poultry, edible offal of	0.02		0.004	
	VD 0541	Soya beans (dry)	0.01*		0	
	VO 0448	Tomato	0.4		0.08	
	JF 0048	Tomato juice			0.014	
	MW 0448	Tomato puree			0.068	
	VW 0448	Tomato paste			0.078	
		Tomato preserve			0.014	
		Tomato wet pomace			0.66	
Definition of the residue (for compliance with the MRL and for estimation of dietary intake for plant and animal commodities)*: lufenuron.* *The residue fat soluble.*						
Penconazole (182)** ADI: 0–0.03 mg/kg bw ARfD: 0.8 mg/kg bw 1,2,4-Triazole ADI: 0–0.2 mg/kg bw ARfD: 0.3 mg/kg bw Triazole alanine and triazole acetic acid ADI: 0–1 mg/kg bw ARfD: 3 mg/kg bw						
Propiconazole (160)	GC 0470	Barley	2	0.2	0.255	
ADI: 0-0.07 mg/kg bw	GC 0647	Oats	0.7		0.26	
ARfD: 0.3 mg/kg bw	GC 0650	Rye	0.09	0.02	0.06	
	GC 0653	Triticale	0.09	0.02	0.06	
	GC 0654	Wheat	0.09	0.02	0.06	
Definition of the residue for compliance with the MRL and for plant and animal commodities: *propiconazole.* Definition of the residue for the estimation of dietary intake for plant and animal commodities: *propiconazole plus all metabolite convertible to 2,4-dichloro-benzoic acid, expressed as propiconazole.* *The residue is fat-soluble*						
Pyrimethanil (226)	FB 0264	Blackberries	15		3.0	
ADI: 0–0.2 mg/kg bw	FB 0020	Blueberries	8		2.1	
ARfD: Unnecessary	VC 0424	Cucumbers	0.7		0.24	
	FB 0272	Raspberries	15		3.0	
Definition of the residue (for compliance with MRL and dietary intake) for plant commodities: *pyrimethanil* Definition of the residue for compliance with the MRL and for dietary intake estimation for milk: *sum of pyrimethanil and 2-anilino-4,6-dimethylpyrimidin-5-ol, expressed as pyrimethanil.*						

Pesticide (Codex reference number)	**CCN**	**Commodity**	**Recommended Maximum residue level (mg/kg)**		**STMR or STMR-P mg/kg**	**HR or HR-P mg/kg**
			New	Previous		
Definition of the residue for compliance with the MRL and for dietary intake estimation for livestock tissues (excluding poultry): *sum of pyrimethanil and 2-(4-hydroxyanilino)-4,6-dimethylpyrimidine, expressed as pyrimethanil*.						
The residue is not fat-soluble						
Quinclorac (287)*	FB 0265	Cranberry	1.5		0.35	1.36
ADI: 0–0.4 mg/kg bw	VS 0627	Rhubarb	0.5		0.36	0.46
ARfD: 2 mg/kg bw						
Definition of the residue for compliance with MRL for plant commodities: quinclorac plus quinclorac conjugates						
Definition of the residue for estimating dietary intake: quinclorac plus quinclorac conjugate plus 10% quinclorac methyl ester expressed as quinclorac						
Definition of the residue for compliance with MRL and estimating the dietary intake for animal commodities quinclorac plus quinclorac conjugates						
The residue is fat-soluble.						
Spirotetramat (234)	FI 0326	Avocado	0.4		0.126	0.23
ADI: 0–0.5 mg/kg bw	FI 0336	Guava	2		0.55	0.85
ARfD: 1 mg/kg bw	GC 0447	Sweet corn	1.5		0.31	0.75
Definition of the residue (for compliance with MRL for plant commodities: *Spirotetramat and its enol metabolite, 3-(2,5-dimethylphenyl)-4-hydroxy-8-methoxy-1-azaspiro[4.5]dec-3-en-2-one, expressed as spirotetramat*. Definition of the residue (for estimation of dietary intake)for plant commodities: *Spirotetramat, enol metabolite 3-(2,5-dimethylphenyl)-4-hydroxy-8-methoxy-1-azaspiro[4.5]dec-3-en-2-one, ketohydroxy metabolite 3-(2,5-dimethylphenyl)-3-hydroxy-8-methyoxy-1-azaspiro[4.5]decane-2,4-dione, monohydroxy metabolite cis-3-(2,5-dimethylphenyl)-4-hydroxy-8-methoxy-1-azaspiro[4.5]decan-2-one, and enol glucoside metabolite glucoside of 3-(2,5-dimethylphenyl)-4-hydroxy-8-methoxy-1-azaspiro[4.5]dec-3-en-2-one, expressed as spirotetramat.* Definition of the residue (for compliance with MRL and estimation of dietary intake) for animal commodities: *Spirotetramat enol metabolite, 3-(2,5-dimethylphenyl)-4-hydroxy-8-methoxy-1-azaspiro[4.5]dec-3-en-2-one, expressed as spirotetramat*. The residue is not fat-soluble.						
Tebuconazole (189)*	VS 0621	Asparagus	0.02*		0.02	0.02
ADI: 0–0.03 mg/kg bw	FI 0327	Banana	1.5	0.05	0.07	0.16
ARfD: 0.3 mg/kg bw	VC 0424	Cucumber	0.2	0.15	0.05	0.11
	VR 0604	Ginseng	0.15		0.05	0.08
	DM 0604	Ginseng, extracts	0.5		0.17	
	DV 0604	Ginseng, dried including red ginseng	0.4		0.125	
	VA 0385	Onion, Bulb	0.15	0.1	0.055	0.09
	VA 0388	Shallot	0.15		0.055	0.09
	VA 389	Spring onion	2		0.1	0.8
	SO 0702	Sunflower seed	0.1		0.04	
Residue: Definition of the residue (for compliance with the MRL and for estimation of dietary intake) for plant and animal commodities: *tebuconazole*.						
The residue is fat soluble.						

Pesticide (Codex reference number)	CCN	Commodity	Recommended Maximum residue level (mg/kg)		STMR or STMR-P mg/kg	HR or HR-P mg/kg
			New	Previous		
Trifloxystrobin (213)	VD 0071	Beans, dry	0.01*		0.021	
ADI: 0–0.04 mg/kg bw	VD 0533	Lentils	0.01*		0.021	
ARfD: Unnecessary	VD 4511	Pea, dry	0.01*		0.021	
	VD0541	Soya bean	0.05		0.01	

Definition of the residue for compliance with MRLs for plant commodities: *trifloxystrobin;*
Definition of the residue for estimation of dietary intake of plant commodities: *sum of trifloxystrobin and [(E,E)-methoxyimino-{2-[1-(3- trifluoromethylphenyl)ethylideneaminooxymethyl]phenyl}acetic acid] (CGA 321113), expressed as trifloxystrobin.*
Definition of the residue for compliance with MRLs and estimation of dietary intake in animal commodities: *sum of trifloxystrobin and [(E,E)- methoxyimino-{2-[1-(3-trifluoromethylphenyl)ethylideneamino-oxymethyl]phenyl}acetic acid] (CGA 321113), expressed as trifloxystrobin.*

The residue is fat-soluble.

Maximum residue level recommendations for Spices

Pesticide	CCN	Commodity	MRL mg/kg		Median mg/kg
			New	Previous	
Acetamiprid (246)	HS 0790	Pepper, Black; White	0.1		0.1
	HS 0775	Cardamom	0.1		0.1
Cypermethrin (118)	HS 0775	Cardamom	3		0.43
Lambda-cyhalothrin (146)	HS 0775	Cardamom	2	0.03	0.28
	HS 0191	Spices, Fruits and Berries (except Cardamom)	0.03		
Phorate (112)	HS 0779	Coriander, seed	0.1	0.5	0.1
	HS 0731	Fennel, seed	0.1	0.5	0.1
	HS 0190	Spices, Seeds (except Coriander seed and Fennel seed)	0.5		
Profenofos (171)	HS 0775	Cardamom	3	0.07	0.3
	HS 0779	Coriander, seed	0.1		0.1
	HS 0780	Cumin seed	5		0.635
	HS 0731	Fennel, seed	0.1		0.1
	HS 0191	Spices, Fruits and Berries (except Cardamom)	0.07		
Triazophos (143)	HS 0775	Cardamom	4	0.07	0.45
	HS 0779	Coriander, seed	0.1		0.1
	HS 0731	Fennel, seed	0.1		0.1
	HS 0191	Spices, Fruits and Berries (except Cardamom)	0.07		

ANNEX 2: INDEX OF REPORTS AND EVALUATIONS OF PESTICIDES BY THE JMPR

Numbers in parentheses after the names of pesticides are Codex classification numbers. The abbreviations used are:

T, evaluation of toxicology

R, evaluation of residue and analytical aspects

E, evaluation of effects on the environment

Abamectin (177)	1992 (T,R), 1994 (T,R), 1995 (T), 1997 (T,R), 2000 (R), 2015 (R)
Acephate (095)	1976 (T,R), 1979 (R), 1981 (R), 1982 (T), 1984 (T,R), 1987 (T), 1988 (T), 1990 (T,R), 1991 (corr. to 1990 R evaluation), 1994 (R), 1996 (R), 2002 (T), 2003 (R), 2004 (corr. to 2003 report), 2005 (T), 2006 (R), 2011 (R)
Acetamiprid (246)	2011 (T, R), 2012 (R), 2015 (R)
Acetochlor (280)	2015 (T, R)
Acrylonitrile	1965 (T, R)
Aldicarb (117)	1979 (T, R), 1982 (T,R), 1985 (R), 1988 (R), 1990 (R), 1991 (corr. to 1990 evaluation), 1992 (T), 1993 (R), 1994 (R), 1996 (R), 2001 (R), 2002 (R), 2006 (R)
Aldrin (001)	1965 (T), 1966 (T,R), 1967 (R), 1974 (R), 1975 (R), 1977 (T), 1990 (R), 1992 (R)
Allethrin	1965 (T, R)
Ametoctradin (253)	2012 (T, R)
Aminocarb (134)	1978 (T, R), 1979 (T,R)
Aminocyclopyrachlor (272)	2014 (T, R)
Aminomethylphosphonic acid (AMPA, 198)	1997 (T,R)
Aminopyralid (220)	2006 (T,R), 2007 (T,R)
Amitraz (122)	1980 (T,R), 1983 (R), 1984 (T,R), 1985 (R), 1986 (R), 1989 (R), 1990 (T,R), 1991 (R & corr. to 1990 R evaluation), 1998 (T)
Amitrole (079)	1974 (T,R), 1977 (T), 1993 (T,R), 1997 (T), 1998 (R)
Anilazine (163)	1989 (T,R), 1992 (R)
Atrazine	2007 (T)
Azinphos-ethyl (068)	1973 (T,R), 1983 (R)
Azinphos-methyl (002)	1965 (T), 1968 (T,R), 1972 (R), 1973 (T), 1974 (R), 1991 (T,R), 1992 (corr. to 1991 report), 1993 (R), 1995 (R), 2007 (T)
Azocyclotin (129)	1979 (R), 1981 (T), 1982 (R),1983 (R), 1985 (R), 1989 (T,R), 1991 (R), 1994 (T), 2005 (T,R)

Azoxystrobin (229)	2008 (T,R), 2011 (R), 2012 (R), 2013 (R)
Benalaxyl (155)	1986 (R), 1987 (T), 1988 (R), 1992 (R), 1993 (R), 2005 (T), 2009 (R)
Bendiocarb (137)	1982 (T,R), 1984 (T,R), 1989 (R), 1990 (R)
Benomyl (069)	1973 (T,R), 1975 (T,R), 1978 (T,R), 1983 (T,R), 1988 (R), 1990 (R), 1994 (R), 1995 (T,E), 1998 (R)
Bentazone (172)	1991 (T,R), 1992 (corr. to 1991 report, Annex I), 1994 (R), 1995 (R), 1998 (T,R), 1999 (corr. to 1998 report), 2004(T), 2012 (T), 2013 (R)
Benzovinfiflupyr (261)	2013 (T), 2014 (R)
BHC (technical-grade)	1965 (T), 1968 (T,R), 1973 (T,R) (see also Lindane)
Bifenazate (219)	2006 (T,R), 2008 (R), 2010 (R)
Bifenthrin (178)	1992 (T,R), 1995 (R), 1996 (R), 1997 (R), 2009 (T), 2010 (R), 2015 (R)
Binapacryl (003)	1969 (T,R), 1974 (R), 1982 (T), 1984 (R), 1985 (T,R)
Bioresmethrin (093)	1975 (R), 1976 (T,R), 1991 (T,R)
Biphenyl	See Diphenyl
Bitertanol (144)	1983 (T), 1984 (R), 1986 (R), 1987 (T), 1988 (R), 1989 (R), 1991 (R), 1998 (T), 1999 (R), 2002 (R)
Bixafen (262)	2013 (T,R)
Boscalid (221)	2006 (T,R), 2008 (R), 2010 (R)
Bromide ion (047)	1968 (R), 1969 (T,R), 1971 (R), 1979 (R), 1981 (R), 1983 (R), 1988 (T,R), 1989 (R), 1992 (R)
Bromomethane (052)	1965 (T,R), 1966 (T,R), 1967 (R), 1968 (T,R), 1971 (R), 1979 (R), 1985 (R), 1992 (R)
Bromophos (004)	1972 (T,R), 1975 (R), 1977 (T,R), 1982 (R), 1984 (R), 1985 (R)
Bromophos-ethyl (005)	1972 (T,R), 1975 (T,R), 1977 (R)
Bromopropylate (070)	1973 (T,R), 1993 (T,R)
Butocarboxim (139)	1983 (R), 1984 (T), 1985 (T), 1986 (R)
Buprofezin (173)	1991 (T,R), 1995 (R), 1996 (corr. to 1995 report.), 1999 (R), 2008 (T,R), 2009 (R), 2012 (R), 2014 (R)
sec-Butylamine (089)	1975 (T,R), 1977 (R), 1978 (T,R), 1979 (R), 1980 (R), 1981 (T), 1984 (T,R: withdrawal of temporary ADI, but no evaluation)
Cadusafos (174)	1991 (T,R), 1992 (R), 1992 (R), 2009 (R), 2010 (R)
Campheclor (071)	1968 (T,R), 1973 (T,R)
Captafol (006)	1969 (T,R), 1973 (T,R), 1974 (R), 1976 (R), 1977 (T,R), 1982 (T), 1985 (T,R), 1986 (corr. to 1985 report), 1990 (R), 1999 (acute Rf D)
Captan (007)	1965 (T), 1969 (T,R), 1973 (T), 1974 (R), 1977 (T,R), 1978 (T,R), 1980 (R), 1982 (T), 1984 (T,R),

	1986 (R), 1987 (R and corr. to 1986 R evaluation), 1990 (T,R), 1991 (corr. to 1990 R evaluation), 1994 (R), 1995 (T), 1997 (R), 2000 (R), 2004 (T), 2007 (T)
Carbaryl (008)	1965 (T), 1966 (T,R), 1967 (T,R), 1968 (R), 1969 (T,R), 1970 (R), 1973 (T,R), 1975 (R), 1976 (R), 1977 (R), 1979 (R), 1984 (R), 1996 (T), 2001 (T), 2002 (R), 2007 (R)
Carbendazim (072)	1973 (T,R), 1976 (R), 1977 (T), 1978 (R), 1983 (T,R), 1985 (T,R), 1987 (R), 1988 (R), 1990 (R), 1994 (R), 1995 (T,E), 1998 (T,R), 2003 (R), 2005 (T), 2012 (R)
Carbofuran (096)	1976 (T,R), 1979 (T,R), 1980 (T), 1982 (T), 1991 (R), 1993 (R), 1996 (T), 1997 (R), 1999 (corr. to 1997 report), 2002 (T,R), 2003 (R) (See also carbosulfan), 2004 (R), 2008 (T), 2009 (R)
Carbon disulfide (009)	1965 (T,R), 1967 (R), 1968 (R), 1971 (R), 1985 (R)
Carbon tetrachloride (010)	1965 (T,R), 1967 (R), 1968 (T,R), 1971 (R), 1979 (R), 1985 (R)
Carbophenothion (011)	1972 (T,R), 1976 (T,R), 1977 (T,R), 1979 (T,R), 1980 (T,R), 1983 (R)
Carbosulfan (145)	1984 (T,R), 1986 (T), 1991 (R), 1992 (corr. to 1991 report), 1993 (R), 1997 (R), 1999 (R), 2002 (R), 2003 (T,R), 2004 (R, corr. to 2003 report)
Cartap (097)	1976 (T,R), 1978 (T,R), 1995 (T,R)
Chinomethionat (080)	1968 (T,R) (as oxythioquinox), 1974 (T,R), 1977 (T,R), 1981 (T,R), 1983 (R), 1984 (T,R), 1987 (T)
Chlorantraniliprole (230)	2008 (T,R), 2010 (R), 2013 (R), 2014 (R)
Chlorbenside	1965 (T)
Chlordane (012)	1965 (T), 1967 (T,R), 1969 (R), 1970 (T,R), 1972 (R), 1974 (R), 1977 (T,R), 1982 (T), 1984 (T,R), 1986 (T)
Chlordimeform (013)	1971 (T,R), 1975 (T,R), 1977 (T), 1978 (T,R), 1979(T), 1980(T), 1985(T), 1986 (R), 1987 (T)
Chlorfenapyr (254)	2013 (T)
Chlorfenson	1965 (T)
Chlorfenvinphos (014)	1971 (T,R), 1984 (R), 1994 (T), 1996 (R)
Chlormequat (015)	1970 (T,R), 1972 (T,R), 1976 (R), 1985 (R), 1994 (T,R), 1997 (T), 1999 (acute Rf D), 2000 (R)
Chlorobenzilate (016)	1965 (T), 1968 (T,R), 1972 (R), 1975 (R), 1977 (R), 1980 (T)
Chloropicrin	1965 (T,R)
Chloropropylate	1968 (T,R), 1972 (R)

Chlorothalonil (081)	1974 (T,R), 1977 (T,R), 1978 (R), 1979 (T,R), 1981 (T,R), 1983 (T,R), 1984 (corr. to 1983 report and T evaluation), 1985 (T,R), 1987 (T), 1988 (R), 1990 (T,R), 1991 (corr. to 1990 evaluation), 1992 (T), 1993 (R), 1997 (R), 2009 (T), 2010 (R), 2012 (R), 2015 (R)
Chlorpropham (201)	1965 (T), 2000 (T), 2001 (R), 2005 (T), 2008 (R)
Chlorpyrifos (017)	1972 (T,R), 1974 (R), 1975 (R), 1977 (T,R), 1981 (R), 1982 (T,R), 1983 (R), 1989 (R), 1995 (R), 1999 (T), 2000 (R), 2004 (R), 2006 (R)
Chlorpyrifos-methyl (090)	1975 (T,R), 1976 (R, Annex I only), 1979 (R), 1990, (R), 1991 (T,R), 1992 (T and corr. to 1991 report), 1993 (R), 1994 (R), 2001 (T), 2009 (R)
Chlorthion	1965 (T)
Clethodim (187)	1994 (T,R), 1997 (R), 1999 (R), 2002 (R)
Clofentezine (156)	1986 (T,R), 1987 (R), 1989 (R), 1990 (R), 1992 (R), 2005 (T), 2007 (R)
Clothianidin (238)	2010 (T,R), 2011 (R), 2014 (R)
Coumaphos (018)	1968 (T,R), 1972 (R), 1975 (R), 1978 (R), 1980 (T,R), 1983 (R), 1987 (T), 1990 (T,R)
Crufomate (019)	1968 (T,R), 1972 (R)
Cyanophenfos (091)	1975 (T,R), 1978 (T: ADI extended, but no evaluation), 1980, (T), 1982 (R), 1983 (T)
Cyantraniliprole (263)	2013 (T,R), 2015 (R)
Cyazofamid (281)	2015 (T, R)
Cycloxydim (179)	1992 (T,R), 1993 (R), 2009 (T), 2012 (R)
Cyflumetofen (273)	2014 (T,R)
Cyfluthrin (157)	1986 (R), 1987 (T and corr. to 1986 report), 1989 (R), 1990 (R), 1992 (R), 2006 (T), 2007 (R)
Cyhalothrin (146)	1984 (T,R), 1986 (R), 1988 (R), 2007 (T), 2008 (R), 2015 (R)
Cyhexatin (067)	1970 (T,R), 1973 (T,R), 1974 (R), 1975 (R), 1977 (T), 1978 (T,R), 1980 (T), 1981 (T), 1982 (R), 1983 (R), 1985 (R), 1988 (T), 1989 (T), 1991 (T,R), 1992 (R), 1994 (T), 2005 (T,R)
Cypermethrin (118)	1979 (T,R), 1981 (T,R), 1982 (R), 1983 (R), 1984 (R), 1985 (R), 1986 (R), 1987 (corr. to 1986 evaluation), 1988 (R), 1990 (R), 2006 (T), 2008 (R), 2009 (R), 2011 (R)
Cyproconazole (239)	2010 (T,R), 2013 (R)
Cyprodinil (207)	2003 (T,R), 2004 (corr. to 2003 report), 2013 (R), 2015 (R)
Cyromazine (169)	1990 (T,R), 1991 (corr. to 1990 R evaluation), 1992 (R), 2006 (T), 2007 (R), 2012 (R)

2,4-D (020)	1970 (T,R), 1971 (T,R), 1974 (T,R), 1975 (T,R), 1980 (R), 1985, (R), 1986 (R), 1987 (corr. to 1986 report, Annex I), 1996 (T), 1997 (E), 1998 (R), 2001 (R)
Daminozide (104)	1977 (T,R), 1983 (T), 1989 (T,R), 1991 (T)
DDT (021)	1965 (T), 1966 (T,R), 1967 (T,R),1968 (T,R), 1969 (T,R), 1978 (R), 1979 (T), 1980 (T), 1983 (T), 1984 (T), 1993 (R), 1994 (R), 1996 (R)
Deltamethrin (135)	1980 (T,R), 1981 (T,R), 1982 (T,R), 1984 (R), 1985 (R), 1986 (R), 1987 (R), 1988 (R), 1990 (R), 1992 (R), 2000 (T), 2002 (R)
Demeton (092)	1965 (T), 1967 (R), 1975 (R), 1982 (T)
Demeton-S-methyl (073)	1973 (T,R), 1979 (R), 1982 (T), 1984 (T,R), 1989 (T,R), 1992 (R), 1998 (R)
Demeton-S-methylsulfon (164)	1973 (T,R), 1982 (T), 1984 (T,R), 1989 (T,R), 1992 (R)
Dialifos (098)	1976 (T,R), 1982 (T), 1985 (R)
Diazinon (022)	1965 (T), 1966 (T), 1967 (R), 1968 (T,R), 1970 (T,R), 1975 (R), 1979 (R), 1993 (T,R), 1994 (R), 1996 (R), 1999 (R), 2001 (T) , 2006 (T,R)
1,2-Dibromoethane (023)	1965 (T,R), 1966 (T,R), 1967 (R), 1968 (R), 1971 (R), 1979 (R), 1985 (R)
Dicamba (240)	2010 (T,R), 2011 (R), 2012 (R), 2013 (R)
Dichlobenil (274)	2014 (T,R)
Dicloran (083)	2003 (R)
Dichlorfluanid (082)	1969 (T,R), 1974 (T,R), 1977 (T,R), 1979 (T,R), 1981 (R),1982 (R), 1983 (T,R), 1985 (R)
1,2-Dichloroethane (024)	1965 (T,R), 1967 (R), 1971 (R), 1979 (R), 1985 (R)
Dichlorvos (025)	1965 (T,R), 1966 (T,R), 1967 (T,R), 1969 (R), 1970 (T,R), 1974 (R), 1977 (T), 1993 (T,R), 2011 (T), 2012 (R)
Dicloran (083)	1974 (T,R), 1977 (T,R), 1998 (T,R)
Dicofol (026)	1968 (T,R), 1970 (R), 1974 (R), 1992 (T,R), 1994 (R), 2011 (T), 2012 (R)
Dieldrin (001)	1965 (T), 1966 (T,R), 1967 (T,R), 1968 (R), 1969 (R), 1970, (T,R), 1974 (R), 1975 (R), 1977 (T), 1990 (R), 1992 (R)
Difenoconazole (224)	2007 (T,R), 2010 (R), 2013 (R), 2015 (R)
Diflubenzuron (130)	1981 (T,R), 1983 (R), 1984 (T,R), 1985 (T,R), 1988 (R), 2001 (T), 2002 (R), 2011 (R)
Dimethenamid-P (214)	2005 (T,R)
Dimethipin (151)	1985 (T,R), 1987 (T,R), 1988 (T,R), 1999 (T), 2001 (R), 2004 (T)

Dimethoate (027)	1965 (T), 1966 (T), 1967 (T,R), 1970 (R), 1973 (R in evaluation of formothion), 1977 (R), 1978 (R), 1983 (R) 1984 (T,R) 1986 (R), 1987 (T,R), 1988 (R), 1990 (R), 1991 (corr. to 1990 evaluation), 1994 (R), 1996 (T), 1998 (R), 2003 (T,R), 2004 (corr. to 2003 report), 2006 (R), 2008 (R)
Dimethomorph (225)	2007 (T,R), 2014 (R)
Dimethrin	1965 (T)
Dinocap (087)	1969 (T,R), 1974 (T,R), 1989 (T,R), 1992 (R), 1998 (R), 1999 (R), 2000 (T), 2001 (R)
Dinotefuran (255)	2012 (T,R)
Dioxathion (028)	1968 (T,R), 1972 (R)
Diphenyl (029)	1966 (T,R), 1967 (T)
Diphenylamine (030)	1969 (T,R), 1976 (T,R), 1979 (R), 1982 (T), 1984 (T,R), 1998 (T), 2001 (R), 2003 (R), 2008 (R)
Diquat (031)	1970 (T,R), 1972 (T,R), 1976 (R), 1977 (T,R), 1978 (R), 1994 (R), 2013 (T,R)
Disulfoton (074)	1973 (T,R), 1975 (T,R), 1979 (R), 1981 (R), 1984 (R), 1991 (T,R), 1992 (corr. to 1991 report, Annex I), 1994 (R), 1996 (T), 1998 (R), 2006 (R)
Dithianon (180)	1992 (T,R), 1995 (R), 1996 (corr. to 1995 report), 2010 (T), 2013 (T,R)
Dithiocarbamates (105)	1965 (T), 1967 (T,R), 1970 (T,R), 1983 (R propineb, thiram), 1984 (R propineb), 1985 (R), 1987 (T thiram), 1988 (R thiram), 1990 (R), 1991 (corr. to 1990 evaluation), 1992 (T thiram), 1993 (T,R), 1995 (R), 1996 (T,R ferbam, ziram;, R thiram), 2004 (R), 2012 (R), 2014 (R)
4,6-Dinitro-*ortho*-cresol (DNOC)	1965 (T)
Dodine (084)	1974 (T,R), 1976 (T,R), 1977 (R), 2000 (T), 2003(R) 2004 (corr. to 2003 report)
Edifenphos (099)	1976 (T,R), 1979 (T,R), 1981 (T,R)
Emamectin benzoate (247)	2011 (T,R), 2014 (R)
Endosulfan (032)	1965 (T), 1967 (T,R), 1968 (T,R), 1971 (R), 1974 (R), 1975 (R), 1982 (T), 1985 (T,R), 1989 (T,R), 1993 (R), 1998 (T), 2006 (R), 2010 (R)
Endrin (033)	1965 (T), 1970 (T,R), 1974 (R), 1975 (R), 1990 (R), 1992 (R)
Esfenvalerate (204)	2002 (T,R)
Ethephon (106)	1977 (T,R), 1978 (T,R), 1983 (R), 1985 (R), 1993 (T), 1994 (R), 1995 (T), 1997 (T), 2002 (T), 2015 (T, R)
Ethiofencarb (107)	1977 (T,R), 1978 (R), 1981 (R), 1982 (T,R), 1983 (R)

Ethion (034)	1968 (T,R), 1969 (R), 1970 (R), 1972 (T,R), 1975 (R), 1982 (T), 1983 (R), 1985 (T), 1986 (T), 1989 (T), 1990 (T), 1994 (R)
Ethoprophos (149)	1983 (T), 1984 (R), 1987 (T), 1999 (T), 2004 (R)
Ethoxyquin (035)	1969 (T,R), 1998 (T), 1999 (R). 2005 (T), 2008 (R)
Ethylene dibromide	See 1,2-Dibromoethane
Ethylene dichloride	See 1,2-Dichloroethane
Ethylene oxide	1965 (T,R), 1968 (T,R), 1971 (R)
Ethylenethiourea (ETU) (108)	1974 (R), 1977 (T,R), 1986 (T,R), 1987 (R), 1988 (T,R), 1990 (R), 1993 (T,R)
Etofenprox (184)	1993 (T,R), 2011 (T,R)
Etoxazole (241)	2010 (T,R), 2011 (R)
Etrimfos (123)	1980 (T,R), 1982 (T,R[1]), 1986 (T,R), 1987 (R), 1988 (R), 1989 (R), 1990 (R)
Famoxadone (208)	2003 (T,R)
Fenamidone (264)	2013 (T), 2014 (T,R)
Fenamiphos (085)	1974 (T,R), 1977 (R), 1978 (R), 1980 (R), 1985 (T), 1987 (T), 1997 (T), 1999 (R), 2002 (T), 2006 (R)
Fenarimol (192)	1995 (T,R, E), 1996 (R and corr. to 1995 report)
Fenbuconazole (197)	1997 (T,R), 2009 (R), 2012 (T), 2013 (R)
Fenbutatin oxide (109)	1977 (T,R), 1979 (R), 1992 (T), 1993 (R)
Fenchlorfos (036)	1968 (T,R), 1972 (R), 1983 (R)
Fenhexamid (215)	2005 (T,R)
Fenitrothion (037)	1969 (T,R), 1974 (T,R), 1976 (R), 1977 (T,R), 1979(R), 1982, (T) 1983 (R), 1984 (T,R), 1986 (T,R), 1987 (R and corr. to 1986 R evaluation), 1988 (T), 1989 (R), 2000 (T), 2003 (R), 2004 (R, corr. to 2003 report), 2007 (T,R)
Fenpropathrin (185)	1993 (T,R), 2006 (R), 2012 (T), 2014 (R)
Fenpropimorph (188)	1994 (T), 1995 (R), 1999 (R), 2001 (T), 2004 (T)
Fenpyroximate (193)	1995 (T,R), 1996 (corr. to 1995 report.), 1999 (R), 2004 (T), 2007 (T), 2010 (R), 2013 (R)
Fensulfothion (038)	1972 (T,R), 1982 (T), 1983 (R)
Fenthion (039)	1971 (T,R), 1975 (T,R), 1977 (R), 1978 (T,R), 1979 (T), 1980 (T), 1983 (R), 1989 (R), 1995 (T,R,E), 1996 (corr. to 1995 report), 1997 (T), 2000 (R)
Fentin compounds (040)	1965 (T), 1970 (T,R), 1972 (R), 1986 (R), 1991 (T,R), 1993 (R), 1994 (R)
Fenvalerate (119)	1979 (T,R), 1981 (T,R), 1982 (T), 1984 (T,R), 1985 (R), 1986 (T,R), 1987 (R and corr. to 1986 report), 1988 (R), 1990 (R), 1991 (corr. to 1990 R evaluation), 2012 (T,R)

Ferbam See Dithiocarbamates, 1965 (T), 1967 (T,R), 1996 (T,R)

Fipronil (202)	1997 (T), 2000 (T), 2001 (R), 2008
Fipronil-desulfinyl	1997 (T)
Flonicamid (282)	2015 (T, R)
Flubendiamide (242)	2010 (T,R)
Flucythrinate (152)	1985 (T,R), 1987 (R), 1988 (R), 1989 (R), 1990 (R), 1993 (R)
Fludioxonil (211)	2004 (T,R), 2006 (R), 2010 (R), 2012 (R), 2013 (R)
Fluensulfone (265)	2013 (T), 2014 (T,R)
Flufenoxuron (275)	2014 (T,R)
Flumethrin (195)	1996 (T,R)
Fluopicolide (235)	2009 (T,R), 2014 (R)
Fluopyram (243)	2010 (T,R), 2012 (R), 2014 (R), 2015 (R)
Flupyradifurone (285)	2015 (T)
Flusilazole (165)	1989 (T,R), 1990 (R), 1991 (R), 1993 (R), 1995 (T), 2007 (T,R)
Flutolanil (205)	2002 (T,R), 2013 (R)
Flutriafol (248)	2011 (T,R), 2015 (R)
Fluxapyroxad (256)	2012 (T,R), 2015 (R)
Folpet (041)	1969 (T,R), 1973 (T), 1974 (R), 1982 (T), 1984 (T,R), 1986 (T), 1987 (R), 1990 (T,R), 1991 (corr. to 1990 R evaluation), 1993 (T,R), 1994 (R), 1995 (T), 1997 (R), 1998 (R), 1999(R) , 2002 (T), 2004 (T), 2007 (T)
Formothion (042)	1969 (T,R), 1972 (R), 1973 (T,R), 1978 (R), 1998 (R)
Glufosinate-ammonium (175)	1991 (T,R), 1992 (corr. to 1991 report, Annex I), 1994 (R), 1998 (R), 1999 (T,R), 2012 (T,R), 2014 (R)
Glyphosate (158)	1986 (T,R), 1987 (R and corr. to 1986 report), 1988 (R), 1994 (R), 1997 (T,R), 2004 (T), 2005 (R), 2011 (T,R), 2013 (R)
Guazatine (114)	1978 (T.R), 1980 (R), 1997 (T,R)
Haloxyfop (194)	1995 (T,R), 1996 (R and corr. to 1995 report), 2001 (R), 2006 (T), 2009 (R)
Heptachlor (043)	1965 (T), 1966 (T,R), 1967 (R), 1968 (R), 1969 (R), 1970 (T,R), 1974 (R), 1975 (R), 1977 (R), 1987 (R), 1991 (T,R), 1992 (corr. to 1991 report, Annex I), 1993 (R), 1994 (R)
Hexachlorobenzene (044)	1969 (T,R), 1973 (T,R), 1974 (T,R), 1978(T), 1985 (R)
Hexaconazole (170)	1990 (T,R), 1991 (R and corr. to 1990 R evaluation), 1993 (R)
Hexythiazox (176)	1991 (T,R), 1994 (R), 1998 (R), 2008 (T), 2009 (R)

Hydrogen cyanide (045)	1965 (T,R)
Hydrogen phosphide (046)	1965 (T,R), 1966 (T,R), 1967 (R), 1969 (R), 1971 (R)
Imazalil (110)	1977 (T,R), 1980 (T,R), 1984 (T,R), 1985 (T,R), 1986 (T), 1988 (R), 1989 (R), 1991 (T), 1994 (R), 2000 (T), 2001 (T), 2005 (T)
Imazamox (276)	2014 (T,R)
Imazapic (266)	2013 (T,R), 2015 (R)
Imazapyr (267)	2013 (T,R), 2015 (R)
Imidacloprid (206)	2001 (T), 2002 (R), 2006 (R), 2008 (R), 2012 (R), 2015 (R)
Indoxacarb (216)	2005 (T,R), 2007 (R), 2009 (R), 2012 (R), 2013 (R)
Iprodione (111)	1977 (T,R), 1980 (R), 1992 (T), 1994 (R), 1995 (T), 2001 (R)
Isofenphos (131)	1981 (T,R), 1982 (T,R), 1984 (R), 1985 (R), 1986 (T,R), 1988 (R), 1992 (R)
Isopyrazam (249)	2011 (T,R)
Isoxaflutole (268)	2013 (T,R)
Kresoxim-methyl (199)	1998 (T,R), 2001 (R)
Lead arsenate	1965 (T), 1968 (T,R)
Leptophos (088)	1974 (T,R), 1975 (T,R), 1978 (T,R)
Lindane (048)	1965 (T), 1966 (T,R), 1967 (R), 1968 (R), 1969 (R), 1970 (T,R, published as Annex VI to 1971 evaluations), 1973 (T,R), 1974 (R), 1975 (R), 1977 (T,R), 1978 (R), 1979 (R), 1989 (T,R), 1997 (T), 2002 (T), 2003 (R), 2004 (corr. to 2003 report), 2015 (R)
Lufenuron (286)	2015 (T, R)
Malathion (049)	1965 (T), 1966 (T,R), 1967 (corr. to 1966 R evaluation), 1968 (R), 1969 (R), 1970 (R), 1973 (R), 1975 (R), 1977 (R), 1984 (R), 1997 (T), 1999 (R), 2000 (R), 2003 (T), 2004 (R), 2005 (R), 2008 (R), 2013 (R)
Maleic hydrazide (102)	1976 (T,R), 1977 (T,R), 1980 (T), 1984 (T,R), 1996 (T), 1998 (R)
Mancozeb (050)	1967 (T,R), 1970 (T,R), 1974 (R), 1977 (R), 1980 (T,R), 1993 (T,R)
Mandipropamid (231)	2008 (T,R), 2013 (R)
Maneb See Dithiocarbamates, 1965 (T), 1967 (T,R), 1987 (T), 1993 (T,R)	
MCPA (257)	2012 (T,R)
Mecarbam (124)	1980 (T,R), 1983 (T,R), 1985 (T,R), 1986 (T,R), 1987 (R)
Meptyldinocap (244)	2010 (T,R)
Mesotrione (277)	2014 (T,R)

Metaflumizone (236)	2009 (T,R)
Metalaxyl (138)	1982 (T,R), 1984 (R), 1985 (R), 1986 (R), 1987 (R), 1989 (R), 1990 (R), 1992 (R), 1995 (R)
Metalaxyl –M (212)	2002 (T), 2004 (R)
Methacrifos (125)	1980 (T,R), 1982 (T), 1986 (T), 1988 (T), 1990 (T,R), 1992 (R)
Methamidophos (100)	1976 (T,R), 1979 (R), 1981 (R), 1982 (T,R), 1984 (R), 1985 (T), 1989 (R), 1990 (T,R), 1994 (R), 1996 (R), 1997 (R), 2002 (T), 2003 (R), 2004 (R, corr. to 2003 report)
Methidathion (051)	1972 (T,R), 1975 (T,R), 1979 (R), 1992 (T,R), 1994 (R), 1997 (T)
Methiocarb (132)	1981 (T,R), 1983 (T,R), 1984 (T), 1985 (T), 1986 (R), 1987 (T,R), 1988 (R), 1998 (T), 1999 (R), 2005 (R)
Methomyl (094)	1975 (R), 1976 (R), 1977 (R), 1978 (R), 1986 (T,R), 1987 (R), 1988 (R), 1989 (T,R), 1990 (R), 1991 (R), 2001 (T,R), 2004 (R), 2008 (R)
Methoprene (147)	1984 (T,R), 1986 (R), 1987 (T and corr. to 1986 report), 1988 (R), 1989 (R), 2001 (T), 2005 (R)
Methoxychlor	1965 (T), 1977 (T)
Methoxyfenozide (209)	2003 (T,R), 2004 (corr. to 2003 report), 2006 (R), 2009 (R), 2012 (R)
Methyl bromide (052)	See Bromomethane
Metrafenone (278)	2014 (T,R)
Metiram (186)	1993 (T), 1995 (R)
Mevinphos (053)	1965 (T), 1972 (T,R), 1996 (T), 1997 (E,R), 2000 (R)
MGK 264	1967 (T,R)
Monocrotophos (054)	1972 (T,R), 1975 (T,R), 1991 (T,R), 1993 (T), 1994 (R)
Myclobutanil (181)	1992 (T,R), 1997 (R), 1998 (R), (2001 (R)), 2014 (T,R)
Nabam See Dithiocarbamates, 1965 (T), 1976 (T,R)	
Nitrofen (140)	1983 (T,R)
Novaluron (217)	2005 (T,R), 2010 (R)
Omethoate (055)	1971 (T,R), 1975 (T,R), 1978 (T,R), 1979 (T), 1981 (T,R), 1984 (R), 1985 (T), 1986 (R), 1987 (R), 1988 (R), 1990 (R), 1998 (R)
Organomercury compounds	1965 (T), 1966 (T,R), 1967 (T,R)
Oxamyl (126)	1980 (T,R), 1983 (R), 1984 (T), 1985 (T,R), 1986 (R), 2002 (T,R)
Oxydemeton-methyl (166)	1965 (T, as demeton-*S*-methyl sulfoxide), 1967 (T), 1968 (R), 1973 (T,R), 1982 (T), 1984 (T,R),

	1989 (T,R), 1992 (R), 1998 (R), 1999 (corr. to 1992 report), 2002 (T), 2004 (R)
Oxythioquinox	See Chinomethionat
Paclobutrazol (161)	1988 (T,R), 1989 (R)
Paraquat (057)	1970 (T,R), 1972 (T,R), 1976 (T,R), 1978 (R), 1981 (R), 1982 (T), 1985 (T), 1986 (T), 2003 (T), 2004 (R), 2009 (R)
Parathion (058)	1965 (T), 1967 (T,R), 1969 (R), 1970 (R), 1984 (R), 1991 (R), 1995 (T,R), 1997 (R), 2000 (R)
Parathion-methyl (059)	1965 (T), 1968 (T,R), 1972 (R), 1975 (T,R), 1978 (T,R), 1979 (T), 1980 (T), 1982 (T), 1984 (T,R), 1991 (R), 1992 (R), 1994 (R), 1995 (T), 2000 (R), 2003 (R)
Penconazole (182)	1992 (T,R), 1995 (R), 2015 (T)
Penthiopyrad (253)	2011 (T), 2012 (R), 2013 (R)
Permethrin (120)	1979 (T,R), 1980 (R), 1981 (T,R), 1982 (R), 1983 (R), 1984 (R), 1985 (R), 1986 (T,R), 1987 (T), 1988 (R), 1989 (R), 1991 (R), 1992 (corr. to 1991 report), 1999 (T)
2-Phenylphenol (056)	1969 (T,R), 1975 (R), 1983 (T), 1985 (T,R), 1989 (T), 1990 (T,R), 1999 (T,R), 2002 (R)
Phenothrin (127)	1979 (R), 1980 (T,R), 1982 (T), 1984 (T), 1987 (R), 1988 (T,R)
Phenthoate (128)	1980 (T,R), 1981 (R), 1984 (T)
Phorate (112)	1977 (T,R), 1982 (T), 1983 (T), 1984 (R), 1985 (T), 1990 (R), 1991 (R), 1992 (R), 1993 (T), 1994 (T), 1996 (T), 2004 (T), 2005 (R), 2012 (R), 2014 (R)
Phosalone (060)	1972 (T,R), 1975 (R), 1976 (R), 1993 (T), 1994 (R), 1997 (T), 1999 (R), 2001 (T)
Phosmet (103)	1976 (R), 1977 (corr. to 1976 R evaluation), 1978 (T,R), 1979 (T,R), 1981 (R), 1984 (R), 1985 (R), 1986 (R), 1987 (R and corr. to 1986 R evaluation), 1988 (R), 1994 (T), 1997 (R), 1998 (T), 2002 (R), 2003 (R), 2007 (R)
Phosphine	See Hydrogen phosphide
Phosphamidon (061)	1965 (T), 1966 (T), 1968 (T,R), 1969 (R), 1972 (R), 1974 (R), 1982 (T), 1985 (T), 1986 (T)
Phoxim (141)	1982 (T), 1983 (R), 1984 (T,R), 1986 (R), 1987 (R), 1988 (R)
Picoxystrobin (258)	2012 (T,R), 2013 (R)
Piperonyl butoxide (062)	1965 (T,R), 1966 (T,R), 1967 (R), 1969 (R), 1972(T,R), 1992 (T,R), 1995 (T), 2001 (R), 2002 (R)
Pirimicarb (101)	1976 (T,R), 1978 (T,R), 1979 (R), 1981 (T,R), 1982 (T), 1985 (R), 2004 (T), 2006 (R)

Pirimiphos-methyl (086)	1974 (T,R), 1976 (T,R), 1977 (R), 1979 (R), 1983 (R), 1985 (R), 1992 (T), 1994 (R), 2003 (R), 2004 (R, corr. to 2003 report), 2006 (T)
Prochloraz (142)	1983 (T,R), 1985 (R), 1987 (R), 1988 (R), 1989 (R), 1990 (R), 1991 (corr. to 1990 report, Annex I, and R evaluation), 1992 (R), 2001 (T), 2004 (R), 2009 (R)
Procymidone(136)	1981 (R), 1982 (T), 1989 (T,R), 1990 (R), 1991 (corr. to 1990 Annex I), 1993 (R), 1998 (R), 2007 (T)
Profenofos (171)	1990 (T,R), 1992 (R), 1994 (R), 1995 (R), 2007 (T), 2008 (R), 2011 (R)
Propamocarb (148)	1984 (T,R), 1986 (T,R), 1987 (R), 2005 (T), 2006 (R), 2014 (R)
Propargite (113)	1977 (T,R), 1978 (R), 1979 (R), 1980 (T,R), 1982 (T,R), 1999 (T), 2002 (R), 2006 (R)
Propham (183)	1965 (T), 1992 (T,R)
Propiconazole (160)	1987 (T,R), 1991 (R), 1994 (R), 2004 (T), 2006 (R), 2007 (R), 2013 (R), 2014 (R), 2015 (R)
Propineb	1977 (T,R), 1980 (T), 1983 (T), 1984 (R), 1985 (T,R), 1993 (T,R), 2004 (R)
Propoxur (075)	1973 (T,R), 1977 (R), 1981 (R), 1983 (R), 1989 (T), 1991 (R), 1996 (R)
Propylene oxide (250)	2011 (T,R)
Propylenethiourea (PTU, 150)	1993 (T,R), 1994 (R), 1999 (T)
Prothioconazole (232)	2008 (T,R), 2009 (R), 2014 (R)
Pymetrozine (279)	2014 (T,R)
Pyraclostrobin (210)	2003 (T), 2004 (R), 2006 (R), 2011 (R), 2012 (R), 2014 (R)
Pyrazophos (153)	1985 (T,R), 1987 (R), 1992 (T,R), 1993 (R)
Pyrethrins (063)	1965 (T), 1966 (T,R), 1967 (R), 1968 (R), 1969 (R), 1970 (T), 1972 (T,R), 1974 (R), 1999 (T), 2000 (R), 2003 (T,R), 2005 (R)
Pyrimethanil (226)	2007 (T,R), 2013 (R)
Pyriproxyfen (200)	1999 (R,T), 2000 (R), 2001 (T)
Quinclorac (287)	2015 (T, R)
Quinoxyfen (223)	2006 (T,R)
Quintozene (064)	1969 (T,R) 1973 (T,R), 1974 (R), 1975 (T,R), 1976 (Annex I, corr. to 1975 R evaluation), 1977 (T,R), 1995 (T,R), 1998 (R)
Saflufenacil (251)	2011 (T,R)
Sedaxane (259)	2012 (T,R), 2014 (R)
Spices	2004 (R), 2005 (R), 2007 (R), 2010 (R), 2015 (R)
Spinetoram (233)	2008 (T,R), 2012 (R)

Spinosad (203)	2001 (T,R, 2004 (R), 2008 (R), 2011 (R)
Spirodiclofen (237)	2009 (T,R)
Spirotetramat (234)	2008 (T,R), 2011 (R), 2012 (R), 2013 (R), 2015 (R)
Sulfoxaflor (252)	2011 (T,R), 2013 (R), 2014 (R)
Sulfuryl fluoride (218)	2005 (T,R)
2,4,5-T (121)	1970 (T,R), 1979 (T,R), 1981 (T)
Tebuconazole (189)	1994 (T,R), 1996 (corr. to Annex II of 1995 report), 1997 (R), 2008 (R), 2010 (T), 2011 (R), 2015 (R)
Tebufenozide (196)	1996 (T,R), 1997 (R), 1999 (R), 2001 (T,R), 2003(T)
Tecnazine (115)	1974 (T,R), 1978 (T,R), 1981 (R), 1983 (T), 1987 (R), 1989 (R), 1994 (T,R)
Teflubenzuron (190)	1994 (T), 1996 (R)
Temephos	2006 (T)
Terbufos (167)	1989 (T,R), 1990 (T,R), 2003 (T), 2005 (R)
Thiabendazole (065)	1970 (T,R), 1971 (R), 1972 (R), 1975 (R), 1977 (T,R), 1979 (R), 1981 (R), 1997 (R), 2000 (R), 2006 (T,R)
Thiacloprid (223)	2006 (T,R)
Thiamethoxam (245)	2010 (T,R), 2011 (R), 2012 (R), 2014 (R)
Thiodicarb (154)	1985 (T,R), 1986 (T), 1987 (R), 1988 (R), 2000 (T), 2001 (R)
Thiometon (076)	1969 (T,R), 1973 (T,R), 1976 (R), 1979 (T,R), 1988 (R)
Thiophanate-methyl (077)	1973 (T,R), 1975 (T,R), 1977 (T), 1978 (R), 1988 (R), 2002 (R), 1990 (R), 1994 (R), 1995 (T,E), 1998 (T,R), 2006 (T)
Thiram (105)	See Dithiocarbamates, 1965 (T), 1967 (T,R), 1970 (T,R), 1974 (T), 1977 (T), 1983 (R), 1984 (R), 1985 (T,R), 1987 (T), 1988 (R), 1989 (R), 1992 (T), 1996 (R)
Tolclofos-methyl (191)	1994 (T,R) 1996 (corr. to Annex II of 1995 report)
Tolfenpyrad (269)	2013 (T)
Tolylfluanid (162)	1988 (T,R), 1990 (R), 1991 (corr. to 1990 report), 2002 (T,R), 2003 (R)
Toxaphene	See Camphechlor
Triadimefon (133)	1979 (R), 1981 (T,R), 1983 (T,R), 1984 (R), 1985 (T,R), 1986 (R), 1987 (R and corr. to 1986 R evaluation), 1988 (R), 1989 (R), 1992 (R), 1995 (R), 2004 (T), 2007 (R)
Triadimenol (168)	1989 (T,R), 1992 (R), 1995 (R), 2004 (T), 2007 (R), 2014 (R)
Triazolylalanine	1989 (T,R)

Triazophos (143)	1982 (T), 1983 (R), 1984 (corr. to 1983 report, Annex I), 1986 (T,R), 1990 (R), 1991 (T and corr. to 1990 R evaluation), 1992 (R), 1993 (T,R), 2002 (T), 2007 (R), 2010 (R), 2013 (R)
Trichlorfon (066)	1971 (T,R), 1975 (T,R), 1978 (T,R), 1987 (R)
Trichloronat	1971 (T,R)
Trichloroethylene	1968 (R)
Tricyclohexyltin hydroxide	See Cyhexatin
Trifloxystrobin (213)	2004 (T,R), 2012 (R), 2015 (R)
Triflumizole (270)	2013 (T,R)
Triforine (116)	1977 (T), 1978 (T,R), 1997 (T), 2004 (R), 2014 (T,R)
Trinexapac-ethyl (271)	2013 (T,R)
Triphenyltin compounds	See Fentin compounds
Vamidothion (078)	1973 (T,R), 1982 (T), 1985 (T,R), 1987 (R), 1988 (T), 1990 (R), 1992 (R)
Vinclozolin (159)	1986 (T,R), 1987 (R and corr. to 1986 report and R evaluation), 1988 (T,R), 1989 (R), 1990 (R), 1992 (R), 1995 (T)
Zineb (105)	See Dithiocarbamates, 1965 (T), 1967 (T,R), 1993 (T)
Ziram (105)	See Dithiocarbamates, 1965 (T), 1967 (T,R), 1996 (T,R)
Zoxamide (227)	2007 (T,R), 2009 (R)

ANNEX 3: INTERNATIONAL ESTIMATED DAILY INTAKES OF PESTICIDE RESIDUES

ABAMECTIN (177) **International Estimated Daily Intake (IEDI)** **ADI = 0 - 0.000 mg/kg bw**

			STMR	Diets as g/person/day		Intake as µg//person/day									
Codex Code	Commodity description	Expr as	mg/kg	G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
FC 0001	Citrus fruit, raw (incl citrus fruit juice, incl kumquat commodities)	RAC	0.005	34.91	0.17	16.51	0.08	17.23	0.09	104.48	0.52	35.57	0.18	98.49	0.49
FP 0009	Pome fruits, raw (incl. apple juice, incl cider)	RAC	0.002	19.79	0.04	38.25	0.08	17.96	0.04	32.56	0.07	8.08	0.02	64.45	0.13
FS 0013	Cherries, raw	RAC	0.009	0.92	0.01	9.15	0.08	0.10	0.00	0.61	0.01	0.10	0.00	6.64	0.06
FS 0014	Plums, raw (incl dried plums, incl Chinese jujube)	RAC	0.002	2.67	0.01	8.77	0.02	0.10	0.00	3.03	0.01	0.70	0.00	4.34	0.01
FS 2001	Peaches, nectarines, apricots, raw (incl dried apricots)	RAC	0.004	8.01	0.03	5.87	0.02	0.18	0.00	8.19	0.03	1.64	0.01	22.46	0.09
FB 0264	Blackberries, raw	RAC	0.02	0.35	0.01	0.11	0.00	0.10	0.00	0.10	0.00	0.10	0.00	1.23	0.02
FB 0272	Raspberries, red, black, raw	RAC	0.02	0.10	0.00	0.93	0.02	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00
FB 0269	Grape, raw (incl must, incl wine, excl dried, excl juice)	RAC	0.002	13.94	0.03	26.46	0.05	2.79	0.01	18.58	0.04	8.54	0.02	59.95	0.12
DF 0269	Grape, dried (= currants, raisins and sultanas)	PP	0.0056	0.51	0.00	0.51	0.00	0.10	0.00	1.27	0.01	0.12	0.00	2.07	0.01
JF 0269	Grape juice	PP	0.0028	0.14	0.00	0.29	0.00	0.10	0.00	0.30	0.00	0.24	0.00	0.10	0.00
FB 0275	Strawberry, raw	RAC	0.027	0.70	0.02	2.01	0.05	0.10	0.00	1.36	0.04	0.37	0.01	2.53	0.07
FI 0326	Avocado, raw	RAC	0.004	0.13	0.00	0.10	0.00	2.05	0.01	2.54	0.01	2.34	0.01	0.12	0.00
FI 0345	Mango, raw (incl canned mango, incl mango juice)	RAC	0.002	10.48	0.02	0.10	0.00	7.24	0.01	6.87	0.01	19.98	0.04	6.25	0.01
FI 0350	Papaya, raw	RAC	0	0.35	0.00	0.10	0.00	3.05	0.00	0.80	0.00	7.28	0.00	1.00	0.00
VA 0381	Garlic, raw	RAC	0.002	2.29	0.00	5.78	0.01	0.11	0.00	3.69	0.01	1.65	0.00	3.91	0.01
VA 0384	Leek, raw	RAC	0.002	0.18	0.00	1.59	0.00	0.10	0.00	0.28	0.00	0.10	0.00	3.21	0.01
-	Onions, mature bulbs, dry	RAC	0.002	29.36	0.06	37.50	0.08	3.56	0.01	34.78	0.07	18.81	0.04	43.38	0.09
VC 0046	Melons, raw (excl watermelons)	RAC	0.002	8.90	0.02	8.64	0.02	0.80	0.00	17.90	0.04	2.80	0.01	29.17	0.06
VC 0424	Cucumber, raw	RAC	0.002	8.01	0.02	30.66	0.06	1.45	0.00	19.84	0.04	0.27	0.00	34.92	0.07
VC 0425	Gherkin, raw	RAC	0.002	1.73	0.00	6.64	0.01	0.31	0.00	4.29	0.01	0.29	0.00	7.56	0.02
VO 0440	Egg plants, raw (= aubergines)	RAC	0.004	5.58	0.02	4.31	0.02	0.89	0.00	9.31	0.04	13.64	0.05	20.12	0.08
VO 0444	Peppers, chili, raw (incl dried)	RAC	0.005	6.93	0.03	10.97	0.05	8.83	0.04	9.13	0.05	6.65	0.03	20.01	0.10
VO 0445	Peppers, sweet, raw (incl dried)	RAC	0.009	4.49	0.04	6.44	0.06	7.21	0.06	5.68	0.05	9.52	0.09	8.92	0.08
VO 0448	Tomato, raw (incl juice, incl paste, incl canned)	RAC	0.004	51.75	0.21	81.80	0.33	16.99	0.07	102.02	0.41	26.32	0.11	214.77	0.86
VL 0482	Lettuce, head, raw	RAC	0.0275	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
VL 0502	Spinach, raw	RAC	0.024	0.74	0.02	0.22	0.01	0.10	0.00	0.91	0.02	0.10	0.00	2.92	0.07
VP 0061	Beans, green, with pods, raw: beans except broad bean & soya bean (i.e. immature seeds +	RAC	0.007	0.68	0.00	NC	-	NC	-	0.39	0.00	0.22	0.00	0.49	0.00

ABAMECTIN (177) **International Estimated Daily Intake (IEDI)** **ADI = 0 - 0.000 mg/kg bw**

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day G01 diet	Intake as µg//person/day G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
	pods) (Phaseolus spp)														
VD 0071	Beans, dry, raw (Phaseolus spp)	RAC	0.002	2.39	0.00	1.61	0.00	10.47	0.02	1.84	0.00	12.90	0.03	7.44	0.01
VR 0508	Sweet potato, raw (incl dried)	RAC	0	0.18	0.00	0.18	0.00	42.16	0.00	1.61	0.00	3.06	0.00	6.67	0.00
VR 0589	Potato, raw (incl flour, incl frozen, incl starch, incl tapioca)	RAC	0	59.74	0.00	316.14	0.00	9.78	0.00	60.26	0.00	54.12	0.00	119.82	0.00
VR 0600	Yams, raw (incl dried)	RAC	0	0.10	0.00	NC	-	90.40	0.00	6.45	0.00	0.74	0.00	0.65	0.00
VS 0624	Celery	RAC	0.0055	2.14	0.01	3.79	0.02	2.35	0.01	5.69	0.03	0.10	0.00	2.75	0.02
CM 0649 (GC 0649)	Rice, husked, dry (incl polished, incl flour, incl starch, incl oil, incl beverages)	REP	0.001	45.40	0.05	14.99	0.01	84.88	0.08	111.73	0.11	194.75	0.19	93.12	0.09
TN 0085	Tree nuts, raw (incl processed)	RAC	0	4.06	0.00	3.27	0.00	7.01	0.00	13.93	0.00	14.01	0.00	9.36	0.00
SO 0691	Cotton seed, raw	RAC	0.002	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
OR 0691	Cotton seed oil, edible	PP	0	3.22	0.00	1.54	0.00	1.01	0.00	0.74	0.00	1.12	0.00	2.93	0.00
SO 0697	Peanuts, nutmeat, raw (incl roasted, incl oil, incl butter)	RAC	0	1.30	0.00	1.23	0.00	12.62	0.00	2.87	0.00	6.59	0.00	2.67	0.00
DH 1100	Hops, dry	RAC	0.038	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00	NC	-	0.10	0.00
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total intake (µg//person)=				0.8		1.1		0.5		1.6		0.8		2.6
	Bodyweight per region (kg bw) =				60		60		60		60		60		60
	ADI (µg//person)=				60		60		60		60		60		60
	%ADI=				1.4%		1.8%		0.8%		2.7%		1.4%		4.3%
	Rounded %ADI=				1%		2%		1%		3%		1%		4%

ABAMECTIN (177) International Estimated Daily Intake (IEDI) ADI = 0 - 0.000 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day G07 diet	Intake as µg//person/day G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
FC 0001	Citrus fruit, raw (incl citrus fruit juice, incl kumquat commodities)	RAC	0.005	114.42	0.57	62.91	0.31	26.97	0.13	96.72	0.48	96.22	0.48	563.19	2.82
FP 0009	Pome fruits, raw (incl. apple juice, incl cider)	RAC	0.002	71.38	0.14	81.73	0.16	42.91	0.09	58.89	0.12	103.85	0.21	12.48	0.02
FS 0013	Cherries, raw	RAC	0.009	1.40	0.01	4.21	0.04	0.10	0.00	2.93	0.03	1.50	0.01	NC	-
FS 0014	Plums, raw (incl dried plums, incl Chinese jujube)	RAC	0.002	5.55	0.01	4.37	0.01	6.08	0.01	3.66	0.01	3.93	0.01	0.46	0.00
FS 2001	Peaches, nectarines, apricots, raw (incl dried apricots)	RAC	0.004	13.03	0.05	16.29	0.07	8.29	0.03	12.95	0.05	5.35	0.02	0.10	0.00

ABAMECTIN (177) International Estimated Daily Intake (IEDI) ADI = 0 - 0.000 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day G07 diet	Intake as µg//person/day G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
FB 0264	Blackberries, raw	RAC	0.02	0.10	0.00	0.52	0.01	0.14	0.00	0.24	0.00	NC	-	0.10	0.00
FB 0272	Raspberries, red, black, raw	RAC	0.02	0.47	0.01	0.91	0.02	0.10	0.00	0.99	0.02	1.14	0.02	NC	-
FB 0269	Grape, raw (incl must, incl wine, excl dried, excl juice)	RAC	0.002	128.64	0.26	97.04	0.19	7.74	0.02	43.94	0.09	88.68	0.18	8.80	0.02
DF 0269	Grape, dried (= currants, raisins and sultanas)	PP	0.0056	3.09	0.02	1.51	0.01	0.10	0.00	1.38	0.01	4.26	0.02	0.42	0.00
JF 0269	Grape juice	PP	0.0028	0.56	0.00	1.96	0.01	0.10	0.00	2.24	0.01	2.27	0.01	0.34	0.00
FB 0275	Strawberry, raw	RAC	0.027	4.49	0.12	5.66	0.15	0.10	0.00	6.63	0.18	5.75	0.16	0.10	0.00
FI 0326	Avocado, raw	RAC	0.004	2.65	0.01	0.87	0.00	0.46	0.00	1.64	0.01	1.30	0.01	0.96	0.00
FI 0345	Mango, raw (incl canned mango, incl mango juice)	RAC	0.002	1.80	0.00	0.63	0.00	10.05	0.02	1.07	0.00	3.52	0.01	16.44	0.03
FI 0350	Papaya, raw	RAC	0	0.31	0.00	0.18	0.00	1.50	0.00	0.51	0.00	0.54	0.00	1.08	0.00
VA 0381	Garlic, raw	RAC	0.002	0.98	0.00	1.49	0.00	12.88	0.03	3.74	0.01	2.05	0.00	1.14	0.00
VA 0384	Leek, raw	RAC	0.002	4.01	0.01	4.41	0.01	0.72	0.00	0.54	0.00	16.41	0.03	0.10	0.00
-	Onions, mature bulbs, dry	RAC	0.002	19.69	0.04	29.83	0.06	24.64	0.05	31.35	0.06	9.72	0.02	12.59	0.03
VC 0046	Melons, raw (excl watermelons)	RAC	0.002	9.20	0.02	11.95	0.02	14.63	0.03	8.99	0.02	7.86	0.02	2.46	0.00
VC 0424	Cucumber, raw	RAC	0.002	6.72	0.01	11.03	0.02	32.10	0.06	15.10	0.03	4.05	0.01	9.57	0.02
VC 0425	Gherkin, raw	RAC	0.002	0.41	0.00	5.89	0.01	NC	-	0.10	0.00	0.37	0.00	2.07	0.00
VO 0440	Egg plants, raw (= aubergines)	RAC	0.004	1.01	0.00	1.69	0.01	21.37	0.09	3.00	0.01	1.40	0.01	NC	-
VO 0444	Peppers, chili, raw (incl dried)	RAC	0.005	6.36	0.03	15.46	0.08	10.74	0.05	7.28	0.04	8.21	0.04	3.58	0.02
VO 0445	Peppers, sweet, raw (incl dried)	RAC	0.009	0.82	0.01	1.53	0.01	10.85	0.10	4.59	0.04	1.84	0.02	2.00	0.02
VO 0448	Tomato, raw (incl juice, incl paste, incl canned)	RAC	0.004	64.74	0.26	68.31	0.27	36.05	0.14	82.09	0.33	54.50	0.22	11.69	0.05
VL 0482	Lettuce, head, raw	RAC	0.0275	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
VL 0502	Spinach, raw	RAC	0.024	2.20	0.05	1.76	0.04	13.38	0.32	2.94	0.07	5.53	0.13	0.10	0.00
VP 0061	Beans, green, with pods, raw: beans except broad bean & soya bean (i.e. immature seeds + pods) (Phaseolus spp)	RAC	0.007	5.07	0.04	0.83	0.01	0.17	0.00	3.70	0.03	NC	-	NC	-
VD 0071	Beans, dry, raw (Phaseolus spp)	RAC	0.002	1.51	0.00	1.50	0.00	1.90	0.00	5.11	0.01	1.36	0.00	23.43	0.05
VR 0508	Sweet potato, raw (incl dried)	RAC	0	0.93	0.00	0.32	0.00	64.65	0.00	5.37	0.00	0.30	0.00	3.13	0.00
VR 0589	Potato, raw (incl flour, incl frozen, incl starch, incl tapioca)	RAC	0	225.03	0.00	234.24	0.00	71.48	0.00	177.55	0.00	234.55	0.00	37.71	0.00
VR 0600	Yams, raw (incl dried)	RAC	0	NC	-	NC	-	0.10	0.00	0.71	0.00	NC	-	17.57	0.00
VS 0624	Celery	RAC	0.0055	7.68	0.04	2.85	0.02	NC	-	3.34	0.02	16.83	0.09	4.04	0.02
CM 0649 (GC 0649)	Rice, husked, dry (incl polished, incl flour, incl starch, incl oil, incl beverages)	REP	0.001	20.96	0.02	16.04	0.02	339.67	0.34	75.51	0.08	16.86	0.02	86.13	0.09
TN 0085	Tree nuts, raw (incl processed)	RAC	0	8.52	0.00	8.94	0.00	15.09	0.00	9.60	0.00	14.57	0.00	26.26	0.00
SO 0691	Cotton seed, raw	RAC	0.002	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
OR 0691	Cotton seed oil, edible	PP	0	1.68	0.00	0.66	0.00	1.13	0.00	1.18	0.00	0.89	0.00	0.37	0.00

ABAMECTIN (177) International Estimated Daily Intake (IEDI) ADI = 0 - 0.000 mg/kg bw

			STMR	Diets as g/person/day			Intake as µg//person/day								
Codex Code	Commodity description	Expr as	mg/kg	G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
SO 0697	Peanuts, nutmeat, raw (incl roasted, incl oil, incl butter)	RAC	0	5.63	0.00	2.75	0.00	9.58	0.00	5.82	0.00	13.71	0.00	1.84	0.00
DH 1100	Hops, dry	RAC	0.038	NC	-	NC	-	0.10	0.00	0.10	0.00	NC	-	NC	-
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total intake (µg//person)=				1.8		1.6		1.5		1.7		1.7		3.2
	Bodyweight per region (kg bw) =				60		60		55		60		60		60
	ADI (µg//person)=				60		60		55		60		60		60
	%ADI=				2.9%		2.6%		2.8%		2.9%		2.9%		5.3%
	Rounded %ADI=				3%		3%		3%		3%		3%		5%

ABAMECTIN (177) International Estimated Daily Intake (IEDI) ADI = 0 - 0.000 mg/kg bw

			STMR	Diets: g/person/day			Intake = daily intake: µg//person						
Codex Code	Commodity description	Expr as	mg/kg	G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
FC 0001	Citrus fruit, raw (incl citrus fruit juice, incl kumquat commodities)	RAC	0.005	21.16	0.11	2.94	0.01	58.52	0.29	0.44	0.00	5.13	0.03
FP 0009	Pome fruits, raw (incl. apple juice, incl cider)	RAC	0.002	68.89	0.14	11.06	0.02	80.62	0.16	189.82	0.38	19.56	0.04
FS 0013	Cherries, raw	RAC	0.009	0.10	0.00	0.10	0.00	5.96	0.05	0.10	0.00	NC	-
FS 0014	Plums, raw (incl dried plums, incl Chinese jujube)	RAC	0.002	0.10	0.00	0.10	0.00	16.65	0.03	0.10	0.00	NC	-
FS 2001	Peaches, nectarines, apricots, raw (incl dried apricots)	RAC	0.004	0.10	0.00	0.10	0.00	10.76	0.04	0.10	0.00	NC	-
FB 0264	Blackberries, raw	RAC	0.02	0.10	0.00	7.29	0.15	0.25	0.01	0.10	0.00	NC	-
FB 0272	Raspberries, red, black, raw	RAC	0.02	0.10	0.00	0.10	0.00	2.04	0.04	0.10	0.00	NC	-
FB 0269	Grape, raw (incl must, incl wine, excl dried, excl juice)	RAC	0.002	0.57	0.00	0.69	0.00	98.34	0.20	0.73	0.00	44.12	0.09
DF 0269	Grape, dried (= currants, raisins and sultanas)	PP	0.0056	0.10	0.00	0.13	0.00	1.06	0.01	0.10	0.00	0.10	0.00
JF 0269	Grape juice	PP	0.0028	0.10	0.00	0.10	0.00	0.41	0.00	0.10	0.00	NC	-
FB 0275	Strawberry, raw	RAC	0.027	0.10	0.00	0.10	0.00	3.35	0.09	0.10	0.00	0.10	0.00
FI 0326	Avocado, raw	RAC	0.004	1.12	0.00	0.10	0.00	0.84	0.00	0.10	0.00	6.60	0.03
FI 0345	Mango, raw (incl canned mango, incl mango juice)	RAC	0.002	12.25	0.02	6.83	0.01	0.76	0.00	0.10	0.00	20.12	0.04
FI 0350	Papaya, raw	RAC	0	6.47	0.00	0.25	0.00	0.19	0.00	0.10	0.00	26.42	0.00
VA 0381	Garlic, raw	RAC	0.002	0.82	0.00	2.06	0.00	3.79	0.01	0.10	0.00	0.29	0.00
VA 0384	Leek, raw	RAC	0.002	0.10	0.00	1.44	0.00	1.22	0.00	0.10	0.00	NC	-
-	Onions, mature bulbs, dry	RAC	0.002	9.01	0.02	20.24	0.04	30.90	0.06	9.61	0.02	2.11	0.00

ABAMECTIN (177) International Estimated Daily Intake (IEDI) ADI = 0 - 0.000 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day G13 diet	G13 intake	G14 diet	Intake = daily intake: µg//person G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
VC 0046	Melons, raw (excl watermelons)	RAC	0.002	0.19	0.00	0.10	0.00	4.98	0.01	0.10	0.00	NC	-
VC 0424	Cucumber, raw	RAC	0.002	0.68	0.00	1.81	0.00	10.40	0.02	0.10	0.00	0.10	0.00
VC 0425	Gherkin, raw	RAC	0.002	0.15	0.00	0.39	0.00	3.15	0.01	0.10	0.00	0.10	0.00
VO 0440	Egg plants, raw (= aubergines)	RAC	0.004	1.31	0.01	8.26	0.03	3.95	0.02	0.10	0.00	NC	-
VO 0444	Peppers, chili, raw (incl dried)	RAC	0.005	7.55	0.04	12.48	0.06	24.78	0.12	0.87	0.00	NC	-
VO 0445	Peppers, sweet, raw (incl dried)	RAC	0.009	5.49	0.05	10.57	0.10	8.84	0.08	0.91	0.01	NC	-
VO 0448	Tomato, raw (incl juice, incl paste, incl canned)	RAC	0.004	15.50	0.06	5.78	0.02	71.52	0.29	2.00	0.01	12.50	0.05
VL 0482	Lettuce, head, raw	RAC	0.0275	NC	-	NC	-	NC	-	NC	-	NC	-
VL 0502	Spinach, raw	RAC	0.024	0.17	0.00	0.10	0.00	0.81	0.02	0.10	0.00	NC	-
VP 0061	Beans, green, with pods, raw: beans except broad bean & soya bean (i.e. immature seeds + pods) (Phaseolus spp)	RAC	0.007	NC	-	NC	-	NC	-	NC	-	NC	-
VD 0071	Beans, dry, raw (Phaseolus spp)	RAC	0.002	7.11	0.01	2.33	0.00	3.76	0.01	44.70	0.09	3.27	0.01
VR 0508	Sweet potato, raw (incl dried)	RAC	0	28.83	0.00	61.55	0.00	0.15	0.00	221.94	0.00	NC	-
VR 0589	Potato, raw (incl flour, incl frozen, incl starch, incl tapioca)	RAC	0	23.96	0.00	13.56	0.00	213.41	0.00	104.35	0.00	8.56	0.00
VR 0600	Yams, raw (incl dried)	RAC	0	70.93	0.00	30.62	0.00	0.10	0.00	5.65	0.00	30.85	0.00
VS 0624	Celery	RAC	0.0055	3.66	0.02	2.65	0.01	4.84	0.03	2.47	0.01	4.94	0.03
CM 0649 (GC 0649)	Rice, husked, dry (incl polished, incl flour, incl starch, incl oil, incl beverages)	REP	0.001	52.55	0.05	286.02	0.29	18.64	0.02	19.67	0.02	75.09	0.08
TN 0085	Tree nuts, raw (incl processed)	RAC	0	4.39	0.00	135.53	0.00	6.11	0.00	0.72	0.00	317.74	0.00
SO 0691	Cotton seed, raw	RAC	0.002	NC	-	NC	-	NC	-	NC	-	NC	-
OR 0691	Cotton seed oil, edible	PP	0	1.28	0.00	0.10	0.00	0.45	0.00	0.42	0.00	0.15	0.00
SO 0697	Peanuts, nutmeat, raw (incl roasted, incl oil, incl butter)	RAC	0	18.82	0.00	0.57	0.00	2.28	0.00	6.90	0.00	0.53	0.00
DH 1100	Hops, dry	RAC	0.038	NC	-	NC	-	0.10	0.00	NC	-	NC	-
	Total intake (µg//person)=				0.6		0.8		1.6		0.6		0.4
	Bodyweight per region (kg bw) =				60		60		60		60		60
	ADI (µg//person)=				60		60		60		60		60
	%ADI=				0.9%		1.3%		2.7%		0.9%		0.6%
	Rounded %ADI=				1%		1%		3%		1%		1%

ACETAMIPRID (246) International Estimated Daily Intake (IEDI) ADI = 0 - 0.07 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day G01 diet	Intake as µg//person/day G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
FC 0001	Citrus fruit, raw (incl citrus fruit juice, incl kumquat commodities)	RAC	0.25	34.91	8.73	16.51	4.13	17.23	4.31	104.48	26.12	35.57	8.89	98.49	24.62
FP 0009	Pomefruits, raw	RAC	0.225	19.24	4.33	33.89	7.63	3.34	0.75	25.53	5.74	7.59	1.71	56.76	12.77
JF 0226	Apple juice, single strength (incl. concentrated)	PP	0.2	0.32	0.06	3.07	0.61	0.10	0.02	5.00	1.00	0.29	0.06	5.57	1.11
FS 0013	Cherries, raw	RAC	0.45	0.92	0.41	9.15	4.12	0.10	0.05	0.61	0.27	0.10	0.05	6.64	2.99
FS 0014	Plums, raw (incl dried plums, incl Chinese jujube)	RAC	0.04	2.67	0.11	8.77	0.35	0.10	0.00	3.03	0.12	0.70	0.03	4.34	0.17
DF 0014	Plum, dried (prunes)	PP	0.12	0.10	0.01	0.10	0.01	0.10	0.01	0.18	0.02	0.10	0.01	0.10	0.01
-	Peaches and nectarines, raw	RAC	0.2	2.87	0.57	2.21	0.44	0.15	0.03	5.94	1.19	1.47	0.29	15.66	3.13
FB 0018	Berries and other small fruits, raw, (incl processed), excl small fruit vine climbing (group 004D)	RAC	0.64	2.29	1.47	4.71	3.01	0.78	0.50	4.48	2.87	0.39	0.25	6.27	4.01
FB 0269	Grape, raw (incl must, incl wine, excl dried, excl juice)	RAC	0.085	13.94	1.18	26.46	2.25	2.79	0.24	18.58	1.58	8.54	0.73	59.95	5.10
DF 0269	Grape, dried (= currants, raisins and sultanas)	PP	0.08	0.51	0.04	0.51	0.04	0.10	0.01	1.27	0.10	0.12	0.01	2.07	0.17
JF 0269	Grape juice	PP	0.13	0.14	0.02	0.29	0.04	0.10	0.01	0.30	0.04	0.24	0.03	0.10	0.01
FB 0275	Strawberry, raw	RAC	0.1	0.70	0.07	2.01	0.20	0.10	0.01	1.36	0.14	0.37	0.04	2.53	0.25
VA 0381	Garlic, raw	RAC	0.01	2.29	0.02	5.78	0.06	0.11	0.00	3.69	0.04	1.65	0.02	3.91	0.04
-	Onions, green, raw	RAC	0.38	2.45	0.93	1.49	0.57	1.02	0.39	2.60	0.99	0.60	0.23	2.03	0.77
VB 0041	Cabbages, head, raw	RAC	0.02	2.73	0.05	27.92	0.56	0.55	0.01	4.47	0.09	4.27	0.09	10.25	0.21
VB 0042	Flowerhead brassicas, raw	RAC	0.02	2.96	0.06	0.57	0.01	0.10	0.00	4.17	0.08	7.79	0.16	3.64	0.07
VC 0046	Melons, raw (excl watermelons)	RAC	0.05	8.90	0.45	8.64	0.43	0.80	0.04	17.90	0.90	2.80	0.14	29.17	1.46
VC 0421	Balsam pear (Bitter cucumber, Bitter gourd, Bitter melon)	RAC	0.05	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
VC 0422	Bottle gourd (Cucuzzi)	RAC	0.05	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
VC 0423	Chayote (Christophine)	RAC	0.05	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
VC 0424	Cucumber, raw	RAC	0.057	8.01	0.46	30.66	1.75	1.45	0.08	19.84	1.13	0.27	0.02	34.92	1.99
VC 0425	Gherkin, raw	RAC	0.05	1.73	0.09	6.64	0.33	0.31	0.02	4.29	0.21	0.29	0.01	7.56	0.38
VC 0427	Loofah, Angled (Sinkwa, Sinkwa towel gourd), raw	RAC	0.05	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
VC 0428	Loofah, Smooth, raw	RAC	0.05	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
VC 0430	Snake gourd	RAC	0.05	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
VC 0431	Squash, summer, raw (= courgette, zuchini)	RAC	0.05	0.78	0.04	2.06	0.10	0.30	0.02	1.61	0.08	2.25	0.11	2.36	0.12
VC 0432	Watermelon, raw	RAC	0.05	28.96	1.45	25.65	1.28	1.56	0.08	39.26	1.96	4.94	0.25	66.90	3.35
VC 0433	Winter squash, raw (= pumpkin)	RAC	0.05	4.76	0.24	12.56	0.63	1.85	0.09	9.86	0.49	5.11	0.26	14.39	0.72

ACETAMIPRID (246) International Estimated Daily Intake (IEDI) ADI = 0 - 0.07 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day G01 diet	Intake as µg//person/day G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
VO 0050	Fruiting vegetables other than cucurbits, raw, (incl processed commodities), excl sweet corn commodities, excl mushroom commodities	RAC	0.04	70.72	2.83	103.53	4.14	37.61	1.50	129.38	5.18	61.87	2.47	265.39	10.62
-	Peppers, chili, dried	PP	0.4	0.42	0.17	0.53	0.21	0.84	0.34	0.50	0.20	0.95	0.38	0.37	0.15
VO 0447	Sweet corn on the cob, raw (incl frozen, incl canned) (i.e. kernels plus cob without husks)	RAC	0.01	0.14	0.00	0.94	0.01	5.70	0.06	2.61	0.03	1.94	0.02	0.22	0.00
-	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	0.09	2.34	0.21	1.33	0.12	1.57	0.14	4.24	0.38	0.34	0.03	2.83	0.25
VL 0485	Mustard greens, raw (i.e. Brassica)	RAC	2	0.10	0.20	0.31	0.62	0.10	0.20	0.10	0.20	0.47	0.94	0.11	0.22
VP 0061	Beans, green, with pods, raw: beans except broad bean & soya bean (i.e. immature seeds + pods) (Phaseolus spp)	RAC	0.01	0.68	0.01	NC	-	NC	-	0.39	0.00	0.22	0.00	0.49	0.00
VP 0062	Beans, green, without pods, raw: beans except broad bean & soya bean (i.e. immature seeds only) (Phaseolus spp..)	RAC	0.03	1.56	0.05	0.60	0.02	0.49	0.01	1.18	0.04	0.90	0.03	7.79	0.23
VP 0064	Peas, green, without pods, raw (i.e. immature seeds only) (Pisum spp)	RAC	0.03	1.97	0.06	0.51	0.02	0.10	0.00	0.79	0.02	3.68	0.11	3.80	0.11
VS 0621	Asparagus	RAC	0.26	0.10	0.03	0.10	0.03	0.10	0.03	0.10	0.03	0.10	0.03	0.21	0.05
VS 0624	Celery	RAC	0.3	2.14	0.64	3.79	1.14	2.35	0.71	5.69	1.71	0.10	0.03	2.75	0.83
TN 0085	Tree nuts, raw (incl processed)	RAC	0.01	4.06	0.04	3.27	0.03	7.01	0.07	13.93	0.14	14.01	0.14	9.36	0.09
OR 0691	Cotton seed oil, edible	PP	0.004	3.22	0.01	1.54	0.01	1.01	0.00	0.74	0.00	1.12	0.00	2.93	0.01
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) -80% as muscle	RAC	0.022	24.96	0.55	57.95	1.27	16.70	0.37	38.38	0.84	26.46	0.58	29.00	0.64
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) - 20% as fat	RAC	0.017	6.24	0.11	14.49	0.25	4.18	0.07	9.60	0.16	6.62	0.11	7.25	0.12
MF 0100	Mammalian fats, raw, excl milk fats (incl rendered fats)	RAC	0.017	3.29	0.06	6.14	0.10	0.82	0.01	1.57	0.03	2.23	0.04	1.07	0.02
MO 0105	Edible offal (mammalian), raw	RAC	0.11	4.79	0.53	9.68	1.06	2.97	0.33	5.49	0.60	3.84	0.42	5.03	0.55
ML 0106	Milks, raw or skimmed (incl dairy products)	RAC	0.019	289.65	5.50	485.88	9.23	26.92	0.51	239.03	4.54	199.91	3.80	180.53	3.43
PM 0110	Poultry meat, raw (incl prepared)	RAC	0	14.63	0.00	29.76	0.00	8.04	0.00	129.68	0.00	25.04	0.00	35.66	0.00
PO 0111	Poultry edible offal, raw (incl prepared)	RAC	0.01	0.12	0.00	0.12	0.00	0.11	0.00	5.37	0.05	0.24	0.00	0.10	0.00
PE 0112	Eggs, raw, (incl dried)	RAC	0	7.84	0.00	23.08	0.00	2.88	0.00	14.89	0.00	9.81	0.00	14.83	0.00
	Total intake (µg//person)=				31.8		46.8		11.0		59.3		22.5		80.8

	ACETAMIPRID (246)			International Estimated Daily Intake (IEDI)				ADI = 0 - 0.07 mg/kg bw							
			STMR	Diets as g/person/day		Intake as µg//person/day									
Codex Code	Commodity description	Expr as	mg/kg	G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
	Bodyweight per region (kg bw) =				60		60		60		60		60		60
	ADI (µg//person)=				4200		4200		4200		4200		4200		4200
	%ADI=				0.8%		1.1%		0.3%		1.4%		0.5%		1.9%
	Rounded %ADI=				1%		1%		0%		1%		1%		2%

ACETAMIPRID (246)				International Estimated Daily Intake (IEDI)				ADI = 0 - 0.07 mg/kg bw							
			STMR	Diets as g/person/day		Intake as µg//person/day									
Codex Code	Commodity description	Expr as	mg/kg	G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
FC 0001	Citrus fruit, raw (incl citrus fruit juice, incl kumquat commodities)	RAC	0.25	114.42	28.61	62.91	15.73	26.97	6.74	96.72	24.18	96.22	24.06	563.19	140.80
FP 0009	Pomefruits, raw	RAC	0.225	37.39	8.41	58.13	13.08	37.64	8.47	44.80	10.08	62.17	13.99	6.47	1.46
JF 0226	Apple juice, single strength (incl. concentrated)	PP	0.2	14.88	2.98	11.98	2.40	0.15	0.03	9.98	2.00	30.32	6.06	3.47	0.69
FS 0013	Cherries, raw	RAC	0.45	1.40	0.63	4.21	1.89	0.10	0.05	2.93	1.32	1.50	0.68	NC	-
FS 0014	Plums, raw (incl dried plums, incl Chinese jujube)	RAC	0.04	5.55	0.22	4.37	0.17	6.08	0.24	3.66	0.15	3.93	0.16	0.46	0.02
DF 0014	Plum, dried (prunes)	PP	0.12	0.61	0.07	0.35	0.04	0.10	0.01	0.35	0.04	0.49	0.06	0.13	0.02
-	Peaches and nectarines, raw	RAC	0.2	8.76	1.75	12.98	2.60	8.23	1.65	10.09	2.02	3.64	0.73	0.10	0.02
FB 0018	Berries and other small fruits, raw, (incl processed), excl small fruit vine climbing (group 004D)	RAC	0.64	14.68	9.40	12.74	8.15	0.23	0.15	11.77	7.53	8.01	5.13	4.08	2.61
FB 0269	Grape, raw (incl must, incl wine, excl dried, excl juice)	RAC	0.085	128.64	10.93	97.04	8.25	7.74	0.66	43.94	3.73	88.68	7.54	8.80	0.75
DF 0269	Grape, dried (= currants, raisins and sultanas)	PP	0.08	3.09	0.25	1.51	0.12	0.10	0.01	1.38	0.11	4.26	0.34	0.42	0.03
JF 0269	Grape juice	PP	0.13	0.56	0.07	1.96	0.25	0.10	0.01	2.24	0.29	2.27	0.30	0.34	0.04
FB 0275	Strawberry, raw	RAC	0.1	4.49	0.45	5.66	0.57	0.10	0.01	6.63	0.66	5.75	0.58	0.10	0.01
VA 0381	Garlic, raw	RAC	0.01	0.98	0.01	1.49	0.01	12.88	0.13	3.74	0.04	2.05	0.02	1.14	0.01
-	Onions, green, raw	RAC	0.38	1.55	0.59	0.74	0.28	1.05	0.40	3.74	1.42	0.94	0.36	6.45	2.45
VB 0041	Cabbages, head, raw	RAC	0.02	8.97	0.18	27.12	0.54	1.44	0.03	24.96	0.50	4.55	0.09	11.23	0.22
VB 0042	Flowerhead brassicas, raw	RAC	0.02	9.50	0.19	6.77	0.14	9.03	0.18	3.21	0.06	9.36	0.19	0.87	0.02
VC 0046	Melons, raw (excl watermelons)	RAC	0.05	9.20	0.46	11.95	0.60	14.63	0.73	8.99	0.45	7.86	0.39	2.46	0.12
VC 0421	Balsam pear (Bitter cucumber, Bitter gourd, Bitter melon)	RAC	0.05	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-

ACETAMIPRID (246) International Estimated Daily Intake (IEDI) ADI = 0 - 0.07 mg/kg bw

			STMR	Diets as g/person/day		Intake as µg//person/day									
Codex Code	Commodity description	Expr as	mg/kg	G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
VC 0422	Bottle gourd (Cucuzzi)	RAC	0.05	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
VC 0423	Chayote (Christophine)	RAC	0.05	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
VC 0424	Cucumber, raw	RAC	0.057	6.72	0.38	11.03	0.63	32.10	1.83	15.10	0.86	4.05	0.23	9.57	0.55
VC 0425	Gherkin, raw	RAC	0.05	0.41	0.02	5.89	0.29	NC	-	0.10	0.01	0.37	0.02	2.07	0.10
VC 0427	Loofah, Angled (Sinkwa, Sinkwa towel gourd), raw	RAC	0.05	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
VC 0428	Loofah, Smooth, raw	RAC	0.05	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
VC 0430	Snake gourd	RAC	0.05	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
VC 0431	Squash, summer, raw (= courgette, zuchini)	RAC	0.05	NC	-	NC	-	5.48	0.27	NC	-	NC	-	1.03	0.05
VC 0432	Watermelon, raw	RAC	0.05	4.60	0.23	9.82	0.49	68.50	3.43	13.19	0.66	1.99	0.10	14.56	0.73
VC 0433	Winter squash, raw (= pumpkin)	RAC	0.05	6.88	0.34	3.23	0.16	2.59	0.13	12.12	0.61	1.68	0.08	6.30	0.32
VO 0050	Fruiting vegetables other than cucurbits, raw, (incl processed commodities), excl sweet corn commodities, excl mushroom commodities	RAC	0.04	72.92	2.92	86.99	3.48	79.04	3.16	97.13	3.89	65.96	2.64	17.98	0.72
-	Peppers, chili, dried	PP	0.4	0.11	0.04	0.21	0.08	0.36	0.14	0.21	0.08	0.25	0.10	0.15	0.06
VO 0447	Sweet corn on the cob, raw (incl frozen, incl canned) (i.e. kernels plus cob without husks)	RAC	0.01	11.43	0.11	3.71	0.04	0.74	0.01	13.63	0.14	3.07	0.03	1.50	0.02
-	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	0.09	4.96	0.45	3.20	0.29	0.15	0.01	1.61	0.14	6.88	0.62	0.52	0.05
VL 0485	Mustard greens, raw (i.e. Brassica)	RAC	2	NC	-	NC	-	NC	-	NC	-	NC	-	0.13	0.26
VP 0061	Beans, green, with pods, raw: beans except broad bean & soya bean (i.e. immature seeds + pods) (Phaseolus spp)	RAC	0.01	5.07	0.05	0.83	0.01	0.17	0.00	3.70	0.04	NC	-	NC	-
VP 0062	Beans, green, without pods, raw: beans except broad bean & soya bean (i.e. immature seeds only) (Phaseolus spp..)	RAC	0.03	2.21	0.07	5.25	0.16	4.17	0.13	1.61	0.05	16.95	0.51	0.17	0.01
VP 0064	Peas, green, without pods, raw (i.e. immature seeds only) (Pisum spp)	RAC	0.03	10.72	0.32	1.99	0.06	2.72	0.08	4.26	0.13	4.23	0.13	NC	-
VS 0621	Asparagus	RAC	0.26	0.84	0.22	2.08	0.54	7.11	1.85	1.01	0.26	1.69	0.44	0.10	0.03
VS 0624	Celery	RAC	0.3	7.68	2.30	2.85	0.86	NC	-	3.34	1.00	16.83	5.05	4.04	1.21
TN 0085	Tree nuts, raw (incl processed)	RAC	0.01	8.52	0.09	8.94	0.09	15.09	0.15	9.60	0.10	14.57	0.15	26.26	0.26
OR 0691	Cotton seed oil, edible	PP	0.004	1.68	0.01	0.66	0.00	1.13	0.00	1.18	0.00	0.89	0.00	0.37	0.00
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) -80% as muscle	RAC	0.022	112.02	2.46	120.71	2.66	63.46	1.40	88.99	1.96	96.24	2.12	41.02	0.90
MM	MEAT FROM MAMMALS other than	RAC	0.017	28.01	0.48	30.18	0.51	15.86	0.27	22.25	0.38	24.06	0.41	10.25	0.17

ACETAMIPRID (246) International Estimated Daily Intake (IEDI) ADI = 0 - 0.07 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day G07 diet	G07 intake	Intake as µg//person/day G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
0095	marine mammals, raw (incl prepared meat) - 20% as fat														
MF 0100	Mammalian fats, raw, excl milk fats (incl rendered fats)	RAC	0.017	6.44	0.11	15.51	0.26	3.79	0.06	8.29	0.14	18.44	0.31	8.00	0.14
MO 0105	Edible offal (mammalian), raw	RAC	0.11	15.17	1.67	5.19	0.57	6.30	0.69	6.78	0.75	3.32	0.37	3.17	0.35
ML 0106	Milks, raw or skimmed (incl dairy products)	RAC	0.019	388.92	7.39	335.88	6.38	49.15	0.93	331.25	6.29	468.56	8.90	245.45	4.66
PM 0110	Poultry meat, raw (incl prepared)	RAC	0	73.76	0.00	53.86	0.00	23.98	0.00	87.12	0.00	53.38	0.00	84.45	0.00
PO 0111	Poultry edible offal, raw (incl prepared)	RAC	0.01	0.33	0.00	0.72	0.01	0.27	0.00	0.35	0.00	0.80	0.01	NC	-
PE 0112	Eggs, raw, (incl dried)	RAC	0	25.84	0.00	29.53	0.00	28.05	0.00	33.19	0.00	36.44	0.00	8.89	0.00
	Total intake (µg/person)=				84.9		72.4		34.0		72.1		82.9		159.9
	Bodyweight per region (kg bw) =				60		60		55		60		60		60
	ADI (µg//person)=				4200		4200		3850		4200		4200		4200
	%ADI=				2.0%		1.7%		0.9%		1.7%		2.0%		3.8%
	Rounded %ADI=				2%		2%		1%		2%		2%		4%

ACETAMIPRID (246) International Estimated Daily Intake (IEDI) ADI = 0 - 0.07 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day G13 diet	G13 intake	Intake = daily intake: µg//person G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
FC 0001	Citrus fruit, raw (incl citrus fruit juice, incl kumquat commodities)	RAC	0.25	21.16	5.29	2.94	0.74	58.52	14.63	0.44	0.11	5.13	1.28
FP 0009	Pomefruits, raw	RAC	0.225	2.39	0.54	10.93	2.46	69.47	15.63	1.59	0.36	19.56	4.40
JF 0226	Apple juice, single strength (incl. concentrated)	PP	0.2	0.10	0.02	0.10	0.02	7.19	1.44	0.10	0.02	NC	-
FS 0013	Cherries, raw	RAC	0.45	0.10	0.05	0.10	0.05	5.96	2.68	0.10	0.05	NC	-
FS 0014	Plums, raw (incl dried plums, incl Chinese jujube)	RAC	0.04	0.10	0.00	0.10	0.00	16.65	0.67	0.10	0.00	NC	-
DF 0014	Plum, dried (prunes)	PP	0.12	0.10	0.01	0.10	0.01	0.37	0.04	0.10	0.01	NC	-
-	Peaches and nectarines, raw	RAC	0.2	0.10	0.02	0.10	0.02	7.47	1.49	0.10	0.02	NC	-
FB 0018	Berries and other small fruits, raw, (incl processed), excl small fruit vine climbing (group 004D)	RAC	0.64	1.54	0.99	18.66	11.94	11.59	7.42	0.81	0.52	4.99	3.19
FB 0269	Grape, raw (incl must, incl wine, excl dried, excl juice)	RAC	0.085	0.57	0.05	0.69	0.06	98.34	8.36	0.73	0.06	44.12	3.75

Annex 3

ACETAMIPRID (246) International Estimated Daily Intake (IEDI) ADI = 0 - 0.07 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day		Intake = daily intake: µg//person							
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
DF 0269	Grape, dried (= currants, raisins and sultanas)	PP	0.08	0.10	0.01	0.13	0.01	1.06	0.08	0.10	0.01	0.10	0.01
JF 0269	Grape juice	PP	0.13	0.10	0.01	0.10	0.01	0.41	0.05	0.10	0.01	NC	-
FB 0275	Strawberry, raw	RAC	0.1	0.10	0.01	0.10	0.01	3.35	0.34	0.10	0.01	0.10	0.01
VA 0381	Garlic, raw	RAC	0.01	0.82	0.01	2.06	0.02	3.79	0.04	0.10	0.00	0.29	0.00
-	Onions, green, raw	RAC	0.38	1.43	0.54	0.10	0.04	0.20	0.08	NC	-	6.30	2.39
VB 0041	Cabbages, head, raw	RAC	0.02	3.82	0.08	2.99	0.06	49.16	0.98	0.10	0.00	NC	-
VB 0042	Flowerhead brassicas, raw	RAC	0.02	0.10	0.00	0.10	0.00	4.86	0.10	0.10	0.00	NC	-
VC 0046	Melons, raw (excl watermelons)	RAC	0.05	0.19	0.01	0.10	0.01	4.98	0.25	0.10	0.01	NC	-
VC 0421	Balsam pear (Bitter cucumber, Bitter gourd, Bitter melon)	RAC	0.05	NC	-	NC	-	NC	-	NC	-	NC	-
VC 0422	Bottle gourd (Cucuzzi)	RAC	0.05	NC	-	NC	-	NC	-	NC	-	NC	-
VC 0423	Chayote (Christophine)	RAC	0.05	NC	-	NC	-	NC	-	NC	-	NC	-
VC 0424	Cucumber, raw	RAC	0.057	0.68	0.04	1.81	0.10	10.40	0.59	0.10	0.01	0.10	0.01
VC 0425	Gherkin, raw	RAC	0.05	0.15	0.01	0.39	0.02	3.15	0.16	0.10	0.01	0.10	0.01
VC 0427	Loofah, Angled (Sinkwa, Sinkwa towel gourd), raw	RAC	0.05	NC	-	NC	-	NC	-	NC	-	NC	-
VC 0428	Loofah, Smooth, raw	RAC	0.05	NC	-	NC	-	NC	-	NC	-	NC	-
VC 0430	Snake gourd	RAC	0.05	NC	-	NC	-	NC	-	NC	-	NC	-
VC 0431	Squash, summer, raw (= courgette, zuchini)	RAC	0.05	0.10	0.01	1.01	0.05	NC	-	1.91	0.10	NC	-
VC 0432	Watermelon, raw	RAC	0.05	4.29	0.21	0.30	0.02	28.70	1.44	0.10	0.01	NC	-
VC 0433	Winter squash, raw (= pumpkin)	RAC	0.05	0.56	0.03	6.14	0.31	4.59	0.23	11.70	0.59	NC	-
VO 0050	Fruiting vegetables other than cucurbits, raw, (incl processed commodities), excl sweet corn commodities, excl mushroom commodities	RAC	0.04	36.09	1.44	37.19	1.49	109.09	4.36	3.78	0.15	12.50	0.50
-	Peppers, chili, dried	PP	0.4	0.58	0.23	1.27	0.51	1.21	0.48	0.12	0.05	NC	-
VO 0447	Sweet corn on the cob, raw (incl frozen, incl canned) (i.e. kernels plus cob without husks)	RAC	0.01	3.63	0.04	20.50	0.21	8.78	0.09	0.10	0.00	0.17	0.00
-	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	0.09	0.58	0.05	0.22	0.02	2.21	0.20	0.24	0.02	3.10	0.28
VL 0485	Mustard greens, raw (i.e. Brassica)	RAC	2	0.10	0.20	0.10	0.20	NC	-	0.10	0.20	NC	-
VP 0061	Beans, green, with pods, raw: beans except broad bean & soya bean (i.e. immature seeds + pods) (Phaseolus spp)	RAC	0.01	NC	-	NC	-	NC	-	NC	-	NC	-

ACETAMIPRID (246) International Estimated Daily Intake (IEDI) ADI = 0 - 0.07 mg/kg bw

			STMR	Diets: g/person/day	Intake = daily intake: µg//person								
Codex Code	Commodity description	Expr as	mg/kg	G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
VP 0062	Beans, green, without pods, raw: beans except broad bean & soya bean (i.e. immature seeds only) (Phaseolus spp..)	RAC	0.03	0.30	0.01	3.13	0.09	4.11	0.12	0.10	0.00	NC	-
VP 0064	Peas, green, without pods, raw (i.e. immature seeds only) (Pisum spp)	RAC	0.03	0.21	0.01	0.10	0.00	5.51	0.17	0.10	0.00	NC	-
VS 0621	Asparagus	RAC	0.26	0.10	0.03	0.10	0.03	0.17	0.04	0.10	0.03	NC	-
VS 0624	Celery	RAC	0.3	3.66	1.10	2.65	0.80	4.84	1.45	2.47	0.74	4.94	1.48
TN 0085	Tree nuts, raw (incl processed)	RAC	0.01	4.39	0.04	135.53	1.36	6.11	0.06	0.72	0.01	317.74	3.18
OR 0691	Cotton seed oil, edible	PP	0.004	1.28	0.01	0.10	0.00	0.45	0.00	0.42	0.00	0.15	0.00
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) -80% as muscle	RAC	0.022	23.34	0.51	40.71	0.90	97.15	2.14	18.06	0.40	57.71	1.27
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) - 20% as fat	RAC	0.017	5.84	0.10	10.18	0.17	24.29	0.41	4.52	0.08	14.43	0.25
MF 0100	Mammalian fats, raw, excl milk fats (incl rendered fats)	RAC	0.017	1.05	0.02	1.14	0.02	18.69	0.32	0.94	0.02	3.12	0.05
MO 0105	Edible offal (mammalian), raw	RAC	0.11	4.64	0.51	1.97	0.22	10.01	1.10	3.27	0.36	3.98	0.44
ML 0106	Milks, raw or skimmed (incl dairy products)	RAC	0.019	108.75	2.07	70.31	1.34	436.11	8.29	61.55	1.17	79.09	1.50
PM 0110	Poultry meat, raw (incl prepared)	RAC	0	3.92	0.00	12.03	0.00	57.07	0.00	5.03	0.00	55.56	0.00
PO 0111	Poultry edible offal, raw (incl prepared)	RAC	0.01	0.10	0.00	0.70	0.01	0.97	0.01	0.10	0.00	NC	-
PE 0112	Eggs, raw, (incl dried)	RAC	0	3.84	0.00	4.41	0.00	27.25	0.00	1.13	0.00	7.39	0.00

	G13	G14	G15	G16	G17
Total intake (µg/person)=	14.3	23.3	75.9	5.1	24.0
Bodyweight per region (kg bw) =	60	60	60	60	60
ADI (µg/person)=	4200	4200	4200	4200	4200
%ADI=	0.3%	0.6%	1.8%	0.1%	0.6%
Rounded %ADI=	0%	1%	2%	0%	1%

ACETOCHLOR (280) International Estimated Daily Intake (IEDI) ADI = 0 - 0.01 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day G01 diet	Intake as µg//person/day G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
	Sweet corn on the cob, raw (incl frozen, incl canned) (i.e. kernels plus cob without husks)	RAC	0.04	0.14	0.01	0.94	0.04	5.70	0.23	2.61	0.10	1.94	0.08	0.22	0.01
VO 0447	Beans, dry, raw (Phaseolus spp)	RAC	0.02	2.39	0.05	1.61	0.03	10.47	0.21	1.84	0.04	12.90	0.26	7.44	0.15
VD 0071	Peas, dry, raw (Pisum spp, Vigna spp): garden peas & field peas & cow peas	RAC	0.02	1.67	0.03	3.22	0.06	2.66	0.05	1.51	0.03	2.91	0.06	0.24	0.00
VD 0072	Broad bean, dry, raw (incl horse-bean, broad bean, field bean) (Vicia faba)	RAC	0.02	1.27	0.03	0.10	0.00	0.12	0.00	2.49	0.05	0.23	0.00	5.54	0.11
VD 0523	Chick-pea, dry, raw (Cicer arietinum)	RAC	0.02	5.34	0.11	0.13	0.00	0.10	0.00	4.69	0.09	7.24	0.14	5.52	0.11
VD 0524	Hyacinth bean (dry) (Lablab spp), raw	RAC	0.02	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
VD 0531	Lentil, dry, raw (Ervum lens)	RAC	0.02	2.12	0.04	0.10	0.00	0.10	0.00	3.21	0.06	1.60	0.03	4.90	0.10
VD 0533	Pigeon pea dry, raw (Cajanus cajan)	RAC	0.02	NC	-	NC	-	0.10	0.00	0.10	0.00	3.38	0.07	NC	-
VD 0537	Pulses, NES, dry, raw: lablab or hyacinth bean, jack or sword bean, winged bean, guar bean, velvet bean, yam bean (Dolichos spp., Canavalia spp., Psophocarpus tetragonolobus, Cyamopsis tetragonoloba, Stizolobium spp., Pachyrrhizus erosus)	RAC	0.02	1.70	0.03	0.10	0.00	3.00	0.06	1.80	0.04	1.64	0.03	1.33	0.03
-	Potato, raw (incl flour, incl frozen, incl starch, incl tapioca)	RAC	0.04	59.74	2.39	316.14	12.65	9.78	0.39	60.26	2.41	54.12	2.16	119.82	4.79
VR 0589	Sµg/ar beet, raw	RAC	0.018	NC	-	NC	-	NC	-	NC	-	0.10	0.00	NC	-
VR 0596	Sµg/ar beet, sµg/ar	PP	0.0068	0.10	0.00	NC	-	0.10	0.00	0.10	0.00	0.10	0.00	12.63	0.09
-	Barley, raw (incl malt extract, incl pot&pearled, incl flour & grits, incl beer, incl malt)	RAC	0.035	19.91	0.70	31.16	1.09	5.04	0.18	3.10	0.11	9.77	0.34	4.31	0.15
GC 0640	Buckwheat, raw (incl flour)	RAC	0.035	NC	-	0.40	0.01	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00
GC 0641	Maize, raw (incl glucose & dextrose & isoglucose, incl flour, incl oil, incl beer, incl germ, incl starch)	RAC	0.002	29.81	0.06	44.77	0.09	108.95	0.22	52.37	0.10	60.28	0.12	75.69	0.15
GC 0645	Popcorn (i.e. maize used for preparation of popcorn)	RAC	0.002	-	-	-	-	-	-	-	-	-	-	-	-
GC 0656	Millet, raw (incl flour, incl beer)	RAC	0.035	1.46	0.05	2.32	0.08	5.84	0.20	0.89	0.03	16.17	0.57	0.10	0.00
GC 0646	Oats, raw (incl rolled)	RAC	0.035	0.10	0.00	7.05	0.25	0.10	0.00	1.71	0.06	0.96	0.03	0.10	0.00
GC 0647	Rye, raw (incl flour)	RAC	0.035	0.13	0.00	19.38	0.68	0.10	0.00	0.12	0.00	0.10	0.00	2.15	0.08
GC 0650	Triticale, raw (incl flour)	RAC	0.035	NC	-	NC	-	NC	-	0.10	0.00	0.39	0.01	NC	-
GC 0653	Wheat, raw (incl bulgur, incl fermented beverages, incl germ, incl wholemeal bread, incl white flour products, incl white bread)	RAC	0.02	381.15	7.62	341.55	6.83	38.35	0.77	281.89	5.64	172.83	3.46	434.07	8.68
GC 0654	Cereals, NES, raw (including processed) : canagua, quihuicha, Job's tears and wild rice	RAC	0.035	2.04	0.07	2.99	0.10	1.86	0.07	19.17	0.67	3.33	0.12	1.66	0.06
-	Sunflower seed, raw	RAC	0.04	0.10	0.00	0.33	0.01	0.10	0.00	0.24	0.01	0.10	0.00	0.10	0.00
SO 0702	Sunflower seed oil, edible	PP	0.0088	2.97	0.03	14.42	0.13	0.43	0.00	3.46	0.03	2.20	0.02	5.53	0.05
OR 0702	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) -80% as muscle	RAC	0.0004	24.96	0.01	57.95	0.02	16.70	0.01	38.38	0.02	26.46	0.01	29.00	0.01
MM 0095	MEAT FROM MAMMALS other than marine mammals,	RAC	0.0004	6.24	0.00	14.49	0.01	4.18	0.00	9.60	0.00	6.62	0.00	7.25	0.00

ACETOCHLOR (280) International Estimated Daily Intake (IEDI) ADI = 0 - 0.01 mg/kg bw

	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day G01 diet	G01 intake	G02 diet	Intake as µg//person/day G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
	raw (incl prepared meat) - 20% as fat														
MM 0095	Mammalian fats, raw, excl milk fats (incl rendered fats)	RAC	0.0004	3.29	0.00	6.14	0.00	0.82	0.00	1.57	0.00	2.23	0.00	1.07	0.00
MF 0100	Edible offal (mammalian), raw	RAC	0.0006	4.79	0.00	9.68	0.01	2.97	0.00	5.49	0.00	3.84	0.00	5.03	0.00
MO 0105	Milks, raw or skimmed (incl dairy products)	RAC	0.0012	289.65	0.35	485.88	0.58	26.92	0.03	239.03	0.29	199.91	0.24	180.53	0.22
ML 0106	Poultry meat, raw (incl prepared) - 90% as muscle	RAC	0	13.17	0.00	26.78	0.00	7.24	0.00	116.71	0.00	22.54	0.00	32.09	0.00
PM 0110	Poultry meat, raw (incl prepared) - 10% as fat	RAC	0	1.46	0.00	2.98	0.00	0.80	0.00	12.97	0.00	2.50	0.00	3.57	0.00
PM 0110	Poultry fat, raw (incl rendered)	RAC	0	0.10	0.00	0.10	0.00	NC	-	0.10	0.00	0.10	0.00	0.10	0.00
PF 0111	Poultry edible offal, raw (incl prepared)	RAC	0	0.12	0.00	0.12	0.00	0.11	0.00	5.37	0.00	0.24	0.00	0.10	0.00
PO 0111	Eggs, raw, (incl dried)	RAC	0	7.84	0.00	23.08	0.00	2.88	0.00	14.89	0.00	9.81	0.00	14.83	0.00
-	Total intake (µg//person)=				11.6		22.7		2.4		9.8		7.8		14.8
	Bodyweight per region (kg bw) =				60		60		60		60		60		60
	ADI (µg//person)=				600		600		600		600		600		600
	%ADI=				1.9%		3.8%		0.4%		1.6%		1.3%		2.5%
	Rounded %ADI=				2%		4%		0%		2%		1%		2%

ACETOCHLOR (280) International Estimated Daily Intake (IEDI) ADI = 0 - 0.01 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day G07 diet	G07 intake	G08 diet	Intake as µg//person/day G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
VO 0447	Sweet corn on the cob, raw (incl frozen, incl canned) (i.e. kernels plus cob without husks)	RAC	0.04	11.43	0.46	3.71	0.15	0.74	0.03	13.63	0.55	3.07	0.12	1.50	0.06
VD 0071	Beans, dry, raw (Phaseolus spp)	RAC	0.02	1.51	0.03	1.50	0.03	1.90	0.04	5.11	0.10	1.36	0.03	23.43	0.47
VD 0072	Peas, dry, raw (Pisum spp, Vigna spp): garden peas & field peas & cow peas	RAC	0.02	3.80	0.08	1.25	0.03	1.06	0.02	2.33	0.05	2.70	0.05	3.83	0.08
VD 0523	Broad bean, dry, raw (incl horse-bean, broad bean, field bean) (Vicia faba)	RAC	0.02	0.10	0.00	0.10	0.00	1.16	0.02	0.40	0.01	NC	-	0.10	0.00
VD 0524	Chick-pea, dry, raw (Cicer arietinum)	RAC	0.02	0.27	0.01	1.33	0.03	0.32	0.01	0.15	0.00	0.10	0.00	0.10	0.00
VD 0531	Hyacinth bean (dry) (Lablab spp), raw	RAC	0.02	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
VD 0533	Lentil, dry, raw (Ervum lens)	RAC	0.02	0.95	0.02	1.18	0.02	0.40	0.01	0.96	0.02	0.71	0.01	1.28	0.03
VD 0537	Pigeon pea dry, raw (Cajanus cajan)	RAC	0.02	NC	-	NC	-	0.20	0.00	NC	-	NC	-	NC	-
-	Pulses, NES, dry, raw: lablab or hyacinth bean, jack or sword bean, winged bean, guar bean, velvet bean, yam bean (Dolichos spp., Canavalia spp., Psophocarpus	RAC	0.02	0.10	0.00	NC	-	0.57	0.01	0.11	0.00	0.16	0.00	0.94	0.02

ACETOCHLOR (280) International Estimated Daily Intake (IEDI) ADI = 0 - 0.01 mg/kg bw

			STMR	Diets as g/person/day			Intake as µg//person/day								
Codex Code	Commodity description	Expr as	mg/kg	G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
	tetragonolobus, Cyamopsis tetragonoloba, Stizolobium spp., Pachyrrhizus erosus)														
VR 0589	Potato, raw (incl flour, incl frozen, incl starch, incl tapioca)	RAC	0.04	225.03	9.00	234.24	9.37	71.48	2.86	177.55	7.10	234.55	9.38	37.71	1.51
VR 0596	Sµg/ar beet, raw	RAC	0.018	0.10	0.00	NC	-	0.10	0.00	0.10	0.00	NC	-	NC	-
-	Sµg/ar beet, sµg/ar	PP	0.0068	0.10	0.00	NC	-	0.10	0.00	NC	-	NC	-	NC	-
GC 0640	Barley, raw (incl malt extract, incl pot&pearled, incl flour & grits, incl beer, incl malt)	RAC	0.035	36.18	1.27	53.45	1.87	9.39	0.33	35.25	1.23	46.68	1.63	15.92	0.56
GC 0641	Buckwheat, raw (incl flour)	RAC	0.035	0.10	0.00	0.79	0.03	0.18	0.01	0.35	0.01	NC	-	NC	-
GC 0645	Maize, raw (incl glucose & dextrose & isoglucose, incl flour, incl oil, incl beer, incl germ, incl starch)	RAC	0.002	18.51	0.04	26.18	0.05	26.04	0.05	39.99	0.08	7.36	0.01	64.58	0.13
GC 0656	Popcorn (i.e. maize used for preparation of popcorn)	RAC	0.002	-	-	-	-	-	-	-	-	-	-	-	-
GC 0646	Millet, raw (incl flour, incl beer)	RAC	0.035	0.10	0.00	0.16	0.01	1.75	0.06	0.69	0.02	NC	-	NC	-
GC 0647	Oats, raw (incl rolled)	RAC	0.035	7.50	0.26	6.26	0.22	0.15	0.01	4.87	0.17	3.16	0.11	2.98	0.10
GC 0650	Rye, raw (incl flour)	RAC	0.035	3.21	0.11	35.38	1.24	0.21	0.01	6.50	0.23	1.49	0.05	NC	-
GC 0653	Triticale, raw (incl flour)	RAC	0.035	0.10	0.00	0.17	0.01	0.29	0.01	0.10	0.00	NC	-	NC	-
GC 0654	Wheat, raw (incl bulgur, incl fermented beverages, incl germ, incl wholemeal bread, incl white flour products, incl white bread)	RAC	0.02	253.07	5.06	244.73	4.89	134.44	2.69	235.10	4.70	216.39	4.33	167.40	3.35
-	Cereals, NES, raw (including processed) : canagua, quihuicha, Job's tears and wild rice	RAC	0.035	6.17	0.22	3.01	0.11	0.76	0.03	3.30	0.12	3.38	0.12	15.84	0.55
SO 0702	Sunflower seed, raw	RAC	0.04	0.10	0.00	1.32	0.05	0.10	0.00	1.17	0.05	NC	-	0.10	0.00
OR 0702	Sunflower seed oil, edible	PP	0.0088	9.50	0.08	11.37	0.10	0.49	0.00	5.15	0.05	2.63	0.02	2.80	0.02
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) - 80% as muscle	RAC	0.0004	######	0.04	######	0.05	63.46	0.03	88.99	0.04	96.24	0.04	41.02	0.02
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) - 20% as fat	RAC	0.0004	28.01	0.01	30.18	0.01	15.86	0.01	22.25	0.01	24.06	0.01	10.25	0.00
MF 0100	Mammalian fats, raw, excl milk fats (incl rendered fats)	RAC	0.0004	6.44	0.00	15.51	0.01	3.79	0.00	8.29	0.00	18.44	0.01	8.00	0.00
MO 0105	Edible offal (mammalian), raw	RAC	0.0006	15.17	0.01	5.19	0.00	6.30	0.00	6.78	0.00	3.32	0.00	3.17	0.00
ML 0106	Milks, raw or skimmed (incl dairy products)	RAC	0.0012	388.92	0.47	335.88	0.40	49.15	0.06	331.25	0.40	468.56	0.56	245.45	0.29
PM 0110	Poultry meat, raw (incl prepared) - 90% as muscle	RAC	0	66.38	0.00	48.47	0.00	21.58	0.00	78.41	0.00	48.04	0.00	76.01	0.00
PM 0110	Poultry meat, raw (incl prepared) - 10% as fat	RAC	0	7.38	0.00	5.39	0.00	2.40	0.00	8.71	0.00	5.34	0.00	8.45	0.00

ACETOCHLOR (280) International Estimated Daily Intake (IEDI) ADI = 0 - 0.01 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day G07 diet	G07 intake	G08 diet	Intake as µg//person/day G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
PF 0111	Poultry fat, raw (incl rendered)	RAC	0	0.10	0.00	0.10	0.00	NC	-	0.10	0.00	0.71	0.00	NC	-
PO 0111	Poultry edible offal, raw (incl prepared)	RAC	0	0.33	0.00	0.72	0.00	0.27	0.00	0.35	0.00	0.80	0.00	NC	-
PE 0112	Eggs, raw, (incl dried)	RAC	0	25.84	0.00	29.53	0.00	28.05	0.00	33.19	0.00	36.44	0.00	8.89	0.00
	Total intake (µg//person)=				17.2		18.7		6.3		14.9		16.5		7.2
	Bodyweight per region (kg bw) =				60		60		55		60		60		60
	ADI (µg//person)=				600		600		550		600		600		600
	%ADI=				2.9%		3.1%		1.1%		2.5%		2.8%		1.2%
	Rounded %ADI=				3%		3%		1%		2%		3%		1%

ACETOCHLOR (280) International Estimated Daily Intake (IEDI) ADI = 0 - 0.01 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day G13 diet	G13 intake	G14 diet	Intake = daily intake: µg//person G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
VO 0447	Sweet corn on the cob, raw (incl frozen, incl canned) (i.e. kernels plus cob without husks)	RAC	0.04	3.63	0.15	20.50	0.82	8.78	0.35	0.10	0.00	0.17	0.01
VD 0071	Beans, dry, raw (Phaseolus spp)	RAC	0.02	7.11	0.14	2.33	0.05	3.76	0.08	44.70	0.89	3.27	0.07
VD 0072	Peas, dry, raw (Pisum spp, Vigna spp): garden peas & field peas & cow peas	RAC	0.02	14.30	0.29	3.51	0.07	3.52	0.07	7.89	0.16	0.74	0.01
VD 0523	Broad bean, dry, raw (incl horse-bean, broad bean, field bean) (Vicia faba)	RAC	0.02	3.70	0.07	0.10	0.00	0.17	0.00	0.10	0.00	NC	-
VD 0524	Chick-pea, dry, raw (Cicer arietinum)	RAC	0.02	1.09	0.02	1.56	0.03	0.33	0.01	0.18	0.00	0.47	0.01
VD 0531	Hyacinth bean (dry) (Lablab spp), raw	RAC	0.02	NC	-	NC	-	NC	-	NC	-	NC	-
VD 0533	Lentil, dry, raw (Ervum lens)	RAC	0.02	0.67	0.01	7.26	0.15	0.37	0.01	0.10	0.00	NC	-
VD 0537	Pigeon pea dry, raw (Cajanus cajan)	RAC	0.02	1.14	0.02	0.10	0.00	NC	-	5.53	0.11	NC	-
-	Pulses, NES, dry, raw: lablab or hyacinth bean, jack or sword bean, winged bean, guar bean, velvet bean, yam bean (Dolichos spp., Canavalia spp., Psophocarpus tetragonolobus, Cyamopsis tetragonoloba, Stizolobium spp., Pachyrrhizus erosus)	RAC	0.02	2.54	0.05	1.77	0.04	0.10	0.00	0.10	0.00	3.99	0.08
VR 0589	Potato, raw (incl flour, incl frozen, incl starch, incl tapioca)	RAC	0.04	23.96	0.96	13.56	0.54	213.41	8.54	104.35	4.17	8.56	0.34
VR 0596	Sµg/ar beet, raw	RAC	0.018	0.10	0.00	NC	-	NC	-	NC	-	NC	-
-	Sµg/ar beet, sµg/ar	PP	0.0068	0.56	0.00	0.24	0.00	NC	-	NC	-	5.13	0.03
GC 0640	Barley, raw (incl malt extract, incl	RAC	0.035	11.58	0.41	2.33	0.08	46.71	1.63	3.72	0.13	16.26	0.57

ACETOCHLOR (280) International Estimated Daily Intake (IEDI) ADI = 0 - 0.01 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day		Intake = daily intake: µg//person							
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
	pot&pearled, incl flour & grits, incl beer, incl malt)												
GC 0641	Buckwheat, raw (incl flour)	RAC	0.035	0.10	0.00	2.82	0.10	0.10	0.00	0.10	0.00	NC	-
GC 0645	Maize, raw (incl glucose & dextrose & isoglucose, incl flour, incl oil, incl beer, incl germ, incl starch)	RAC	0.002	116.66	0.23	10.52	0.02	38.46	0.08	76.60	0.15	34.44	0.07
GC 0656	Popcorn (i.e. maize used for preparation of popcorn)	RAC	0.002	-	-	-	-	-	-	-	-	-	-
GC 0646	Millet, raw (incl flour, incl beer)	RAC	0.035	61.13	2.14	0.78	0.03	NC	-	33.55	1.17	NC	-
GC 0647	Oats, raw (incl rolled)	RAC	0.035	0.37	0.01	0.10	0.00	2.79	0.10	0.10	0.00	NC	-
GC 0650	Rye, raw (incl flour)	RAC	0.035	0.10	0.00	0.10	0.00	13.95	0.49	0.10	0.00	0.88	0.03
GC 0653	Triticale, raw (incl flour)	RAC	0.035	0.10	0.00	NC	-	NC	-	NC	-	NC	-
GC 0654	Wheat, raw (incl bulgur, incl fermented beverages, incl germ, incl wholemeal bread, incl white flour products, incl white bread)	RAC	0.02	57.20	1.14	110.47	2.21	272.62	5.45	25.82	0.52	132.04	2.64
-	Cereals, NES, raw (including processed) : canagua, quihuicha, Job's tears and wild rice	RAC	0.035	17.71	0.62	2.00	0.07	9.61	0.34	0.45	0.02	4.55	0.16
SO 0702	Sunflower seed, raw	RAC	0.04	0.10	0.00	0.10	0.00	0.10	0.00	2.23	0.09	NC	-
OR 0702	Sunflower seed oil, edible	PP	0.0088	0.37	0.00	0.10	0.00	12.98	0.11	4.01	0.04	0.20	0.00
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) - 80% as muscle	RAC	0.0004	23.34	0.01	40.71	0.02	97.15	0.04	18.06	0.01	57.71	0.02
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) - 20% as fat	RAC	0.0004	5.84	0.00	10.18	0.00	24.29	0.01	4.52	0.00	14.43	0.01
MF 0100	Mammalian fats, raw, excl milk fats (incl rendered fats)	RAC	0.0004	1.05	0.00	1.14	0.00	18.69	0.01	0.94	0.00	3.12	0.00
MO 0105	Edible offal (mammalian), raw	RAC	0.0006	4.64	0.00	1.97	0.00	10.01	0.01	3.27	0.00	3.98	0.00
ML 0106	Milks, raw or skimmed (incl dairy products)	RAC	0.0012	108.75	0.13	70.31	0.08	436.11	0.52	61.55	0.07	79.09	0.09
PM 0110	Poultry meat, raw (incl prepared) - 90% as muscle	RAC	0	3.53	0.00	10.83	0.00	51.36	0.00	4.53	0.00	50.00	0.00
PM 0110	Poultry meat, raw (incl prepared) - 10% as fat	RAC	0	0.39	0.00	1.20	0.00	5.71	0.00	0.50	0.00	5.56	0.00
PF 0111	Poultry fat, raw (incl rendered)	RAC	0	NC	-	NC	-	0.32	0.00	NC	-	NC	-
PO 0111	Poultry edible offal, raw (incl prepared)	RAC	0	0.10	0.00	0.70	0.00	0.97	0.00	0.10	0.00	NC	-
PE 0112	Eggs, raw, (incl dried)	RAC	0	3.84	0.00	4.41	0.00	27.25	0.00	1.13	0.00	7.39	0.00
	Total intake (µg//person)=				6.4		4.3		17.8		7.6		4.2
	Bodyweight per region (kg bw) =				60		60		60		60		60
	ADI (µg//person)=				600		600		600		600		600

ACETOCHLOR (280) International Estimated Daily Intake (IEDI) ADI = 0 - 0.01 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day G13 diet	G13 intake	G14 diet	Intake = daily intake: µg//person G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
	%ADI=				1.1%		0.7%		3.0%		1.3%		0.7%
	Rounded %ADI=				1%		1%		3%		1%		1%

	BIFENTHRIN (178)			International Estimated Daily Intake (IEDI)				ADI = 0 - 0.01 mg/kg bw							
			STMR	Diets as g/person/day		Intake as µg//person/day									
Codex Code	Commodity description	Expr as	mg/kg	G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
FC 0001	Citrus fruit, raw (incl citrus fruit juice, incl kumquat commodities)	RAC	0.05	34.91	1.75	16.51	0.83	17.23	0.86	104.48	5.22	35.57	1.78	98.49	4.92
FB 0264	Blackberries, raw	RAC	0.29	0.35	0.10	0.11	0.03	0.10	0.03	0.10	0.03	0.10	0.03	1.23	0.36
FB 0266	Dewberries, incl boysen- & loganberry, raw	RAC	0.29	0.10	0.03	0.10	0.03	0.10	0.03	0.10	0.03	0.10	0.03	0.10	0.03
FB 0272	Raspberries, red, black, raw	RAC	0.29	0.10	0.03	0.93	0.27	0.10	0.03	0.10	0.03	0.10	0.03	0.10	0.03
FB 0020	Blueberries, raw	RAC	0.67	0.10	0.07	0.10	0.07	0.10	0.07	0.10	0.07	0.10	0.07	0.10	0.07
FB 0269	Grape, raw (incl must, incl dried, incl juice, incl wine)	RAC	0.06	16.25	0.98	28.96	1.74	2.87	0.17	24.22	1.45	9.33	0.56	68.64	4.12
FB 0275	Strawberry, raw	RAC	0.46	0.70	0.32	2.01	0.92	0.10	0.05	1.36	0.63	0.37	0.17	2.53	1.16
FI 0327	Banana, raw (incl plantains) (incl dried)	RAC	0.01	5.06	0.05	6.91	0.07	37.17	0.37	31.16	0.31	40.21	0.40	18.96	0.19
FI 0345	Mango, raw (incl canned mango, incl mango juice)	RAC	0.01	10.48	0.10	0.10	0.00	7.24	0.07	6.87	0.07	19.98	0.20	6.25	0.06
FI 0350	Papaya, raw	RAC	0.01	0.35	0.00	0.10	0.00	3.05	0.03	0.80	0.01	7.28	0.07	1.00	0.01
VB 0040	Brassica vegetables, raw: head cabbages, flowerhead brassicas, Brussels sprouts & kohlrabi	RAC	0.115	6.41	0.74	35.79	4.12	0.71	0.08	9.81	1.13	12.07	1.39	16.58	1.91
VO 0440	Egg plants, raw (= aubergines)	RAC	0.05	5.58	0.28	4.31	0.22	0.89	0.04	9.31	0.47	13.64	0.68	20.12	1.01
VO 0442	Okra, raw	RAC	0.07	1.97	0.14	NC	-	3.68	0.26	3.24	0.23	5.72	0.40	1.57	0.11
VO 0444	Peppers, chili, raw	RAC	0.14	3.99	0.56	7.30	1.02	2.93	0.41	5.62	0.79	NC	-	17.44	2.44
-	Peppers, chili, dried	PP	1.4	0.42	0.59	0.53	0.74	0.84	1.18	0.50	0.70	0.95	1.33	0.37	0.52
VO 0448	Tomato, raw (incl juice, incl canned, excl paste)	RAC	0.06	42.41	2.54	76.50	4.59	10.69	0.64	85.07	5.10	24.98	1.50	203.44	12.21
-	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	0.04	2.34	0.09	1.33	0.05	1.57	0.06	4.24	0.17	0.34	0.01	2.83	0.11
VL 0482	Lettuce, head, raw	RAC	0.51	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
VL 0485	Mustard greens, raw (i.e. Brassica)	RAC	1.16	0.10	0.12	0.31	0.36	0.10	0.12	0.10	0.12	0.47	0.55	0.11	0.13
VL 0494	Radish leaves, raw	RAC	1.75	0.26	0.46	0.45	0.79	0.28	0.49	0.68	1.19	NC	-	0.33	0.58
VP 0063	Peas green, with pods, raw (i.e. immature seeds + pods) (Pisum spp)	RAC	0.23	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
VP 0064	Peas, green, without pods, raw (i.e. immature seeds only) (Pisum spp)	RAC	0	1.97	0.00	0.51	0.00	0.10	0.00	0.79	0.00	3.68	0.00	3.80	0.00
VD 0070	Pulses, raw (incl processed)	RAC	0.05	85.59	4.28	64.02	3.20	34.15	1.71	88.02	4.40	89.38	4.47	96.88	4.84
OR 0541	Soya oil, refined	PP	0.05	12.99	0.65	10.43	0.52	3.63	0.18	13.10	0.66	10.70	0.54	13.10	0.66
VR 0075	Root and tuber vegetables, raw (incl processed)	RAC	0.05	87.83	4.39	374.04	18.70	668.92	33.45	121.64	6.08	94.20	4.71	247.11	12.36
VS 0624	Celery	RAC	0.7	2.14	1.50	3.79	2.65	2.35	1.65	5.69	3.98	0.10	0.07	2.75	1.93
GC 0645	Maize, raw (incl glucose & dextrose &	RAC	0	29.81	0.00	44.77	0.00	108.95	0.00	52.37	0.00	60.28	0.00	75.69	0.00

BIFENTHRIN (178) International Estimated Daily Intake (IEDI) ADI = 0 - 0.01 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day G01 diet	G01 intake	Intake as µg//person/day G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
	isoglucose, incl flour, incl oil, incl beer, incl germ, incl starch)														
GC 0654	Wheat, raw (incl bulgur, incl fermented beverages, incl germ, incl wholemeal bread, incl white flour products, incl white bread)	RAC	0.25	381.15	95.29	341.55	85.39	38.35	9.59	281.89	70.47	172.83	43.21	434.07	108.52
CF 1210	Wheat, germ	PP	0.45	NC	-	NC	-	0.10	0.05	0.10	0.05	0.14	0.06	0.10	0.05
CF 0654	Wheat, bran	PP	0.79	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
TN 0085	Tree nuts, raw (incl processed)	RAC	0.05	4.06	0.20	3.27	0.16	7.01	0.35	13.93	0.70	14.01	0.70	9.36	0.47
OR 0495	Rape seed oil, edible	PP	0.08	0.35	0.03	0.44	0.04	0.19	0.02	0.97	0.08	3.28	0.26	0.77	0.06
OR 0691	Cotton seed oil, edible	PP	0.005	3.22	0.02	1.54	0.01	1.01	0.01	0.74	0.00	1.12	0.01	2.93	0.01
DH 1100	Hops, dry	RAC	1.9	0.10	0.19	0.10	0.19	0.10	0.19	0.10	0.19	NC	-	0.10	0.19
DT 1114	Tea, green or black, fermented and dried, (including concentrates)	RAC	5.2	2.28	11.86	1.98	10.30	0.46	2.39	2.43	12.64	1.29	6.71	3.04	15.81
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) -80% as muscle	RAC	0.07	24.96	1.75	57.95	4.06	16.70	1.17	38.38	2.69	26.46	1.85	29.00	2.03
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) - 20% as fat	RAC	0.59	6.24	3.68	14.49	8.55	4.18	2.46	9.60	5.66	6.62	3.90	7.25	4.28
MO 0105	Edible offal (mammalian), raw	RAC	0.07	4.79	0.34	9.68	0.68	2.97	0.21	5.49	0.38	3.84	0.27	5.03	0.35
ML 0106	Milks, raw or skimmed (incl dairy products)	RAC	0.053	289.65	15.35	485.88	25.75	26.92	1.43	239.03	12.67	199.91	10.60	180.53	9.57
	Total intake (µg//person)=				148.5		176.0		59.8		138.4		86.5		191.1
	Bodyweight per region (kg bw) =				60		60		60		60		60		60
	ADI (µg//person)=				600		600		600		600		600		600
	%ADI=				24.7%		29.3%		10.0%		23.1%		14.4%		31.8%
	Rounded %ADI=				20%		30%		10%		20%		10%		30%

BIFENTHRIN (178) International Estimated Daily Intake (IEDI) ADI = 0 - 0.01 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day G07 diet	Intake as µg//person/day G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
FC 0001	Citrus fruit, raw (incl citrus fruit juice, incl kumquat commodities)	RAC	0.05	114.42	5.72	62.91	3.15	26.97	1.35	96.72	4.84	96.22	4.81	563.19	28.16
FB 0264	Blackberries, raw	RAC	0.29	0.10	0.03	0.52	0.15	0.14	0.04	0.24	0.07	NC	-	0.10	0.03
FB 0266	Dewberries, incl boysen- & loganberry, raw	RAC	0.29	0.10	0.03	NC	-	0.10	0.03	0.10	0.03	NC	-	0.10	0.03
FB 0272	Raspberries, red, black, raw	RAC	0.29	0.47	0.14	0.91	0.26	0.10	0.03	0.99	0.29	1.14	0.33	NC	-
FB 0020	Blueberries, raw	RAC	0.67	0.10	0.07	0.23	0.15	0.10	0.07	0.83	0.56	0.33	0.22	NC	-
FB 0269	Grape, raw (incl must, incl dried, incl juice, incl wine)	RAC	0.06	142.23	8.53	105.77	6.35	7.87	0.47	52.44	3.15	109.22	6.55	10.96	0.66
FB 0275	Strawberry, raw	RAC	0.46	4.49	2.07	5.66	2.60	0.10	0.05	6.63	3.05	5.75	2.65	0.10	0.05
FI 0327	Banana, raw (incl plantains) (incl dried)	RAC	0.01	25.14	0.25	23.37	0.23	23.06	0.23	23.40	0.23	18.44	0.18	39.29	0.39
FI 0345	Mango, raw (incl canned mango, incl mango juice)	RAC	0.01	1.80	0.02	0.63	0.01	10.05	0.10	1.07	0.01	3.52	0.04	16.44	0.16
FI 0350	Papaya, raw	RAC	0.01	0.31	0.00	0.18	0.00	1.50	0.02	0.51	0.01	0.54	0.01	1.08	0.01
VB 0040	Brassica vegetables, raw: head cabbages, flowerhead brassicas, Brussels sprouts & kohlrabi	RAC	0.115	20.71	2.38	39.81	4.58	16.70	1.92	28.49	3.28	18.12	2.08	15.03	1.73
VO 0440	Egg plants, raw (= aubergines)	RAC	0.05	1.01	0.05	1.69	0.08	21.37	1.07	3.00	0.15	1.40	0.07	NC	-
VO 0442	Okra, raw	RAC	0.07	NC	-	NC	-	0.10	0.01	0.17	0.01	NC	-	0.72	0.05
VO 0444	Peppers, chili, raw	RAC	0.14	5.57	0.78	14.00	1.96	8.25	1.16	5.77	0.81	6.44	0.90	2.53	0.35
-	Peppers, chili, dried	PP	1.4	0.11	0.15	0.21	0.29	0.36	0.50	0.21	0.29	0.25	0.35	0.15	0.21
VO 0448	Tomato, raw (incl juice, incl canned, excl paste)	RAC	0.06	44.88	2.69	55.49	3.33	35.44	2.13	75.65	4.54	27.00	1.62	9.61	0.58
-	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	0.04	4.96	0.20	3.20	0.13	0.15	0.01	1.61	0.06	6.88	0.28	0.52	0.02
VL 0482	Lettuce, head, raw	RAC	0.51	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
VL 0485	Mustard greens, raw (i.e. Brassica)	RAC	1.16	NC	-	NC	-	NC	-	NC	-	NC	-	0.13	0.15
VL 0494	Radish leaves, raw	RAC	1.75	NC	-	NC	-	NC	-	3.78	6.62	NC	-	0.48	0.84
VP 0063	Peas green, with pods, raw (i.e. immature seeds + pods) (Pisum spp)	RAC	0.23	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
VP 0064	Peas, green, without pods, raw (i.e. immature seeds only) (Pisum spp)	RAC	0	10.72	0.00	1.99	0.00	2.72	0.00	4.26	0.00	4.23	0.00	NC	-
VD 0070	Pulses, raw (incl processed)	RAC	0.05	112.88	5.64	123.05	6.15	47.15	2.36	204.64	10.23	227.37	11.37	109.11	5.46
OR 0541	Soya oil, refined	PP	0.05	19.06	0.95	21.06	1.05	5.94	0.30	33.78	1.69	40.05	2.00	13.39	0.67
VR 0075	Root and tuber vegetables, raw (incl processed)	RAC	0.05	290.31	14.52	300.35	15.02	214.25	10.71	242.72	12.14	348.67	17.43	137.52	6.88
VS 0624	Celery	RAC	0.7	7.68	5.38	2.85	2.00	NC	-	3.34	2.34	16.83	11.78	4.04	2.83

BIFENTHRIN (178) International Estimated Daily Intake (IEDI) ADI = 0 - 0.01 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day	Intake as µg//person/day										
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
GC 0645	Maize, raw (incl glucose & dextrose & isoglucose, incl flour, incl oil, incl beer, incl germ, incl starch)	RAC	0	18.51	0.00	26.18	0.00	26.04	0.00	39.99	0.00	7.36	0.00	64.58	0.00
GC 0654	Wheat, raw (incl bulgur, incl fermented beverages, incl germ, incl wholemeal bread, incl white flour products, incl white bread)	RAC	0.25	253.07	63.27	244.73	61.18	134.44	33.61	235.10	58.78	216.39	54.10	167.40	41.85
CF 1210	Wheat, germ	PP	0.45	0.97	0.44	0.10	0.05	0.10	0.05	0.10	0.05	NC	-	0.10	0.05
CF 0654	Wheat, bran	PP	0.79	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
TN 0085	Tree nuts, raw (incl processed)	RAC	0.05	8.52	0.43	8.94	0.45	15.09	0.75	9.60	0.48	14.57	0.73	26.26	1.31
OR 0495	Rape seed oil, edible	PP	0.08	12.52	1.00	7.63	0.61	3.00	0.24	6.01	0.48	NC	-	NC	-
OR 0691	Cotton seed oil, edible	PP	0.005	1.68	0.01	0.66	0.00	1.13	0.01	1.18	0.01	0.89	0.00	0.37	0.00
DH 1100	Hops, dry	RAC	1.9	NC	-	NC	-	0.10	0.19	0.10	0.19	NC	-	NC	-
DT 1114	Tea, green or black, fermented and dried, (including concentrates)	RAC	5.2	2.91	15.13	1.73	9.00	1.14	5.93	1.85	9.62	2.29	11.91	0.74	3.85
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) -80% as muscle	RAC	0.07	112.02	7.84	120.71	8.45	63.46	4.44	88.99	6.23	96.24	6.74	41.02	2.87
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) - 20% as fat	RAC	0.59	28.01	16.52	30.18	17.81	15.86	9.36	22.25	13.13	24.06	14.20	10.25	6.05
MO 0105	Edible offal (mammalian), raw	RAC	0.07	15.17	1.06	5.19	0.36	6.30	0.44	6.78	0.47	3.32	0.23	3.17	0.22
ML 0106	Milks, raw or skimmed (incl dairy products)	RAC	0.053	388.92	20.61	335.88	17.80	49.15	2.60	331.25	17.56	468.56	24.83	245.45	13.01
	Total intake (µg//person)=				175.9		163.2		80.2		161.4		175.4		118.5
	Bodyweight per region (kg bw) =				60		60		55		60		60		60
	ADI (µg//person)=				600		600		550		600		600		600
	%ADI=				29.3%		27.2%		14.6%		26.9%		29.2%		19.7%
	Rounded %ADI=				30%		30%		10%		30%		30%		20%

BIFENTHRIN (178) International Estimated Daily Intake (IEDI) ADI = 0 - 0.01 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day G13 diet	Intake = daily intake: µg//person G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
FC 0001	Citrus fruit, raw (incl citrus fruit juice, incl kumquat commodities)	RAC	0.05	21.16	1.06	2.94	0.15	58.52	2.93	0.44	0.02	5.13	0.26
FB 0264	Blackberries, raw	RAC	0.29	0.10	0.03	7.29	2.11	0.25	0.07	0.10	0.03	NC	-
FB 0266	Dewberries, incl boysen- & loganberry, raw	RAC	0.29	0.10	0.03	0.10	0.03	NC	-	0.10	0.03	NC	-
FB 0272	Raspberries, red, black, raw	RAC	0.29	0.10	0.03	0.10	0.03	2.04	0.59	0.10	0.03	NC	-
FB 0020	Blueberries, raw	RAC	0.67	NC	-	NC	-	0.20	0.13	NC	-	NC	-
FB 0269	Grape, raw (incl must, incl dried, incl juice, incl wine)	RAC	0.06	0.60	0.04	1.26	0.08	103.25	6.20	0.74	0.04	44.23	2.65
FB 0275	Strawberry, raw	RAC	0.46	0.10	0.05	0.10	0.05	3.35	1.54	0.10	0.05	0.10	0.05
FI 0327	Banana, raw (incl plantains) (incl dried)	RAC	0.01	20.88	0.21	81.15	0.81	24.58	0.25	37.92	0.38	310.23	3.10
FI 0345	Mango, raw (incl canned mango, incl mango juice)	RAC	0.01	12.25	0.12	6.83	0.07	0.76	0.01	0.10	0.00	20.12	0.20
FI 0350	Papaya, raw	RAC	0.01	6.47	0.06	0.25	0.00	0.19	0.00	0.10	0.00	26.42	0.26
VB 0040	Brassica vegetables, raw: head cabbages, flowerhead brassicas, Brussels sprouts & kohlrabi	RAC	0.115	4.84	0.56	3.79	0.44	58.72	6.75	0.10	0.01	NC	-
VO 0440	Egg plants, raw (= aubergines)	RAC	0.05	1.31	0.07	8.26	0.41	3.95	0.20	0.10	0.01	NC	-
VO 0442	Okra, raw	RAC	0.07	6.23	0.44	0.10	0.01	NC	-	NC	-	NC	-
VO 0444	Peppers, chili, raw	RAC	0.14	3.47	0.49	3.56	0.50	16.30	2.28	0.10	0.01	NC	-
-	Peppers, chili, dried	PP	1.4	0.58	0.81	1.27	1.78	1.21	1.69	0.12	0.17	NC	-
VO 0448	Tomato, raw (incl juice, incl canned, excl paste)	RAC	0.06	13.17	0.79	4.92	0.30	62.69	3.76	1.04	0.06	0.11	0.01
-	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	0.04	0.58	0.02	0.22	0.01	2.21	0.09	0.24	0.01	3.10	0.12
VL 0482	Lettuce, head, raw	RAC	0.51	NC	-	NC	-	NC	-	NC	-	NC	-
VL 0485	Mustard greens, raw (i.e. Brassica)	RAC	1.16	0.10	0.12	0.10	0.12	NC	-	0.10	0.12	NC	-
VL 0494	Radish leaves, raw	RAC	1.75	0.44	0.77	0.32	0.56	NC	-	0.30	0.53	0.59	1.03
VP 0063	Peas green, with pods, raw (i.e. immature seeds + pods) (Pisum spp)	RAC	0.23	NC	-	NC	-	NC	-	NC	-	NC	-
VP 0064	Peas, green, without pods, raw (i.e. immature seeds only) (Pisum spp)	RAC	0	0.21	0.00	0.10	0.00	5.51	0.00	0.10	0.00	NC	-
VD 0070	Pulses, raw (incl processed)	RAC	0.05	44.03	2.20	29.00	1.45	112.51	5.63	75.50	3.78	39.69	1.98
OR 0541	Soya oil, refined	PP	0.05	2.32	0.12	2.54	0.13	18.70	0.94	2.51	0.13	6.29	0.31
VR 0075	Root and tuber vegetables, raw (incl processed)	RAC	0.05	282.25	14.11	232.11	11.61	281.91	14.10	620.21	31.01	459.96	23.00

BIFENTHRIN (178) International Estimated Daily Intake (IEDI) ADI = 0 - 0.01 mg/kg bw

			STMR	Diets: g/person/day	Intake = daily intake: µg//person								
Codex Code	Commodity description	Expr as	mg/kg	G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
VS 0624	Celery	RAC	0.7	3.66	2.56	2.65	1.86	4.84	3.39	2.47	1.73	4.94	3.46
GC 0645	Maize, raw (incl glucose & dextrose & isoglucose, incl flour, incl oil, incl beer, incl germ, incl starch)	RAC	0	116.66	0.00	10.52	0.00	38.46	0.00	76.60	0.00	34.44	0.00
GC 0654	Wheat, raw (incl bulgur, incl fermented beverages, incl germ, incl wholemeal bread, incl white flour products, incl white bread)	RAC	0.25	57.20	14.30	110.47	27.62	272.62	68.16	25.82	6.46	132.04	33.01
CF 1210	Wheat, germ	PP	0.45	0.10	0.05	0.10	0.05	0.10	0.05	0.10	0.05	NC	-
CF 0654	Wheat, bran	PP	0.79	NC	-	NC	-	NC	-	NC	-	NC	-
TN 0085	Tree nuts, raw (incl processed)	RAC	0.05	4.39	0.22	135.53	6.78	6.11	0.31	0.72	0.04	317.74	15.89
OR 0495	Rape seed oil, edible	PP	0.08	0.10	0.01	0.10	0.01	4.62	0.37	0.10	0.01	NC	-
OR 0691	Cotton seed oil, edible	PP	0.005	1.28	0.01	0.10	0.00	0.45	0.00	0.42	0.00	0.15	0.00
DH 1100	Hops, dry	RAC	1.9	NC	-	NC	-	0.10	0.19	NC	-	NC	-
DT 1114	Tea, green or black, fermented and dried, (including concentrates)	RAC	5.2	0.53	2.76	5.25	27.30	0.86	4.47	0.56	2.91	0.88	4.58
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) -80% as muscle	RAC	0.07	23.34	1.63	40.71	2.85	97.15	6.80	18.06	1.26	57.71	4.04
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) - 20% as fat	RAC	0.59	5.84	3.44	10.18	6.01	24.29	14.33	4.52	2.66	14.43	8.51
MO 0105	Edible offal (mammalian), raw	RAC	0.07	4.64	0.32	1.97	0.14	10.01	0.70	3.27	0.23	3.98	0.28
ML 0106	Milks, raw or skimmed (incl dairy products)	RAC	0.053	108.75	5.76	70.31	3.73	436.11	23.11	61.55	3.26	79.09	4.19
	Total intake (µg//person)=				53.2		96.9		169.0		55.0		106.9
	Bodyweight per region (kg bw) =				60		60		60		60		60
	ADI (µg//person)=				600		600		600		600		600
	%ADI=				8.9%		16.2%		28.2%		9.2%		17.8%
	Rounded %ADI=				9%		20%		30%		9%		20%

Annex 3

CHLOROTHALONIL (081) International Estimated Daily Intake (IEDI) ADI = 0 - 000 mg/kg bw

			STMR	Diets as g/person/day		Intake as µg//person/day									
Codex Code	Commodity description	Expr as	mg/kg	G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
FS 0013	Cherries, raw	RAC	0.39	0.92	0.36	9.15	3.57	0.10	0.04	0.61	0.24	0.10	0.04	6.64	2.59
-	Peaches and nectarines, raw	RAC	0.12	2.87	0.34	2.21	0.27	0.15	0.02	5.94	0.71	1.47	0.18	15.66	1.88
FB 0021	Currants, red, black, white, raw	RAC	20	0.10	2.00	0.74	14.80	0.10	2.00	0.10	2.00	0.10	2.00	0.10	2.00
FB 0268	Gooseberries, raw	RAC	20	0.10	2.00	0.24	4.80	NC	-	0.10	2.00	0.10	2.00	NC	-
FB 0269	Grape, raw	RAC	0.955	12.68	12.11	9.12	8.71	0.10	0.10	16.88	16.12	3.70	3.53	54.42	51.97
-	Grape must	PP	0.134	0.33	0.04	0.13	0.02	0.10	0.01	0.10	0.01	0.10	0.01	0.10	0.01
DF 0269	Grape, dried (= currants, raisins and sultanas)	PP	0.248	0.51	0.13	0.51	0.13	0.10	0.02	1.27	0.31	0.12	0.03	2.07	0.51
JF 0269	Grape juice	PP	0.134	0.14	0.02	0.29	0.04	0.10	0.01	0.30	0.04	0.24	0.03	0.10	0.01
-	Grape wine (incl vermouths)	PP	0.0096	0.67	0.01	12.53	0.12	2.01	0.02	1.21	0.01	3.53	0.03	4.01	0.04
FB 0275	Strawberry, raw	RAC	2.05	0.70	1.44	2.01	4.12	0.10	0.21	1.36	2.79	0.37	0.76	2.53	5.19
FI 0327	Banana, raw (incl plantains) (incl dried)	RAC	0.033	5.06	0.17	6.91	0.23	37.17	1.23	31.16	1.03	40.21	1.33	18.96	0.63
FI 0350	Papaya, raw	RAC	2.3	0.35	0.81	0.10	0.23	3.05	7.02	0.80	1.84	7.28	16.74	1.00	2.30
VA 0384	Leek, raw	RAC	17.5	0.18	3.15	1.59	27.83	0.10	1.75	0.28	4.90	0.10	1.75	3.21	56.18
-	Onions, mature bulbs, dry	RAC	0.4	29.36	11.74	37.50	15.00	3.56	1.42	34.78	13.91	18.81	7.52	43.38	17.35
-	Onions, green, raw	RAC	0.835	2.45	2.05	1.49	1.24	1.02	0.85	2.60	2.17	0.60	0.50	2.03	1.70
VB 0042	Flowerhead brassicas, raw	RAC	5	2.96	14.80	0.57	2.85	0.10	0.50	4.17	20.85	7.79	38.95	3.64	18.20
VB 0402	Brussels sprouts, raw	RAC	1.5	0.63	0.95	6.41	9.62	0.13	0.20	1.03	1.55	NC	-	2.35	3.53
VC 0046	Melons, raw (excl watermelons)	RAC	0.04	8.90	0.36	8.64	0.35	0.80	0.03	17.90	0.72	2.80	0.11	29.17	1.17
VC 0424	Cucumber, raw	RAC	0.41	8.01	3.28	30.66	12.57	1.45	0.59	19.84	8.13	0.27	0.11	34.92	14.32
VC 0425	Gherkin, raw	RAC	0.41	1.73	0.71	6.64	2.72	0.31	0.13	4.29	1.76	0.29	0.12	7.56	3.10
VC 0431	Squash, summer, raw (= courgette, zuchini)	RAC	0.41	0.78	0.32	2.06	0.84	0.30	0.12	1.61	0.66	2.25	0.92	2.36	0.97
VO 0444	Peppers, chili, raw	RAC	1.5	3.99	5.99	7.30	10.95	2.93	4.40	5.62	8.43	NC	-	17.44	26.16
-	Peppers, chili, dried	PP	15	0.42	6.30	0.53	7.95	0.84	12.60	0.50	7.50	0.95	14.25	0.37	5.55
VO 0445	Peppers, sweet, raw (incl dried)	RAC	1.5	4.49	6.74	6.44	9.66	7.21	10.82	5.68	8.52	9.52	14.28	8.92	13.38
VO 0448	Tomato, raw (incl paste, excl juice, excl canned)	RAC	1.1	51.07	56.18	80.96	89.06	16.96	18.66	99.83	109.81	26.09	28.70	212.26	233.49
-	Tomato, canned (& peeled)	PP	0.011	0.20	0.00	0.31	0.00	0.10	0.00	1.11	0.01	0.11	0.00	1.50	0.02
JF 0448	Tomato, juice (single strength, incl concentrated)	PP	0.11	0.29	0.03	0.29	0.03	0.10	0.01	0.38	0.04	0.10	0.01	0.14	0.02
VL 0464	Chard, raw (i.e. beet leaves)	RAC	16	0.40	6.40	0.70	11.20	0.44	7.04	1.06	16.96	4.66	74.56	0.51	8.16
VD 0070	Pulses, raw (incl processed)	RAC	0.19	85.59	16.26	64.02	12.16	34.15	6.49	88.02	16.72	89.38	16.98	96.88	18.41
VR 0463	Cassava raw (incl starch, incl tapioca, incl flour)	RAC	0.3	0.10	0.03	0.10	0.03	482.56	144.77	0.99	0.30	25.75	7.73	3.29	0.99
VR 0469	Chicory, roots, raw	RAC	0.3	0.10	0.03	0.20	0.06	0.10	0.03	0.10	0.03	0.10	0.03	0.10	0.03
VR 0494	Radish roots, raw	RAC	0.3	2.31	0.69	4.09	1.23	2.53	0.76	6.15	1.85	5.88	1.76	2.97	0.89
VR 0497	Swede, raw (i.e. rutabaga)	RAC	0.3	1.58	0.47	2.80	0.84	1.74	0.52	4.21	1.26	NC	-	2.03	0.61
VR 0498	Salsify, raw (i.e. oysterplant)	RAC	0.3	0.21	0.06	0.37	0.11	0.23	0.07	0.55	0.17	NC	-	0.27	0.08

CHLOROTHALONIL (081) International Estimated Daily Intake (IEDI) ADI = 0 - 000 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day G01 diet	G01 intake	G02 diet	Intake as µg//person/day G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
VR 0504	Tannia, raw (i.e. yautia)	RAC	0.3	NC	-	NC	-	NC	-	0.10	0.03	0.26	0.08	1.27	0.38
VR 0505	Taro, raw	RAC	0.3	0.10	0.03	NC	-	25.12	7.54	0.10	0.03	0.10	0.03	0.97	0.29
VR 0506	Garden turnip, raw	RAC	0.3	2.50	0.75	4.44	1.33	2.75	0.83	6.67	2.00	0.14	0.04	3.22	0.97
VR 0508	Sweet potato, raw (incl dried)	RAC	0.3	0.18	0.05	0.18	0.05	42.16	12.65	1.61	0.48	3.06	0.92	6.67	2.00
VR 0573	Arrowroot, raw	RAC	0.3	1.53	0.46	0.10	0.03	0.93	0.28	1.33	0.40	0.47	0.14	0.10	0.03
VR 0574	Beetroot, raw	RAC	0.3	3.42	1.03	6.06	1.82	3.75	1.13	9.11	2.73	NC	-	4.39	1.32
VR 0575	Burdock, greater or edible, raw	RAC	0.3	0.10	0.03	0.10	0.03	0.10	0.03	0.10	0.03	NC	-	0.10	0.03
VR 0577	Carrots, raw	RAC	0.3	9.51	2.85	30.78	9.23	0.37	0.11	8.75	2.63	2.80	0.84	6.10	1.83
VR 0578	Celeriac, raw	RAC	0.3	1.70	0.51	3.01	0.90	1.87	0.56	4.53	1.36	NC	-	2.19	0.66
VR 0583	Horseradish, raw	RAC	0.25	0.51	0.13	0.91	0.23	0.56	0.14	1.37	0.34	NC	-	0.66	0.17
VR 0585	Jerusalem artichoke, raw (i.e. topinambur)	RAC	0.3	1.57	0.47	0.10	0.03	0.96	0.29	1.36	0.41	0.48	0.14	0.10	0.03
VR 0587	Parsley turnip-rooted, raw	RAC	0.3	0.32	0.10	0.57	0.17	0.35	0.11	0.85	0.26	NC	-	0.41	0.12
VR 0588	Parsnip, raw	RAC	0.3	0.59	0.18	1.05	0.32	0.65	0.20	1.58	0.47	NC	-	0.76	0.23
VR 0589	Potato, raw (incl flour, incl frozen, incl starch, incl tapioca)	RAC	0.3	59.74	17.92	316.14	94.84	9.78	2.93	60.26	18.08	54.12	16.24	119.82	35.95
VR 0590	Black radish, raw	RAC	0.3	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
VR 0591	Japanese radish, raw (i.e. daikon)	RAC	0.3	1.90	0.57	3.36	1.01	2.08	0.62	5.06	1.52	NC	-	2.44	0.73
VR 0596	Sµg/ar beet, raw (incl sµg/ar)	RAC	0.3	0.13	0.04	NC	-	0.10	0.03	0.66	0.20	0.47	0.14	88.94	26.68
VR 0600	Yams, raw (incl dried)	RAC	0.3	0.10	0.03	NC	-	90.40	27.12	6.45	1.94	0.74	0.22	0.65	0.20
-	Lotus root, raw	RAC	0.3	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
-	Water chestnut, raw	RAC	0.3	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
VS 0621	Asparagus	RAC	0	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.21	0.00
VS 0624	Celery	RAC	2.65	2.14	5.67	3.79	10.04	2.35	6.23	5.69	15.08	0.10	0.27	2.75	7.29
VS 0627	Rhubarb	RAC	0.55	0.73	0.40	1.30	0.72	0.80	0.44	1.95	1.07	NC	-	0.94	0.52
TN 0675	Pistachio nut, nutmeat	RAC	0.082	0.41	0.03	0.10	0.01	0.10	0.01	0.85	0.07	0.10	0.01	1.08	0.09
SO 0697	Peanuts, nutmeat, raw (incl roasted, excl oil, excl butter)	RAC	0.01	0.46	0.00	1.21	0.01	6.64	0.07	2.52	0.03	1.25	0.01	1.83	0.02
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total intake (µg//person)=				187.2		374.1		283.7		302.5		254.1		570.9
	Bodyweight per region (kg bw) =				60		60		60		60		60		60
	ADI (µg//person)=				1200		1200		1200		1200		1200		1200
	%ADI=				15.6%		31.2%		23.6%		25.2%		21.2%		47.6%
	Rounded %ADI=				20%		30%		20%		30%		20%		50%

CHLOROTHALONIL (081) International Estimated Daily Intake (IEDI) ADI = 0 - 000 mg/kg bw

			STMR	Diets as g/person/day			Intake as µg//person/day								
Codex Code	Commodity description	Expr as	mg/kg	G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
FS 0013	Cherries, raw	RAC	0.39	1.40	0.55	4.21	1.64	0.10	0.04	2.93	1.14	1.50	0.59	NC	-
-	Peaches and nectarines, raw	RAC	0.12	8.76	1.05	12.98	1.56	8.23	0.99	10.09	1.21	3.64	0.44	0.10	0.01
FB 0021	Currants, red, black, white, raw	RAC	20	0.48	9.60	4.23	84.60	NC	-	1.51	30.20	0.49	9.80	NC	-
FB 0268	Gooseberries, raw	RAC	20	0.10	2.00	1.04	20.80	0.10	2.00	0.23	4.60	NC	-	NC	-
FB 0269	Grape, raw	RAC	0.955	6.33	6.05	11.22	10.72	5.21	4.98	9.38	8.96	4.55	4.35	0.78	0.74
-	Grape must	PP	0.134	0.16	0.02	0.10	0.01	0.10	0.01	0.12	0.02	0.11	0.01	NC	-
DF 0269	Grape, dried (= currants, raisins and sultanas)	PP	0.248	3.09	0.77	1.51	0.37	0.10	0.02	1.38	0.34	4.26	1.06	0.42	0.10
JF 0269	Grape juice	PP	0.134	0.56	0.08	1.96	0.26	0.10	0.01	2.24	0.30	2.27	0.30	0.34	0.05
-	Grape wine (incl vermouths)	PP	0.0096	88.93	0.85	62.41	0.60	1.84	0.02	25.07	0.24	61.17	0.59	5.84	0.06
FB 0275	Strawberry, raw	RAC	2.05	4.49	9.20	5.66	11.60	0.10	0.21	6.63	13.59	5.75	11.79	0.10	0.21
FI 0327	Banana, raw (incl plantains) (incl dried)	RAC	0.033	25.14	0.83	23.37	0.77	23.06	0.76	23.40	0.77	18.44	0.61	39.29	1.30
FI 0350	Papaya, raw	RAC	2.3	0.31	0.71	0.18	0.41	1.50	3.45	0.51	1.17	0.54	1.24	1.08	2.48
VA 0384	Leek, raw	RAC	17.5	4.01	70.18	4.41	77.18	0.72	12.60	0.54	9.45	16.41	287.18	0.10	1.75
-	Onions, mature bulbs, dry	RAC	0.4	19.69	7.88	29.83	11.93	24.64	9.86	31.35	12.54	9.72	3.89	12.59	5.04
-	Onions, green, raw	RAC	0.835	1.55	1.29	0.74	0.62	1.05	0.88	3.74	3.12	0.94	0.78	6.45	5.39
VB 0042	Flowerhead brassicas, raw	RAC	5	9.50	47.50	6.77	33.85	9.03	45.15	3.21	16.05	9.36	46.80	0.87	4.35
VB 0402	Brussels sprouts, raw	RAC	1.5	2.24	3.36	2.67	4.01	6.23	9.35	0.32	0.48	4.19	6.29	2.58	3.87
VC 0046	Melons, raw (excl watermelons)	RAC	0.04	9.20	0.37	11.95	0.48	14.63	0.59	8.99	0.36	7.86	0.31	2.46	0.10
VC 0424	Cucumber, raw	RAC	0.41	6.72	2.76	11.03	4.52	32.10	13.16	15.10	6.19	4.05	1.66	9.57	3.92
VC 0425	Gherkin, raw	RAC	0.41	0.41	0.17	5.89	2.41	NC	-	0.10	0.04	0.37	0.15	2.07	0.85
VC 0431	Squash, summer, raw (= courgette, zuchini)	RAC	0.41	NC	-	NC	-	5.48	2.25	NC	-	NC	-	1.03	0.42
VO 0444	Peppers, chili, raw	RAC	1.5	5.57	8.36	14.00	21.00	8.25	12.38	5.77	8.66	6.44	9.66	2.53	3.80
-	Peppers, chili, dried	PP	15	0.11	1.65	0.21	3.15	0.36	5.40	0.21	3.15	0.25	3.75	0.15	2.25
VO 0445	Peppers, sweet, raw (incl dried)	RAC	1.5	0.82	1.23	1.53	2.30	10.85	16.28	4.59	6.89	1.84	2.76	2.00	3.00
VO 0448	Tomato, raw (incl paste, excl juice, excl canned)	RAC	1.1	51.98	57.18	64.09	70.50	35.52	39.07	79.82	87.80	42.65	46.92	10.96	12.06
-	Tomato, canned (& peeled)	PP	0.011	7.57	0.08	2.66	0.03	0.30	0.00	0.97	0.01	7.31	0.08	0.41	0.00
JF 0448	Tomato, juice (single strength, incl concentrated)	PP	0.11	0.80	0.09	0.10	0.01	0.10	0.01	0.61	0.07	0.40	0.04	0.10	0.01
VL 0464	Chard, raw (i.e. beet leaves)	RAC	16	NC	-	NC	-	NC	-	NC	-	NC	-	0.75	12.00
VD 0070	Pulses, raw (incl processed)	RAC	0.19	112.88	21.45	123.05	23.38	47.15	8.96	204.64	38.88	227.37	43.20	109.11	20.73
VR 0463	Cassava raw (incl starch, incl tapioca, incl flour)	RAC	0.3	0.10	0.03	NC	-	20.96	6.29	0.14	0.04	NC	-	9.62	2.89
VR 0469	Chicory, roots, raw	RAC	0.3	0.10	0.03	0.51	0.15	0.10	0.03	0.10	0.03	21.12	6.34	NC	-
VR 0494	Radish roots, raw	RAC	0.3	3.83	1.15	11.99	3.60	NC	-	5.26	1.58	2.19	0.66	4.37	1.31

CHLOROTHALONIL (081) International Estimated Daily Intake (IEDI) ADI = 0 - 000 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day G07 diet	G07 intake	G08 diet	Intake as µg//person/day G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
VR 0497	Swede, raw (i.e. rutabaga)	RAC	0.3	10.01	3.00	1.66	0.50	NC	-	NC	-	3.06	0.92	2.99	0.90
VR 0498	Salsify, raw (i.e. oysterplant)	RAC	0.3	1.02	0.31	0.52	0.16	NC	-	NC	-	2.08	0.62	0.39	0.12
VR 0504	Tannia, raw (i.e. yautia)	RAC	0.3	NC	-	NC	-	NC	-	0.10	0.03	NC	-	10.74	3.22
VR 0505	Taro, raw	RAC	0.3	NC	-	NC	-	1.93	0.58	0.84	0.25	NC	-	19.94	5.98
VR 0506	Garden turnip, raw	RAC	0.3	5.78	1.73	15.35	4.61	NC	-	6.54	1.96	1.95	0.59	4.73	1.42
VR 0508	Sweet potato, raw (incl dried)	RAC	0.3	0.93	0.28	0.32	0.10	64.65	19.40	5.37	1.61	0.30	0.09	3.13	0.94
VR 0573	Arrowroot, raw	RAC	0.3	0.10	0.03	0.10	0.03	2.05	0.62	0.21	0.06	NC	-	0.76	0.23
VR 0574	Beetroot, raw	RAC	0.3	9.91	2.97	6.34	1.90	NC	-	9.65	2.90	19.11	5.73	6.47	1.94
VR 0575	Burdock, greater or edible, raw	RAC	0.3	NC	-	NC	-	NC	-	0.48	0.14	NC	-	0.10	0.03
VR 0577	Carrots, raw	RAC	0.3	26.26	7.88	27.13	8.14	10.07	3.02	16.49	4.95	44.69	13.41	8.75	2.63
VR 0578	Celeriac, raw	RAC	0.3	2.97	0.89	1.79	0.54	NC	-	0.10	0.03	16.91	5.07	3.22	0.97
VR 0583	Horseradish, raw	RAC	0.25	0.10	0.03	0.42	0.11	13.01	3.25	0.26	0.07	2.70	0.68	0.97	0.24
VR 0585	Jerusalem artichoke, raw (i.e. topinambur)	RAC	0.3	0.11	0.03	0.10	0.03	NC	-	0.22	0.07	NC	-	0.78	0.23
VR 0587	Parsley turnip-rooted, raw	RAC	0.3	NC	-	NC	-	NC	-	NC	-	NC	-	0.61	0.18
VR 0588	Parsnip, raw	RAC	0.3	4.42	1.33	0.10	0.03	NC	-	NC	-	NC	-	1.12	0.34
VR 0589	Potato, raw (incl flour, incl frozen, incl starch, incl tapioca)	RAC	0.3	225.03	67.51	234.24	70.27	71.48	21.44	177.55	53.27	234.55	70.37	37.71	11.31
VR 0590	Black radish, raw	RAC	0.3	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
VR 0591	Japanese radish, raw (i.e. daikon)	RAC	0.3	NC	-	NC	-	26.64	7.99	18.92	5.68	NC	-	3.59	1.08
VR 0596	Sµg/ar beet, raw (incl sµg/ar)	RAC	0.3	0.10	0.03	NC	-	0.10	0.03	0.10	0.03	NC	-	NC	-
VR 0600	Yams, raw (incl dried)	RAC	0.3	NC	-	NC	-	0.10	0.03	0.71	0.21	NC	-	17.57	5.27
-	Lotus root, raw	RAC	0.3	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
-	Water chestnut, raw	RAC	0.3	NC	-	NC	-	3.42	1.03	NC	-	NC	-	NC	-
VS 0621	Asparagus	RAC	0	0.84	0.00	2.08	0.00	7.11	0.00	1.01	0.00	1.69	0.00	0.10	0.00
VS 0624	Celery	RAC	2.65	7.68	20.35	2.85	7.55	NC	-	3.34	8.85	16.83	44.60	4.04	10.71
VS 0627	Rhubarb	RAC	0.55	1.61	0.89	2.23	1.23	NC	-	0.52	0.29	7.63	4.20	1.39	0.76
TN 0675	Pistachio nut, nutmeat	RAC	0.082	0.35	0.03	0.48	0.04	0.10	0.01	0.39	0.03	0.23	0.02	0.10	0.01
SO 0697	Peanuts, nutmeat, raw (incl roasted, excl oil, excl butter)	RAC	0.01	3.19	0.03	2.19	0.02	5.36	0.05	4.82	0.05	1.40	0.01	1.06	0.01
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total intake (µg//person)=				363.8		487.7		252.2		338.3		637.5		137.2
	Bodyweight per region (kg bw) =				60		60		55		60		60		60
	ADI (µg//person)=				1200		1200		1100		1200		1200		1200
	%ADI=				30.3%		40.6%		22.9%		28.2%		53.1%		11.4%
	Rounded %ADI=				30%		40%		20%		30%		50%		10%

CHLOROTHALONIL (081) International Estimated Daily Intake (IEDI) ADI = 0 - 000 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day G13 diet	G13 intake	G14 diet	Intake = daily intake: µg//person G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
FS 0013	Cherries, raw	RAC	0.39	0.10	0.04	0.10	0.04	5.96	2.32	0.10	0.04	NC	-
-	Peaches and nectarines, raw	RAC	0.12	0.10	0.01	0.10	0.01	7.47	0.90	0.10	0.01	NC	-
FB 0021	Currants, red, black, white, raw	RAC	20	0.10	2.00	NC	-	0.74	14.80	NC	-	NC	-
FB 0268	Gooseberries, raw	RAC	20	NC	-	NC	-	0.12	2.40	NC	-	NC	-
FB 0269	Grape, raw	RAC	0.955	0.14	0.13	0.36	0.34	15.22	14.54	0.10	0.10	0.10	0.10
-	Grape must	PP	0.134	0.10	0.01	0.10	0.01	0.11	0.01	0.10	0.01	0.19	0.03
DF 0269	Grape, dried (= currants, raisins and sultanas)	PP	0.248	0.10	0.02	0.13	0.03	1.06	0.26	0.10	0.02	0.10	0.02
JF 0269	Grape juice	PP	0.134	0.10	0.01	0.10	0.01	0.41	0.05	0.10	0.01	NC	-
-	Grape wine (incl vermouths)	PP	0.0096	0.31	0.00	0.23	0.00	60.43	0.58	0.52	0.00	31.91	0.31
FB 0275	Strawberry, raw	RAC	2.05	0.10	0.21	0.10	0.21	3.35	6.87	0.10	0.21	0.10	0.21
FI 0327	Banana, raw (incl plantains) (incl dried)	RAC	0.033	20.88	0.69	81.15	2.68	24.58	0.81	37.92	1.25	310.23	10.24
FI 0350	Papaya, raw	RAC	2.3	6.47	14.88	0.25	0.58	0.19	0.44	0.10	0.23	26.42	60.77
VA 0384	Leek, raw	RAC	17.5	0.10	1.75	1.44	25.20	1.22	21.35	0.10	1.75	NC	-
-	Onions, mature bulbs, dry	RAC	0.4	9.01	3.60	20.24	8.10	30.90	12.36	9.61	3.84	2.11	0.84
-	Onions, green, raw	RAC	0.835	1.43	1.19	0.10	0.08	0.20	0.17	NC	-	6.30	5.26
VB 0042	Flowerhead brassicas, raw	RAC	5	0.10	0.50	0.10	0.50	4.86	24.30	0.10	0.50	NC	-
VB 0402	Brussels sprouts, raw	RAC	1.5	0.88	1.32	0.69	1.04	2.89	4.34	0.10	0.15	NC	-
VC 0046	Melons, raw (excl watermelons)	RAC	0.04	0.19	0.01	0.10	0.00	4.98	0.20	0.10	0.00	NC	-
VC 0424	Cucumber, raw	RAC	0.41	0.68	0.28	1.81	0.74	10.40	4.26	0.10	0.04	0.10	0.04
VC 0425	Gherkin, raw	RAC	0.41	0.15	0.06	0.39	0.16	3.15	1.29	0.10	0.04	0.10	0.04
VC 0431	Squash, summer, raw (= courgette, zuchini)	RAC	0.41	0.10	0.04	1.01	0.41	NC	-	1.91	0.78	NC	-
VO 0444	Peppers, chili, raw	RAC	1.5	3.47	5.21	3.56	5.34	16.30	24.45	0.10	0.15	NC	-
-	Peppers, chili, dried	PP	15	0.58	8.70	1.27	19.05	1.21	18.15	0.12	1.80	NC	-
VO 0445	Peppers, sweet, raw (incl dried)	RAC	1.5	5.49	8.24	10.57	15.86	8.84	13.26	0.91	1.37	NC	-
VO 0448	Tomato, raw (incl paste, excl juice, excl canned)	RAC	1.1	15.33	16.86	5.65	6.22	67.23	73.95	1.88	2.07	12.48	13.73
-	Tomato, canned (& peeled)	PP	0.011	0.10	0.00	0.10	0.00	2.42	0.03	0.10	0.00	NC	-
JF 0448	Tomato, juice (single strength, incl concentrated)	PP	0.11	0.10	0.01	0.10	0.01	0.42	0.05	0.10	0.01	0.10	0.01
VL 0464	Chard, raw (i.e. beet leaves)	RAC	16	0.68	10.88	0.49	7.84	NC	-	0.46	7.36	0.92	14.72
VD 0070	Pulses, raw (incl processed)	RAC	0.19	44.03	8.37	29.00	5.51	112.51	21.38	75.50	14.35	39.69	7.54
VR 0463	Cassava raw (incl starch, incl tapioca, incl flour)	RAC	0.3	91.92	27.58	34.12	10.24	NC	-	259.92	77.98	45.48	13.64
VR 0469	Chicory, roots, raw	RAC	0.3	0.10	0.03	0.10	0.03	0.10	0.03	NC	-	NC	-
VR 0494	Radish roots, raw	RAC	0.3	3.96	1.19	2.86	0.86	3.30	0.99	2.67	0.80	5.34	1.60

CHLOROTHALONIL (081) International Estimated Daily Intake (IEDI) ADI = 0 - 000 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day		Intake = daily intake: µg//person							
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
VR 0497	Swede, raw (i.e. rutabaga)	RAC	0.3	2.71	0.81	1.96	0.59	7.80	2.34	1.83	0.55	3.66	1.10
VR 0498	Salsify, raw (i.e. oysterplant)	RAC	0.3	0.36	0.11	0.26	0.08	NC	-	0.24	0.07	0.48	0.14
VR 0504	Tannia, raw (i.e. yautia)	RAC	0.3	NC	-	NC	-	0.10	0.03	NC	-	NC	-
VR 0505	Taro, raw	RAC	0.3	6.71	2.01	31.91	9.57	NC	-	10.73	3.22	264.31	79.29
VR 0506	Garden turnip, raw	RAC	0.3	4.29	1.29	3.10	0.93	6.41	1.92	2.90	0.87	5.79	1.74
VR 0508	Sweet potato, raw (incl dried)	RAC	0.3	28.83	8.65	61.55	18.47	0.15	0.05	221.94	66.58	NC	-
VR 0573	Arrowroot, raw	RAC	0.3	13.83	4.15	18.24	5.47	0.10	0.03	0.10	0.03	19.60	5.88
VR 0574	Beetroot, raw	RAC	0.3	5.86	1.76	4.23	1.27	9.46	2.84	3.96	1.19	7.91	2.37
VR 0575	Burdock, greater or edible, raw	RAC	0.3	0.10	0.03	0.10	0.03	NC	-	0.10	0.03	0.10	0.03
VR 0577	Carrots, raw	RAC	0.3	2.07	0.62	3.00	0.90	25.29	7.59	0.10	0.03	NC	-
VR 0578	Celeriac, raw	RAC	0.3	2.91	0.87	2.10	0.63	7.59	2.28	1.97	0.59	3.93	1.18
VR 0583	Horseradish, raw	RAC	0.25	0.88	0.22	0.63	0.16	0.54	0.14	0.59	0.15	1.19	0.30
VR 0585	Jerusalem artichoke, raw (i.e. topinambur)	RAC	0.3	14.22	4.27	18.75	5.63	0.10	0.03	0.10	0.03	20.14	6.04
VR 0587	Parsley turnip-rooted, raw	RAC	0.3	0.55	0.17	0.40	0.12	4.29	1.29	0.37	0.11	0.74	0.22
VR 0588	Parsnip, raw	RAC	0.3	1.02	0.31	0.74	0.22	3.50	1.05	0.69	0.21	1.37	0.41
VR 0589	Potato, raw (incl flour, incl frozen, incl starch, incl tapioca)	RAC	0.3	23.96	7.19	13.56	4.07	213.41	64.02	104.35	31.31	8.56	2.57
VR 0590	Black radish, raw	RAC	0.3	NC	-	NC	-	NC	-	NC	-	NC	-
VR 0591	Japanese radish, raw (i.e. daikon)	RAC	0.3	3.25	0.98	2.35	0.71	NC	-	2.20	0.66	4.39	1.32
VR 0596	Sµg/ar beet, raw (incl sµg/ar)	RAC	0.3	3.93	1.18	1.68	0.50	NC	-	NC	-	36.12	10.84
VR 0600	Yams, raw (incl dried)	RAC	0.3	70.93	21.28	30.62	9.19	0.10	0.03	5.65	1.70	30.85	9.26
-	Lotus root, raw	RAC	0.3	NC	-	NC	-	NC	-	NC	-	NC	-
-	Water chestnut, raw	RAC	0.3	NC	-	NC	-	NC	-	NC	-	NC	-
VS 0621	Asparagus	RAC	0	0.10	0.00	0.10	0.00	0.17	0.00	0.10	0.00	NC	-
VS 0624	Celery	RAC	2.65	3.66	9.70	2.65	7.02	4.84	12.83	2.47	6.55	4.94	13.09
VS 0627	Rhubarb	RAC	0.55	1.26	0.69	0.91	0.50	0.96	0.53	0.85	0.47	1.70	0.94
TN 0675	Pistachio nut, nutmeat	RAC	0.082	0.10	0.01	0.10	0.01	0.15	0.01	0.10	0.01	NC	-
SO 0697	Peanuts, nutmeat, raw (incl roasted, excl oil, excl butter)	RAC	0.01	7.14	0.07	0.42	0.00	1.83	0.02	6.22	0.06	0.53	0.01
-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total intake (µg//person)=				180.2		177.2		361.5		229.3		265.8
	Bodyweight per region (kg bw) =				60		60		60		60		60
	ADI (µg//person)=				1200		1200		1200		1200		1200
	%ADI=				15.0%		14.8%		30.1%		19.1%		22.2%
	Rounded %ADI=				20%		10%		30%		20%		20%

Annex 3

SDS-3701 International Estimated Daily Intake (IEDI) ADI = 0 - 0.000 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day		Intake as µg//person/day									
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
FS 0013	Cherries, raw	RAC	0.01	0.92	0.01	9.15	0.09	0.10	0.00	0.61	0.01	0.10	0.00	6.64	0.07
FS 2001	Peaches, nectarines, apricots, raw (incl dried apricots)	RAC	0.011	8.01	0.09	5.87	0.06	0.18	0.00	8.19	0.09	1.64	0.02	22.46	0.25
FB 2005	Caneberries, raw	RAC	0.01	0.42	0.00	1.05	0.01	0.10	0.00	0.10	0.00	0.10	0.00	1.24	0.01
FB 2006	Bush berries, raw (including processed) (i.e. blueberries, currants, gooseberries, rose hips)	RAC	0.01	0.53	0.01	1.31	0.01	0.40	0.00	1.66	0.02	0.10	0.00	0.99	0.01
FB 2007	Large shrub/tree berries, raw (including processed) (i.e. elderberries, mulberries)	RAC	0.01	0.62	0.01	0.33	0.00	0.34	0.00	1.42	0.01	0.10	0.00	1.51	0.02
FB 0269	Grape, raw	RAC	0.01	12.68	0.13	9.12	0.09	0.10	0.00	16.88	0.17	3.70	0.04	54.42	0.54
-	Grape must	PP	0.0027	0.33	0.00	0.13	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00
DF 0269	Grape, dried (= currants, raisins and sultanas)	PP	0.0079	0.51	0.00	0.51	0.00	0.10	0.00	1.27	0.01	0.12	0.00	2.07	0.02
JF 0269	Grape juice	PP	0.0027	0.14	0.00	0.29	0.00	0.10	0.00	0.30	0.00	0.24	0.00	0.10	0.00
-	Grape wine (incl vermouths)	PP	0.019	0.67	0.01	12.53	0.24	2.01	0.04	1.21	0.02	3.53	0.07	4.01	0.08
FB 2009	Low growing berries, raw (i.e. cranberry and strawberry)	RAC	0.01	0.71	0.01	2.02	0.02	0.10	0.00	1.39	0.01	0.37	0.00	2.53	0.03
VA 0380	Fennel, bulb, raw	RAC	0.01	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
VA 0381	Garlic, raw	RAC	0.01	2.29	0.02	5.78	0.06	0.11	0.00	3.69	0.04	1.65	0.02	3.91	0.04
VA 0384	Leek, raw	RAC	0.01	0.18	0.00	1.59	0.02	0.10	0.00	0.28	0.00	0.10	0.00	3.21	0.03
-	Onions, mature bulbs, dry	RAC	0.02	29.36	0.59	37.50	0.75	3.56	0.07	34.78	0.70	18.81	0.38	43.38	0.87
-	Onions, green, raw	RAC	0.01	2.45	0.02	1.49	0.01	1.02	0.01	2.60	0.03	0.60	0.01	2.03	0.02
VB 0040	Brassica vegetables, raw: head cabbages, flowerhead brassicas, Brussels sprouts & kohlrabi	RAC	0.01	6.41	0.06	35.79	0.36	0.71	0.01	9.81	0.10	12.07	0.12	16.58	0.17
VC 0045	Fruiting vegetables, cucurbits, raw	RAC	0.015	53.14	0.80	86.21	1.29	6.28	0.09	92.76	1.39	15.64	0.23	155.30	2.33
VO 0440	Egg plants, raw (= aubergines)	RAC	0.015	5.58	0.08	4.31	0.06	0.89	0.01	9.31	0.14	13.64	0.20	20.12	0.30
VO 0442	Okra, raw	RAC	0.015	1.97	0.03	NC	-	3.68	0.06	3.24	0.05	5.72	0.09	1.57	0.02
VO 0443	Pepino (Melon pear, Tree melon)	RAC	0.015	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
VO 0444	Peppers, chili, raw	RAC	0.045	3.99	0.18	7.30	0.33	2.93	0.13	5.62	0.25	NC	-	17.44	0.78
-	Peppers, chili, dried	PP	0.45	0.42	0.19	0.53	0.24	0.84	0.38	0.50	0.23	0.95	0.43	0.37	0.17
VO 0445	Peppers, sweet, raw (incl dried)	RAC	0.045	4.49	0.20	6.44	0.29	7.21	0.32	5.68	0.26	9.52	0.43	8.92	0.40
VO 0447	Sweet corn on the cob, raw (incl frozen, incl canned) (i.e. kernels plus cob without husks)	RAC	0.015	0.14	0.00	0.94	0.01	5.70	0.09	2.61	0.04	1.94	0.03	0.22	0.00
VO 0448	Tomato, raw (incl juice, incl paste, incl canned)	RAC	0.015	51.75	0.78	81.80	1.23	16.99	0.25	102.02	1.53	26.32	0.39	214.77	3.22

SDS-3701 International Estimated Daily Intake (IEDI) ADI = 0 - 0.000 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day G01 diet	G01 intake	G02 diet	Intake as µg//person/day G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
-	Gilo (scarlet egg plant)	RAC	0.015	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
-	Goji berry	RAC	0.015	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
-	Quorn	RAC	0.015	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
-	Seaweed	RAC	0.015	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
VL 0053	Leafy vegetables, raw	RAC	0.02	8.47	0.17	22.36	0.45	7.74	0.15	25.51	0.51	45.77	0.92	21.22	0.42
VP 0060	Legume vegetables, raw	RAC	0.01	7.73	0.08	1.53	0.02	0.51	0.01	2.95	0.03	5.08	0.05	12.86	0.13
VD 0070	Pulses, raw (incl processed)	RAC	0.02	85.59	1.71	64.02	1.28	34.15	0.68	88.02	1.76	89.38	1.79	96.88	1.94
VR 0463	Cassava raw (incl starch, incl tapioca, incl flour)	RAC	0.02	0.10	0.00	0.10	0.00	482.56	9.65	0.99	0.02	25.75	0.52	3.29	0.07
VR 0469	Chicory, roots, raw	RAC	0.02	0.10	0.00	0.20	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00
VR 0494	Radish roots, raw	RAC	0.02	2.31	0.05	4.09	0.08	2.53	0.05	6.15	0.12	5.88	0.12	2.97	0.06
VR 0497	Swede, raw (i.e. rutabaga)	RAC	0.02	1.58	0.03	2.80	0.06	1.74	0.03	4.21	0.08	NC	-	2.03	0.04
VR 0498	Salsify, raw (i.e. oysterplant)	RAC	0.02	0.21	0.00	0.37	0.01	0.23	0.00	0.55	0.01	NC	-	0.27	0.01
VR 0504	Tannia, raw (i.e. yautia)	RAC	0.02	NC	-	NC	-	NC	-	0.10	0.00	0.26	0.01	1.27	0.03
VR 0505	Taro, raw	RAC	0.02	0.10	0.00	NC	-	25.12	0.50	0.10	0.00	0.10	0.00	0.97	0.02
VR 0506	Garden turnip, raw	RAC	0.02	2.50	0.05	4.44	0.09	2.75	0.06	6.67	0.13	0.14	0.00	3.22	0.06
VR 0508	Sweet potato, raw (incl dried)	RAC	0.02	0.18	0.00	0.18	0.00	42.16	0.84	1.61	0.03	3.06	0.06	6.67	0.13
VR 0573	Arrowroot, raw	RAC	0.02	1.53	0.03	0.10	0.00	0.93	0.02	1.33	0.03	0.47	0.01	0.10	0.00
VR 0574	Beetroot, raw	RAC	0.02	3.42	0.07	6.06	0.12	3.75	0.08	9.11	0.18	NC	-	4.39	0.09
VR 0575	Burdock, greater or edible, raw	RAC	0.02	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00	NC	-	0.10	0.00
VR 0577	Carrots, raw	RAC	0.02	9.51	0.19	30.78	0.62	0.37	0.01	8.75	0.18	2.80	0.06	6.10	0.12
VR 0578	Celeriac, raw	RAC	0.02	1.70	0.03	3.01	0.06	1.87	0.04	4.53	0.09	NC	-	2.19	0.04
VR 0583	Horseradish, raw	RAC	0.16	0.51	0.08	0.91	0.15	0.56	0.09	1.37	0.22	NC	-	0.66	0.11
VR 0585	Jerusalem artichoke, raw (i.e. topinambur)	RAC	0.02	1.57	0.03	0.10	0.00	0.96	0.02	1.36	0.03	0.48	0.01	0.10	0.00
VR 0587	Parsley turnip-rooted, raw	RAC	0.02	0.32	0.01	0.57	0.01	0.35	0.01	0.85	0.02	NC	-	0.41	0.01
VR 0588	Parsnip, raw	RAC	0.02	0.59	0.01	1.05	0.02	0.65	0.01	1.58	0.03	NC	-	0.76	0.02
VR 0589	Potato, raw (incl flour, incl frozen, incl starch, incl tapioca)	RAC	0.02	59.74	1.19	316.14	6.32	9.78	0.20	60.26	1.21	54.12	1.08	119.82	2.40
VR 0590	Black radish, raw	RAC	0.02	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
VR 0591	Japanese radish, raw (i.e. daikon)	RAC	0.02	1.90	0.04	3.36	0.07	2.08	0.04	5.06	0.10	NC	-	2.44	0.05
VR 0596	Sµg/ar beet, raw (incl sµg/ar)	RAC	0.02	0.13	0.00	NC	-	0.10	0.00	0.66	0.01	0.47	0.01	88.94	1.78
VR 0600	Yams, raw (incl dried)	RAC	0.02	0.10	0.00	NC	-	90.40	1.81	6.45	0.13	0.74	0.01	0.65	0.01
-	Lotus root, raw	RAC	0.02	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
-	Water chestnut, raw	RAC	0.02	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
VS 0469	Witloof chicory (sprouts)	RAC	0.01	0.10	0.00	0.10	0.00	0.10	0.00	0.36	0.00	0.10	0.00	0.35	0.00

SDS-3701 International Estimated Daily Intake (IEDI) ADI = 0 - 0.000 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day G01 diet	G01 intake	G02 diet	Intake as µg//person/day G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
VS 0620	Artichoke globe	RAC	0.01	0.69	0.01	0.10	0.00	0.10	0.00	0.32	0.00	0.26	0.00	1.21	0.01
VS 0621	Asparagus	RAC	0	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.21	0.00
VS 0622	Bamboo shoots	RAC	0.01	1.72	0.02	3.05	0.03	1.89	0.02	4.59	0.05	NC	-	2.21	0.02
VS 0623	Cardoon	RAC	0.01	0.24	0.00	0.43	0.00	0.27	0.00	0.64	0.01	NC	-	0.31	0.00
VS 0624	Celery	RAC	0.01	2.14	0.02	3.79	0.04	2.35	0.02	5.69	0.06	0.10	0.00	2.75	0.03
VS 0626	Palm hearts	RAC	0.01	0.39	0.00	0.70	0.01	0.43	0.00	1.05	0.01	2.27	0.02	0.51	0.01
VS 0627	Rhubarb	RAC	0.02	0.73	0.01	1.30	0.03	0.80	0.02	1.95	0.04	NC	-	0.94	0.02
GC 0080	Cereal grains, raw, (incl processed)	RAC	0.02	484.29	9.69	464.63	9.29	262.36	5.25	486.81	9.74	469.62	9.39	614.04	12.28
SO 0088	Oilseeds, raw (incl processed)	RAC	0.02	79.30	1.59	54.81	1.10	96.74	1.93	137.72	2.75	61.07	1.22	88.71	1.77
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat)	RAC	0.01	31.20	0.31	72.44	0.72	20.88	0.21	47.98	0.48	33.08	0.33	36.25	0.36
MF 0100	Mammalian fats, raw, excl milk fats (incl rendered fats)	RAC	0.025	3.29	0.08	6.14	0.15	0.82	0.02	1.57	0.04	2.23	0.06	1.07	0.03
MO 0105	Edible offal (mammalian), raw	RAC	0.16	4.79	0.77	9.68	1.55	2.97	0.48	5.49	0.88	3.84	0.61	5.03	0.80
ML 0106	Milks, raw or skimmed (incl dairy products)	RAC	0.05	289.65	14.48	485.88	24.29	26.92	1.35	239.03	11.95	199.91	10.00	180.53	9.03
PM 0110	Poultry meat, raw (incl prepared)	RAC	0.01	14.63	0.15	29.76	0.30	8.04	0.08	129.68	1.30	25.04	0.25	35.66	0.36
PF 0111	Poultry fat, raw (incl rendered)	RAC	0.01	0.10	0.00	0.10	0.00	NC	-	0.10	0.00	0.10	0.00	0.10	0.00
PO 0111	Poultry edible offal, raw (incl prepared)	RAC	0.039	0.12	0.00	0.12	0.00	0.11	0.00	5.37	0.21	0.24	0.01	0.10	0.00
PE 0112	Eggs, raw, (incl dried)	RAC	0.031	7.84	0.24	23.08	0.72	2.88	0.09	14.89	0.46	9.81	0.30	14.83	0.46
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total intake (µg//person)=				34.4		52.8		25.3		38.0		29.3		42.1
	Bodyweight per region (kg bw) =				60		60		60		60		60		60
	ADI (µg//person)=				480		480		480		480		480		480
	%ADI=				7.2%		11.0%		5.3%		7.9%		6.1%		8.8%
	Rounded %ADI=				7%		10%		5%		8%		6%		9%

SDS-3701 International Estimated Daily Intake (IEDI) ADI = 0 - 0.000 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day G07 diet	G07 intake	G08 diet	Intake as µg//person/day G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
FS 0013	Cherries, raw	RAC	0.01	1.40	0.01	4.21	0.04	0.10	0.00	2.93	0.03	1.50	0.02	NC	-
FS 2001	Peaches, nectarines, apricots, raw (incl dried apricots)	RAC	0.011	13.03	0.14	16.29	0.18	8.29	0.09	12.95	0.14	5.35	0.06	0.10	0.00

SDS-3701 International Estimated Daily Intake (IEDI) ADI = 0 - 0.000 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day G07 diet	Intake as µg//person/day G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
FB 2005	Caneberries, raw	RAC	0.01	0.56	0.01	1.43	0.01	0.14	0.00	1.23	0.01	1.14	0.01	0.10	0.00
FB 2006	Bush berries, raw (including processed) (i.e. blueberries, currants, gooseberries, rose hips)	RAC	0.01	1.31	0.01	5.50	0.06	0.10	0.00	2.57	0.03	0.82	0.01	2.15	0.02
FB 2007	Large shrub/tree berries, raw (including processed) (i.e. elderberries, mulberries)	RAC	0.01	8.26	0.08	0.14	0.00	0.10	0.00	0.13	0.00	0.19	0.00	1.87	0.02
FB 0269	Grape, raw	RAC	0.01	6.33	0.06	11.22	0.11	5.21	0.05	9.38	0.09	4.55	0.05	0.78	0.01
-	Grape must	PP	0.0027	0.16	0.00	0.10	0.00	0.10	0.00	0.12	0.00	0.11	0.00	NC	-
DF 0269	Grape, dried (= currants, raisins and sultanas)	PP	0.0079	3.09	0.02	1.51	0.01	0.10	0.00	1.38	0.01	4.26	0.03	0.42	0.00
JF 0269	Grape juice	PP	0.0027	0.56	0.00	1.96	0.01	0.10	0.00	2.24	0.01	2.27	0.01	0.34	0.00
-	Grape wine (incl vermouths)	PP	0.019	88.93	1.69	62.41	1.19	1.84	0.03	25.07	0.48	61.17	1.16	5.84	0.11
FB 2009	Low growing berries, raw (i.e. cranberry and strawberry)	RAC	0.01	4.55	0.05	5.66	0.06	0.10	0.00	7.85	0.08	5.86	0.06	0.10	0.00
VA 0380	Fennel, bulb, raw	RAC	0.01	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
VA 0381	Garlic, raw	RAC	0.01	0.98	0.01	1.49	0.01	12.88	0.13	3.74	0.04	2.05	0.02	1.14	0.01
VA 0384	Leek, raw	RAC	0.01	4.01	0.04	4.41	0.04	0.72	0.01	0.54	0.01	16.41	0.16	0.10	0.00
-	Onions, mature bulbs, dry	RAC	0.02	19.69	0.39	29.83	0.60	24.64	0.49	31.35	0.63	9.72	0.19	12.59	0.25
-	Onions, green, raw	RAC	0.01	1.55	0.02	0.74	0.01	1.05	0.01	3.74	0.04	0.94	0.01	6.45	0.06
VB 0040	Brassica vegetables, raw: head cabbages, flowerhead brassicas, Brussels sprouts & kohlrabi	RAC	0.01	20.71	0.21	39.81	0.40	16.70	0.17	28.49	0.28	18.12	0.18	15.03	0.15
VC 0045	Fruiting vegetables, cucurbits, raw	RAC	0.015	27.81	0.42	41.93	0.63	123.30	1.85	49.47	0.74	15.95	0.24	35.99	0.54
VO 0440	Egg plants, raw (= aubergines)	RAC	0.015	1.01	0.02	1.69	0.03	21.37	0.32	3.00	0.05	1.40	0.02	NC	-
VO 0442	Okra, raw	RAC	0.015	NC	-	NC	-	0.10	0.00	0.17	0.00	NC	-	0.72	0.01
VO 0443	Pepino (Melon pear, Tree melon)	RAC	0.015	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
VO 0444	Peppers, chili, raw	RAC	0.045	5.57	0.25	14.00	0.63	8.25	0.37	5.77	0.26	6.44	0.29	2.53	0.11
-	Peppers, chili, dried	PP	0.45	0.11	0.05	0.21	0.09	0.36	0.16	0.21	0.09	0.25	0.11	0.15	0.07
VO 0445	Peppers, sweet, raw (incl dried)	RAC	0.045	0.82	0.04	1.53	0.07	10.85	0.49	4.59	0.21	1.84	0.08	2.00	0.09
VO 0447	Sweet corn on the cob, raw (incl frozen, incl canned) (i.e. kernels plus cob without husks)	RAC	0.015	11.43	0.17	3.71	0.06	0.74	0.01	13.63	0.20	3.07	0.05	1.50	0.02
VO 0448	Tomato, raw (incl juice, incl paste, incl canned)	RAC	0.015	64.74	0.97	68.31	1.02	36.05	0.54	82.09	1.23	54.50	0.82	11.69	0.18
-	Gilo (scarlet egg plant)	RAC	0.015	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
-	Goji berry	RAC	0.015	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
-	Quorn	RAC	0.015	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
-	Seaweed	RAC	0.015	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
VL 0053	Leafy vegetables, raw	RAC	0.02	18.83	0.38	21.85	0.44	121.23	2.42	43.09	0.86	18.18	0.36	18.32	0.37
VP 0060	Legume vegetables, raw	RAC	0.01	18.21	0.18	8.91	0.09	7.22	0.07	10.04	0.10	23.22	0.23	0.17	0.00
VD 0070	Pulses, raw (incl processed)	RAC	0.02	112.88	2.26	123.05	2.46	47.15	0.94	204.64	4.09	227.37	4.55	109.11	2.18

SDS-3701 International Estimated Daily Intake (IEDI) ADI = 0 - 0.000 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
				Diets as g/person/day			Intake as µg//person/day								
VR 0463	Cassava raw (incl starch, incl tapioca, incl flour)	RAC	0.02	0.10	0.00	NC	-	20.96	0.42	0.14	0.00	NC	-	9.62	0.19
VR 0469	Chicory, roots, raw	RAC	0.02	0.10	0.00	0.51	0.01	0.10	0.00	0.10	0.00	21.12	0.42	NC	-
VR 0494	Radish roots, raw	RAC	0.02	3.83	0.08	11.99	0.24	NC	-	5.26	0.11	2.19	0.04	4.37	0.09
VR 0497	Swede, raw (i.e. rutabaga)	RAC	0.02	10.01	0.20	1.66	0.03	NC	-	NC	-	3.06	0.06	2.99	0.06
VR 0498	Salsify, raw (i.e. oysterplant)	RAC	0.02	1.02	0.02	0.52	0.01	NC	-	NC	-	2.08	0.04	0.39	0.01
VR 0504	Tannia, raw (i.e. yautia)	RAC	0.02	NC	-	NC	-	NC	-	0.10	0.00	NC	-	10.74	0.21
VR 0505	Taro, raw	RAC	0.02	NC	-	NC	-	1.93	0.04	0.84	0.02	NC	-	19.94	0.40
VR 0506	Garden turnip, raw	RAC	0.02	5.78	0.12	15.35	0.31	NC	-	6.54	0.13	1.95	0.04	4.73	0.09
VR 0508	Sweet potato, raw (incl dried)	RAC	0.02	0.93	0.02	0.32	0.01	64.65	1.29	5.37	0.11	0.30	0.01	3.13	0.06
VR 0573	Arrowroot, raw	RAC	0.02	0.10	0.00	0.10	0.00	2.05	0.04	0.21	0.00	NC	-	0.76	0.02
VR 0574	Beetroot, raw	RAC	0.02	9.91	0.20	6.34	0.13	NC	-	9.65	0.19	19.11	0.38	6.47	0.13
VR 0575	Burdock, greater or edible, raw	RAC	0.02	NC	-	NC	-	NC	-	0.48	0.01	NC	-	0.10	0.00
VR 0577	Carrots, raw	RAC	0.02	26.26	0.53	27.13	0.54	10.07	0.20	16.49	0.33	44.69	0.89	8.75	0.18
VR 0578	Celeriac, raw	RAC	0.02	2.97	0.06	1.79	0.04	NC	-	0.10	0.00	16.91	0.34	3.22	0.06
VR 0583	Horseradish, raw	RAC	0.16	0.10	0.02	0.42	0.07	13.01	2.08	0.26	0.04	2.70	0.43	0.97	0.16
VR 0585	Jerusalem artichoke, raw (i.e. topinambur)	RAC	0.02	0.11	0.00	0.10	0.00	NC	-	0.22	0.00	NC	-	0.78	0.02
VR 0587	Parsley turnip-rooted, raw	RAC	0.02	NC	-	NC	-	NC	-	NC	-	NC	-	0.61	0.01
VR 0588	Parsnip, raw	RAC	0.02	4.42	0.09	0.10	0.00	NC	-	NC	-	NC	-	1.12	0.02
VR 0589	Potato, raw (incl flour, incl frozen, incl starch, incl tapioca)	RAC	0.02	225.03	4.50	234.24	4.68	71.48	1.43	177.55	3.55	234.55	4.69	37.71	0.75
VR 0590	Black radish, raw	RAC	0.02	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
VR 0591	Japanese radish, raw (i.e. daikon)	RAC	0.02	NC	-	NC	-	26.64	0.53	18.92	0.38	NC	-	3.59	0.07
VR 0596	Sµg/ar beet, raw (incl sµg/ar)	RAC	0.02	0.10	0.00	NC	-	0.10	0.00	0.10	0.00	NC	-	NC	-
VR 0600	Yams, raw (incl dried)	RAC	0.02	NC	-	NC	-	0.10	0.00	0.71	0.01	NC	-	17.57	0.35
-	Lotus root, raw	RAC	0.02	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
-	Water chestnut, raw	RAC	0.02	NC	-	NC	-	3.42	0.07	NC	-	NC	-	NC	-
VS 0469	Witloof chicory (sprouts)	RAC	0.01	1.50	0.02	0.95	0.01	NC	-	1.84	0.02	0.65	0.01	0.13	0.00
VS 0620	Artichoke globe	RAC	0.01	0.98	0.01	3.65	0.04	0.10	0.00	1.67	0.02	0.26	0.00	NC	-
VS 0621	Asparagus	RAC	0	0.84	0.00	2.08	0.00	7.11	0.00	1.01	0.00	1.69	0.00	0.10	0.00
VS 0622	Bamboo shoots	RAC	0.01	0.92	0.01	0.55	0.01	61.79	0.62	NC	-	1.72	0.02	3.26	0.03
VS 0623	Cardoon	RAC	0.01	0.10	0.00	3.49	0.03	NC	-	0.10	0.00	NC	-	0.46	0.00
VS 0624	Celery	RAC	0.01	7.68	0.08	2.85	0.03	NC	-	3.34	0.03	16.83	0.17	4.04	0.04
VS 0626	Palm hearts	RAC	0.01	0.51	0.01	0.73	0.01	3.54	0.04	0.10	0.00	0.66	0.01	0.75	0.01
VS 0627	Rhubarb	RAC	0.02	1.61	0.03	2.23	0.04	NC	-	0.52	0.01	7.63	0.15	1.39	0.03

SDS-3701 International Estimated Daily Intake (IEDI) ADI = 0 - 0.000 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day G07 diet	G07 intake	G08 diet	Intake as µg//person/day G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
GC 0080	Cereal grains, raw, (incl processed)	RAC	0.02	345.63	6.91	386.16	7.72	514.33	10.29	402.72	8.05	295.30	5.91	359.97	7.20
SO 0088	Oilseeds, raw (incl processed)	RAC	0.02	108.63	2.17	112.14	2.24	64.25	1.29	81.75	1.64	66.09	1.32	20.34	0.41
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat)	RAC	0.01	140.03	1.40	150.89	1.51	79.32	0.79	111.24	1.11	120.30	1.20	51.27	0.51
MF 0100	Mammalian fats, raw, excl milk fats (incl rendered fats)	RAC	0.025	6.44	0.16	15.51	0.39	3.79	0.09	8.29	0.21	18.44	0.46	8.00	0.20
MO 0105	Edible offal (mammalian), raw	RAC	0.16	15.17	2.43	5.19	0.83	6.30	1.01	6.78	1.08	3.32	0.53	3.17	0.51
ML 0106	Milks, raw or skimmed (incl dairy products)	RAC	0.05	388.92	19.45	335.88	16.79	49.15	2.46	331.25	16.56	468.56	23.43	245.45	12.27
PM 0110	Poultry meat, raw (incl prepared)	RAC	0.01	73.76	0.74	53.86	0.54	23.98	0.24	87.12	0.87	53.38	0.53	84.45	0.84
PF 0111	Poultry fat, raw (incl rendered)	RAC	0.01	0.10	0.00	0.10	0.00	NC	-	0.10	0.00	0.71	0.01	NC	-
PO 0111	Poultry edible offal, raw (incl prepared)	RAC	0.039	0.33	0.01	0.72	0.03	0.27	0.01	0.35	0.01	0.80	0.03	NC	-
PE 0112	Eggs, raw, (incl dried)	RAC	0.031	25.84	0.80	29.53	0.92	28.05	0.87	33.19	1.03	36.44	1.13	8.89	0.28
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total intake (µg//person)=				47.5		45.4		32.0		45.3		51.0		29.4
	Bodyweight per region (kg bw) =				60		60		55		60		60		60
	ADI (µg//person)=				480		480		440		480		480		480
	%ADI=				9.9%		9.5%		7.3%		9.4%		10.6%		6.1%
	Rounded %ADI=				10%		9%		7%		9%		10%		6%

SDS-3701 International Estimated Daily Intake (IEDI) ADI = 0 - 0.000 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day G13 diet	G13 intake	G14 diet	Intake = daily intake: µg//person G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
FS 0013	Cherries, raw	RAC	0.01	0.10	0.00	0.10	0.00	5.96	0.06	0.10	0.00	NC	-
FS 2001	Peaches, nectarines, apricots, raw (incl dried apricots)	RAC	0.011	0.10	0.00	0.10	0.00	10.76	0.12	0.10	0.00	NC	-
FB 2005	Caneberries, raw	RAC	0.01	0.10	0.00	7.30	0.07	2.29	0.02	0.10	0.00	NC	-
FB 2006	Bush berries, raw (including processed) (i.e. blueberries, currants, gooseberries, rose hips)	RAC	0.01	0.82	0.01	4.05	0.04	5.94	0.06	0.43	0.00	2.66	0.03
FB 2007	Large shrub/tree berries, raw (including processed) (i.e. elderberries, mulberries)	RAC	0.01	0.71	0.01	7.32	0.07	NC	-	0.38	0.00	2.32	0.02
FB 0269	Grape, raw	RAC	0.01	0.14	0.00	0.36	0.00	15.22	0.15	0.10	0.00	0.10	0.00
-	Grape must	PP	0.0027	0.10	0.00	0.10	0.00	0.11	0.00	0.10	0.00	0.19	0.00

Annex 3

SDS-3701 International Estimated Daily Intake (IEDI) ADI = 0 - 0.000 mg/kg bw

			STMR	Diets: g/person/day			Intake = daily intake: μg//person						
Codex Code	Commodity description	Expr as	mg/kg	G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
DF 0269	Grape, dried (= currants, raisins and sultanas)	PP	0.0079	0.10	0.00	0.13	0.00	1.06	0.01	0.10	0.00	0.10	0.00
JF 0269	Grape juice	PP	0.0027	0.10	0.00	0.10	0.00	0.41	0.00	0.10	0.00	NC	-
-	Grape wine (incl vermouths)	PP	0.019	0.31	0.01	0.23	0.00	60.43	1.15	0.52	0.01	31.91	0.61
FB 2009	Low growing berries, raw (i.e. cranberry and strawberry)	RAC	0.01	0.10	0.00	0.10	0.00	3.37	0.03	0.10	0.00	0.10	0.00
VA 0380	Fennel, bulb, raw	RAC	0.01	NC	-	NC	-	NC	-	NC	-	NC	-
VA 0381	Garlic, raw	RAC	0.01	0.82	0.01	2.06	0.02	3.79	0.04	0.10	0.00	0.29	0.00
VA 0384	Leek, raw	RAC	0.01	0.10	0.00	1.44	0.01	1.22	0.01	0.10	0.00	NC	-
-	Onions, mature bulbs, dry	RAC	0.02	9.01	0.18	20.24	0.40	30.90	0.62	9.61	0.19	2.11	0.04
-	Onions, green, raw	RAC	0.01	1.43	0.01	0.10	0.00	0.20	0.00	NC	-	6.30	0.06
VB 0040	Brassica vegetables, raw: head cabbages, flowerhead brassicas, Brussels sprouts & kohlrabi	RAC	0.01	4.84	0.05	3.79	0.04	58.72	0.59	0.10	0.00	NC	-
VC 0045	Fruiting vegetables, cucurbits, raw	RAC	0.015	5.96	0.09	9.74	0.15	51.82	0.78	13.61	0.20	0.10	0.00
VO 0440	Egg plants, raw (= aubergines)	RAC	0.015	1.31	0.02	8.26	0.12	3.95	0.06	0.10	0.00	NC	-
VO 0442	Okra, raw	RAC	0.015	6.23	0.09	0.10	0.00	NC	-	NC	-	NC	-
VO 0443	Pepino (Melon pear, Tree melon)	RAC	0.015	NC	-	NC	-	NC	-	NC	-	NC	-
VO 0444	Peppers, chili, raw	RAC	0.045	3.47	0.16	3.56	0.16	16.30	0.73	0.10	0.00	NC	-
-	Peppers, chili, dried	PP	0.45	0.58	0.26	1.27	0.57	1.21	0.54	0.12	0.05	NC	-
VO 0445	Peppers, sweet, raw (incl dried)	RAC	0.045	5.49	0.25	10.57	0.48	8.84	0.40	0.91	0.04	NC	-
VO 0447	Sweet corn on the cob, raw (incl frozen, incl canned) (i.e. kernels plus cob without husks)	RAC	0.015	3.63	0.05	20.50	0.31	8.78	0.13	0.10	0.00	0.17	0.00
VO 0448	Tomato, raw (incl juice, incl paste, incl canned)	RAC	0.015	15.50	0.23	5.78	0.09	71.52	1.07	2.00	0.03	12.50	0.19
-	Gilo (scarlet egg plant)	RAC	0.015	NC	-	NC	-	NC	-	NC	-	NC	-
-	Goji berry	RAC	0.015	NC	-	NC	-	NC	-	NC	-	NC	-
-	Quorn	RAC	0.015	NC	-	NC	-	NC	-	NC	-	NC	-
-	Seaweed	RAC	0.015	NC	-	NC	-	NC	-	NC	-	NC	-
VL 0053	Leafy vegetables, raw	RAC	0.02	12.42	0.25	8.75	0.18	7.53	0.15	7.07	0.14	14.11	0.28
VP 0060	Legume vegetables, raw	RAC	0.01	0.58	0.01	3.16	0.03	10.38	0.10	0.10	0.00	NC	-
VD 0070	Pulses, raw (incl processed)	RAC	0.02	44.03	0.88	29.00	0.58	112.51	2.25	75.50	1.51	39.69	0.79
VR 0463	Cassava raw (incl starch, incl tapioca, incl flour)	RAC	0.02	91.92	1.84	34.12	0.68	NC	-	259.92	5.20	45.48	0.91
VR 0469	Chicory, roots, raw	RAC	0.02	0.10	0.00	0.10	0.00	0.10	0.00	NC	-	NC	-
VR 0494	Radish roots, raw	RAC	0.02	3.96	0.08	2.86	0.06	3.30	0.07	2.67	0.05	5.34	0.11
VR 0497	Swede, raw (i.e. rutabaga)	RAC	0.02	2.71	0.05	1.96	0.04	7.80	0.16	1.83	0.04	3.66	0.07
VR 0498	Salsify, raw (i.e. oysterplant)	RAC	0.02	0.36	0.01	0.26	0.01	NC	-	0.24	0.00	0.48	0.01
VR 0504	Tannia, raw (i.e. yautia)	RAC	0.02	NC	-	NC	-	0.10	0.00	NC	-	NC	-

SDS-3701 International Estimated Daily Intake (IEDI) ADI = 0 - 0.000 mg/kg bw

			STMR	Diets: g/person/day			Intake = daily intake: µg//person						
Codex Code	Commodity description	Expr as	mg/kg	G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
VR 0505	Taro, raw	RAC	0.02	6.71	0.13	31.91	0.64	NC	-	10.73	0.21	264.31	5.29
VR 0506	Garden turnip, raw	RAC	0.02	4.29	0.09	3.10	0.06	6.41	0.13	2.90	0.06	5.79	0.12
VR 0508	Sweet potato, raw (incl dried)	RAC	0.02	28.83	0.58	61.55	1.23	0.15	0.00	221.94	4.44	NC	-
VR 0573	Arrowroot, raw	RAC	0.02	13.83	0.28	18.24	0.36	0.10	0.00	0.10	0.00	19.60	0.39
VR 0574	Beetroot, raw	RAC	0.02	5.86	0.12	4.23	0.08	9.46	0.19	3.96	0.08	7.91	0.16
VR 0575	Burdock, greater or edible, raw	RAC	0.02	0.10	0.00	0.10	0.00	NC	-	0.10	0.00	0.10	0.00
VR 0577	Carrots, raw	RAC	0.02	2.07	0.04	3.00	0.06	25.29	0.51	0.10	0.00	NC	-
VR 0578	Celeriac, raw	RAC	0.02	2.91	0.06	2.10	0.04	7.59	0.15	1.97	0.04	3.93	0.08
VR 0583	Horseradish, raw	RAC	0.16	0.88	0.14	0.63	0.10	0.54	0.09	0.59	0.09	1.19	0.19
VR 0585	Jerusalem artichoke, raw (i.e. topinambur)	RAC	0.02	14.22	0.28	18.75	0.38	0.10	0.00	0.10	0.00	20.14	0.40
VR 0587	Parsley turnip-rooted, raw	RAC	0.02	0.55	0.01	0.40	0.01	4.29	0.09	0.37	0.01	0.74	0.01
VR 0588	Parsnip, raw	RAC	0.02	1.02	0.02	0.74	0.01	3.50	0.07	0.69	0.01	1.37	0.03
VR 0589	Potato, raw (incl flour, incl frozen, incl starch, incl tapioca)	RAC	0.02	23.96	0.48	13.56	0.27	213.41	4.27	104.35	2.09	8.56	0.17
VR 0590	Black radish, raw	RAC	0.02	NC	-	NC	-	NC	-	NC	-	NC	-
VR 0591	Japanese radish, raw (i.e. daikon)	RAC	0.02	3.25	0.07	2.35	0.05	NC	-	2.20	0.04	4.39	0.09
VR 0596	Sµg/ar beet, raw (incl sµg/ar)	RAC	0.02	3.93	0.08	1.68	0.03	NC	-	NC	-	36.12	0.72
VR 0600	Yams, raw (incl dried)	RAC	0.02	70.93	1.42	30.62	0.61	0.10	0.00	5.65	0.11	30.85	0.62
-	Lotus root, raw	RAC	0.02	NC	-	NC	-	NC	-	NC	-	NC	-
-	Water chestnut, raw	RAC	0.02	NC	-	NC	-	NC	-	NC	-	NC	-
VS 0469	Witloof chicory (sprouts)	RAC	0.01	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00	NC	-
VS 0620	Artichoke globe	RAC	0.01	0.10	0.00	NC	-	0.10	0.00	0.10	0.00	NC	-
VS 0621	Asparagus	RAC	0	0.10	0.00	0.10	0.00	0.17	0.00	0.10	0.00	NC	-
VS 0622	Bamboo shoots	RAC	0.01	2.95	0.03	2.13	0.02	1.52	0.02	2.00	0.02	3.99	0.04
VS 0623	Cardoon	RAC	0.01	0.41	0.00	0.30	0.00	NC	-	0.28	0.00	0.56	0.01
VS 0624	Celery	RAC	0.01	3.66	0.04	2.65	0.03	4.84	0.05	2.47	0.02	4.94	0.05
VS 0626	Palm hearts	RAC	0.01	0.67	0.01	0.49	0.00	NC	-	0.46	0.00	0.91	0.01
VS 0627	Rhubarb	RAC	0.02	1.26	0.03	0.91	0.02	0.96	0.02	0.85	0.02	1.70	0.03
GC 0080	Cereal grains, raw, (incl processed)	RAC	0.02	407.04	8.14	417.04	8.34	402.79	8.06	195.30	3.91	263.26	5.27
SO 0088	Oilseeds, raw (incl processed)	RAC	0.02	131.71	2.63	22.49	0.45	69.33	1.39	57.68	1.15	86.74	1.73
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat)	RAC	0.01	29.18	0.29	50.89	0.51	121.44	1.21	22.58	0.23	72.14	0.72
MF 0100	Mammalian fats, raw, excl milk fats (incl rendered fats)	RAC	0.025	1.05	0.03	1.14	0.03	18.69	0.47	0.94	0.02	3.12	0.08
MO 0105	Edible offal (mammalian), raw	RAC	0.16	4.64	0.74	1.97	0.32	10.01	1.60	3.27	0.52	3.98	0.64

Annex 3

SDS-3701 International Estimated Daily Intake (IEDI) ADI = 0 - 0.000 mg/kg bw

			STMR	Diets: g/person/day		Intake = daily intake: μg//person							
Codex Code	Commodity description	Expr as	mg/kg	G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
ML 0106	Milks, raw or skimmed (incl dairy products)	RAC	0.05	108.75	5.44	70.31	3.52	436.11	21.81	61.55	3.08	79.09	3.95
PM 0110	Poultry meat, raw (incl prepared)	RAC	0.01	3.92	0.04	12.03	0.12	57.07	0.57	5.03	0.05	55.56	0.56
PF 0111	Poultry fat, raw (incl rendered)	RAC	0.01	NC	-	NC	-	0.32	0.00	NC	-	NC	-
PO 0111	Poultry edible offal, raw (incl prepared)	RAC	0.039	0.10	0.00	0.70	0.03	0.97	0.04	0.10	0.00	NC	-
PE 0112	Eggs, raw, (incl dried)	RAC	0.031	3.84	0.12	4.41	0.14	27.25	0.84	1.13	0.04	7.39	0.23
-	-	-	-	-	-	-	-	-	-	-	-	-	-

	G13 intake	G14 intake	G15 intake	G16 intake	G17 intake
Total intake (μg//person)=	25.9	21.6	50.9	23.8	24.7
Bodyweight per region (kg bw) =	60	60	60	60	60
ADI (μg//person)=	480	480	480	480	480
%ADI=	5.4%	4.5%	10.6%	5.0%	5.1%
Rounded %ADI=	5%	4%	10%	5%	5%

CYANTRANILIPROLE (263) International Estimated Daily Intake (IEDI) ADI = 0 - 0.03 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day G01 diet	G01 intake	G02 diet	Intake as µg//person/day G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
FC 0001	Citrus fruit, raw (excl kumquat commodities)	RAC	0.041	29.89	1.23	11.40	0.47	13.51	0.55	61.57	2.52	32.24	1.32	91.26	3.74
JF 0001	Citrus fruit, juice	PP	0.0069	1.30	0.01	2.37	0.02	0.22	0.00	13.88	0.10	0.75	0.01	2.63	0.02
FC 0002	Lemons and limes, raw (incl lemon juice, excl kumquat commodities)	RAC	0.035	2.46	0.09	2.18	0.08	0.74	0.03	10.99	0.38	7.09	0.25	14.51	0.51
FC 0003	Mandarins, raw (incl mandarin juice)	RAC	0.035	6.18	0.22	3.66	0.13	0.25	0.01	6.82	0.24	3.49	0.12	19.38	0.68
FC 0004	Oranges, sweet, sour, raw (incl orange juice)	RAC	0.035	23.26	0.81	9.71	0.34	12.09	0.42	62.02	2.17	22.09	0.77	59.91	2.10
JF 0004	Oranges, juice (single strength, incl. concentrated)	PP	0.0069	1.27	0.01	2.20	0.02	0.10	0.00	11.81	0.08	0.46	0.00	1.69	0.01
FC 0005	Pummelo and grapefruits, raw (incl grapefruit juice)	RAC	0.035	0.66	0.02	0.69	0.02	0.96	0.03	10.20	0.36	1.25	0.04	2.97	0.10
FP 0009	Pome fruit, raw (incl cider, excl apple juice)	RAC	0.16	19.35	3.10	34.06	5.45	17.87	2.86	25.74	4.12	7.69	1.23	56.85	9.10
JF 0226	Apple juice, single strength (incl. concentrated)	PP	0.05	0.32	0.02	3.07	0.15	0.10	0.01	5.00	0.25	0.29	0.01	5.57	0.28
FS 0013	Cherries, raw	RAC	0.93	0.92	0.86	9.15	8.51	0.10	0.09	0.61	0.57	0.10	0.09	6.64	6.18
FS 0014	Plums, raw (incl dried plums, incl Chinese jujube)	RAC	0.07	2.67	0.19	8.77	0.61	0.10	0.01	3.03	0.21	0.70	0.05	4.34	0.30
DF 0014	Plum, dried (prunes)	PP	0.54	0.10	0.05	0.10	0.05	0.10	0.05	0.18	0.10	0.10	0.05	0.10	0.05
FS 2001	Peaches, nectarines, apricots, raw (incl dried apricots)	RAC	0.34	8.01	2.72	5.87	2.00	0.18	0.06	8.19	2.78	1.64	0.56	22.46	7.64
FB 2006	Bush berries, raw (including processed) (i.e. blueberries, currants, gooseberries, rose hips)	RAC	0.75	0.53	0.40	1.31	0.98	0.40	0.30	1.66	1.25	0.10	0.08	0.99	0.74
FI 0355	Pomegranate, raw, (incl processed)	RAC	0.01	3.40	0.03	2.10	0.02	2.65	0.03	10.89	0.11	NC	-	6.67	0.07
-	Onions, mature bulbs, dry	RAC	0.02	29.36	0.59	37.50	0.75	3.56	0.07	34.78	0.70	18.81	0.38	43.38	0.87
-	Onions, green, raw	RAC	1.3	2.45	3.19	1.49	1.94	1.02	1.33	2.60	3.38	0.60	0.78	2.03	2.64
VB 0040	Brassica vegetables, raw: head cabbages, flowerhead brassicas, Brussels sprouts & kohlrabi	RAC	0.56	6.41	3.59	35.79	20.04	0.71	0.40	9.81	5.49	12.07	6.76	16.58	9.28
VC 0046	Melons, raw (excl watermelons)	RAC	0.01	8.90	0.09	8.64	0.09	0.80	0.01	17.90	0.18	2.80	0.03	29.17	0.29
VC 0423	Chayote (Christophine)	RAC	0.065	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
VC 0424	Cucumber, raw	RAC	0.065	8.01	0.52	30.66	1.99	1.45	0.09	19.84	1.29	0.27	0.02	34.92	2.27
VC 0425	Gherkin, raw	RAC	0.065	1.73	0.11	6.64	0.43	0.31	0.02	4.29	0.28	0.29	0.02	7.56	0.49
VC 0431	Squash, summer, raw (= courgette, zuchini)	RAC	0.065	0.78	0.05	2.06	0.13	0.30	0.02	1.61	0.10	2.25	0.15	2.36	0.15
VC 0432	Watermelon, raw	RAC	0.01	28.96	0.29	25.65	0.26	1.56	0.02	39.26	0.39	4.94	0.05	66.90	0.67
VC 0433	Winter squash, raw (= pumpkin)	RAC	0.01	4.76	0.05	12.56	0.13	1.85	0.02	9.86	0.10	5.11	0.05	14.39	0.14

Annex 3

CYANTRANILIPROLE (263) International Estimated Daily Intake (IEDI) ADI = 0 - 0.03 mg/kg bw

			STMR	Diets as g/person/day			Intake as µg//person/day								
Codex Code	Commodity description	Expr as	mg/kg	G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
VO 0440	Egg plants, raw (= aubergines)	RAC	0.08	5.58	0.45	4.31	0.34	0.89	0.07	9.31	0.74	13.64	1.09	20.12	1.61
VO 0442	Okra, raw	RAC	0.08	1.97	0.16	NC	-	3.68	0.29	3.24	0.26	5.72	0.46	1.57	0.13
VO 0445	Peppers, sweet, raw	RAC	0.08	1.43	0.11	2.61	0.21	1.05	0.08	2.01	0.16	2.59	0.21	6.24	0.50
VO 0448	Tomato, raw	RAC	0.08	41.73	3.34	75.65	6.05	10.66	0.85	82.87	6.63	24.75	1.98	200.93	16.07
-	Tomato, canned (& peeled)	PP	0.004	0.20	0.00	0.31	0.00	0.10	0.00	1.11	0.00	0.11	0.00	1.50	0.01
-	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	0.07	2.34	0.16	1.33	0.09	1.57	0.11	4.24	0.30	0.34	0.02	2.83	0.20
JF 0448	Tomato, juice (single strength, incl concentrated)	PP	0.014	0.29	0.00	0.29	0.00	0.10	0.00	0.38	0.01	0.10	0.00	0.14	0.00
VL 0054	Brassica leafy vegetables, raw	RAC	4.7	1.07	5.03	10.95	51.47	0.22	1.03	1.75	8.23	5.72	26.88	4.02	18.89
VL 0469	Chicory leaves (sµg/ar loaf), raw	RAC	4.7	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
VL 0470	Lambs lettuce, raw (i.e. corn salad)	RAC	4.7	0.64	3.01	1.13	5.31	0.70	3.29	1.70	7.99	NC	-	0.82	3.85
VL 0472	Garden cress, raw	RAC	4.7	0.10	0.47	0.10	0.47	0.10	0.47	0.15	0.71	NC	-	0.10	0.47
VL 0473	Watercress, raw	RAC	4.7	1.21	5.69	2.15	10.11	1.33	6.25	3.24	15.23	11.36	53.39	1.56	7.33
VL 0476	Endive, raw (i.e. scarole)	RAC	4.7	0.10	0.47	0.10	0.47	0.10	0.47	0.40	1.88	0.10	0.47	0.39	1.83
VL 0482	Lettuce, head, raw	RAC	0.79	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
VL 0483	Lettuce, leaf, raw	RAC	4.7	0.53	2.49	0.36	1.69	0.16	0.75	6.21	29.19	1.90	8.93	6.05	28.44
VL 0492	Purslane, raw	RAC	4.7	0.10	0.47	0.10	0.47	0.10	0.47	0.10	0.47	NC	-	0.10	0.47
VL 0502	Spinach, raw	RAC	4.7	0.74	3.48	0.22	1.03	0.10	0.47	0.91	4.28	0.10	0.47	2.92	13.72
VL 0510	Cos lettuce, raw	RAC	4.7	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
VP 0061	Beans, green, with pods, raw: beans except broad bean & soya bean (i.e. immature seeds + pods) (Phaseolus spp)	RAC	0.23	0.68	0.16	NC	-	NC	-	0.39	0.09	0.22	0.05	0.49	0.11
VP 0062	Beans, green, without pods, raw: beans except broad bean & soya bean (i.e. immature seeds only) (Phaseolus spp..)	RAC	0.07	1.56	0.11	0.60	0.04	0.49	0.03	1.18	0.08	0.90	0.06	7.79	0.55
VP 0063	Peas green, with pods, raw (i.e. immature seeds + pods) (Pisum spp)	RAC	0.7	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
VP 0064	Peas, green, without pods, raw (i.e. immature seeds only) (Pisum spp)	RAC	0.07	1.97	0.14	0.51	0.04	0.10	0.01	0.79	0.06	3.68	0.26	3.80	0.27
VP 0541	Soya bean, green, without pods, raw (i.e. immature seeds only) (Glycine max)	RAC	0.036	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
VD 0071	Beans, dry, raw (Phaseolus spp)	RAC	0.01	2.39	0.02	1.61	0.02	10.47	0.10	1.84	0.02	12.90	0.13	7.44	0.07
VD 0541	Soya bean, dry, raw (incl paste, incl curd, incl oil, incl sauce)	RAC	0.033	72.79	2.40	59.05	1.95	20.55	0.68	74.20	2.45	61.12	2.02	73.24	2.42

CYANTRANILIPROLE (263) International Estimated Daily Intake (IEDI) ADI = 0 - 0.03 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day G01 diet	G01 intake	G02 diet	Intake as μg//person/day G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
VR 0463	Cassava raw (incl starch, incl tapioca, incl flour)	RAC	0.01	0.10	0.00	0.10	0.00	482.56	4.83	0.99	0.01	25.75	0.26	3.29	0.03
VR 0469	Chicory, roots, raw	RAC	0.01	0.10	0.00	0.20	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00
VR 0494	Radish roots, raw	RAC	0.01	2.31	0.02	4.09	0.04	2.53	0.03	6.15	0.06	5.88	0.06	2.97	0.03
VR 0497	Swede, raw (i.e. rutabaga)	RAC	0.01	1.58	0.02	2.80	0.03	1.74	0.02	4.21	0.04	NC	-	2.03	0.02
VR 0498	Salsify, raw (i.e. oysterplant)	RAC	0.01	0.21	0.00	0.37	0.00	0.23	0.00	0.55	0.01	NC	-	0.27	0.00
VR 0504	Tannia, raw (i.e. yautia)	RAC	0.01	NC	-	NC	-	NC	-	0.10	0.00	0.26	0.00	1.27	0.01
VR 0505	Taro, raw	RAC	0.01	0.10	0.00	NC	-	25.12	0.25	0.10	0.00	0.10	0.00	0.97	0.01
VR 0506	Garden turnip, raw	RAC	0.01	2.50	0.03	4.44	0.04	2.75	0.03	6.67	0.07	0.14	0.00	3.22	0.03
VR 0508	Sweet potato, raw (incl dried)	RAC	0.01	0.18	0.00	0.18	0.00	42.16	0.42	1.61	0.02	3.06	0.03	6.67	0.07
VR 0574	Beetroot, raw	RAC	0.01	3.42	0.03	6.06	0.06	3.75	0.04	9.11	0.09	NC	-	4.39	0.04
VR 0577	Carrots, raw	RAC	0.01	9.51	0.10	30.78	0.31	0.37	0.00	8.75	0.09	2.80	0.03	6.10	0.06
VR 0578	Celeriac, raw	RAC	0.01	1.70	0.02	3.01	0.03	1.87	0.02	4.53	0.05	NC	-	2.19	0.02
VR 0583	Horseradish, raw	RAC	0.01	0.51	0.01	0.91	0.01	0.56	0.01	1.37	0.01	NC	-	0.66	0.01
VR 0585	Jerusalem artichoke, raw (i.e. topinambur)	RAC	0.01	1.57	0.02	0.10	0.00	0.96	0.01	1.36	0.01	0.48	0.00	0.10	0.00
VR 0588	Parsnip, raw	RAC	0.01	0.59	0.01	1.05	0.01	0.65	0.01	1.58	0.02	NC	-	0.76	0.01
VR 0589	Potato, raw (incl flour, incl frozen, incl starch, incl tapioca)	RAC	0.02	59.74	1.19	316.14	6.32	9.78	0.20	60.26	1.21	54.12	1.08	119.82	2.40
VR 0590	Black radish, raw	RAC	0.01	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
VR 0591	Japanese radish, raw (i.e. daikon)	RAC	0.01	1.90	0.02	3.36	0.03	2.08	0.02	5.06	0.05	NC	-	2.44	0.02
VR 0596	Sμg/ar beet, raw (incl sμg/ar)	RAC	0.01	0.13	0.00	NC	-	0.10	0.00	0.66	0.01	0.47	0.00	88.94	0.89
VR 0600	Yams, raw (incl dried)	RAC	0.01	0.10	0.00	NC	-	90.40	0.90	6.45	0.06	0.74	0.01	0.65	0.01
VS 0624	Celery	RAC	2	2.14	4.28	3.79	7.58	2.35	4.70	5.69	11.38	0.10	0.20	2.75	5.50
GC 0645	Maize, raw (incl glucose & dextrose & isoglucose, incl flour, incl oil, incl beer, incl germ, incl starch)	RAC	0	29.81	0.00	44.77	0.00	108.95	0.00	52.37	0.00	60.28	0.00	75.69	0.00
GC 0645	Maize, raw (incl glucose & dextrose & isoglucose, incl germ, excl flour, excl oil, excl beer, excl starch)	RAC	0	0.84	0.00	0.24	0.00	0.68	0.00	0.46	0.00	2.44	0.00	13.13	0.00
CF 1255	Maize, flour (white flour and wholemeal flour)	PP	0.0027	22.72	0.06	35.61	0.10	87.27	0.24	34.92	0.09	46.71	0.13	49.12	0.13
-	Maize starch	PP	0.0022	0.10	0.00	NC	-	0.10	0.00	2.29	0.01	0.10	0.00	0.11	0.00
OR 0645	Maize oil	PP	0.0033	0.96	0.00	0.85	0.00	0.29	0.00	5.42	0.02	0.42	0.00	2.10	0.01
TN 0085	Tree nuts, raw (incl processed)	RAC	0.01	4.06	0.04	3.27	0.03	7.01	0.07	13.93	0.14	14.01	0.14	9.36	0.09
SO 0495	Rape seed, raw (incl oil)	RAC	0.077	0.93	0.07	1.16	0.09	0.49	0.04	2.53	0.19	9.32	0.72	2.02	0.16
SO 0691	Cotton seed, raw	RAC	0.16	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-

CYANTRANILIPROLE (263) International Estimated Daily Intake (IEDI) ADI = 0 - 0.03 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day G01 diet	Intake as µg//person/day G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
OR 0691	Cotton seed oil, edible	PP	0.0064	3.22	0.02	1.54	0.01	1.01	0.01	0.74	0.00	1.12	0.01	2.93	0.02
SO 0702	Sunflower seed, raw (incl oil)	RAC	0.067	7.40	0.50	35.86	2.40	1.15	0.08	8.76	0.59	5.45	0.37	13.62	0.91
SB 0716	Coffee beans, raw (i.e. green coffee)	RAC	0.01	0.96	0.01	0.16	0.00	0.91	0.01	0.27	0.00	1.37	0.01	0.46	0.00
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) -80% as muscle	RAC	0.041	24.96	1.02	57.95	2.38	16.70	0.68	38.38	1.57	26.46	1.09	29.00	1.19
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) - 20% as fat	RAC	0.1	6.24	0.62	14.49	1.45	4.18	0.42	9.60	0.96	6.62	0.66	7.25	0.73
MF 0100	Mammalian fats, raw, excl milk fats (incl rendered fats)	RAC	0.1	3.29	0.33	6.14	0.61	0.82	0.08	1.57	0.16	2.23	0.22	1.07	0.11
MO 0105	Edible offal (mammalian), raw	RAC	0.38	4.79	1.82	9.68	3.68	2.97	1.13	5.49	2.09	3.84	1.46	5.03	1.91
ML 0106	Milks, raw or skimmed (incl dairy products)	RAC	0.21	289.65	60.83	485.88	102.03	26.92	5.65	239.03	50.20	199.91	41.98	180.53	37.91
PM 0110	Poultry meat, raw (incl prepared) - 90% as muscle	RAC	0.0039	13.17	0.05	26.78	0.10	7.24	0.03	116.71	0.46	22.54	0.09	32.09	0.13
PM 0110	Poultry meat, raw (incl prepared) - 10% as fat	RAC	0.0083	1.46	0.01	2.98	0.02	0.80	0.01	12.97	0.11	2.50	0.02	3.57	0.03
PF 0111	Poultry fat, raw (incl rendered)	RAC	0.0083	0.10	0.00	0.10	0.00	NC	-	0.10	0.00	0.10	0.00	0.10	0.00
PO 0111	Poultry edible offal, raw (incl prepared)	RAC	0.0321	0.12	0.00	0.12	0.00	0.11	0.00	5.37	0.17	0.24	0.01	0.10	0.00
PE 0112	Eggs, raw, (incl dried)	RAC	0.0426	7.84	0.33	23.08	0.98	2.88	0.12	14.89	0.63	9.81	0.42	14.83	0.63
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total intake (µg//person)=				117.8		252.7		41.9		176.5		158.2		198.4
	Bodyweight per region (kg bw) =				60		60		60		60		60		60
	ADI (µg//person)=				1800		1800		1800		1800		1800		1800
	%ADI=				6.5%		14.0%		2.3%		9.8%		8.8%		11.0%
	Rounded %ADI=				7%		10%		2%		10%		9%		10%

CYANTRANILIPROLE (263) International Estimated Daily Intake (IEDI) ADI = 0 - 0.03 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day			Intake as µg//person/day						
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
FC 0001	Citrus fruit, raw (excl kumquat commodities)	RAC	0.041	33.99	1.39	49.07	2.01	24.40	1.00	50.01	2.05	34.01	1.39	464.99	19.06
JF 0001	Citrus fruit, juice	PP	0.0069	36.84	0.25	3.75	0.03	0.30	0.00	21.62	0.15	21.82	0.15	46.67	0.32
FC 0002	Lemons and limes, raw (incl lemon juice, excl kumquat commodities)	RAC	0.035	5.45	0.19	9.83	0.34	0.92	0.03	10.85	0.38	5.27	0.18	5.23	0.18
FC 0003	Mandarins, raw (incl mandarin juice)	RAC	0.035	12.42	0.43	14.99	0.52	16.08	0.56	10.78	0.38	9.94	0.35	NC	-
FC 0004	Oranges, sweet, sour, raw (incl orange juice)	RAC	0.035	83.66	2.93	27.64	0.97	7.37	0.26	67.80	2.37	43.97	1.54	187.74	6.57
JF 0004	Oranges, juice (single strength, incl. concentrated)	PP	0.0069	33.31	0.23	1.78	0.01	0.28	0.00	18.97	0.13	14.01	0.10	13.36	0.09
FC 0005	Pummelo and grapefruits, raw (incl grapefruit juice)	RAC	0.035	8.21	0.29	4.60	0.16	0.64	0.02	5.85	0.20	19.98	0.70	368.86	12.91
FP 0009	Pome fruit, raw (incl cider, excl apple juice)	RAC	0.16	51.09	8.17	65.40	10.46	42.71	6.83	45.29	7.25	62.51	10.00	7.74	1.24
JF 0226	Apple juice, single strength (incl. concentrated)	PP	0.05	14.88	0.74	11.98	0.60	0.15	0.01	9.98	0.50	30.32	1.52	3.47	0.17
FS 0013	Cherries, raw	RAC	0.93	1.40	1.30	4.21	3.92	0.10	0.09	2.93	2.72	1.50	1.40	NC	-
FS 0014	Plums, raw (incl dried plums, incl Chinese jujube)	RAC	0.07	5.55	0.39	4.37	0.31	6.08	0.43	3.66	0.26	3.93	0.28	0.46	0.03
DF 0014	Plum, dried (prunes)	PP	0.54	0.61	0.33	0.35	0.19	0.10	0.05	0.35	0.19	0.49	0.26	0.13	0.07
FS 2001	Peaches, nectarines, apricots, raw (incl dried apricots)	RAC	0.34	13.03	4.43	16.29	5.54	8.29	2.82	12.95	4.40	5.35	1.82	0.10	0.03
FB 2006	Bush berries, raw (including processed) (i.e. blueberries, currants, gooseberries, rose hips)	RAC	0.75	1.31	0.98	5.50	4.13	0.10	0.08	2.57	1.93	0.82	0.62	2.15	1.61
FI 0355	Pomegranate, raw, (incl processed)	RAC	0.01	7.91	0.08	9.72	0.10	7.67	0.08	5.26	0.05	9.04	0.09	14.43	0.14
-	Onions, mature bulbs, dry	RAC	0.02	19.69	0.39	29.83	0.60	24.64	0.49	31.35	0.63	9.72	0.19	12.59	0.25
-	Onions, green, raw	RAC	1.3	1.55	2.02	0.74	0.96	1.05	1.37	3.74	4.86	0.94	1.22	6.45	8.39
VB 0040	Brassica vegetables, raw: head cabbages, flowerhead brassicas, Brussels sprouts & kohlrabi	RAC	0.56	20.71	11.60	39.81	22.29	16.70	9.35	28.49	15.95	18.12	10.15	15.03	8.42
VC 0046	Melons, raw (excl watermelons)	RAC	0.01	9.20	0.09	11.95	0.12	14.63	0.15	8.99	0.09	7.86	0.08	2.46	0.02
VC 0423	Chayote (Christophine)	RAC	0.065	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
VC 0424	Cucumber, raw	RAC	0.065	6.72	0.44	11.03	0.72	32.10	2.09	15.10	0.98	4.05	0.26	9.57	0.62
VC 0425	Gherkin, raw	RAC	0.065	0.41	0.03	5.89	0.38	NC	-	0.10	0.01	0.37	0.02	2.07	0.13
VC 0431	Squash, summer, raw (= courgette, zuchini)	RAC	0.065	NC	-	NC	-	5.48	0.36	NC	-	NC	-	1.03	0.07
VC 0432	Watermelon, raw	RAC	0.01	4.60	0.05	9.82	0.10	68.50	0.69	13.19	0.13	1.99	0.02	14.56	0.15
VC 0433	Winter squash, raw (= pumpkin)	RAC	0.01	6.88	0.07	3.23	0.03	2.59	0.03	12.12	0.12	1.68	0.02	6.30	0.06

CYANTRANILIPROLE (263) International Estimated Daily Intake (IEDI) ADI = 0 - 0.03 mg/kg bw

			STMR	Diets as g/person/day			Intake as µg//person/day								
Codex Code	Commodity description	Expr as	mg/kg	G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
VO 0440	Egg plants, raw (= aubergines)	RAC	0.08	1.01	0.08	1.69	0.14	21.37	1.71	3.00	0.24	1.40	0.11	NC	-
VO 0442	Okra, raw	RAC	0.08	NC	-	NC	-	0.10	0.01	0.17	0.01	NC	-	0.72	0.06
VO 0445	Peppers, sweet, raw	RAC	0.08	NC	-	NC	-	8.25	0.66	3.03	0.24	NC	-	0.91	0.07
VO 0448	Tomato, raw	RAC	0.08	32.13	2.57	51.27	4.10	34.92	2.79	73.37	5.87	15.15	1.21	8.88	0.71
-	Tomato, canned (& peeled)	PP	0.004	7.57	0.03	2.66	0.01	0.30	0.00	0.97	0.00	7.31	0.03	0.41	0.00
-	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	0.07	4.96	0.35	3.20	0.22	0.15	0.01	1.61	0.11	6.88	0.48	0.52	0.04
JF 0448	Tomato, juice (single strength, incl concentrated)	PP	0.014	0.80	0.01	0.10	0.00	0.10	0.00	0.61	0.01	0.40	0.01	0.10	0.00
VL 0054	Brassica leafy vegetables, raw	RAC	4.7	NC	-	NC	-	33.86	159.14	9.44	44.37	NC	-	4.40	20.68
VL 0469	Chicory leaves (sµg/ar loaf), raw	RAC	4.7	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
VL 0470	Lambs lettuce, raw (i.e. corn salad)	RAC	4.7	1.41	6.63	4.28	20.12	NC	-	0.10	0.47	5.11	24.02	1.20	5.64
VL 0472	Garden cress, raw	RAC	4.7	0.10	0.47	NC	-	1.27	5.97	0.13	0.61	0.21	0.99	0.10	0.47
VL 0473	Watercress, raw	RAC	4.7	0.35	1.65	3.13	14.71	0.32	1.50	NC	-	NC	-	2.30	10.81
VL 0476	Endive, raw (i.e. scarole)	RAC	4.7	0.21	0.99	0.93	4.37	NC	-	0.30	1.41	2.14	10.06	0.14	0.66
VL 0482	Lettuce, head, raw	RAC	0.79	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
VL 0483	Lettuce, leaf, raw	RAC	4.7	14.50	68.15	11.76	55.27	13.14	61.76	19.50	91.65	4.81	22.61	2.23	10.48
VL 0492	Purslane, raw	RAC	4.7	0.10	0.47	NC	-	NC	-	NC	-	NC	-	0.10	0.47
VL 0502	Spinach, raw	RAC	4.7	2.20	10.34	1.76	8.27	13.38	62.89	2.94	13.82	5.53	25.99	0.10	0.47
VL 0510	Cos lettuce, raw	RAC	4.7	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
VP 0061	Beans, green, with pods, raw: beans except broad bean & soya bean (i.e. immature seeds + pods) (Phaseolus spp)	RAC	0.23	5.07	1.17	0.83	0.19	0.17	0.04	3.70	0.85	NC	-	NC	-
VP 0062	Beans, green, without pods, raw: beans except broad bean & soya bean (i.e. immature seeds only) (Phaseolus spp..)	RAC	0.07	2.21	0.15	5.25	0.37	4.17	0.29	1.61	0.11	16.95	1.19	0.17	0.01
VP 0063	Peas green, with pods, raw (i.e. immature seeds + pods) (Pisum spp)	RAC	0.7	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
VP 0064	Peas, green, without pods, raw (i.e. immature seeds only) (Pisum spp)	RAC	0.07	10.72	0.75	1.99	0.14	2.72	0.19	4.26	0.30	4.23	0.30	NC	-
VP 0541	Soya bean, green, without pods, raw (i.e. immature seeds only) (Glycine max)	RAC	0.036	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
VD 0071	Beans, dry, raw (Phaseolus spp)	RAC	0.01	1.51	0.02	1.50	0.02	1.90	0.02	5.11	0.05	1.36	0.01	23.43	0.23
VD 0541	Soya bean, dry, raw (incl paste, incl curd, incl oil, incl sauce)	RAC	0.033	106.33	3.51	117.78	3.89	42.12	1.39	195.70	6.46	222.52	7.34	80.47	2.66
VR 0463	Cassava raw (incl starch, incl tapioca, incl flour)	RAC	0.01	0.10	0.00	NC	-	20.96	0.21	0.14	0.00	NC	-	9.62	0.10
VR 0469	Chicory, roots, raw	RAC	0.01	0.10	0.00	0.51	0.01	0.10	0.00	0.10	0.00	21.12	0.21	NC	-

CYANTRANILIPROLE (263) International Estimated Daily Intake (IEDI) ADI = 0 - 0.03 mg/kg bw

			STMR	Diets as g/person/day			Intake as µg//person/day								
Codex Code	Commodity description	Expr as	mg/kg	G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
VR 0494	Radish roots, raw	RAC	0.01	3.83	0.04	11.99	0.12	NC	-	5.26	0.05	2.19	0.02	4.37	0.04
VR 0497	Swede, raw (i.e. rutabaga)	RAC	0.01	10.01	0.10	1.66	0.02	NC	-	NC	-	3.06	0.03	2.99	0.03
VR 0498	Salsify, raw (i.e. oysterplant)	RAC	0.01	1.02	0.01	0.52	0.01	NC	-	NC	-	2.08	0.02	0.39	0.00
VR 0504	Tannia, raw (i.e. yautia)	RAC	0.01	NC	-	NC	-	NC	-	0.10	0.00	NC	-	10.74	0.11
VR 0505	Taro, raw	RAC	0.01	NC	-	NC	-	1.93	0.02	0.84	0.01	NC	-	19.94	0.20
VR 0506	Garden turnip, raw	RAC	0.01	5.78	0.06	15.35	0.15	NC	-	6.54	0.07	1.95	0.02	4.73	0.05
VR 0508	Sweet potato, raw (incl dried)	RAC	0.01	0.93	0.01	0.32	0.00	64.65	0.65	5.37	0.05	0.30	0.00	3.13	0.03
VR 0574	Beetroot, raw	RAC	0.01	9.91	0.10	6.34	0.06	NC	-	9.65	0.10	19.11	0.19	6.47	0.06
VR 0577	Carrots, raw	RAC	0.01	26.26	0.26	27.13	0.27	10.07	0.10	16.49	0.16	44.69	0.45	8.75	0.09
VR 0578	Celeriac, raw	RAC	0.01	2.97	0.03	1.79	0.02	NC	-	0.10	0.00	16.91	0.17	3.22	0.03
VR 0583	Horseradish, raw	RAC	0.01	0.10	0.00	0.42	0.00	13.01	0.13	0.26	0.00	2.70	0.03	0.97	0.01
VR 0585	Jerusalem artichoke, raw (i.e. topinambur)	RAC	0.01	0.11	0.00	0.10	0.00	NC	-	0.22	0.00	NC	-	0.78	0.01
VR 0588	Parsnip, raw	RAC	0.01	4.42	0.04	0.10	0.00	NC	-	NC	-	NC	-	1.12	0.01
VR 0589	Potato, raw (incl flour, incl frozen, incl starch, incl tapioca)	RAC	0.02	225.03	4.50	234.24	4.68	71.48	1.43	177.55	3.55	234.55	4.69	37.71	0.75
VR 0590	Black radish, raw	RAC	0.01	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
VR 0591	Japanese radish, raw (i.e. daikon)	RAC	0.01	NC	-	NC	-	26.64	0.27	18.92	0.19	NC	-	3.59	0.04
VR 0596	Sµg/ar beet, raw (incl sµg/ar)	RAC	0.01	0.10	0.00	NC	-	0.10	0.00	0.10	0.00	NC	-	NC	-
VR 0600	Yams, raw (incl dried)	RAC	0.01	NC	-	NC	-	0.10	0.00	0.71	0.01	NC	-	17.57	0.18
VS 0624	Celery	RAC	2	7.68	15.36	2.85	5.70	NC	-	3.34	6.68	16.83	33.66	4.04	8.08
GC 0645	Maize, raw (incl glucose & dextrose & isoglucose, incl flour, incl oil, incl beer, incl germ, incl starch)	RAC	0	18.51	0.00	26.18	0.00	26.04	0.00	39.99	0.00	7.36	0.00	64.58	0.00
GC 0645	Maize, raw (incl glucose & dextrose & isoglucose, incl germ, excl flour, excl oil, excl beer, excl starch)	RAC	0	0.10	0.00	9.93	0.00	1.40	0.00	9.88	0.00	0.33	0.00	0.10	0.00
CF 1255	Maize, flour (white flour and wholemeal flour)	PP	0.0027	14.27	0.04	12.86	0.03	19.71	0.05	12.55	0.03	4.21	0.01	52.30	0.14
-	Maize starch	PP	0.0022	NC	-	NC	-	0.19	0.00	7.13	0.02	NC	-	NC	-
OR 0645	Maize oil	PP	0.0033	0.90	0.00	0.47	0.00	0.15	0.00	3.01	0.01	1.86	0.01	0.36	0.00
TN 0085	Tree nuts, raw (incl processed)	RAC	0.01	8.52	0.09	8.94	0.09	15.09	0.15	9.60	0.10	14.57	0.15	26.26	0.26
SO 0495	Rape seed, raw (incl oil)	RAC	0.077	32.68	2.52	19.91	1.53	7.83	0.60	15.69	1.21	NC	-	NC	-
SO 0691	Cotton seed, raw	RAC	0.16	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
OR 0691	Cotton seed oil, edible	PP	0.0064	1.68	0.01	0.66	0.00	1.13	0.01	1.18	0.01	0.89	0.01	0.37	0.00
SO 0702	Sunflower seed, raw (incl oil)	RAC	0.067	23.40	1.57	29.33	1.97	1.24	0.08	13.85	0.93	6.48	0.43	6.91	0.46

CYANTRANILIPROLE (263) International Estimated Daily Intake (IEDI) ADI = 0 - 0.03 mg/kg bw

			STMR	Diets as g/person/day				Intake as µg//person/day							
Codex Code	Commodity description	Expr as	mg/kg	G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
SB 0716	Coffee beans, raw (i.e. green coffee)	RAC	0.01	0.60	0.01	NC	-	0.62	0.01	1.71	0.02	NC	-	3.51	0.04
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) -80% as muscle	RAC	0.041	112.02	4.59	120.71	4.95	63.46	2.60	88.99	3.65	96.24	3.95	41.02	1.68
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) - 20% as fat	RAC	0.1	28.01	2.80	30.18	3.02	15.86	1.59	22.25	2.22	24.06	2.41	10.25	1.03
MF 0100	Mammalian fats, raw, excl milk fats (incl rendered fats)	RAC	0.1	6.44	0.64	15.51	1.55	3.79	0.38	8.29	0.83	18.44	1.84	8.00	0.80
MO 0105	Edible offal (mammalian), raw	RAC	0.38	15.17	5.76	5.19	1.97	6.30	2.39	6.78	2.58	3.32	1.26	3.17	1.20
ML 0106	Milks, raw or skimmed (incl dairy products)	RAC	0.21	388.92	81.67	335.88	70.53	49.15	10.32	331.25	69.56	468.56	98.40	245.45	51.54
PM 0110	Poultry meat, raw (incl prepared) - 90% as muscle	RAC	0.0039	66.38	0.26	48.47	0.19	21.58	0.08	78.41	0.31	48.04	0.19	76.01	0.30
PM 0110	Poultry meat, raw (incl prepared) - 10% as fat	RAC	0.0083	7.38	0.06	5.39	0.04	2.40	0.02	8.71	0.07	5.34	0.04	8.45	0.07
PF 0111	Poultry fat, raw (incl rendered)	RAC	0.0083	0.10	0.00	0.10	0.00	NC	-	0.10	0.00	0.71	0.01	NC	-
PO 0111	Poultry edible offal, raw (incl prepared)	RAC	0.0321	0.33	0.01	0.72	0.02	0.27	0.01	0.35	0.01	0.80	0.03	NC	-
PE 0112	Eggs, raw, (incl dried)	RAC	0.0426	25.84	1.10	29.53	1.26	28.05	1.19	33.19	1.41	36.44	1.55	8.89	0.38
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total intake (µg//person)=				255.8		264.5		347.4		306.2		276.5		181.7
	Bodyweight per region (kg bw) =				60		60		55		60		60		60
	ADI (µg//person)=				1800		1800		1650		1800		1800		1800
	%ADI=				14.2%		14.7%		21.1%		17.0%		15.4%		10.1%
	Rounded %ADI=				10%		10%		20%		20%		20%		10%

CYANTRANILIPROLE (263) International Estimated Daily Intake (IEDI) ADI = 0 - 0.03 mg/kg bw

			STMR	Diets: g/person/day				Intake = daily intake: µg//person					
Codex Code	Commodity description	Expr as	mg/kg	G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
FC 0001	Citrus fruit, raw (excl kumquat commodities)	RAC	0.041	2.57	0.11	2.12	0.09	28.93	1.19	0.10	0.00	1.10	0.05
JF 0001	Citrus fruit, juice	PP	0.0069	0.11	0.00	0.29	0.00	13.55	0.09	0.14	0.00	0.33	0.00
FC 0002	Lemons and limes, raw (incl lemon juice, excl kumquat commodities)	RAC	0.035	0.62	0.02	0.74	0.03	4.44	0.16	0.10	0.00	NC	-
FC 0003	Mandarins, raw (incl mandarin juice)	RAC	0.035	0.16	0.01	0.27	0.01	9.06	0.32	0.10	0.00	0.10	0.00

CYANTRANILIPROLE (263) International Estimated Daily Intake (IEDI) ADI = 0 - 0.03 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day				Intake = daily intake: µg//person					
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
FC 0004	Oranges, sweet, sour, raw (incl orange juice)	RAC	0.035	1.34	0.05	1.65	0.06	40.03	1.40	0.33	0.01	1.76	0.06
JF 0004	Oranges, juice (single strength, incl. concentrated)	PP	0.0069	0.10	0.00	0.26	0.00	12.61	0.09	0.14	0.00	0.33	0.00
FC 0005	Pummelo and grapefruits, raw (incl grapefruit juice)	RAC	0.035	0.68	0.02	0.10	0.00	3.21	0.11	0.10	0.00	NC	-
FP 0009	Pome fruit, raw (incl cider, excl apple juice)	RAC	0.16	68.85	11.02	10.93	1.75	70.82	11.33	189.78	30.36	19.56	3.13
JF 0226	Apple juice, single strength (incl. concentrated)	PP	0.05	0.10	0.01	0.10	0.01	7.19	0.36	0.10	0.01	NC	-
FS 0013	Cherries, raw	RAC	0.93	0.10	0.09	0.10	0.09	5.96	5.54	0.10	0.09	NC	-
FS 0014	Plums, raw (incl dried plums, incl Chinese jujube)	RAC	0.07	0.10	0.01	0.10	0.01	16.65	1.17	0.10	0.01	NC	-
DF 0014	Plum, dried (prunes)	PP	0.54	0.10	0.05	0.10	0.05	0.37	0.20	0.10	0.05	NC	-
FS 2001	Peaches, nectarines, apricots, raw (incl dried apricots)	RAC	0.34	0.10	0.03	0.10	0.03	10.76	3.66	0.10	0.03	NC	-
FB 2006	Bush berries, raw (including processed) (i.e. blueberries, currants, gooseberries, rose hips)	RAC	0.75	0.82	0.62	4.05	3.04	5.94	4.46	0.43	0.32	2.66	2.00
FI 0355	Pomegranate, raw, (incl processed)	RAC	0.01	5.49	0.05	27.17	0.27	NC	-	2.89	0.03	17.87	0.18
-	Onions, mature bulbs, dry	RAC	0.02	9.01	0.18	20.24	0.40	30.90	0.62	9.61	0.19	2.11	0.04
-	Onions, green, raw	RAC	1.3	1.43	1.86	0.10	0.13	0.20	0.26	NC	-	6.30	8.19
VB 0040	Brassica vegetables, raw: head cabbages, flowerhead brassicas, Brussels sprouts & kohlrabi	RAC	0.56	4.84	2.71	3.79	2.12	58.72	32.88	0.10	0.06	NC	-
VC 0046	Melons, raw (excl watermelons)	RAC	0.01	0.19	0.00	0.10	0.00	4.98	0.05	0.10	0.00	NC	-
VC 0423	Chayote (Christophine)	RAC	0.065	NC	-	NC	-	NC	-	NC	-	NC	-
VC 0424	Cucumber, raw	RAC	0.065	0.68	0.04	1.81	0.12	10.40	0.68	0.10	0.01	0.10	0.01
VC 0425	Gherkin, raw	RAC	0.065	0.15	0.01	0.39	0.03	3.15	0.20	0.10	0.01	0.10	0.01
VC 0431	Squash, summer, raw (= courgette, zuchini)	RAC	0.065	0.10	0.01	1.01	0.07	NC	-	1.91	0.12	NC	-
VC 0432	Watermelon, raw	RAC	0.01	4.29	0.04	0.30	0.00	28.70	0.29	0.10	0.00	NC	-
VC 0433	Winter squash, raw (= pumpkin)	RAC	0.01	0.56	0.01	6.14	0.06	4.59	0.05	11.70	0.12	NC	-
VO 0440	Egg plants, raw (= aubergines)	RAC	0.08	1.31	0.10	8.26	0.66	3.95	0.32	0.10	0.01	NC	-
VO 0442	Okra, raw	RAC	0.08	6.23	0.50	0.10	0.01	NC	-	NC	-	NC	-
VO 0445	Peppers, sweet, raw	RAC	0.08	1.24	0.10	1.27	0.10	NC	-	0.10	0.01	NC	-
VO 0448	Tomato, raw	RAC	0.08	12.99	1.04	4.79	0.38	58.40	4.67	0.92	0.07	0.10	0.01
-	Tomato, canned (& peeled)	PP	0.004	0.10	0.00	0.10	0.00	2.42	0.01	0.10	0.00	NC	-

Annex 3

CYANTRANILIPROLE (263) International Estimated Daily Intake (IEDI) ADI = 0 - 0.03 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day			Intake = daily intake: µg//person						
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
-	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	0.07	0.58	0.04	0.22	0.02	2.21	0.15	0.24	0.02	3.10	0.22
JF 0448	Tomato, juice (single strength, incl concentrated)	PP	0.014	0.10	0.00	0.10	0.00	0.42	0.01	0.10	0.00	0.10	0.00
VL 0054	Brassica leafy vegetables, raw	RAC	4.7	1.50	7.05	1.17	5.50	NC	-	0.10	0.47	NC	-
VL 0469	Chicory leaves (sµg/ar loaf), raw	RAC	4.7	NC	-	NC	-	NC	-	NC	-	NC	-
VL 0470	Lambs lettuce, raw (i.e. corn salad)	RAC	4.7	1.09	5.12	0.79	3.71	NC	-	0.74	3.48	1.47	6.91
VL 0472	Garden cress, raw	RAC	4.7	0.10	0.47	0.10	0.47	NC	-	0.10	0.47	0.13	0.61
VL 0473	Watercress, raw	RAC	4.7	2.08	9.78	1.50	7.05	0.10	0.47	1.41	6.63	2.81	13.21
VL 0476	Endive, raw (i.e. scarole)	RAC	4.7	0.10	0.47	0.10	0.47	0.10	0.47	0.10	0.47	NC	-
VL 0482	Lettuce, head, raw	RAC	0.79	NC	-	NC	-	NC	-	NC	-	NC	-
VL 0483	Lettuce, leaf, raw	RAC	4.7	0.29	1.36	0.10	0.47	6.71	31.54	0.10	0.47	NC	-
VL 0492	Purslane, raw	RAC	4.7	0.10	0.47	0.10	0.47	NC	-	0.10	0.47	0.10	0.47
VL 0502	Spinach, raw	RAC	4.7	0.17	0.80	0.10	0.47	0.81	3.81	0.10	0.47	NC	-
VL 0510	Cos lettuce, raw	RAC	4.7	NC	-	NC	-	NC	-	NC	-	NC	-
VP 0061	Beans, green, with pods, raw: beans except broad bean & soya bean (i.e. immature seeds + pods) (Phaseolus spp)	RAC	0.23	NC	-	NC	-	NC	-	NC	-	NC	-
VP 0062	Beans, green, without pods, raw: beans except broad bean & soya bean (i.e. immature seeds only) (Phaseolus spp..)	RAC	0.07	0.30	0.02	3.13	0.22	4.11	0.29	0.10	0.01	NC	-
VP 0063	Peas green, with pods, raw (i.e. immature seeds + pods) (Pisum spp)	RAC	0.7	NC	-	NC	-	NC	-	NC	-	NC	-
VP 0064	Peas, green, without pods, raw (i.e. immature seeds only) (Pisum spp)	RAC	0.07	0.21	0.01	0.10	0.01	5.51	0.39	0.10	0.01	NC	-
VP 0541	Soya bean, green, without pods, raw (i.e. immature seeds only) (Glycine max)	RAC	0.036	NC	-	NC	-	NC	-	NC	-	NC	-
VD 0071	Beans, dry, raw (Phaseolus spp)	RAC	0.01	7.11	0.07	2.33	0.02	3.76	0.04	44.70	0.45	3.27	0.03
VD 0541	Soya bean, dry, raw (incl paste, incl curd, incl oil, incl sauce)	RAC	0.033	15.80	0.52	14.29	0.47	104.36	3.44	17.11	0.56	35.20	1.16
VR 0463	Cassava raw (incl starch, incl tapioca, incl flour)	RAC	0.01	91.92	0.92	34.12	0.34	NC	-	259.92	2.60	45.48	0.45
VR 0469	Chicory, roots, raw	RAC	0.01	0.10	0.00	0.10	0.00	0.10	0.00	NC	-	NC	-
VR 0494	Radish roots, raw	RAC	0.01	3.96	0.04	2.86	0.03	3.30	0.03	2.67	0.03	5.34	0.05
VR 0497	Swede, raw (i.e. rutabaga)	RAC	0.01	2.71	0.03	1.96	0.02	7.80	0.08	1.83	0.02	3.66	0.04
VR 0498	Salsify, raw (i.e. oysterplant)	RAC	0.01	0.36	0.00	0.26	0.00	NC	-	0.24	0.00	0.48	0.00
VR 0504	Tannia, raw (i.e. yautia)	RAC	0.01	NC	-	NC	-	0.10	0.00	NC	-	NC	-

CYANTRANILIPROLE (263) International Estimated Daily Intake (IEDI) ADI = 0 - 0.03 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day		Intake = daily intake: μg//person							
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
VR 0505	Taro, raw	RAC	0.01	6.71	0.07	31.91	0.32	NC	-	10.73	0.11	264.31	2.64
VR 0506	Garden turnip, raw	RAC	0.01	4.29	0.04	3.10	0.03	6.41	0.06	2.90	0.03	5.79	0.06
VR 0508	Sweet potato, raw (incl dried)	RAC	0.01	28.83	0.29	61.55	0.62	0.15	0.00	221.94	2.22	NC	-
VR 0574	Beetroot, raw	RAC	0.01	5.86	0.06	4.23	0.04	9.46	0.09	3.96	0.04	7.91	0.08
VR 0577	Carrots, raw	RAC	0.01	2.07	0.02	3.00	0.03	25.29	0.25	0.10	0.00	NC	-
VR 0578	Celeriac, raw	RAC	0.01	2.91	0.03	2.10	0.02	7.59	0.08	1.97	0.02	3.93	0.04
VR 0583	Horseradish, raw	RAC	0.01	0.88	0.01	0.63	0.01	0.54	0.01	0.59	0.01	1.19	0.01
VR 0585	Jerusalem artichoke, raw (i.e. topinambur)	RAC	0.01	14.22	0.14	18.75	0.19	0.10	0.00	0.10	0.00	20.14	0.20
VR 0588	Parsnip, raw	RAC	0.01	1.02	0.01	0.74	0.01	3.50	0.04	0.69	0.01	1.37	0.01
VR 0589	Potato, raw (incl flour, incl frozen, incl starch, incl tapioca)	RAC	0.02	23.96	0.48	13.56	0.27	213.41	4.27	104.35	2.09	8.56	0.17
VR 0590	Black radish, raw	RAC	0.01	NC	-	NC	-	NC	-	NC	-	NC	-
VR 0591	Japanese radish, raw (i.e. daikon)	RAC	0.01	3.25	0.03	2.35	0.02	NC	-	2.20	0.02	4.39	0.04
VR 0596	Sμg/ar beet, raw (incl sμg/ar)	RAC	0.01	3.93	0.04	1.68	0.02	NC	-	NC	-	36.12	0.36
VR 0600	Yams, raw (incl dried)	RAC	0.01	70.93	0.71	30.62	0.31	0.10	0.00	5.65	0.06	30.85	0.31
VS 0624	Celery	RAC	2	3.66	7.32	2.65	5.30	4.84	9.68	2.47	4.94	4.94	9.88
GC 0645	Maize, raw (incl glucose & dextrose & isoglucose, incl flour, incl oil, incl beer, incl germ, incl starch)	RAC	0	116.66	0.00	10.52	0.00	38.46	0.00	76.60	0.00	34.44	0.00
GC 0645	Maize, raw (incl glucose & dextrose & isoglucose, incl germ, excl flour, excl oil, excl beer, excl starch)	RAC	0	0.35	0.00	0.51	0.00	3.26	0.00	0.18	0.00	NC	-
CF 1255	Maize, flour (white flour and wholemeal flour)	PP	0.0027	94.34	0.25	8.09	0.02	28.03	0.08	55.94	0.15	28.07	0.08
-	Maize starch	PP	0.0022	0.10	0.00	0.10	0.00	NC	-	NC	-	NC	-
OR 0645	Maize oil	PP	0.0033	0.33	0.00	0.10	0.00	0.81	0.00	0.10	0.00	NC	-
TN 0085	Tree nuts, raw (incl processed)	RAC	0.01	4.39	0.04	135.53	1.36	6.11	0.06	0.72	0.01	317.74	3.18
SO 0495	Rape seed, raw (incl oil)	RAC	0.077	0.19	0.01	0.10	0.01	12.07	0.93	0.10	0.01	NC	-
SO 0691	Cotton seed, raw	RAC	0.16	NC	-	NC	-	NC	-	NC	-	NC	-
OR 0691	Cotton seed oil, edible	PP	0.0064	1.28	0.01	0.10	0.00	0.45	0.00	0.42	0.00	0.15	0.00
SO 0702	Sunflower seed, raw (incl oil)	RAC	0.067	0.94	0.06	0.22	0.01	32.01	2.14	12.12	0.81	0.48	0.03
SB 0716	Coffee beans, raw (i.e. green coffee)	RAC	0.01	0.83	0.01	0.69	0.01	1.09	0.01	2.91	0.03	0.82	0.01
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) -80% as muscle	RAC	0.041	23.34	0.96	40.71	1.67	97.15	3.98	18.06	0.74	57.71	2.37
MM 0095	MEAT FROM MAMMALS other than	RAC	0.1	5.84	0.58	10.18	1.02	24.29	2.43	4.52	0.45	14.43	1.44

CYANTRANILIPROLE (263) International Estimated Daily Intake (IEDI) ADI = 0 - 0.03 mg/kg bw

			STMR	Diets: g/person/day			Intake = daily intake: µg//person						
Codex Code	Commodity description	Expr as	mg/kg	G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
	marine mammals, raw (incl prepared meat) - 20% as fat												
MF 0100	Mammalian fats, raw, excl milk fats (incl rendered fats)	RAC	0.1	1.05	0.11	1.14	0.11	18.69	1.87	0.94	0.09	3.12	0.31
MO 0105	Edible offal (mammalian), raw	RAC	0.38	4.64	1.76	1.97	0.75	10.01	3.80	3.27	1.24	3.98	1.51
ML 0106	Milks, raw or skimmed (incl dairy products)	RAC	0.21	108.75	22.84	70.31	14.77	436.11	91.58	61.55	12.93	79.09	16.61
PM 0110	Poultry meat, raw (incl prepared) - 90% as muscle	RAC	0.0039	3.53	0.01	10.83	0.04	51.36	0.20	4.53	0.02	50.00	0.20
PM 0110	Poultry meat, raw (incl prepared) - 10% as fat	RAC	0.0083	0.39	0.00	1.20	0.01	5.71	0.05	0.50	0.00	5.56	0.05
PF 0111	Poultry fat, raw (incl rendered)	RAC	0.0083	NC	-	NC	-	0.32	0.00	NC	-	NC	-
PO 0111	Poultry edible offal, raw (incl prepared)	RAC	0.0321	0.10	0.00	0.70	0.02	0.97	0.03	0.10	0.00	NC	-
PE 0112	Eggs, raw, (incl dried)	RAC	0.0426	3.84	0.16	4.41	0.19	27.25	1.16	1.13	0.05	7.39	0.31
	Total intake (µg//person)=				81.9		56.4		233.6		74.2		76.7
	Bodyweight per region (kg bw) =				60		60		60		60		60
	ADI (µg//person)=				1800		1800		1800		1800		1800
	%ADI=				4.6%		3.1%		13.0%		4.1%		4.3%
	Rounded %ADI=				5%		3%		10%		4%		4%

CYAZOFAMID (281) International Estimated Daily Intake (IEDI) ADI = 0 - 0.2 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day G01 diet	G01 intake	G02 diet	Intake as µg//person/day G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
FB 0269	Grape, raw (incl juice, excl must, excl dried, excl wine)	RAC	0.06	12.86	0.77	9.49	0.57	0.10	0.01	17.25	1.04	3.99	0.24	54.48	3.27
-	Grape must	PP	0.035	0.33	0.01	0.13	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00
DF 0269	Grape, dried (= currants, raisins and sultanas)	PP	0.013	0.51	0.01	0.51	0.01	0.10	0.00	1.27	0.02	0.12	0.00	2.07	0.03
-	Grape wine (incl vermouths)	PP	0.03	0.67	0.02	12.53	0.38	2.01	0.06	1.21	0.04	3.53	0.11	4.01	0.12
VB 0040	Brassica vegetables, raw: head cabbages, flowerhead brassicas, Brussels sprouts & kohlrabi	RAC	0.31	6.41	1.99	35.79	11.09	0.71	0.22	9.81	3.04	12.07	3.74	16.58	5.14
VC 0045	Fruiting vegetables, cucurbits, raw	RAC	0.04	53.14	2.13	86.21	3.45	6.28	0.25	92.76	3.71	15.64	0.63	155.30	6.21
VO 0440	Egg plants, raw (= aubergines)	RAC	0.06	5.58	0.33	4.31	0.26	0.89	0.05	9.31	0.56	13.64	0.82	20.12	1.21
VO 0444	Peppers, chili, raw (incl dried)	RAC	0.27	6.93	1.87	10.97	2.96	8.83	2.38	9.13	2.47	6.65	1.80	20.01	5.40
VO 0445	Peppers, sweet, raw (incl dried)	RAC	0.072	4.49	0.32	6.44	0.46	7.21	0.52	5.68	0.41	9.52	0.69	8.92	0.64
VO 0448	Tomato, raw (incl juice, incl canned, excl paste)	RAC	0.06	42.41	2.54	76.50	4.59	10.69	0.64	85.07	5.10	24.98	1.50	203.44	12.21
-	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	0.043	2.34	0.10	1.33	0.06	1.57	0.07	4.24	0.18	0.34	0.01	2.83	0.12
VL 0053	Leafy vegetables, raw (excl brassica leafy vegetables)	RAC	3.2	7.40	23.68	11.42	36.54	7.52	24.06	23.76	76.03	40.05	128.16	17.20	55.04
VL 0054	Brassica leafy vegetables, raw	RAC	3.7	1.07	3.96	10.95	40.52	0.22	0.81	1.75	6.48	5.72	21.16	4.02	14.87
VP 0061	Beans, green, with pods, raw: beans except broad bean & soya bean (i.e. immature seeds + pods) (Phaseolus spp)	RAC	0.125	0.68	0.09	NC	-	NC	-	0.39	0.05	0.22	0.03	0.49	0.06
VP 0062	Beans, green, without pods, raw: beans except broad bean & soya bean (i.e. immature seeds only) (Phaseolus spp..)	RAC	0.025	1.56	0.04	0.60	0.02	0.49	0.01	1.18	0.03	0.90	0.02	7.79	0.19
VR 0589	Potato, raw (incl flour, incl frozen, incl starch, incl tapioca)	RAC	0.01	59.74	0.60	316.14	3.16	9.78	0.10	60.26	0.60	54.12	0.54	119.82	1.20
DH 1100	Hops, dry	RAC	3.6	0.10	0.36	0.10	0.36	0.10	0.36	0.10	0.36	NC	-	0.10	0.36
	Total intake (µg//person)=				38.8		104.4		29.6		100.1		159.4		106.1
	Bodyweight per region (kg bw) =				60		60		60		60		60		60
	ADI (µg//person)=				12000		12000		12000		12000		12000		12000
	%ADI=				0.3%		0.9%		0.2%		0.8%		1.3%		0.9%
	Rounded %ADI=				0%		1%		0%		1%		1%		1%

Annex 3

CYAZOFAMID (281) International Estimated Daily Intake (IEDI) ADI = 0 - 0.2 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
				Diets as g/person/day		Intake as µg//person/day									
FB 0269	Grape, raw (incl juice, excl must, excl dried, excl wine)	RAC	0.06	7.03	0.42	13.65	0.82	5.23	0.31	12.15	0.73	7.35	0.44	1.21	0.07
-	Grape must	PP	0.035	0.16	0.01	0.10	0.00	0.10	0.00	0.12	0.00	0.11	0.00	NC	-
DF 0269	Grape, dried (= currants, raisins and sultanas)	PP	0.013	3.09	0.04	1.51	0.02	0.10	0.00	1.38	0.02	4.26	0.06	0.42	0.01
-	Grape wine (incl vermouths)	PP	0.03	88.93	2.67	62.41	1.87	1.84	0.06	25.07	0.75	61.17	1.84	5.84	0.18
VB 0040	Brassica vegetables, raw: head cabbages, flowerhead brassicas, Brussels sprouts & kohlrabi	RAC	0.31	20.71	6.42	39.81	12.34	16.70	5.18	28.49	8.83	18.12	5.62	15.03	4.66
VC 0045	Fruiting vegetables, cucurbits, raw	RAC	0.04	27.81	1.11	41.93	1.68	123.30	4.93	49.47	1.98	15.95	0.64	35.99	1.44
VO 0440	Egg plants, raw (= aubergines)	RAC	0.06	1.01	0.06	1.69	0.10	21.37	1.28	3.00	0.18	1.40	0.08	NC	-
VO 0444	Peppers, chili, raw (incl dried)	RAC	0.27	6.36	1.72	15.46	4.17	10.74	2.90	7.28	1.97	8.21	2.22	3.58	0.97
VO 0445	Peppers, sweet, raw (incl dried)	RAC	0.072	0.82	0.06	1.53	0.11	10.85	0.78	4.59	0.33	1.84	0.13	2.00	0.14
VO 0448	Tomato, raw (incl juice, incl canned, excl paste)	RAC	0.06	44.88	2.69	55.49	3.33	35.44	2.13	75.65	4.54	27.00	1.62	9.61	0.58
-	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	0.043	4.96	0.21	3.20	0.14	0.15	0.01	1.61	0.07	6.88	0.30	0.52	0.02
VL 0053	Leafy vegetables, raw (excl brassica leafy vegetables)	RAC	3.2	18.83	60.26	21.85	69.92	87.37	279.58	33.65	107.68	18.18	58.18	13.92	44.54
VL 0054	Brassica leafy vegetables, raw	RAC	3.7	NC	-	NC	-	33.86	125.28	9.44	34.93	NC	-	4.40	16.28
VP 0061	Beans, green, with pods, raw: beans except broad bean & soya bean (i.e. immature seeds + pods) (Phaseolus spp)	RAC	0.125	5.07	0.63	0.83	0.10	0.17	0.02	3.70	0.46	NC	-	NC	-
VP 0062	Beans, green, without pods, raw: beans except broad bean & soya bean (i.e. immature seeds only) (Phaseolus spp..)	RAC	0.025	2.21	0.06	5.25	0.13	4.17	0.10	1.61	0.04	16.95	0.42	0.17	0.00
VR 0589	Potato, raw (incl flour, incl frozen, incl starch, incl tapioca)	RAC	0.01	225.03	2.25	234.24	2.34	71.48	0.71	177.55	1.78	234.55	2.35	37.71	0.38
DH 1100	Hops, dry	RAC	3.6	NC	-	NC	-	0.10	0.36	0.10	0.36	NC	-	NC	-
	Total intake (µg//person)=				78.6		97.1		423.6		164.6		73.9		69.3
	Bodyweight per region (kg bw) =				60		60		55		60		60		60
	ADI (µg//person)=				12000		12000		11000		12000		12000		12000
	%ADI=				0.7%		0.8%		3.9%		1.4%		0.6%		0.6%
	Rounded %ADI=				1%		1%		4%		1%		1%		1%

CYAZOFAMID (281) International Estimated Daily Intake (IEDI) ADI = 0 - 0.2 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day G13 diet	G13 intake	G14 diet	Intake = daily intake: µg//person G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
FB 0269	Grape, raw (incl juice, excl must, excl dried, excl wine)	RAC	0.06	0.15	0.01	0.38	0.02	15.73	0.94	0.10	0.01	0.10	0.01
-	Grape must	PP	0.035	0.10	0.00	0.10	0.00	0.11	0.00	0.10	0.00	0.19	0.01
DF 0269	Grape, dried (= currants, raisins and sultanas)	PP	0.013	0.10	0.00	0.13	0.00	1.06	0.01	0.10	0.00	0.10	0.00
-	Grape wine (incl vermouths)	PP	0.03	0.31	0.01	0.23	0.01	60.43	1.81	0.52	0.02	31.91	0.96
VB 0040	Brassica vegetables, raw: head cabbages, flowerhead brassicas, Brussels sprouts & kohlrabi	RAC	0.31	4.84	1.50	3.79	1.17	58.72	18.20	0.10	0.03	NC	-
VC 0045	Fruiting vegetables, cucurbits, raw	RAC	0.04	5.96	0.24	9.74	0.39	51.82	2.07	13.61	0.54	0.10	0.00
VO 0440	Egg plants, raw (= aubergines)	RAC	0.06	1.31	0.08	8.26	0.50	3.95	0.24	0.10	0.01	NC	-
VO 0444	Peppers, chili, raw (incl dried)	RAC	0.27	7.55	2.04	12.48	3.37	24.78	6.69	0.87	0.23	NC	-
VO 0445	Peppers, sweet, raw (incl dried)	RAC	0.072	5.49	0.40	10.57	0.76	8.84	0.64	0.91	0.07	NC	-
VO 0448	Tomato, raw (incl juice, incl canned, excl paste)	RAC	0.06	13.17	0.79	4.92	0.30	62.69	3.76	1.04	0.06	0.11	0.01
-	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	0.043	0.58	0.02	0.22	0.01	2.21	0.10	0.24	0.01	3.10	0.13
VL 0053	Leafy vegetables, raw (excl brassica leafy vegetables)	RAC	3.2	10.92	34.94	7.58	24.26	7.53	24.10	7.06	22.59	14.11	45.15
VL 0054	Brassica leafy vegetables, raw	RAC	3.7	1.50	5.55	1.17	4.33	NC	-	0.10	0.37	NC	-
VP 0061	Beans, green, with pods, raw: beans except broad bean & soya bean (i.e. immature seeds + pods) (Phaseolus spp)	RAC	0.125	NC	-	NC	-	NC	-	NC	-	NC	-
VP 0062	Beans, green, without pods, raw: beans except broad bean & soya bean (i.e. immature seeds only) (Phaseolus spp..)	RAC	0.025	0.30	0.01	3.13	0.08	4.11	0.10	0.10	0.00	NC	-
VR 0589	Potato, raw (incl flour, incl frozen, incl starch, incl tapioca)	RAC	0.01	23.96	0.24	13.56	0.14	213.41	2.13	104.35	1.04	8.56	0.09
DH 1100	Hops, dry	RAC	3.6	NC	-	NC	-	0.10	0.36	NC	-	NC	-
	Total intake (µg//person)=				45.8		35.3		61.2		25.0		46.4
	Bodyweight per region (kg bw) =				60		60		60		60		60
	ADI (µg//person)=				12000		12000		12000		12000		12000
	%ADI=				0.4%		0.3%		0.5%		0.2%		0.4%
	Rounded %ADI=				0%		0%		1%		0%		0%

Annex 3

CYPRODINIL (207) International Estimated Daily Intake (IEDI) ADI = 0 - 0.03 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day	Intake as µg//person/day										
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
FP 0009	Pome fruit, raw (incl cider, excl apple juice)	RAC	0.48	19.35	9.29	34.06	16.35	17.87	8.58	25.74	12.36	7.69	3.69	56.85	27.29
JF 0226	Apple juice, single strength (incl. concentrated)	PP	0.015	0.32	0.00	3.07	0.05	0.10	0.00	5.00	0.08	0.29	0.00	5.57	0.08
FS 0012	Stone fruits, raw (incl dried apricots, excl dried plums)	RAC	0.68	11.33	7.70	23.62	16.06	0.24	0.16	11.32	7.70	2.28	1.55	33.26	22.62
DF 0014	Plum, dried (prunes)	PP	1.2	0.10	0.12	0.10	0.12	0.10	0.12	0.18	0.22	0.10	0.12	0.10	0.12
FB 0018	Berries and other small fruits, raw, (incl processed), excl small fruit vine climbing (group 004D)	RAC	2.2	2.29	5.04	4.71	10.36	0.78	1.72	4.48	9.86	0.39	0.86	6.27	13.79
FB 0269	Grape, raw (incl must, excl dried, excl juice, excl wine)	RAC	0.79	13.02	10.29	9.25	7.31	0.10	0.08	16.91	13.36	3.70	2.92	54.44	43.01
DF 0269	Grape, dried (= currants, raisins and sultanas)	PP	1.7	0.51	0.87	0.51	0.87	0.10	0.17	1.27	2.16	0.12	0.20	2.07	3.52
JF 0269	Grape juice	PP	0.12	0.14	0.02	0.29	0.03	0.10	0.01	0.30	0.04	0.24	0.03	0.10	0.01
-	Grape wine (incl vermouths)	PP	0.062	0.67	0.04	12.53	0.78	2.01	0.12	1.21	0.08	3.53	0.22	4.01	0.25
FI 0326	Avocado, raw	RAC	0.265	0.13	0.03	0.10	0.03	2.05	0.54	2.54	0.67	2.34	0.62	0.12	0.03
-	Onions, mature bulbs, dry	RAC	0.065	29.36	1.91	37.50	2.44	3.56	0.23	34.78	2.26	18.81	1.22	43.38	2.82
-	Onions, green, raw	RAC	0.065	2.45	0.16	1.49	0.10	1.02	0.07	2.60	0.17	0.60	0.04	2.03	0.13
VB 0041	Cabbages, head, raw	RAC	0.03	2.73	0.08	27.92	0.84	0.55	0.02	4.47	0.13	4.27	0.13	10.25	0.31
VB 0042	Flowerhead brassicas, raw	RAC	0.27	2.96	0.80	0.57	0.15	0.10	0.03	4.17	1.13	7.79	2.10	3.64	0.98
VC 0045	Fruiting vegetables, cucurbits, raw	RAC	0.09	53.14	4.78	86.21	7.76	6.28	0.57	92.76	8.35	15.64	1.41	155.30	13.98
VO 0050	Fruiting vegetables other than cucurbits, raw, (incl processed commodities), excl sweet corn commodities, excl mushroom commodities	RAC	0.24	70.72	16.97	103.53	24.85	37.61	9.03	129.38	31.05	61.87	14.85	265.39	63.69
-	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	0.48	2.34	1.12	1.33	0.64	1.57	0.75	4.24	2.04	0.34	0.16	2.83	1.36
JF 0448	Tomato, juice (single strength, incl concentrated)	PP	0.036	0.29	0.01	0.29	0.01	0.10	0.00	0.38	0.01	0.10	0.00	0.14	0.01
VL 0053	Leafy vegetables, raw (excl brassica leafy vegetables)	RAC	11	7.40	81.40	11.42	125.62	7.52	82.72	23.76	261.36	40.05	440.55	17.20	189.20
VL 0054	Brassica leafy vegetables, raw	RAC	0.37	1.07	0.40	10.95	4.05	0.22	0.08	1.75	0.65	5.72	2.12	4.02	1.49
VP 0061	Beans, green, with pods, raw: beans except broad bean & soya bean (i.e. immature seeds + pods) (Phaseolus spp)	RAC	0.165	0.68	0.11	NC	-	NC	-	0.39	0.06	0.22	0.04	0.49	0.08
VP 0062	Beans, green, without pods, raw: beans except broad bean & soya	RAC	0.02	1.56	0.03	0.60	0.01	0.49	0.01	1.18	0.02	0.90	0.02	7.79	0.16

CYPRODINIL (207) International Estimated Daily Intake (IEDI) ADI = 0 - 0.03 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day G01 diet	G01 intake	G02 diet	Intake as µg//person/day G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
	bean (i.e. immature seeds only) (Phaseolus spp..)														
VR 0494	Radish roots, raw	RAC	0.01	2.31	0.02	4.09	0.04	2.53	0.03	6.15	0.06	5.88	0.06	2.97	0.03
VR 0577	Carrots, raw	RAC	0.09	9.51	0.86	30.78	2.77	0.37	0.03	8.75	0.79	2.80	0.25	6.10	0.55
VR 0588	Parsnip, raw	RAC	0.09	0.59	0.05	1.05	0.09	0.65	0.06	1.58	0.14	NC	-	0.76	0.07
GC 0640	Barley, raw (incl malt extract, incl pot&pearled, incl flour & grits, incl malt, excl beer)	RAC	0.58	18.98	11.01	13.35	7.74	0.42	0.24	0.67	0.39	2.30	1.33	0.86	0.50
-	Barley beer	PP	0.0058	4.87	0.03	93.78	0.54	24.28	0.14	12.76	0.07	39.28	0.23	18.15	0.11
GC 0654	Wheat, raw (incl bulgur, incl fermented beverages, incl germ, incl wholemeal bread, excl white flour products, excl white bread)	RAC	0.07	0.10	0.01	1.13	0.08	0.10	0.01	0.10	0.01	0.74	0.05	0.10	0.01
CF 0654	Wheat, bran	PP	0.21	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
CF 1212	Wheat, wholemeal flour	PP	0.019	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
CP 1212	Wheat, wholemeal bread	PP	0.036	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00
TN 0660	Almonds, nutmeat	RAC	0.02	1.38	0.03	0.10	0.00	0.10	0.00	1.00	0.02	0.10	0.00	0.81	0.02
SO 0495	Rape seed, raw	RAC	0.02	0.10	0.00	NC	-	NC	-	0.10	0.00	0.75	0.02	0.10	0.00
HH 0720	Herbs, raw (incl dried)	RAC	5.05	1.69	8.53	1.91	9.65	1.18	5.96	3.35	16.92	0.55	2.78	1.64	8.28
HS 0093	Spices, as traded	RAC	2	1.33	2.66	0.57	1.14	0.49	0.98	5.48	10.96	2.00	4.00	1.18	2.36
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat)	RAC	0	31.20	0.00	72.44	0.00	20.88	0.00	47.98	0.00	33.08	0.00	36.25	0.00
MO 0105	Edible offal (mammalian), raw	RAC	0	4.79	0.00	9.68	0.00	2.97	0.00	5.49	0.00	3.84	0.00	5.03	0.00
ML 0106	Milks, raw or skimmed (incl dairy products)	RAC	0	289.65	0.00	485.88	0.00	26.92	0.00	239.03	0.00	199.91	0.00	180.53	0.00
PM 0110	Poultry meat, raw (incl prepared)	RAC	0	14.63	0.00	29.76	0.00	8.04	0.00	129.68	0.00	25.04	0.00	35.66	0.00
PO 0111	Poultry edible offal, raw (incl prepared)	RAC	0	0.12	0.00	0.12	0.00	0.11	0.00	5.37	0.00	0.24	0.00	0.10	0.00
PE 0112	Eggs, raw, (incl dried)	RAC	0	7.84	0.00	23.08	0.00	2.88	0.00	14.89	0.00	9.81	0.00	14.83	0.00
	Total intake (µg//person)=				164.4		240.5		112.5		383.1		481.6		396.8
	Bodyweight per region (kg bw) =				60		60		60		60		60		60
	ADI (µg//person)=				1800		1800		1800		1800		1800		1800
	%ADI=				9.1%		13.4%		6.2%		21.3%		26.8%		22.0%
	Rounded %ADI=				9%		10%		6%		20%		30%		20%

CYPRODINIL (207) International Estimated Daily Intake (IEDI) ADI = 0 - 0.03 mg/kg bw

			STMR	Diets as g/person/day			Intake as µg//person/day								
Codex Code	Commodity description	Expr as	mg/kg	G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
FP 0009	Pome fruit, raw (incl cider, excl apple juice)	RAC	0.48	51.09	24.52	65.40	31.39	42.71	20.50	45.29	21.74	62.51	30.00	7.74	3.72
JF 0226	Apple juice, single strength (incl. concentrated)	PP	0.015	14.88	0.22	11.98	0.18	0.15	0.00	9.98	0.15	30.32	0.45	3.47	0.05
FS 0012	Stone fruits, raw (incl dried apricots, excl dried plums)	RAC	0.68	18.18	12.36	23.83	16.20	14.27	9.70	18.52	12.59	9.35	6.36	0.11	0.07
DF 0014	Plum, dried (prunes)	PP	1.2	0.61	0.73	0.35	0.42	0.10	0.12	0.35	0.42	0.49	0.59	0.13	0.16
FB 0018	Berries and other small fruits, raw, (incl processed), excl small fruit vine climbing (group 004D)	RAC	2.2	14.68	32.30	12.74	28.03	0.23	0.51	11.77	25.89	8.01	17.62	4.08	8.98
FB 0269	Grape, raw (incl must, excl dried, excl juice, excl wine)	RAC	0.79	6.48	5.12	11.31	8.93	5.21	4.12	9.50	7.51	4.66	3.68	0.78	0.62
DF 0269	Grape, dried (= currants, raisins and sultanas)	PP	1.7	3.09	5.25	1.51	2.57	0.10	0.17	1.38	2.35	4.26	7.24	0.42	0.71
JF 0269	Grape juice	PP	0.12	0.56	0.07	1.96	0.24	0.10	0.01	2.24	0.27	2.27	0.27	0.34	0.04
-	Grape wine (incl vermouths)	PP	0.062	88.93	5.51	62.41	3.87	1.84	0.11	25.07	1.55	61.17	3.79	5.84	0.36
FI 0326	Avocado, raw	RAC	0.265	2.65	0.70	0.87	0.23	0.46	0.12	1.64	0.43	1.30	0.34	0.96	0.25
-	Onions, mature bulbs, dry	RAC	0.065	19.69	1.28	29.83	1.94	24.64	1.60	31.35	2.04	9.72	0.63	12.59	0.82
-	Onions, green, raw	RAC	0.065	1.55	0.10	0.74	0.05	1.05	0.07	3.74	0.24	0.94	0.06	6.45	0.42
VB 0041	Cabbages, head, raw	RAC	0.03	8.97	0.27	27.12	0.81	1.44	0.04	24.96	0.75	4.55	0.14	11.23	0.34
VB 0042	Flowerhead brassicas, raw	RAC	0.27	9.50	2.57	6.77	1.83	9.03	2.44	3.21	0.87	9.36	2.53	0.87	0.23
VC 0045	Fruiting vegetables, cucurbits, raw	RAC	0.09	27.81	2.50	41.93	3.77	123.30	11.10	49.47	4.45	15.95	1.44	35.99	3.24
VO 0050	Fruiting vegetables other than cucurbits, raw, (incl processed commodities), excl sweet corn commodities, excl mushroom commodities	RAC	0.24	72.92	17.50	86.99	20.88	79.04	18.97	97.13	23.31	65.96	15.83	17.98	4.32
-	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	0.48	4.96	2.38	3.20	1.54	0.15	0.07	1.61	0.77	6.88	3.30	0.52	0.25
JF 0448	Tomato, juice (single strength, incl concentrated)	PP	0.036	0.80	0.03	0.10	0.00	0.10	0.00	0.61	0.02	0.40	0.01	0.10	0.00
VL 0053	Leafy vegetables, raw (excl brassica leafy vegetables)	RAC	11	18.83	207.13	21.85	240.35	87.37	961.07	33.65	370.15	18.18	199.98	13.92	153.12
VL 0054	Brassica leafy vegetables, raw	RAC	0.37	NC	-	NC	-	33.86	12.53	9.44	3.49	NC	-	4.40	1.63
VP 0061	Beans, green, with pods, raw: beans except broad bean & soya bean (i.e. immature seeds + pods) (Phaseolus spp)	RAC	0.165	5.07	0.84	0.83	0.14	0.17	0.03	3.70	0.61	NC	-	NC	-

CYPRODINIL (207) International Estimated Daily Intake (IEDI) ADI = 0 - 0.03 mg/kg bw

			STMR	Diets as g/person/day		Intake as µg//person/day									
Codex Code	Commodity description	Expr as	mg/kg	G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
VP 0062	Beans, green, without pods, raw: beans except broad bean & soya bean (i.e. immature seeds only) (Phaseolus spp..)	RAC	0.02	2.21	0.04	5.25	0.11	4.17	0.08	1.61	0.03	16.95	0.34	0.17	0.00
VR 0494	Radish roots, raw	RAC	0.01	3.83	0.04	11.99	0.12	NC	-	5.26	0.05	2.19	0.02	4.37	0.04
VR 0577	Carrots, raw	RAC	0.09	26.26	2.36	27.13	2.44	10.07	0.91	16.49	1.48	44.69	4.02	8.75	0.79
VR 0588	Parsnip, raw	RAC	0.09	4.42	0.40	0.10	0.01	NC	-	NC	-	NC	-	1.12	0.10
GC 0640	Barley, raw (incl malt extract, incl pot&pearled, incl flour & grits, incl malt, excl beer)	RAC	0.58	1.94	1.13	4.15	2.41	0.66	0.38	2.50	1.45	2.14	1.24	3.52	2.04
-	Barley beer	PP	0.0058	180.21	1.05	259.46	1.50	45.91	0.27	172.36	1.00	234.42	1.36	65.30	0.38
GC 0654	Wheat, raw (incl bulgur, incl fermented beverages, incl germ, incl wholemeal bread, excl white flour products, excl white bread)	RAC	0.07	1.00	0.07	0.11	0.01	0.10	0.01	0.84	0.06	0.10	0.01	0.10	0.01
CF 0654	Wheat, bran	PP	0.21	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
CF 1212	Wheat, wholemeal flour	PP	0.019	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
CP 1212	Wheat, wholemeal bread	PP	0.036	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00
TN 0660	Almonds, nutmeat	RAC	0.02	0.81	0.02	2.21	0.04	0.10	0.00	1.02	0.02	1.47	0.03	NC	-
SO 0495	Rape seed, raw	RAC	0.02	NC	-	NC	-	0.10	0.00	NC	-	NC	-	NC	-
HH 0720	Herbs, raw (incl dried)	RAC	5.05	2.61	13.18	2.31	11.67	8.89	44.89	3.92	19.80	1.16	5.86	2.06	10.40
HS 0093	Spices, as traded	RAC	2	0.96	1.92	0.99	1.98	1.09	2.18	1.53	3.06	6.06	12.12	2.46	4.92
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat)	RAC	0	140.03	0.00	150.89	0.00	79.32	0.00	111.24	0.00	120.30	0.00	51.27	0.00
MO 0105	Edible offal (mammalian), raw	RAC	0	15.17	0.00	5.19	0.00	6.30	0.00	6.78	0.00	3.32	0.00	3.17	0.00
ML 0106	Milks, raw or skimmed (incl dairy products)	RAC	0	388.92	0.00	335.88	0.00	49.15	0.00	331.25	0.00	468.56	0.00	245.45	0.00
PM 0110	Poultry meat, raw (incl prepared)	RAC	0	73.76	0.00	53.86	0.00	23.98	0.00	87.12	0.00	53.38	0.00	84.45	0.00
PO 0111	Poultry edible offal, raw (incl prepared)	RAC	0	0.33	0.00	0.72	0.00	0.27	0.00	0.35	0.00	0.80	0.00	NC	-
PE 0112	Eggs, raw, (incl dried)	RAC	0	25.84	0.00	29.53	0.00	28.05	0.00	33.19	0.00	36.44	0.00	8.89	0.00
	Total intake (µg//person)=				341.6		383.7		1092.0		506.6		319.3		198.0
	Bodyweight per region (kg bw) =				60		60		55		60		60		60
	ADI (µg//person)=				1800		1800		1650		1800		1800		1800
	%ADI=				19.0%		21.3%		66.2%		28.1%		17.7%		11.0%
	Rounded %ADI=				20%		20%		70%		30%		20%		10%

CYPRODINIL (207) International Estimated Daily Intake (IEDI) ADI = 0 - 0.03 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	Intake = daily intake: µg/person G16 intake	G17 diet	G17 intake
FP 0009	Pome fruit, raw (incl cider, excl apple juice)	RAC	0.48	68.85	33.05	10.93	5.25	70.82	33.99	######	91.09	19.56	9.39
JF 0226	Apple juice, single strength (incl. concentrated)	PP	0.015	0.10	0.00	0.10	0.00	7.19	0.11	0.10	0.00	NC	-
FS 0012	Stone fruits, raw (incl dried apricots, excl dried plums)	RAC	0.68	0.10	0.07	0.10	0.07	32.27	21.94	0.10	0.07	NC	-
DF 0014	Plum, dried (prunes)	PP	1.2	0.10	0.12	0.10	0.12	0.37	0.44	0.10	0.12	NC	-
FB 0018	Berries and other small fruits, raw, (incl processed), excl small fruit vine climbing (group 004D)	RAC	2.2	1.54	3.39	18.66	41.05	11.59	25.50	0.81	1.78	4.99	10.98
FB 0269	Grape, raw (incl must, excl dried, excl juice, excl wine)	RAC	0.79	0.14	0.11	0.36	0.28	15.33	12.11	0.10	0.08	0.28	0.22
DF 0269	Grape, dried (= currants, raisins and sultanas)	PP	1.7	0.10	0.17	0.13	0.22	1.06	1.80	0.10	0.17	0.10	0.17
JF 0269	Grape juice	PP	0.12	0.10	0.01	0.10	0.01	0.41	0.05	0.10	0.01	NC	-
-	Grape wine (incl vermouths)	PP	0.062	0.31	0.02	0.23	0.01	60.43	3.75	0.52	0.03	31.91	1.98
FI 0326	Avocado, raw	RAC	0.265	1.12	0.30	0.10	0.03	0.84	0.22	0.10	0.03	6.60	1.75
-	Onions, mature bulbs, dry	RAC	0.065	9.01	0.59	20.24	1.32	30.90	2.01	9.61	0.62	2.11	0.14
-	Onions, green, raw	RAC	0.065	1.43	0.09	0.10	0.01	0.20	0.01	NC	-	6.30	0.41
VB 0041	Cabbages, head, raw	RAC	0.03	3.82	0.11	2.99	0.09	49.16	1.47	0.10	0.00	NC	-
VB 0042	Flowerhead brassicas, raw	RAC	0.27	0.10	0.03	0.10	0.03	4.86	1.31	0.10	0.03	NC	-
VC 0045	Fruiting vegetables, cucurbits, raw	RAC	0.09	5.96	0.54	9.74	0.88	51.82	4.66	13.61	1.22	0.10	0.01
VO 0050	Fruiting vegetables other than cucurbits, raw, (incl processed commodities), excl sweet corn commodities, excl mushroom commodities	RAC	0.24	36.09	8.66	37.19	8.93	109.09	26.18	3.78	0.91	12.50	3.00
-	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	0.48	0.58	0.28	0.22	0.11	2.21	1.06	0.24	0.12	3.10	1.49
JF 0448	Tomato, juice (single strength, incl concentrated)	PP	0.036	0.10	0.00	0.10	0.00	0.42	0.02	0.10	0.00	0.10	0.00
VL 0053	Leafy vegetables, raw (excl brassica leafy vegetables)	RAC	11	10.92	120.12	7.58	83.38	7.53	82.83	7.06	77.66	14.11	155.21
VL 0054	Brassica leafy vegetables, raw	RAC	0.37	1.50	0.56	1.17	0.43	NC	-	0.10	0.04	NC	-
VP 0061	Beans, green, with pods, raw: beans except broad bean & soya bean (i.e. immature seeds + pods) (Phaseolus spp)	RAC	0.165	NC	-	NC	-	NC	-	NC	-	NC	-
VP 0062	Beans, green, without pods, raw: beans except broad bean & soya bean (i.e. immature seeds only) (Phaseolus spp..)	RAC	0.02	0.30	0.01	3.13	0.06	4.11	0.08	0.10	0.00	NC	-

CYPRODINIL (207) International Estimated Daily Intake (IEDI) ADI = 0 - 0.03 mg/kg bw

			STMR	Diets: g/person/day				Intake = daily intake: µg/person					
Codex Code	Commodity description	Expr as	mg/kg	G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
VR 0494	Radish roots, raw	RAC	0.01	3.96	0.04	2.86	0.03	3.30	0.03	2.67	0.03	5.34	0.05
VR 0577	Carrots, raw	RAC	0.09	2.07	0.19	3.00	0.27	25.29	2.28	0.10	0.01	NC	-
VR 0588	Parsnip, raw	RAC	0.09	1.02	0.09	0.74	0.07	3.50	0.32	0.69	0.06	1.37	0.12
GC 0640	Barley, raw (incl malt extract, incl pot&pearled, incl flour & grits, incl malt, excl beer)	RAC	0.58	8.50	4.93	0.17	0.10	3.92	2.27	0.10	0.06	6.34	3.68
-	Barley beer	PP	0.0058	16.25	0.09	11.36	0.07	225.21	1.31	19.49	0.11	52.17	0.30
GC 0654	Wheat, raw (incl bulgur, incl fermented beverages, incl germ, incl wholemeal bread, excl white flour products, excl white bread)	RAC	0.07	0.10	0.01	0.10	0.01	0.10	0.01	0.10	0.01	0.97	0.07
CF 0654	Wheat, bran	PP	0.21	NC	-	NC	-	NC	-	NC	-	NC	-
CF 1212	Wheat, wholemeal flour	PP	0.019	NC	-	NC	-	NC	-	NC	-	NC	-
CP 1212	Wheat, wholemeal bread	PP	0.036	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00
TN 0660	Almonds, nutmeat	RAC	0.02	0.10	0.00	0.10	0.00	0.61	0.01	0.10	0.00	NC	-
SO 0495	Rape seed, raw	RAC	0.02	NC	-	0.10	0.00	NC	-	NC	-	NC	-
HH 0720	Herbs, raw (incl dried)	RAC	5.05	1.85	9.34	1.67	8.43	2.80	14.14	1.24	6.26	2.75	13.89
HS 0093	Spices, as traded	RAC	2	1.26	2.52	4.34	8.68	0.78	1.56	0.41	0.82	1.46	2.92
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat)	RAC	0	29.18	0.00	50.89	0.00	121.44	0.00	22.58	0.00	72.14	0.00
MO 0105	Edible offal (mammalian), raw	RAC	0	4.64	0.00	1.97	0.00	10.01	0.00	3.27	0.00	3.98	0.00
ML 0106	Milks, raw or skimmed (incl dairy products)	RAC	0	108.75	0.00	70.31	0.00	436.11	0.00	61.55	0.00	79.09	0.00
PM 0110	Poultry meat, raw (incl prepared)	RAC	0	3.92	0.00	12.03	0.00	57.07	0.00	5.03	0.00	55.56	0.00
PO 0111	Poultry edible offal, raw (incl prepared)	RAC	0	0.10	0.00	0.70	0.00	0.97	0.00	0.10	0.00	NC	-
PE 0112	Eggs, raw, (incl dried)	RAC	0	3.84	0.00	4.41	0.00	27.25	0.00	1.13	0.00	7.39	0.00
	Total intake (µg//person)=				185.4		159.9		241.5		181.4		205.8
	Bodyweight per region (kg bw) =				60		60		60		60		60
	ADI (µg//person)=				1800		1800		1800		1800		1800
	%ADI=				10.3%		8.9%		13.4%		10.1%		11.4%
	Rounded %ADI=				10%		9%		10%		10%		10%

Annex 3

DIFENOCONAZOLE (224) International Estimated Daily Intake (IEDI) ADI = 0 - 0.01 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
				Diets as g/person/day	Intake as µg/person/day										
FP 0009	Pomefruits, raw	RAC	0.16	19.24	3.08	33.89	5.42	3.34	0.53	25.53	4.08	7.59	1.21	56.76	9.08
JF 0226	Apple juice, single strength (incl. concentrated)	PP	0.005	0.32	0.00	3.07	0.02	0.10	0.00	5.00	0.03	0.29	0.00	5.57	0.03
FS 0013	Cherries, raw	RAC	0.04	0.92	0.04	9.15	0.37	0.10	0.00	0.61	0.02	0.10	0.00	6.64	0.27
FS 0014	Plums, raw (incl dried plums) (excl jujube)	RAC	0.04	2.67	0.11	8.77	0.35	0.10	0.00	3.03	0.12	0.70	0.03	4.34	0.17
003C	**Peaches**	-	0.15	-	-	-	-	-	-	-	-	-	-	-	-
FS 2001	Peaches, nectarines, apricots, raw (incl dried apricots)	RAC	0.15	8.01	1.20	5.87	0.88	0.18	0.03	8.19	1.23	1.64	0.25	22.46	3.37
FB 0269	Grape, raw	RAC	0.52	12.68	6.59	9.12	4.74	0.10	0.05	16.88	8.78	3.70	1.92	54.42	28.30
DF 0269	Grape, dried (= currants, raisins and sultanas)	PP	1.1	0.51	0.56	0.51	0.56	0.10	0.11	1.27	1.40	0.12	0.13	2.07	2.28
JF 0269	Grape juice	PP	0.24	0.14	0.03	0.29	0.07	0.10	0.02	0.30	0.07	0.24	0.06	0.10	0.02
004E	**Low growing berries**	-	0.094	-	-	-	-	-	-	-	-	-	-	-	-
FT 0305	Table olive, raw	RAC	0.465	0.10	0.05	0.16	0.07	NC	-	0.24	0.11	0.10	0.05	0.65	0.30
FI 0326	Avocado, raw	RAC	0.05	0.13	0.01	0.10	0.01	2.05	0.10	2.54	0.13	2.34	0.12	0.12	0.01
FI 0327	Banana, raw (incl plantains)	RAC	0.02	4.90	0.10	6.94	0.14	99.37	1.99	32.44	0.65	48.24	0.96	24.67	0.49
FI 0345	Mango, raw (incl canned mango, incl mango juice)	RAC	0.03	10.48	0.31	0.10	0.00	7.24	0.22	6.87	0.21	19.98	0.60	6.25	0.19
FI 0350	Papaya, raw	RAC	0.065	0.35	0.02	0.10	0.01	3.05	0.20	0.80	0.05	7.28	0.47	1.00	0.07
FI 0351	Passion fruit, raw	RAC	0.01	0.58	0.0058	0.10	0.0010	0.59	0.0059	0.60	0.0060	0.18	0.0018	0.10	0.0010
VA 0384	Leek, raw	RAC	0.08	0.18	0.01	1.59	0.13	0.10	0.01	0.28	0.02	0.10	0.01	3.21	0.26
-	Onions, mature bulbs, dry	RAC	0.015	29.36	0.44	37.50	0.56	3.56	0.05	34.78	0.52	18.81	0.28	43.38	0.65
VB 0040	Brassica vegetables, raw: head cabbages, flowerhead brassicas, Brussels sprouts & kohlrabi	RAC	0.35	6.41	2.24	35.79	12.53	0.71	0.25	9.81	3.43	12.07	4.22	16.58	5.80
VC 0046	Melons, raw (excl watermelons)	RAC	0.14	8.90	1.25	8.64	1.21	0.80	0.11	17.90	2.51	2.80	0.39	29.17	4.08
VC 0424	Cucumber, raw	RAC	0.04	8.01	0.32	30.66	1.23	1.45	0.06	19.84	0.79	0.27	0.01	34.92	1.40
VC 0425	Gherkin, raw	RAC	0.04	1.73	0.07	6.64	0.27	0.31	0.01	4.29	0.17	0.29	0.01	7.56	0.30
VC 0431	Squash, summer, raw (= courgette, zuchini)	RAC	0.04	0.78	0.03	2.06	0.08	0.30	0.01	1.61	0.06	2.25	0.09	2.36	0.09
VO 0440	Egg plants, raw (= aubergines)	RAC	0.14	5.58	0.78	4.31	0.60	0.89	0.12	9.31	1.30	13.64	1.91	20.12	2.82
VO 0442	Okra, raw	RAC	0.14	1.97	0.28	NC	-	3.68	0.52	3.24	0.45	5.72	0.80	1.57	0.22
VO 0444	Peppers, chili, raw	RAC	0.14	3.99	0.56	7.30	1.02	2.93	0.41	5.62	0.79	NC	-	17.44	2.44
VO 0448	Tomato, raw	RAC	0.14	41.73	5.84	75.65	10.59	10.66	1.49	82.87	11.60	24.75	3.47	200.93	28.13
-	Tomato, canned (& peeled)	PP	0.01	0.20	0.00	0.31	0.00	0.10	0.00	1.11	0.01	0.11	0.00	1.50	0.02
-	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	0.22	2.34	0.51	1.33	0.29	1.57	0.35	4.24	0.93	0.34	0.07	2.83	0.62
JF 0448	Tomato, juice (single strength, incl concentrated)	PP	0.031	0.29	0.01	0.29	0.01	0.10	0.00	0.38	0.01	0.10	0.00	0.14	0.00
VL 0482	Lettuce, head, raw	RAC	0.41	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
VL 0483	Lettuce, leaf, raw	RAC	0.41	0.53	0.22	0.36	0.15	0.16	0.07	6.21	2.55	1.90	0.78	6.05	2.48

DIFENOCONAZOLE (224) International Estimated Daily Intake (IEDI) ADI = 0 - 0.01 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
			STMR	Diets as g/person/day Intake as μg/person/day											
VP 0061	Beans, green, with pods, raw: beans except broad bean & soya bean (i.e. immature seeds + pods) (Phaseolus spp)	RAC	0.07	0.68	0.05	NC	-	NC	-	0.39	0.03	0.22	0.02	0.49	0.03
VP 0063	Peas green, with pods, raw (i.e. immature seeds + pods) (Pisum spp)	RAC	0.07	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
VP 0541	Soya bean, green, without pods, raw (i.e. immature seeds only) (Glycine max)	RAC	0.01	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
OR 0541	Soya oil, refined	PP	0.08	12.99	1.04	10.43	0.83	3.63	0.29	13.10	1.05	10.70	0.86	13.10	1.05
VR 0577	Carrots, raw	RAC	0.05	9.51	0.48	30.78	1.54	0.37	0.02	8.75	0.44	2.80	0.14	6.10	0.31
VR 0578	Celeriac, raw	RAC	0.12	1.70	0.20	3.01	0.36	1.87	0.22	4.53	0.54	NC	-	2.19	0.26
VR 0589	Potato, raw (incl flour, incl frozen, incl starch, incl tapioca)	RAC	1.2	59.74	71.69	316.14	379.37	9.78	11.74	60.26	72.31	54.12	64.94	119.82	143.78
VR 0596	Sμg/ar beet, raw	RAC	0.02	NC	-	NC	-	NC	-	NC	-	0.10	0.00	NC	-
VS 0621	Asparagus	RAC	0.02	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.21	0.00
VS 0624	Celery	RAC	0.14	2.14	0.30	3.79	0.53	2.35	0.33	5.69	0.80	0.10	0.01	2.75	0.39
CM 1205	Rice polished, dry	PP	0.09	34.21	3.08	10.39	0.94	41.72	3.75	82.38	7.41	150.24	13.52	70.47	6.34
-	Rice flour	PP	0.001	0.10	0.00	0.22	0.00	0.10	0.00	0.50	0.00	0.22	0.00	0.10	0.00
GC 0654	Wheat, raw (incl bulgur, incl fermented beverages, incl germ, incl wholemeal bread, incl white flour products, incl white bread)	RAC	0	381.15	0.00	341.55	0.00	38.35	0.00	281.89	0.00	172.83	0.00	434.07	0.00
SO 0088	Oilseeds, raw (incl processed)	RAC	0.029	79.30	2.30	54.81	1.59	96.74	2.81	137.72	3.99	61.07	1.77	88.71	2.57
SO 0495	Rape seed, raw (incl oil)	RAC	0.03	0.93	0.03	1.16	0.03	0.49	0.01	2.53	0.08	9.32	0.28	2.02	0.06
SO 0697	Peanuts, nutmeat, raw (incl roasted, incl oil, incl butter)	RAC	0	1.30	0.00	1.23	0.00	12.62	0.00	2.87	0.00	6.59	0.00	2.67	0.00
SO 0702	Sunflower seed, raw (incl oil)	RAC	0.01	7.40	0.07	35.86	0.36	1.15	0.01	8.76	0.09	5.45	0.05	13.62	0.14
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) -80% as muscle	RAC	0.047	24.96	1.17	57.95	2.72	16.70	0.79	38.38	1.80	26.46	1.24	29.00	1.36
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) - 20% as fat	RAC	0.14	6.24	0.87	14.49	2.03	4.18	0.58	9.60	1.34	6.62	0.93	7.25	1.02
MO 0105	Edible offal (mammalian), raw	RAC	0.71	4.79	3.40	9.68	6.87	2.97	2.11	5.49	3.90	3.84	2.73	5.03	3.57
ML 0106	Milks, raw or skimmed (incl dairy products)	RAC	0.01	289.65	2.90	485.88	4.86	26.92	0.27	239.03	2.39	199.91	2.00	180.53	1.81
PM 0110	Poultry meat, raw (incl prepared) - 90% as muscle	RAC	0.001	13.17	0.01	26.78	0.03	7.24	0.01	116.71	0.12	22.54	0.02	32.09	0.03
PM 0110	Poultry meat, raw (incl prepared) - 10% as fat	RAC	0.001	1.46	0.00	2.98	0.00	0.80	0.00	12.97	0.01	2.50	0.00	3.57	0.00
PE 0112	Eggs, raw, (incl dried)	RAC	0.011	7.84	0.09	23.08	0.25	2.88	0.03	14.89	0.16	9.81	0.11	14.83	0.16
	Total intake (μg/person)=				112.4		443.6		29.7		138.5		106.5		256.8
	Bodyweight per region (kg bw) =				60		60		60		60		60		60
	ADI (μg/person)=				600		600		600		600		600		600

Annex 3

	DIFENOCONAZOLE (224)			International Estimated Daily Intake (IEDI)			ADI = 0 - 0.01 mg/kg bw								
			STMR	Diets as g/person/day	Intake as µg/person/day										
Codex Code	Commodity description	Expr as	mg/kg	G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
	%ADI=				18.7%		73.9%		5.0%		23.1%		17.7%		42.8%
	Rounded %ADI=				20%		70%		5%		20%		20%		40%

DIFENOCONAZOLE (224) International Estimated Daily Intake (IEDI)								ADI =0-0.01 mg/kg bw							
			STMR	Diets as g/person/day		Intake as µg/person/day									
Codex Code	Commodity description	Expr as	mg/kg	G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
FP 0009	Pomefruits, raw	RAC	0.16	37.39	5.98	58.13	9.30	37.64	6.02	44.80	7.17	62.17	9.95	6.47	1.04
JF 0226	Apple juice, single strength (incl. concentrated)	PP	0.005	14.88	0.07	11.98	0.06	0.15	0.00	9.98	0.05	30.32	0.15	3.47	0.02
FS 0013	Cherries, raw	RAC	0.04	1.40	0.06	4.21	0.17	0.10	0.00	2.93	0.12	1.50	0.06	NC	-
FS 0014	Plums, raw (incl dried plums) (excl jujube)	RAC	0.04	5.55	0.22	4.37	0.17	6.08	0.24	3.66	0.15	3.93	0.16	0.46	0.02
003C	Peaches	-	0.15	-	-	-	-	-	-	-	-	-	-	-	-
FS 2001	Peaches, nectarines, apricots, raw (incl dried apricots)	RAC	0.15	13.03	1.95	16.29	2.44	8.29	1.24	12.95	1.94	5.35	0.80	0.10	0.02
FB 0269	Grape, raw	RAC	0.52	6.33	3.29	11.22	5.83	5.21	2.71	9.38	4.88	4.55	2.37	0.78	0.41
DF 0269	Grape, dried (= currants, raisins and sultanas)	PP	1.1	3.09	3.40	1.51	1.66	0.10	0.11	1.38	1.52	4.26	4.69	0.42	0.46
JF 0269	Grape juice	PP	0.24	0.56	0.13	1.96	0.47	0.10	0.02	2.24	0.54	2.27	0.54	0.34	0.08
004E	Low growing berries	-	0.094	-	-	-	-	-	-	-	-	-	-	-	-
FT 0305	Table olive, raw	RAC	0.465	0.10	0.05	0.10	0.05	0.10	0.05	0.10	0.05	0.10	0.05	NC	-
FI 0326	Avocado, raw	RAC	0.05	2.65	0.13	0.87	0.04	0.46	0.02	1.64	0.08	1.30	0.07	0.96	0.05
FI 0327	Banana, raw (incl plantains)	RAC	0.02	25.61	0.51	23.59	0.47	23.58	0.47	24.26	0.49	18.88	0.38	101.55	2.03
FI 0345	Mango, raw (incl canned mango, incl mango juice)	RAC	0.03	1.80	0.05	0.63	0.02	10.05	0.30	1.07	0.03	3.52	0.11	16.44	0.49
FI 0350	Papaya, raw	RAC	0.065	0.31	0.02	0.18	0.01	1.50	0.10	0.51	0.03	0.54	0.04	1.08	0.07
FI 0351	Passion fruit, raw	RAC	0.01	0.10	0.0010	0.10	0.0010	NC	-	NC	-	0.10	0.0010	NC	-
VA 0384	Leek, raw	RAC	0.08	4.01	0.32	4.41	0.35	0.72	0.06	0.54	0.04	16.41	1.31	0.10	0.01
-	Onions, mature bulbs, dry	RAC	0.015	19.69	0.30	29.83	0.45	24.64	0.37	31.35	0.47	9.72	0.15	12.59	0.19
VB 0040	Brassica vegetables, raw: head cabbages, flowerhead brassicas, Brussels sprouts & kohlrabi	RAC	0.35	20.71	7.25	39.81	13.93	16.70	5.85	28.49	9.97	18.12	6.34	15.03	5.26
VC 0046	Melons, raw (excl watermelons)	RAC	0.14	9.20	1.29	11.95	1.67	14.63	2.05	8.99	1.26	7.86	1.10	2.46	0.34
VC 0424	Cucumber, raw	RAC	0.04	6.72	0.27	11.03	0.44	32.10	1.28	15.10	0.60	4.05	0.16	9.57	0.38
VC 0425	Gherkin, raw	RAC	0.04	0.41	0.02	5.89	0.24	NC	-	0.10	0.00	0.37	0.01	2.07	0.08
VC 0431	Squash, summer, raw (= courgette, zuchini)	RAC	0.04	NC	-	NC	-	5.48	0.22	NC	-	NC	-	1.03	0.04
VO 0440	Egg plants, raw (= aubergines)	RAC	0.14	1.01	0.14	1.69	0.24	21.37	2.99	3.00	0.42	1.40	0.20	NC	-

DIFENOCONAZOLE (224) International Estimated Daily Intake (IEDI)								ADI =0-0.01 mg/kg bw							
			STMR	Diets as g/person/day				Intake as µg/person/day							
Codex Code	Commodity description	Expr as	mg/kg	G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
VO 0442	Okra, raw	RAC	0.14	NC	-	NC	-	0.10	0.01	0.17	0.02	NC	-	0.72	0.10
VO 0444	Peppers, chili, raw	RAC	0.14	5.57	0.78	14.00	1.96	8.25	1.16	5.77	0.81	6.44	0.90	2.53	0.35
VO 0448	Tomato, raw	RAC	0.14	32.13	4.50	51.27	7.18	34.92	4.89	73.37	10.27	15.15	2.12	8.88	1.24
-	Tomato, canned (& peeled)	PP	0.01	7.57	0.08	2.66	0.03	0.30	0.00	0.97	0.01	7.31	0.07	0.41	0.00
-	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	0.22	4.96	1.09	3.20	0.70	0.15	0.03	1.61	0.35	6.88	1.51	0.52	0.11
JF 0448	Tomato, juice (single strength, incl concentrated)	PP	0.031	0.80	0.02	0.10	0.00	0.10	0.00	0.61	0.02	0.40	0.01	0.10	0.00
VL 0482	Lettuce, head, raw	RAC	0.41	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
VL 0483	Lettuce, leaf, raw	RAC	0.41	14.50	5.95	11.76	4.82	13.14	5.39	19.50	8.00	4.81	1.97	2.23	0.91
VP 0061	Beans, green, with pods, raw: beans except broad bean & soya bean (i.e. immature seeds + pods) (Phaseolus spp)	RAC	0.07	5.07	0.35	0.83	0.06	0.17	0.01	3.70	0.26	NC	-	NC	-
VP 0063	Peas green, with pods, raw (i.e. immature seeds + pods) (Pisum spp)	RAC	0.07	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
VP 0541	Soya bean, green, without pods, raw (i.e. immature seeds only) (Glycine max)	RAC	0.01	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
OR 0541	Soya oil, refined	PP	0.08	19.06	1.52	21.06	1.68	5.94	0.48	33.78	2.70	40.05	3.20	13.39	1.07
VR 0577	Carrots, raw	RAC	0.05	26.26	1.31	27.13	1.36	10.07	0.50	16.49	0.82	44.69	2.23	8.75	0.44
VR 0578	Celeriac, raw	RAC	0.12	2.97	0.36	1.79	0.21	NC	-	0.10	0.01	16.91	2.03	3.22	0.39
VR 0589	Potato, raw (incl flour, incl frozen, incl starch, incl tapioca)	RAC	1.2	225.03	270.04	234.24	281.09	71.48	85.78	177.55	213.06	234.55	281.46	37.71	45.25
	Total intake (µg/person)=				342.3		360.0		158.7		290.6		345.1		76.0
	Bodyweight per region (kg bw) =				60		60		55		60		60		60
	ADI (µg/person)=				600		600		550		600		600		600
	%ADI=				57.1%		60.0%		28.9%		48.4%		57.5%		12.7%
	Rounded %ADI=				60%		60%		30%		50%		60%		10%

DIFENOCONAZOLE (224)				International Estimated Daily Intake (IEDI)						ADI = 0 - 0.0000 mg/kg bw			
			STMR	Diets: g/person/day			Intake = daily intake: µg/person						
Codex Code	Commodity description	Expr as	mg/kg	G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
FP 0009	Pomefruits, raw	RAC	0.16	2.39	0.38	10.93	1.75	69.47	11.12	1.59	0.25	19.56	3.13
JF 0226	Apple juice, single strength (incl. concentrated)	PP	0.005	0.10	0.00	0.10	0.00	7.19	0.04	0.10	0.00	NC	-
FS 0013	Cherries, raw	RAC	0.04	0.10	0.00	0.10	0.00	5.96	0.24	0.10	0.00	NC	-
FS 0014	Plums, raw (incl dried plums) (excl jujube)	RAC	0.04	0.10	0.00	0.10	0.00	16.65	0.67	0.10	0.00	NC	-
003C	Peaches	-	0.15	-	-	-	-	-	-	-	-	-	-

DIFENOCONAZOLE (224) International Estimated Daily Intake (IEDI) ADI = 0 - 0.0000 mg/kg bw

			STMR	Diets: g/person/day		Intake = daily intake: µg/person							
Codex Code	Commodity description	Expr as	mg/kg	G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
FS 2001	Peaches, nectarines, apricots, raw (incl dried apricots)	RAC	0.15	0.10	0.02	0.10	0.02	10.76	1.61	0.10	0.02	NC	-
FB 0269	Grape, raw	RAC	0.52	0.14	0.07	0.36	0.19	15.22	7.91	0.10	0.05	0.10	0.05
DF 0269	Grape, dried (= currants, raisins and sultanas)	PP	1.1	0.10	0.11	0.13	0.14	1.06	1.17	0.10	0.11	0.10	0.11
JF 0269	Grape juice	PP	0.24	0.10	0.02	0.10	0.02	0.41	0.10	0.10	0.02	NC	-
004E	Low growing berries	-	0.094	-	-	-	-	-	-	-	-	-	-
FT 0305	Table olive, raw	RAC	0.465	NC	-	NC	-	0.10	0.05	NC	-	NC	-
FI 0326	Avocado, raw	RAC	0.05	1.12	0.06	0.10	0.01	0.84	0.04	0.10	0.01	6.60	0.33
FI 0327	Banana, raw (incl plantains)	RAC	0.02	44.76	0.90	118.16	2.36	25.19	0.50	454.49	9.09	310.23	6.20
FI 0345	Mango, raw (incl canned mango, incl mango juice)	RAC	0.03	12.25	0.37	6.83	0.20	0.76	0.02	0.10	0.00	20.12	0.60
FI 0350	Papaya, raw	RAC	0.065	6.47	0.42	0.25	0.02	0.19	0.01	0.10	0.01	26.42	1.72
FI 0351	Passion fruit, raw	RAC	0.01	0.12	0.0012	0.10	0.0010	0.10	0.0010	0.18	0.0018	3.81	0.0381
VA 0384	Leek, raw	RAC	0.08	0.10	0.01	1.44	0.12	1.22	0.10	0.10	0.01	NC	-
-	Onions, mature bulbs, dry	RAC	0.015	9.01	0.14	20.24	0.30	30.90	0.46	9.61	0.14	2.11	0.03
VB 0040	Brassica vegetables, raw: head cabbages, flowerhead brassicas, Brussels sprouts & kohlrabi	RAC	0.35	4.84	1.69	3.79	1.33	58.72	20.55	0.10	0.04	NC	-
VC 0046	Melons, raw (excl watermelons)	RAC	0.14	0.19	0.03	0.10	0.01	4.98	0.70	0.10	0.01	NC	-
VC 0424	Cucumber, raw	RAC	0.04	0.68	0.03	1.81	0.07	10.40	0.42	0.10	0.00	0.10	0.00
VC 0425	Gherkin, raw	RAC	0.04	0.15	0.01	0.39	0.02	3.15	0.13	0.10	0.00	0.10	0.00
VC 0431	Squash, summer, raw (= courgette, zuchini)	RAC	0.04	0.10	0.00	1.01	0.04	NC	-	1.91	0.08	NC	-
VO 0440	Egg plants, raw (= aubergines)	RAC	0.14	1.31	0.18	8.26	1.16	3.95	0.55	0.10	0.01	NC	-
VO 0442	Okra, raw	RAC	0.14	6.23	0.87	0.10	0.01	NC	-	NC	-	NC	-
VO 0444	Peppers, chili, raw	RAC	0.14	3.47	0.49	3.56	0.50	16.30	2.28	0.10	0.01	NC	-
VO 0448	Tomato, raw	RAC	0.14	12.99	1.82	4.79	0.67	58.40	8.18	0.92	0.13	0.10	0.01
-	Tomato, canned (& peeled)	PP	0.01	0.10	0.00	0.10	0.00	2.42	0.02	0.10	0.00	NC	-
-	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	0.22	0.58	0.13	0.22	0.05	2.21	0.49	0.24	0.05	3.10	0.68
JF 0448	Tomato, juice (single strength, incl concentrated)	PP	0.031	0.10	0.00	0.10	0.00	0.42	0.01	0.10	0.00	0.10	0.00
VL 0482	Lettuce, head, raw	RAC	0.41	NC	-	NC	-	NC	-	NC	-	NC	-
VL 0483	Lettuce, leaf, raw	RAC	0.41	0.29	0.12	0.10	0.04	6.71	2.75	0.10	0.04	NC	-
VP 0061	Beans, green, with pods, raw: beans except broad bean & soya bean (i.e. immature seeds + pods) (Phaseolus spp)	RAC	0.07	NC	-	NC	-	NC	-	NC	-	NC	-
VP 0063	Peas green, with pods, raw (i.e. immature seeds + pods) (Pisum spp)	RAC	0.07	NC	-	NC	-	NC	-	NC	-	NC	-
VP 0541	Soya bean, green, without pods, raw (i.e. immature seeds only) (Glycine max)	RAC	0.01	NC	-	NC	-	NC	-	NC	-	NC	-
OR 0541	Soya oil, refined	PP	0.08	2.32	0.19	2.54	0.20	18.70	1.50	2.51	0.20	6.29	0.50

DIFENOCONAZOLE (224) International Estimated Daily Intake (IEDI) ADI = 0 - 0.0000 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day G13 diet	G13 intake	G14 diet	Intake = daily intake: µg/person G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
VR 0577	Carrots, raw	RAC	0.05	2.07	0.10	3.00	0.15	25.29	1.26	0.10	0.01	NC	-
VR 0578	Celeriac, raw	RAC	0.12	2.91	0.35	2.10	0.25	7.59	0.91	1.97	0.24	3.93	0.47
VR 0589	Potato, raw (incl flour, incl frozen, incl starch, incl tapioca)	RAC	1.2	23.96	28.75	13.56	16.27	213.41	256.09	104.35	125.22	8.56	10.27
VR 0596	Sµg/ar beet, raw	RAC	0.02	0.10	0.00	NC	-	NC	-	NC	-	NC	-
VS 0621	Asparagus	RAC	0.02	0.10	0.00	0.10	0.00	0.17	0.00	0.10	0.00	NC	-
VS 0624	Celery	RAC	0.14	3.66	0.51	2.65	0.37	4.84	0.68	2.47	0.35	4.94	0.69
CM 1205	Rice polished, dry	PP	0.09	30.20	2.72	218.34	19.65	12.77	1.15	15.24	1.37	51.35	4.62
-	Rice flour	PP	0.001	0.10	0.00	0.13	0.00	0.16	0.00	0.10	0.00	NC	-
GC 0654	Wheat, raw (incl bulgur, incl fermented beverages, incl germ, incl wholemeal bread, incl white flour products, incl white bread)	RAC	0	57.20	0.00	110.47	0.00	272.62	0.00	25.82	0.00	132.04	0.00
SO 0088	Oilseeds, raw (incl processed)	RAC	0.029	131.71	3.82	22.49	0.65	69.33	2.01	57.68	1.67	86.74	2.52
SO 0495	Rape seed, raw (incl oil)	RAC	0.03	0.19	0.01	0.10	0.00	12.07	0.36	0.10	0.00	NC	-
SO 0697	Peanuts, nutmeat, raw (incl roasted, incl oil, incl butter)	RAC	0	18.82	0.00	0.57	0.00	2.28	0.00	6.90	0.00	0.53	0.00
SO 0702	Sunflower seed, raw (incl oil)	RAC	0.01	0.94	0.01	0.22	0.00	32.01	0.32	12.12	0.12	0.48	0.00
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) -80% as muscle	RAC	0.047	23.34	1.10	40.71	1.91	97.15	4.57	18.06	0.85	57.71	2.71
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) - 20% as fat	RAC	0.14	5.84	0.82	10.18	1.42	24.29	3.40	4.52	0.63	14.43	2.02
MO 0105	Edible offal (mammalian), raw	RAC	0.71	4.64	3.29	1.97	1.40	10.01	7.11	3.27	2.32	3.98	2.83
ML 0106	Milks, raw or skimmed (incl dairy products)	RAC	0.01	108.75	1.09	70.31	0.70	436.11	4.36	61.55	0.62	79.09	0.79
PM 0110	Poultry meat, raw (incl prepared) - 90% as muscle	RAC	0.001	3.53	0.00	10.83	0.01	51.36	0.05	4.53	0.00	50.00	0.05
PM 0110	Poultry meat, raw (incl prepared) - 10% as fat	RAC	0.001	0.39	0.00	1.20	0.00	5.71	0.01	0.50	0.00	5.56	0.01
PE 0112	Eggs, raw, (incl dried)	RAC	0.011	3.84	0.04	4.41	0.05	27.25	0.30	1.13	0.01	7.39	0.08
-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total intake (µg/person)=				50.7		52.1		344.2		143.7		40.5
	Bodyweight per region (kg bw) =				60		60		60		60		60
	ADI (µg/person)=				600		600		600		600		600
	%ADI=				8.4%		8.7%		57.4%		24.0%		6.7%
	Rounded %ADI=				8%		9%		60%		20%		7%

ETHEPHON (106) International Estimated Daily Intake (IEDI) ADI = 0 - 0.05 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day Intake as µg//person/day G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
JF 0226	Apple juice, single strength (incl. concentrated)	PP	0.075	0.32	0.02	3.07	0.23	0.10	0.01	5.00	0.38	0.29	0.02	5.57	0.42
FP 0226	Apple, raw (incl cider, excl juice)	RAC	0.15	13.49	2.02	26.63	3.99	15.05	2.26	16.28	2.44	6.47	0.97	47.88	7.18
-	Barley, pot&pearled	PP	0.12	7.12	0.85	7.34	0.88	0.10	0.01	0.10	0.01	0.67	0.08	0.20	0.02
GC 0640	Barley, raw (incl malt extract, incl flour & grits, incl beer, incl malt, excl pot&pearled)	RAC	0.13	8.95	1.16	19.87	2.58	5.01	0.65	3.04	0.40	8.73	1.13	4.00	0.52
FS 0013	Cherries, raw	RAC	0.65	0.92	0.60	9.15	5.95	0.10	0.07	0.61	0.40	0.10	0.07	6.64	4.32
OR 0691	Cotton seed oil, edible	PP	0.011	3.22	0.04	1.54	0.02	1.01	0.01	0.74	0.01	1.12	0.01	2.93	0.03
SO 0691	Cotton seed, raw	RAC	0.55	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
MO 0105	Edible offal (mammalian), raw	RAC	0.12	4.79	0.57	9.68	1.16	2.97	0.36	5.49	0.66	3.84	0.46	5.03	0.60
PE 0112	Eggs, raw, (incl dried)	RAC	0	7.84	0.00	23.08	0.00	2.88	0.00	14.89	0.00	9.81	0.00	14.83	0.00
FT 0297	Fig, raw (incl dried)	RAC	0.73	1.71	1.25	0.71	0.52	0.10	0.07	0.62	0.45	0.13	0.09	4.00	2.92
JF 0269	Grape juice	PP	0.14	0.14	0.02	0.29	0.04	0.10	0.01	0.30	0.04	0.24	0.03	0.10	0.01
-	Grape must	PP	0.16	0.33	0.05	0.13	0.02	0.10	0.02	0.10	0.02	0.10	0.02	0.10	0.02
-	Grape wine (incl vermouths)	PP	0.25	0.67	0.17	12.53	3.13	2.01	0.50	1.21	0.30	3.53	0.88	4.01	1.00
DF 0269	Grape, dried (= currants, raisins and sultanas)	PP	0.23	0.51	0.12	0.51	0.12	0.10	0.02	1.27	0.29	0.12	0.03	2.07	0.48
FB 0269	Grape, raw	RAC	0.19	12.68	2.41	9.12	1.73	0.10	0.02	16.88	3.21	3.70	0.70	54.42	10.34
MF 0100	Mammalian fats, raw, excl milk fats (incl rendered fats)	RAC	0.002	3.29	0.01	6.14	0.01	0.82	0.00	1.57	0.00	2.23	0.00	1.07	0.00
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat)	RAC	0.002	31.20	0.06	72.44	0.14	20.88	0.04	47.98	0.10	33.08	0.07	36.25	0.07
ML 0106	Milks, raw or skimmed (incl dairy products)	RAC	0.0004	289.65	0.12	485.88	0.19	26.92	0.01	239.03	0.10	199.91	0.08	180.53	0.07
-	Olive oil (virgin and residue oil)	PP	0.038	2.17	0.08	0.13	0.00	0.10	0.00	1.32	0.05	0.10	0.00	2.76	0.10
SO 0305	Olives for oil production, raw	RAC	1.9	1.47	2.79	0.67	1.27	NC	-	1.26	2.39	0.10	0.19	7.63	14.50
FI 0353	Pineapple, raw (incl canned pineapple, incl pineapple juice, incl dried pineapple)	RAC	0.12	0.61	0.07	1.56	0.19	7.89	0.95	9.36	1.12	8.76	1.05	1.30	0.16
PO 0111	Poultry edible offal, raw (incl prepared)	RAC	0.037	0.12	0.00	0.12	0.00	0.11	0.00	5.37	0.20	0.24	0.01	0.10	0.00
PF 0111	Poultry fat, raw (incl rendered)	RAC	0.0015	0.10	0.00	0.10	0.00	NC	-	0.10	0.00	0.10	0.00	0.10	0.00
PM 0110	Poultry meat, raw (incl prepared)	RAC	0.0022	14.63	0.03	29.76	0.07	8.04	0.02	129.68	0.29	25.04	0.06	35.66	0.08
GC 0650	Rye, raw (incl flour)	RAC	0.095	0.13	0.01	19.38	1.84	0.10	0.01	0.12	0.01	0.10	0.01	2.15	0.20
DM 0305	Table olive, preserved	PP	0.019	0.58	0.01	0.15	0.00	0.10	0.00	1.22	0.02	0.15	0.00	1.13	0.02
FT 0305	Table olive, raw	RAC	1.9	0.10	0.19	0.16	0.30	NC	-	0.24	0.46	0.10	0.19	0.65	1.24
-	Tomato, canned (& peeled)	PP	0.1	0.20	0.02	0.31	0.03	0.10	0.01	1.11	0.11	0.11	0.01	1.50	0.15
JF 0448	Tomato, juice (single strength, incl concentrated)	PP	0.18	0.29	0.05	0.29	0.05	0.10	0.02	0.38	0.07	0.10	0.02	0.14	0.03
-	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	0.31	2.34	0.73	1.33	0.41	1.57	0.49	4.24	1.31	0.34	0.11	2.83	0.88

ETHEPHON (106) International Estimated Daily Intake (IEDI) ADI = 0 - 0.05 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day G01 diet	Intake as µg//person/day G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
VO 0448	Tomato, raw	RAC	0.52	41.73	21.70	75.65	39.34	10.66	5.54	82.87	43.09	24.75	12.87	200.93	104.48
GC 0653	Triticale, raw (incl flour)	RAC	0.095	NC	-	NC	-	NC	-	0.10	0.01	0.39	0.04	NC	-
GC 0654	Wheat, raw (incl bulgur, incl fermented beverages, incl germ, incl wholemeal bread, incl white flour products, incl white bread)	RAC	0.095	381.15	36.21	341.55	32.45	38.35	3.64	281.89	26.78	172.83	16.42	434.07	41.24
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total intake (µg//person)=				71.4		96.7		14.7		84.7		35.6		191.1
	Bodyweight per region (kg bw) =				60		60		60		60		60		60
	ADI (µg//person)=				3000		3000		3000		3000		3000		3000
	%ADI=				2.4%		3.2%		0.5%		2.8%		1.2%		6.4%
	Rounded %ADI=				2%		3%		0%		3%		1%		6%

ETHEPHON (106) International Estimated Daily Intake (IEDI) ADI = 0 - 0.05 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day G07 diet	Intake as µg//person/day G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
JF 0226	Apple juice, single strength (incl. concentrated)	PP	0.075	14.88	1.12	11.98	0.90	0.15	0.01	9.98	0.75	30.32	2.27	3.47	0.26
FP 0226	Apple, raw (incl cider, excl juice)	RAC	0.15	41.14	6.17	56.49	8.47	26.64	4.00	31.58	4.74	51.94	7.79	3.05	0.46
-	Barley, pot&pearled	PP	0.12	0.57	0.07	2.56	0.31	0.33	0.04	0.56	0.07	0.36	0.04	NC	-
GC 0640	Barley, raw (incl malt extract, incl flour & grits, incl beer, incl malt, excl pot&pearled)	RAC	0.13	35.31	4.59	49.50	6.44	8.87	1.15	34.39	4.47	46.12	6.00	15.92	2.07
FS 0013	Cherries, raw	RAC	0.65	1.40	0.91	4.21	2.74	0.10	0.07	2.93	1.90	1.50	0.98	NC	-
OR 0691	Cotton seed oil, edible	PP	0.011	1.68	0.02	0.66	0.01	1.13	0.01	1.18	0.01	0.89	0.01	0.37	0.00
SO 0691	Cotton seed, raw	RAC	0.55	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
MO 0105	Edible offal (mammalian), raw	RAC	0.12	15.17	1.82	5.19	0.62	6.30	0.76	6.78	0.81	3.32	0.40	3.17	0.38
PE 0112	Eggs, raw, (incl dried)	RAC	0	25.84	0.00	29.53	0.00	28.05	0.00	33.19	0.00	36.44	0.00	8.89	0.00
FT 0297	Fig, raw (incl dried)	RAC	0.73	0.88	0.64	0.82	0.60	0.10	0.07	0.48	0.35	0.54	0.39	NC	-
JF 0269	Grape juice	PP	0.14	0.56	0.08	1.96	0.27	0.10	0.01	2.24	0.31	2.27	0.32	0.34	0.05
-	Grape must	PP	0.16	0.16	0.03	0.10	0.02	0.10	0.02	0.12	0.02	0.11	0.02	NC	-
-	Grape wine (incl vermouths)	PP	0.25	88.93	22.23	62.41	15.60	1.84	0.46	25.07	6.27	61.17	15.29	5.84	1.46
DF 0269	Grape, dried (= currants, raisins and sultanas)	PP	0.23	3.09	0.71	1.51	0.35	0.10	0.02	1.38	0.32	4.26	0.98	0.42	0.10
FB 0269	Grape, raw	RAC	0.19	6.33	1.20	11.22	2.13	5.21	0.99	9.38	1.78	4.55	0.86	0.78	0.15
MF 0100	Mammalian fats, raw, excl milk fats (incl	RAC	0.002	6.44	0.01	15.51	0.03	3.79	0.01	8.29	0.02	18.44	0.04	8.00	0.02

ETHEPHON (106) International Estimated Daily Intake (IEDI) ADI = 0 - 0.05 mg/kg bw

			STMR	Diets as g/person/day			Intake as µg//person/day								
Codex Code	Commodity description	Expr as	mg/kg	G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
	rendered fats)														
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat)	RAC	0.002	140.03	0.28	150.89	0.30	79.32	0.16	111.24	0.22	120.30	0.24	51.27	0.10
ML 0106	Milks, raw or skimmed (incl dairy products)	RAC	0.0004	388.92	0.16	335.88	0.13	49.15	0.02	331.25	0.13	468.56	0.19	245.45	0.10
-	Olive oil (virgin and residue oil)	PP	0.038	3.40	0.13	9.49	0.36	0.10	0.00	4.28	0.16	2.74	0.10	0.48	0.02
SO 0305	Olives for oil production, raw	RAC	1.9	0.35	0.67	0.10	0.19	0.10	0.19	0.57	1.08	0.10	0.19	NC	-
FI 0353	Pineapple, raw (incl canned pineapple, incl pineapple juice, incl dried pineapple)	RAC	0.12	13.13	1.58	11.13	1.34	6.94	0.83	14.36	1.72	36.74	4.41	18.81	2.26
PO 0111	Poultry edible offal, raw (incl prepared)	RAC	0.037	0.33	0.01	0.72	0.03	0.27	0.01	0.35	0.01	0.80	0.03	NC	-
PF 0111	Poultry fat, raw (incl rendered)	RAC	0.0015	0.10	0.00	0.10	0.00	NC	-	0.10	0.00	0.71	0.00	NC	-
PM 0110	Poultry meat, raw (incl prepared)	RAC	0.0022	73.76	0.16	53.86	0.12	23.98	0.05	87.12	0.19	53.38	0.12	84.45	0.19
GC 0650	Rye, raw (incl flour)	RAC	0.095	3.21	0.30	35.38	3.36	0.21	0.02	6.50	0.62	1.49	0.14	NC	-
DM 0305	Table olive, preserved	PP	0.019	1.85	0.04	2.34	0.04	0.10	0.00	1.11	0.02	1.54	0.03	0.26	0.00
FT 0305	Table olive, raw	RAC	1.9	0.10	0.19	0.10	0.19	0.10	0.19	0.10	0.19	0.10	0.19	NC	-
-	Tomato, canned (& peeled)	PP	0.1	7.57	0.76	2.66	0.27	0.30	0.03	0.97	0.10	7.31	0.73	0.41	0.04
JF 0448	Tomato, juice (single strength, incl concentrated)	PP	0.18	0.80	0.14	0.10	0.02	0.10	0.02	0.61	0.11	0.40	0.07	0.10	0.02
-	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	0.31	4.96	1.54	3.20	0.99	0.15	0.05	1.61	0.50	6.88	2.13	0.52	0.16
VO 0448	Tomato, raw	RAC	0.52	32.13	16.71	51.27	26.66	34.92	18.16	73.37	38.15	15.15	7.88	8.88	4.62
GC 0653	Triticale, raw (incl flour)	RAC	0.095	0.10	0.01	0.17	0.02	0.29	0.03	0.10	0.01	NC	-	NC	-
GC 0654	Wheat, raw (incl bulgur, incl fermented beverages, incl germ, incl wholemeal bread, incl white flour products, incl white bread)	RAC	0.095	253.07	24.04	244.73	23.25	134.44	12.77	235.10	22.33	216.39	20.56	167.40	15.90
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total intake (µg//person)=				86.3		95.7		40.1		87.4		72.4		28.3
	Bodyweight per region (kg bw) =				60		60		55		60		60		60
	ADI (µg//person)=				3000		3000		2750		3000		3000		3000
	%ADI=				2.9%		3.2%		1.5%		2.9%		2.4%		0.9%
	Rounded %ADI=				3%		3%		1%		3%		2%		1%

ETHEPHON (106) International Estimated Daily Intake (IEDI) ADI = 0 - 0.05 mg/kg bw

			STMR	Diets: g/person/day			Intake = daily intake: µg//person						
Codex Code	Commodity description	Expr as	mg/kg	G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
JF 0226	Apple juice, single strength (incl. concentrated)	PP	0.075	0.10	0.01	0.10	0.01	7.19	0.54	0.10	0.01	NC	-
FP 0226	Apple, raw (incl cider, excl juice)	RAC	0.15	66.67	10.00	2.06	0.31	55.83	8.37	188.29	28.24	1.38	0.21
-	Barley, pot&pearled	PP	0.12	5.46	0.66	0.10	0.01	1.44	0.17	0.10	0.01	NC	-
GC 0640	Barley, raw (incl malt extract, incl flour & grits, incl beer, incl malt, excl pot&pearled)	RAC	0.13	3.19	0.41	2.31	0.30	44.50	5.79	3.72	0.48	16.26	2.11
FS 0013	Cherries, raw	RAC	0.65	0.10	0.07	0.10	0.07	5.96	3.87	0.10	0.07	NC	-
OR 0691	Cotton seed oil, edible	PP	0.011	1.28	0.01	0.10	0.00	0.45	0.00	0.42	0.00	0.15	0.00
SO 0691	Cotton seed, raw	RAC	0.55	NC	-	NC	-	NC	-	NC	-	NC	-
MO 0105	Edible offal (mammalian), raw	RAC	0.12	4.64	0.56	1.97	0.24	10.01	1.20	3.27	0.39	3.98	0.48
PE 0112	Eggs, raw, (incl dried)	RAC	0	3.84	0.00	4.41	0.00	27.25	0.00	1.13	0.00	7.39	0.00
FT 0297	Fig, raw (incl dried)	RAC	0.73	0.10	0.07	0.10	0.07	1.13	0.82	0.10	0.07	0.10	0.07
JF 0269	Grape juice	PP	0.14	0.10	0.01	0.10	0.01	0.41	0.06	0.10	0.01	NC	-
-	Grape must	PP	0.16	0.10	0.02	0.10	0.02	0.11	0.02	0.10	0.02	0.19	0.03
-	Grape wine (incl vermouths)	PP	0.25	0.31	0.08	0.23	0.06	60.43	15.11	0.52	0.13	31.91	7.98
DF 0269	Grape, dried (= currants, raisins and sultanas)	PP	0.23	0.10	0.02	0.13	0.03	1.06	0.24	0.10	0.02	0.10	0.02
FB 0269	Grape, raw	RAC	0.19	0.14	0.03	0.36	0.07	15.22	2.89	0.10	0.02	0.10	0.02
MF 0100	Mammalian fats, raw, excl milk fats (incl rendered fats)	RAC	0.002	1.05	0.00	1.14	0.00	18.69	0.04	0.94	0.00	3.12	0.01
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat)	RAC	0.002	29.18	0.06	50.89	0.10	121.44	0.24	22.58	0.05	72.14	0.14
ML 0106	Milks, raw or skimmed (incl dairy products)	RAC	0.0004	108.75	0.04	70.31	0.03	436.11	0.17	61.55	0.02	79.09	0.03
-	Olive oil (virgin and residue oil)	PP	0.038	0.10	0.00	0.10	0.00	2.14	0.08	0.10	0.00	0.10	0.00
SO 0305	Olives for oil production, raw	RAC	1.9	NC	-	NC	-	0.10	0.19	NC	-	NC	-
FI 0353	Pineapple, raw (incl canned pineapple, incl pineapple juice, incl dried pineapple)	RAC	0.12	8.51	1.02	6.27	0.75	6.89	0.83	0.18	0.02	24.94	2.99
PO 0111	Poultry edible offal, raw (incl prepared)	RAC	0.037	0.10	0.00	0.70	0.03	0.97	0.04	0.10	0.00	NC	-
PF 0111	Poultry fat, raw (incl rendered)	RAC	0.0015	NC	-	NC	-	0.32	0.00	NC	-	NC	-
PM 0110	Poultry meat, raw (incl prepared)	RAC	0.0022	3.92	0.01	12.03	0.03	57.07	0.13	5.03	0.01	55.56	0.12
GC 0650	Rye, raw (incl flour)	RAC	0.095	0.10	0.01	0.10	0.01	13.95	1.33	0.10	0.01	0.88	0.08
DM 0305	Table olive, preserved	PP	0.019	0.10	0.00	0.10	0.00	1.65	0.03	0.10	0.00	0.23	0.00
FT 0305	Table olive, raw	RAC	1.9	NC	-	NC	-	0.10	0.19	NC	-	NC	-
-	Tomato, canned (& peeled)	PP	0.1	0.10	0.01	0.10	0.01	2.42	0.24	0.10	0.01	NC	-
JF 0448	Tomato, juice (single strength, incl concentrated)	PP	0.18	0.10	0.02	0.10	0.02	0.42	0.08	0.10	0.02	0.10	0.02
-	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	0.31	0.58	0.18	0.22	0.07	2.21	0.69	0.24	0.07	3.10	0.96

Annex 3

ETHEPHON (106) International Estimated Daily Intake (IEDI) ADI = 0 - 0.05 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day G13 diet	G13 intake	G14 diet	Intake = daily intake: µg//person G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
VO 0448	Tomato, raw	RAC	0.52	12.99	6.75	4.79	2.49	58.40	30.37	0.92	0.48	0.10	0.05
GC 0653	Triticale, raw (incl flour)	RAC	0.095	0.10	0.01	NC	-	NC	-	NC	-	NC	-
GC 0654	Wheat, raw (incl bulgur, incl fermented beverages, incl germ, incl wholemeal bread, incl white flour products, incl white bread)	RAC	0.095	57.20	5.43	110.47	10.49	272.62	25.90	25.82	2.45	132.04	12.54
-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total intake (µg//person)=				25.5		15.2		99.6		32.6		27.9
	Bodyweight per region (kg bw) =				60		60		60		60		60
	ADI (µg//person)=				3000		3000		3000		3000		3000
	%ADI=				0.9%		0.5%		3.3%		1.1%		0.9%
	Rounded %ADI=				1%		1%		3%		1%		1%

FLONICAMID (282) International Estimated Daily Intake (IEDI) ADI = 0 - 0.07 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day G01 diet	Intake as µg//person/day G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
FP 0009	Pome fruits, raw (incl. apple juice, incl cider)	RAC	0.13	19.79	2.57	38.25	4.97	17.96	2.33	32.56	4.23	8.08	1.05	64.45	8.38
FS 0013	Cherries, raw	RAC	0.28	0.92	0.26	9.15	2.56	0.10	0.03	0.61	0.17	0.10	0.03	6.64	1.86
FS 0014	Plums, raw (incl Chinese jujube)	RAC	0.03	2.40	0.07	8.60	0.26	0.10	0.00	2.52	0.08	0.58	0.02	4.16	0.12
DF 0014	Plum, dried (prunes)	PP	0.04	0.10	0.00	0.10	0.00	0.10	0.00	0.18	0.01	0.10	0.00	0.10	0.00
FS 2001	Peaches, nectarines, apricots, raw (incl dried apricots)	RAC	0.14	8.01	1.12	5.87	0.82	0.18	0.03	8.19	1.15	1.64	0.23	22.46	3.14
FB 2009	Low growing berries, raw (i.e. cranberry and strawberry)	RAC	0.37	0.71	0.26	2.02	0.75	0.10	0.04	1.39	0.51	0.37	0.14	2.53	0.94
VB 0041	Cabbages, head, raw	RAC	0.025	2.73	0.07	27.92	0.70	0.55	0.01	4.47	0.11	4.27	0.11	10.25	0.26
VB 0042	Flowerhead brassicas, raw	RAC	0.358	2.96	1.06	0.57	0.20	0.10	0.04	4.17	1.49	7.79	2.79	3.64	1.30
VB 0400	Broccoli, raw	RAC	0.358	0.88	0.32	0.17	0.06	0.10	0.04	1.25	0.45	3.00	1.07	1.09	0.39
VB 0401	Chinese Broccoli, raw (i.e. kailan)	RAC	0.358	0.42	0.15	0.10	0.04	0.10	0.04	0.60	0.21	NC	-	0.52	0.19
VB 0402	Brussels sprouts, raw	RAC	0.358	0.63	0.23	6.41	2.29	0.13	0.05	1.03	0.37	NC	-	2.35	0.84
VB 0404	Cauliflower, raw	RAC	0.358	1.65	0.59	0.32	0.11	0.10	0.04	2.33	0.83	4.79	1.71	2.03	0.73
VB 0405	Kohlrabi, raw	RAC	0.358	0.10	0.04	0.89	0.32	0.10	0.04	0.14	0.05	NC	-	0.33	0.12
VC 0045	Fruiting vegetables, cucurbits, raw	RAC	0.04	53.14	2.13	86.21	3.45	6.28	0.25	92.76	3.71	15.64	0.63	155.30	6.21
VO 0050	Fruiting vegetables other than cucurbits, raw, (incl processed commodities), excl tomato commodities, excl sweet corn commodities, excl mushroom commodities	RAC	0.09	18.97	1.71	21.73	1.96	20.61	1.85	27.35	2.46	35.54	3.20	50.62	4.56
VO 0448	Tomato, raw (incl juice, incl canned, excl paste)	RAC	0.09	42.41	3.82	76.50	6.89	10.69	0.96	85.07	7.66	24.98	2.25	203.44	18.31
-	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	1.45	2.34	3.39	1.33	1.93	1.57	2.28	4.24	6.15	0.34	0.49	2.83	4.10
VL 0054	Brassica leafy vegetables, raw	RAC	8.31	1.07	8.89	10.95	90.99	0.22	1.83	1.75	14.54	5.72	47.53	4.02	33.41
VL 0482	Lettuce, head, raw	RAC	0.51	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
VL 0483	Lettuce, leaf, raw	RAC	2.67	0.53	1.42	0.36	0.96	0.16	0.43	6.21	16.58	1.90	5.07	6.05	16.15
VL 0494	Radish leaves, raw	RAC	8.5	0.26	2.21	0.45	3.83	0.28	2.38	0.68	5.78	NC	-	0.33	2.81
VL 0502	Spinach, raw	RAC	5.72	0.74	4.23	0.22	1.26	0.10	0.57	0.91	5.21	0.10	0.57	2.92	16.70
VR 0494	Radish roots, raw	RAC	0.1	2.31	0.23	4.09	0.41	2.53	0.25	6.15	0.62	5.88	0.59	2.97	0.30
VR 0589	Potato, raw (incl flour, incl frozen, incl starch, incl tapioca)	RAC	0.01	59.74	0.60	316.14	3.16	9.78	0.10	60.26	0.60	54.12	0.54	119.82	1.20
VS 0624	Celery	RAC	0.45	2.14	0.96	3.79	1.71	2.35	1.06	5.69	2.56	0.10	0.05	2.75	1.24
GC 0650	Rye, raw (incl flour)	RAC	0.01	0.13	0.00	19.38	0.19	0.10	0.00	0.12	0.00	0.10	0.00	2.15	0.02
GC 0653	Triticale, raw (incl flour)	RAC	0.01	NC	-	NC	-	NC	-	0.10	0.00	0.39	0.00	NC	-
GC 0654	Wheat, raw (incl bulgur, incl fermented beverages, incl germ, incl wholemeal bread, incl white flour products, incl white bread)	RAC	0.01	381.15	3.81	341.55	3.42	38.35	0.38	281.89	2.82	172.83	1.73	434.07	4.34

Annex 3

FLONICAMID (282) International Estimated Daily Intake (IEDI) ADI = 0 - 0.07 mg/kg bw

			STMR	Diets as g/person/day			Intake as µg//person/day								
Codex Code	Commodity description	Expr as	mg/kg	G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
TN 0660	Almonds, nutmeat	RAC	0.01	1.38	0.01	0.10	0.00	0.10	0.00	1.00	0.01	0.10	0.00	0.81	0.01
TN 0672	Pecan nuts, nutmeat	RAC	0.01	0.10	0.00	0.10	0.00	0.10	0.00	0.14	0.00	0.10	0.00	0.13	0.00
SO 0495	Rape seed, raw	RAC	0.04	0.10	0.00	NC	-	NC	-	0.10	0.00	0.75	0.03	0.10	0.00
OR 0495	Rape seed oil, edible	PP	0.004	0.35	0.00	0.44	0.00	0.19	0.00	0.97	0.00	3.28	0.01	0.77	0.00
SO 0691	Cotton seed, raw	RAC	0.06	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
OR 0691	Cotton seed oil, edible	PP	0.02	3.22	0.06	1.54	0.03	1.01	0.02	0.74	0.01	1.12	0.02	2.93	0.06
HH 0738	Mints, raw	RAC	1.92	0.50	0.96	0.10	0.19	NC	-	NC	-	NC	-	NC	-
DH 1100	Hops, dry	RAC	1.98	0.10	0.20	0.10	0.20	0.10	0.20	0.10	0.20	NC	-	0.10	0.20
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) -80% as muscle	RAC	0.05	24.96	1.25	57.95	2.90	16.70	0.84	38.38	1.92	26.46	1.32	29.00	1.45
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) - 20% as fat	RAC	0.02	6.24	0.12	14.49	0.29	4.18	0.08	9.60	0.19	6.62	0.13	7.25	0.15
MF 0100	Mammalian fats, raw, excl milk fats (incl rendered fats)	RAC	0.02	3.29	0.07	6.14	0.12	0.82	0.02	1.57	0.03	2.23	0.04	1.07	0.02
MO 0105	Edible offal (mammalian), raw	RAC	0.05	4.79	0.24	9.68	0.48	2.97	0.15	5.49	0.27	3.84	0.19	5.03	0.25
ML 0106	Milks, raw or skimmed (incl dairy products)	RAC	0.04	289.65	11.59	485.88	19.44	26.92	1.08	239.03	9.56	199.91	8.00	180.53	7.22
PM 0110	Poultry meat, raw (incl prepared)	RAC	0.02	14.63	0.29	29.76	0.60	8.04	0.16	129.68	2.59	25.04	0.50	35.66	0.71
PF 0111	Poultry fat, raw (incl rendered)	RAC	0.02	0.10	0.00	0.10	0.00	NC	-	0.10	0.00	0.10	0.00	0.10	0.00
PO 0111	Poultry edible offal, raw (incl prepared)	RAC	0.02	0.12	0.00	0.12	0.00	0.11	0.00	5.37	0.11	0.24	0.00	0.10	0.00
PE 0112	Eggs, raw, (incl dried)	RAC	0.02	7.84	0.16	23.08	0.46	2.88	0.06	14.89	0.30	9.81	0.20	14.83	0.30
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total intake (µg//person)=				55.1		157.9		17.6		93.6		80.3		138.0
	Bodyweight per region (kg bw) =				60		60		60		60		60		60
	ADI (µg//person)=				4200		4200		4200		4200		4200		4200
	%ADI=				1.3%		3.8%		0.4%		2.2%		1.9%		3.3%
	Rounded %ADI=				1%		4%		0%		2%		2%		3%

FLONICAMID (282) International Estimated Daily Intake (IEDI) ADI = 0 - 0.07 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day Intake as µg//person/day											
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
FP 0009	Pome fruits, raw (incl. apple juice, incl cider)	RAC	0.13	71.38	9.28	81.73	10.62	42.91	5.58	58.89	7.66	103.85	13.50	12.48	1.62
FS 0013	Cherries, raw	RAC	0.28	1.40	0.39	4.21	1.18	0.10	0.03	2.93	0.82	1.50	0.42	NC	-
FS 0014	Plums, raw (incl Chinese jujube)	RAC	0.03	3.75	0.11	3.33	0.10	5.94	0.18	2.64	0.08	2.50	0.08	0.10	0.00
DF 0014	Plum, dried (prunes)	PP	0.04	0.61	0.02	0.35	0.01	0.10	0.00	0.35	0.01	0.49	0.02	0.13	0.01
FS 2001	Peaches, nectarines, apricots, raw (incl dried apricots)	RAC	0.14	13.03	1.82	16.29	2.28	8.29	1.16	12.95	1.81	5.35	0.75	0.10	0.01
FB 2009	Low growing berries, raw (i.e. cranberry and strawberry)	RAC	0.37	4.55	1.68	5.66	2.09	0.10	0.04	7.85	2.90	5.86	2.17	0.10	0.04
VB 0041	Cabbages, head, raw	RAC	0.025	8.97	0.22	27.12	0.68	1.44	0.04	24.96	0.62	4.55	0.11	11.23	0.28
VB 0042	Flowerhead brassicas, raw	RAC	0.358	9.50	3.40	6.77	2.42	9.03	3.23	3.21	1.15	9.36	3.35	0.87	0.31
VB 0400	Broccoli, raw	RAC	0.358	4.24	1.52	1.76	0.63	NC	-	0.51	0.18	3.79	1.36	0.26	0.09
VB 0401	Chinese Broccoli, raw (i.e. kailan)	RAC	0.358	NC	-	NC	-	9.03	3.23	NC	-	NC	-	0.12	0.04
VB 0402	Brussels sprouts, raw	RAC	0.358	2.24	0.80	2.67	0.96	6.23	2.23	0.32	0.11	4.19	1.50	2.58	0.92
VB 0404	Cauliflower, raw	RAC	0.358	5.27	1.89	5.01	1.79	NC	-	2.70	0.97	5.57	1.99	0.49	0.18
VB 0405	Kohlrabi, raw	RAC	0.358	NC	-	3.25	1.16	NC	-	NC	-	0.10	0.04	0.36	0.13
VC 0045	Fruiting vegetables, cucurbits, raw	RAC	0.04	27.81	1.11	41.93	1.68	123.30	4.93	49.47	1.98	15.95	0.64	35.99	1.44
VO 0050	Fruiting vegetables other than cucurbits, raw, (incl processed commodities), excl tomato commodities, excl sweet corn commodities, excl mushroom commodities	RAC	0.09	8.19	0.74	18.68	1.68	42.99	3.87	15.04	1.35	11.46	1.03	6.30	0.57
VO 0448	Tomato, raw (incl juice, incl canned, excl paste)	RAC	0.09	44.88	4.04	55.49	4.99	35.44	3.19	75.65	6.81	27.00	2.43	9.61	0.86
-	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	1.45	4.96	7.19	3.20	4.64	0.15	0.22	1.61	2.33	6.88	9.98	0.52	0.75
VL 0054	Brassica leafy vegetables, raw	RAC	8.31	NC	-	NC	-	33.86	281.38	9.44	78.45	NC	-	4.40	36.56
VL 0482	Lettuce, head, raw	RAC	0.51	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
VL 0483	Lettuce, leaf, raw	RAC	2.67	14.50	38.72	11.76	31.40	13.14	35.08	19.50	52.07	4.81	12.84	2.23	5.95
VL 0494	Radish leaves, raw	RAC	8.5	NC	-	NC	-	NC	-	3.78	32.13	NC	-	0.48	4.08
VL 0502	Spinach, raw	RAC	5.72	2.20	12.58	1.76	10.07	13.38	76.53	2.94	16.82	5.53	31.63	0.10	0.57
VR 0494	Radish roots, raw	RAC	0.1	3.83	0.38	11.99	1.20	NC	-	5.26	0.53	2.19	0.22	4.37	0.44
VR 0589	Potato, raw (incl flour, incl frozen, incl starch, incl tapioca)	RAC	0.01	225.03	2.25	234.24	2.34	71.48	0.71	177.55	1.78	234.55	2.35	37.71	0.38
VS 0624	Celery	RAC	0.45	7.68	3.46	2.85	1.28	NC	-	3.34	1.50	16.83	7.57	4.04	1.82
GC 0650	Rye, raw (incl flour)	RAC	0.01	3.21	0.03	35.38	0.35	0.21	0.00	6.50	0.07	1.49	0.01	NC	-
GC 0653	Triticale, raw (incl flour)	RAC	0.01	0.10	0.00	0.17	0.00	0.29	0.00	0.10	0.00	NC	-	NC	-
GC 0654	Wheat, raw (incl bulgur, incl fermented beverages, incl germ, incl wholemeal bread, incl white flour products, incl white bread)	RAC	0.01	253.07	2.53	244.73	2.45	134.44	1.34	235.10	2.35	216.39	2.16	167.40	1.67

Annex 3

FLONICAMID (282) International Estimated Daily Intake (IEDI) ADI = 0 - 0.07 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day			Intake as µg//person/day								
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
TN 0660	Almonds, nutmeat	RAC	0.01	0.81	0.01	2.21	0.02	0.10	0.00	1.02	0.01	1.47	0.01	NC	-
TN 0672	Pecan nuts, nutmeat	RAC	0.01	0.38	0.00	NC	-	NC	-	0.27	0.00	NC	-	0.26	0.00
SO 0495	Rape seed, raw	RAC	0.04	NC	-	NC	-	0.10	0.00	NC	-	NC	-	NC	-
OR 0495	Rape seed oil, edible	PP	0.004	12.52	0.05	7.63	0.03	3.00	0.01	6.01	0.02	NC	-	NC	-
SO 0691	Cotton seed, raw	RAC	0.06	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
OR 0691	Cotton seed oil, edible	PP	0.02	1.68	0.03	0.66	0.01	1.13	0.02	1.18	0.02	0.89	0.02	0.37	0.01
HH 0738	Mints, raw	RAC	1.92	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
DH 1100	Hops, dry	RAC	1.98	NC	-	NC	-	0.10	0.20	0.10	0.20	NC	-	NC	-
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) -80% as muscle	RAC	0.05	112.02	5.60	120.71	6.04	63.46	3.17	88.99	4.45	96.24	4.81	41.02	2.05
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) - 20% as fat	RAC	0.02	28.01	0.56	30.18	0.60	15.86	0.32	22.25	0.44	24.06	0.48	10.25	0.21
MF 0100	Mammalian fats, raw, excl milk fats (incl rendered fats)	RAC	0.02	6.44	0.13	15.51	0.31	3.79	0.08	8.29	0.17	18.44	0.37	8.00	0.16
MO 0105	Edible offal (mammalian), raw	RAC	0.05	15.17	0.76	5.19	0.26	6.30	0.32	6.78	0.34	3.32	0.17	3.17	0.16
ML 0106	Milks, raw or skimmed (incl dairy products)	RAC	0.04	388.92	15.56	335.88	13.44	49.15	1.97	331.25	13.25	468.56	18.74	245.45	9.82
PM 0110	Poultry meat, raw (incl prepared)	RAC	0.02	73.76	1.48	53.86	1.08	23.98	0.48	87.12	1.74	53.38	1.07	84.45	1.69
PF 0111	Poultry fat, raw (incl rendered)	RAC	0.02	0.10	0.00	0.10	0.00	NC	-	0.10	0.00	0.71	0.01	NC	-
PO 0111	Poultry edible offal, raw (incl prepared)	RAC	0.02	0.33	0.01	0.72	0.01	0.27	0.01	0.35	0.01	0.80	0.02	NC	-
PE 0112	Eggs, raw, (incl dried)	RAC	0.02	25.84	0.52	29.53	0.59	28.05	0.56	33.19	0.66	36.44	0.73	8.89	0.18
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total intake (µg//person)=				118.9		108.4		430.1		235.8		122.6		73.0
	Bodyweight per region (kg bw) =				60		60		55		60		60		60
	ADI (µg//person)=				4200		4200		3850		4200		4200		4200
	%ADI=				2.8%		2.6%		11.2%		5.6%		2.9%		1.7%
	Rounded %ADI=				3%		3%		10%		6%		3%		2%

FLONICAMID (282) International Estimated Daily Intake (IEDI) ADI = 0 - 0.07 mg/kg bw

			STMR	Diets: g/person/day			Intake = daily intake: µg//person						
Codex Code	Commodity description	Expr as	mg/kg	G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
FP 0009	Pome fruits, raw (incl. apple juice, incl cider)	RAC	0.13	68.89	8.96	11.06	1.44	80.62	10.48	189.82	24.68	19.56	2.54
FS 0013	Cherries, raw	RAC	0.28	0.10	0.03	0.10	0.03	5.96	1.67	0.10	0.03	NC	-
FS 0014	Plums, raw (incl Chinese jujube)	RAC	0.03	0.10	0.00	0.10	0.00	15.56	0.47	0.10	0.00	NC	-
DF 0014	Plum, dried (prunes)	PP	0.04	0.10	0.00	0.10	0.00	0.37	0.01	0.10	0.00	NC	-
FS 2001	Peaches, nectarines, apricots, raw (incl dried apricots)	RAC	0.14	0.10	0.01	0.10	0.01	10.76	1.51	0.10	0.01	NC	-
FB 2009	Low growing berries, raw (i.e. cranberry and strawberry)	RAC	0.37	0.10	0.04	0.10	0.04	3.37	1.25	0.10	0.04	0.10	0.04
VB 0041	Cabbages, head, raw	RAC	0.025	3.82	0.10	2.99	0.07	49.16	1.23	0.10	0.00	NC	-
VB 0042	Flowerhead brassicas, raw	RAC	0.358	0.10	0.04	0.10	0.04	4.86	1.74	0.10	0.04	NC	-
VB 0400	Broccoli, raw	RAC	0.358	0.10	0.04	0.10	0.04	2.13	0.76	0.10	0.04	NC	-
VB 0401	Chinese Broccoli, raw (i.e. kailan)	RAC	0.358	0.10	0.04	0.10	0.04	NC	-	0.10	0.04	NC	-
VB 0402	Brussels sprouts, raw	RAC	0.358	0.88	0.32	0.69	0.25	2.89	1.03	0.10	0.04	NC	-
VB 0404	Cauliflower, raw	RAC	0.358	0.10	0.04	0.10	0.04	2.73	0.98	0.10	0.04	NC	-
VB 0405	Kohlrabi, raw	RAC	0.358	0.12	0.04	0.10	0.04	1.81	0.65	0.10	0.04	NC	-
VC 0045	Fruiting vegetables, cucurbits, raw	RAC	0.04	5.96	0.24	9.74	0.39	51.82	2.07	13.61	0.54	0.10	0.00
VO 0050	Fruiting vegetables other than cucurbits, raw, (incl processed commodities), excl tomato commodities, excl sweet corn commodities, excl mushroom commodities	RAC	0.09	20.58	1.85	31.41	2.83	37.56	3.38	1.79	0.16	NC	-
VO 0448	Tomato, raw (incl juice, incl canned, excl paste)	RAC	0.09	13.17	1.19	4.92	0.44	62.69	5.64	1.04	0.09	0.11	0.01
-	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	1.45	0.58	0.84	0.22	0.32	2.21	3.20	0.24	0.35	3.10	4.50
VL 0054	Brassica leafy vegetables, raw	RAC	8.31	1.50	12.47	1.17	9.72	NC	-	0.10	0.83	NC	-
VL 0482	Lettuce, head, raw	RAC	0.51	NC	-	NC	-	NC	-	NC	-	NC	-
VL 0483	Lettuce, leaf, raw	RAC	2.67	0.29	0.77	0.10	0.27	6.71	17.92	0.10	0.27	NC	-
VL 0494	Radish leaves, raw	RAC	8.5	0.44	3.74	0.32	2.72	NC	-	0.30	2.55	0.59	5.02
VL 0502	Spinach, raw	RAC	5.72	0.17	0.97	0.10	0.57	0.81	4.63	0.10	0.57	NC	-
VR 0494	Radish roots, raw	RAC	0.1	3.96	0.40	2.86	0.29	3.30	0.33	2.67	0.27	5.34	0.53
VR 0589	Potato, raw (incl flour, incl frozen, incl starch, incl tapioca)	RAC	0.01	23.96	0.24	13.56	0.14	213.41	2.13	104.35	1.04	8.56	0.09
VS 0624	Celery	RAC	0.45	3.66	1.65	2.65	1.19	4.84	2.18	2.47	1.11	4.94	2.22
GC 0650	Rye, raw (incl flour)	RAC	0.01	0.10	0.00	0.10	0.00	13.95	0.14	0.10	0.00	0.88	0.01
GC 0653	Triticale, raw (incl flour)	RAC	0.01	0.10	0.00	NC	-	NC	-	NC	-	NC	-
GC 0654	Wheat, raw (incl bulgur, incl fermented beverages, incl germ, incl wholemeal bread, incl white flour products, incl white bread)	RAC	0.01	57.20	0.57	110.47	1.10	272.62	2.73	25.82	0.26	132.04	1.32

Annex 3

FLONICAMID (282) International Estimated Daily Intake (IEDI) ADI = 0 - 0.07 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day			Intake = daily intake: µg//person						
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
TN 0660	Almonds, nutmeat	RAC	0.01	0.10	0.00	0.10	0.00	0.61	0.01	0.10	0.00	NC	-
TN 0672	Pecan nuts, nutmeat	RAC	0.01	0.15	0.00	0.22	0.00	0.31	0.00	0.10	0.00	0.10	0.00
SO 0495	Rape seed, raw	RAC	0.04	NC	-	0.10	0.00	NC	-	NC	-	NC	-
OR 0495	Rape seed oil, edible	PP	0.004	0.10	0.00	0.10	0.00	4.62	0.02	0.10	0.00	NC	-
SO 0691	Cotton seed, raw	RAC	0.06	NC	-	NC	-	NC	-	NC	-	NC	-
OR 0691	Cotton seed oil, edible	PP	0.02	1.28	0.03	0.10	0.00	0.45	0.01	0.42	0.01	0.15	0.00
HH 0738	Mints, raw	RAC	1.92	NC	-	NC	-	NC	-	NC	-	NC	-
DH 1100	Hops, dry	RAC	1.98	NC	-	NC	-	0.10	0.20	NC	-	NC	-
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) -80% as muscle	RAC	0.05	23.34	1.17	40.71	2.04	97.15	4.86	18.06	0.90	57.71	2.89
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) - 20% as fat	RAC	0.02	5.84	0.12	10.18	0.20	24.29	0.49	4.52	0.09	14.43	0.29
MF 0100	Mammalian fats, raw, excl milk fats (incl rendered fats)	RAC	0.02	1.05	0.02	1.14	0.02	18.69	0.37	0.94	0.02	3.12	0.06
MO 0105	Edible offal (mammalian), raw	RAC	0.05	4.64	0.23	1.97	0.10	10.01	0.50	3.27	0.16	3.98	0.20
ML 0106	Milks, raw or skimmed (incl dairy products)	RAC	0.04	108.75	4.35	70.31	2.81	436.11	17.44	61.55	2.46	79.09	3.16
PM 0110	Poultry meat, raw (incl prepared)	RAC	0.02	3.92	0.08	12.03	0.24	57.07	1.14	5.03	0.10	55.56	1.11
PF 0111	Poultry fat, raw (incl rendered)	RAC	0.02	NC	-	NC	-	0.32	0.01	NC	-	NC	-
PO 0111	Poultry edible offal, raw (incl prepared)	RAC	0.02	0.10	0.00	0.70	0.01	0.97	0.02	0.10	0.00	NC	-
PE 0112	Eggs, raw, (incl dried)	RAC	0.02	3.84	0.08	4.41	0.09	27.25	0.55	1.13	0.02	7.39	0.15
-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total intake (µg//person)=				40.6		27.5		91.7		36.8		24.1
	Bodyweight per region (kg bw) =				60		60		60		60		60
	ADI (µg//person)=				4200		4200		4200		4200		4200
	%ADI=				1.0%		0.7%		2.2%		0.9%		0.6%
	Rounded %ADI=				1%		1%		2%		1%		1%

FLUMIOXAZIN (284) International Estimated Daily Intake (IEDI) ADI = 0 - 0.02 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day G01 diet	Intake as µg//person/day G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
VC 0045	Fruiting vegetables, cucurbits, raw	RAC	0.02	53.14	1.06	86.21	1.72	6.28	0.13	92.76	1.86	15.64	0.31	155.30	3.11
VO 0050	Fruiting vegetables other than cucurbits, raw, (incl processed commodities), excl sweet corn commodities, excl mushroom commodities	RAC	0.02	70.72	1.41	103.53	2.07	37.61	0.75	129.38	2.59	61.87	1.24	265.39	5.31
VD 0071	Beans, dry, raw (Phaseolus spp)	RAC	0.02	2.39	0.05	1.61	0.03	10.47	0.21	1.84	0.04	12.90	0.26	7.44	0.15
VD 0072	Peas, dry, raw (Pisum spp, Vigna spp): garden peas & field peas & cow peas	RAC	0.02	1.67	0.03	3.22	0.06	2.66	0.05	1.51	0.03	2.91	0.06	0.24	0.00
VD 0524	Chick-pea, dry, raw (Cicer arietinum)	RAC	0.02	5.34	0.11	0.13	0.00	0.10	0.00	4.69	0.09	7.24	0.14	5.52	0.11
VD 0533	Lentil, dry, raw (Ervum lens)	RAC	0.02	2.12	0.04	0.10	0.00	0.10	0.00	3.21	0.06	1.60	0.03	4.90	0.10
VS 0620	Artichoke globe	RAC	0.02	0.69	0.01	0.10	0.00	0.10	0.00	0.32	0.01	0.26	0.01	1.21	0.02
GC 0654	Wheat, raw (incl bulgur, incl fermented beverages, excl germ, excl wholemeal bread, excl white flour products, excl white bread)	RAC	0.1	0.10	0.01	1.12	0.11	0.10	0.01	0.10	0.01	0.61	0.06	0.10	0.01
CF 1210	Wheat, germ	PP	0.103	NC	-	NC	-	0.10	0.01	0.10	0.01	0.14	0.01	0.10	0.01
CF 0654	Wheat, bran	PP	0.094	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
CF 1212	Wheat, wholemeal flour	PP	0.014	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
SO 0702	Sunflower seed, raw	RAC	0.11	0.10	0.01	0.33	0.04	0.10	0.01	0.24	0.03	0.10	0.01	0.10	0.01
OR 0702	Sunflower seed oil, edible	PP	0.001	2.97	0.00	14.42	0.01	0.43	0.00	3.46	0.00	2.20	0.00	5.53	0.01
HH 0738	Mints, raw	RAC	0.01	0.50	0.01	0.10	0.00	NC	-	NC	-	NC	-	NC	-
PM 0110	Poultry meat, raw (incl prepared) - 90% as muscle	RAC	0.001	13.17	0.01	26.78	0.03	7.24	0.01	116.71	0.12	22.54	0.02	32.09	0.03
PM 0110	Poultry meat, raw (incl prepared) - 10% as fat	RAC	0.004	1.46	0.01	2.98	0.01	0.80	0.00	12.97	0.05	2.50	0.01	3.57	0.01
PF 0111	Poultry fat, raw (incl rendered)	RAC	0.004	0.10	0.00	0.10	0.00	NC	-	0.10	0.00	0.10	0.00	0.10	0.00
PO 0111	Poultry edible offal, raw (incl prepared)	RAC	0.003	0.12	0.00	0.12	0.00	0.11	0.00	5.37	0.02	0.24	0.00	0.10	0.00
PE 0112	Eggs, raw, (incl dried)	RAC	0.001	7.84	0.01	23.08	0.02	2.88	0.00	14.89	0.01	9.81	0.01	14.83	0.01
	Total intake (µg//person)=				2.8		4.1		1.2		4.9		2.2		8.9
	Bodyweight per region (kg bw) =				60		60		60		60		60		60
	ADI (µg//person)=				1200		1200		1200		1200		1200		1200
	%ADI=				0.2%		0.3%		0.1%		0.4%		0.2%		0.7%
	Rounded %ADI=				0%		0%		0%		0%		0%		1%

FLUMIOXAZIN (284) International Estimated Daily Intake (IEDI) ADI = 0 - 0.02 mg/kg bw

			STMR	Diets as g/person/day			Intake as µg//person/day								
Codex Code	Commodity description	Expr as	mg/kg	G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
VC 0045	Fruiting vegetables, cucurbits, raw	RAC	0.02	27.81	0.56	41.93	0.84	123.30	2.47	49.47	0.99	15.95	0.32	35.99	0.72
VO 0050	Fruiting vegetables other than cucurbits, raw, (incl processed commodities), excl sweet corn commodities, excl mushroom commodities	RAC	0.02	72.92	1.46	86.99	1.74	79.04	1.58	97.13	1.94	65.96	1.32	17.98	0.36
VD 0071	Beans, dry, raw (Phaseolus spp)	RAC	0.02	1.51	0.03	1.50	0.03	1.90	0.04	5.11	0.10	1.36	0.03	23.43	0.47
VD 0072	Peas, dry, raw (Pisum spp, Vigna spp): garden peas & field peas & cow peas	RAC	0.02	3.80	0.08	1.25	0.03	1.06	0.02	2.33	0.05	2.70	0.05	3.83	0.08
VD 0524	Chick-pea, dry, raw (Cicer arietinum)	RAC	0.02	0.27	0.01	1.33	0.03	0.32	0.01	0.15	0.00	0.10	0.00	0.10	0.00
VD 0533	Lentil, dry, raw (Ervum lens)	RAC	0.02	0.95	0.02	1.18	0.02	0.40	0.01	0.96	0.02	0.71	0.01	1.28	0.03
VS 0620	Artichoke globe	RAC	0.02	0.98	0.02	3.65	0.07	0.10	0.00	1.67	0.03	0.26	0.01	NC	-
GC 0654	Wheat, raw (incl bulgur, incl fermented beverages, excl germ, excl wholemeal bread, excl white flour products, excl white bread)	RAC	0.1	0.37	0.04	0.10	0.01	0.10	0.01	0.10	0.01	NC	-	0.10	0.01
CF 1210	Wheat, germ	PP	0.103	0.97	0.10	0.10	0.01	0.10	0.01	0.10	0.01	NC	-	0.10	0.01
CF 0654	Wheat, bran	PP	0.094	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
CF 1212	Wheat, wholemeal flour	PP	0.014	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
SO 0702	Sunflower seed, raw	RAC	0.11	0.10	0.01	1.32	0.15	0.10	0.01	1.17	0.13	NC	-	0.10	0.01
OR 0702	Sunflower seed oil, edible	PP	0.001	9.50	0.01	11.37	0.01	0.49	0.00	5.15	0.01	2.63	0.00	2.80	0.00
HH 0738	Mints, raw	RAC	0.01	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
PM 0110	Poultry meat, raw (incl prepared) - 90% as muscle	RAC	0.001	66.38	0.07	48.47	0.05	21.58	0.02	78.41	0.08	48.04	0.05	76.01	0.08
PM 0110	Poultry meat, raw (incl prepared) - 10% as fat	RAC	0.004	7.38	0.03	5.39	0.02	2.40	0.01	8.71	0.03	5.34	0.02	8.45	0.03
PF 0111	Poultry fat, raw (incl rendered)	RAC	0.004	0.10	0.00	0.10	0.00	NC	-	0.10	0.00	0.71	0.00	NC	-
PO 0111	Poultry edible offal, raw (incl prepared)	RAC	0.003	0.33	0.00	0.72	0.00	0.27	0.00	0.35	0.00	0.80	0.00	NC	-
PE 0112	Eggs, raw, (incl dried)	RAC	0.001	25.84	0.03	29.53	0.03	28.05	0.03	33.19	0.03	36.44	0.04	8.89	0.01
	Total intake (µg//person)=				2.4		3.0		4.2		3.4		1.9		1.8
	Bodyweight per region (kg bw) =				60		60		55		60		60		60
	ADI (µg//person)=				1200		1200		1100		1200		1200		1200
	%ADI=				0.2%		0.3%		0.4%		0.3%		0.2%		0.2%
	Rounded %ADI=				0%		0%		0%		0%		0%		0%

FLUMIOXAZIN (284) International Estimated Daily Intake (IEDI) ADI = 0 - 0.02 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day G13 diet	Intake = daily intake: µg//person G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
VC 0045	Fruiting vegetables, cucurbits, raw	RAC	0.02	5.96	0.12	9.74	0.19	51.82	1.04	13.61	0.27	0.10	0.00
VO 0050	Fruiting vegetables other than cucurbits, raw, (incl processed commodities), excl sweet corn commodities, excl mushroom commodities	RAC	0.02	36.09	0.72	37.19	0.74	109.09	2.18	3.78	0.08	12.50	0.25
VD 0071	Beans, dry, raw (Phaseolus spp)	RAC	0.02	7.11	0.14	2.33	0.05	3.76	0.08	44.70	0.89	3.27	0.07
VD 0072	Peas, dry, raw (Pisum spp, Vigna spp): garden peas & field peas & cow peas	RAC	0.02	14.30	0.29	3.51	0.07	3.52	0.07	7.89	0.16	0.74	0.01
VD 0524	Chick-pea, dry, raw (Cicer arietinum)	RAC	0.02	1.09	0.02	1.56	0.03	0.33	0.01	0.18	0.00	0.47	0.01
VD 0533	Lentil, dry, raw (Ervum lens)	RAC	0.02	0.67	0.01	7.26	0.15	0.37	0.01	0.10	0.00	NC	-
VS 0620	Artichoke globe	RAC	0.02	0.10	0.00	NC	-	0.10	0.00	0.10	0.00	NC	-
GC 0654	Wheat, raw (incl bulgur, incl fermented beverages, excl germ, excl wholemeal bread, excl white flour products, excl white bread)	RAC	0.1	0.10	0.01	0.10	0.01	0.10	0.01	0.10	0.01	0.97	0.10
CF 1210	Wheat, germ	PP	0.103	0.10	0.01	0.10	0.01	0.10	0.01	0.10	0.01	NC	-
CF 0654	Wheat, bran	PP	0.094	NC	-	NC	-	NC	-	NC	-	NC	-
CF 1212	Wheat, wholemeal flour	PP	0.014	NC	-	NC	-	NC	-	NC	-	NC	-
SO 0702	Sunflower seed, raw	RAC	0.11	0.10	0.01	0.10	0.01	0.10	0.01	2.23	0.25	NC	-
OR 0702	Sunflower seed oil, edible	PP	0.001	0.37	0.00	0.10	0.00	12.98	0.01	4.01	0.00	0.20	0.00
HH 0738	Mints, raw	RAC	0.01	NC	-	NC	-	NC	-	NC	-	NC	-
PM 0110	Poultry meat, raw (incl prepared) - 90% as muscle	RAC	0.001	3.53	0.00	10.83	0.01	51.36	0.05	4.53	0.00	50.00	0.05
PM 0110	Poultry meat, raw (incl prepared) - 10% as fat	RAC	0.004	0.39	0.00	1.20	0.00	5.71	0.02	0.50	0.00	5.56	0.02
PF 0111	Poultry fat, raw (incl rendered)	RAC	0.004	NC	-	NC	-	0.32	0.00	NC	-	NC	-
PO 0111	Poultry edible offal, raw (incl prepared)	RAC	0.003	0.10	0.00	0.70	0.00	0.97	0.00	0.10	0.00	NC	-
PE 0112	Eggs, raw, (incl dried)	RAC	0.001	3.84	0.00	4.41	0.00	27.25	0.03	1.13	0.00	7.39	0.01
	Total intake (µg//person)=				1.3		1.3		3.5		1.7		0.5
	Bodyweight per region (kg bw) =				60		60		60		60		60
	ADI (µg//person)=				1200		1200		1200		1200		1200
	%ADI=				0.1%		0.1%		0.3%		0.1%		0.0%
	Rounded %ADI=				0%		0%		0%		0%		0%

FLUOPYRAM (243) International Estimated Daily Intake (IEDI) ADI = 0 - 0.01 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day G01 diet	Intake as µg//person/day G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
FP 0009	Pomefruits, raw	RAC	0.135	19.24	2.60	33.89	4.58	3.34	0.45	25.53	3.45	7.59	1.02	56.76	7.66
JF 0226	Apple juice, single strength (incl. concentrated)	PP	0.01	0.32	0.00	3.07	0.03	0.10	0.00	5.00	0.05	0.29	0.00	5.57	0.06
FS 0013	Cherries, raw	RAC	0.205	0.92	0.19	9.15	1.88	0.10	0.02	0.61	0.13	0.10	0.02	6.64	1.36
FS 0014	Plums, raw (incl Chinese jujube)	RAC	0.13	2.40	0.31	8.60	1.12	0.10	0.01	2.52	0.33	0.58	0.08	4.16	0.54
DF 0014	Plum, dried (prunes)	PP	0.14	0.10	0.01	0.10	0.01	0.10	0.01	0.18	0.03	0.10	0.01	0.10	0.01
FS 2001	Peaches, nectarines, apricots, raw (incl dried apricots)	RAC	0.22	8.01	1.76	5.87	1.29	0.18	0.04	8.19	1.80	1.64	0.36	22.46	4.94
FB 0264	Blackberries, raw	RAC	0.7	0.35	0.25	0.11	0.08	0.10	0.07	0.10	0.07	0.10	0.07	1.23	0.86
FB 0272	Raspberries, red, black, raw	RAC	0.7	0.10	0.07	0.93	0.65	0.10	0.07	0.10	0.07	0.10	0.07	0.10	0.07
FB 0269	Grape, raw	RAC	0.58	12.68	7.35	9.12	5.29	0.10	0.06	16.88	9.79	3.70	2.15	54.42	31.56
DF 0269	Grape, dried (= currants, raisins and sultanas)	PP	1.68	0.51	0.86	0.51	0.86	0.10	0.17	1.27	2.13	0.12	0.20	2.07	3.48
JF 0269	Grape juice	PP	0.012	0.14	0.00	0.29	0.00	0.10	0.00	0.30	0.00	0.24	0.00	0.10	0.00
-	Grape wine (incl vermouths)	PP	0.1	0.67	0.07	12.53	1.25	2.01	0.20	1.21	0.12	3.53	0.35	4.01	0.40
FB 0275	Strawberry, raw	RAC	0.025	0.70	0.02	2.01	0.05	0.10	0.00	1.36	0.03	0.37	0.01	2.53	0.06
FI 0327	Banana, raw (incl plantains) (incl dried)	RAC	0.175	5.06	0.89	6.91	1.21	37.17	6.50	31.16	5.45	40.21	7.04	18.96	3.32
VA 0381	Garlic, raw	RAC	0.01	2.29	0.02	5.78	0.06	0.11	0.00	3.69	0.04	1.65	0.02	3.91	0.04
VA 0384	Leek, raw	RAC	0.01	0.18	0.00	1.59	0.02	0.10	0.00	0.28	0.00	0.10	0.00	3.21	0.03
-	Onions, mature bulbs, dry	RAC	0.01	29.36	0.29	37.50	0.38	3.56	0.04	34.78	0.35	18.81	0.19	43.38	0.43
VB 0041	Cabbages, head, raw	RAC	0.01	2.73	0.03	27.92	0.28	0.55	0.01	4.47	0.04	4.27	0.04	10.25	0.10
VB 0400	Broccoli, raw	RAC	0.05	0.88	0.04	0.17	0.01	0.10	0.01	1.25	0.06	3.00	0.15	1.09	0.05
VB 0402	Brussels sprouts, raw	RAC	0.06	0.63	0.04	6.41	0.38	0.13	0.01	1.03	0.06	NC	-	2.35	0.14
VB 0404	Cauliflower, raw	RAC	0.01	1.65	0.02	0.32	0.00	0.10	0.00	2.33	0.02	4.79	0.05	2.03	0.02
VC 0424	Cucumber, raw	RAC	0.11	8.01	0.88	30.66	3.37	1.45	0.16	19.84	2.18	0.27	0.03	34.92	3.84
VO 0444	Peppers, chili, raw	RAC	0.085	3.99	0.34	7.30	0.62	2.93	0.25	5.62	0.48	NC	-	17.44	1.48
-	Peppers, chili, dried	PP	0.85	0.42	0.36	0.53	0.45	0.84	0.71	0.50	0.43	0.95	0.81	0.37	0.31
VO 0445	Peppers, sweet, raw (incl dried)	RAC	0.085	4.49	0.38	6.44	0.55	7.21	0.61	5.68	0.48	9.52	0.81	8.92	0.76
VO 0448	Tomato, raw	RAC	0.09	41.73	3.76	75.65	6.81	10.66	0.96	82.87	7.46	24.75	2.23	200.93	18.08
-	Tomato, canned (& peeled)	PP	0.02	0.20	0.00	0.31	0.01	0.10	0.00	1.11	0.02	0.11	0.00	1.50	0.03
-	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	0.04	2.34	0.09	1.33	0.05	1.57	0.06	4.24	0.17	0.34	0.01	2.83	0.11
JF 0448	Tomato, juice (single strength, incl concentrated)	PP	0.03	0.29	0.01	0.29	0.01	0.10	0.00	0.38	0.01	0.10	0.00	0.14	0.00
VL 0482	Lettuce, head, raw	RAC	2.2	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
VL 0483	Lettuce, leaf, raw	RAC	2.2	0.53	1.17	0.36	0.79	0.16	0.35	6.21	13.66	1.90	4.18	6.05	13.31
VP 0061	Beans, green, with pods, raw: beans except broad bean & soya bean (i.e. immature seeds + pods) (Phaseolus spp)	RAC	0.2	0.68	0.14	NC	-	NC	-	0.39	0.08	0.22	0.04	0.49	0.10
VP 0062	Beans, green, without pods, raw: beans except broad bean & soya bean (i.e. immature seeds only) (Phaseolus spp..)	RAC	0.03	1.56	0.05	0.60	0.02	0.49	0.01	1.18	0.04	0.90	0.03	7.79	0.23

FLUOPYRAM (243) International Estimated Daily Intake (IEDI) ADI = 0 - 0.01 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day			Intake as µg//person/day								
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
VP 0064	Peas, green, without pods, raw (i.e. immature seeds only) (Pisum spp)	RAC	0.03	1.97	0.06	0.51	0.02	0.10	0.00	0.79	0.02	3.68	0.11	3.80	0.11
VD 0071	Beans, dry, raw (Phaseolus spp)	RAC	0.01	2.39	0.02	1.61	0.02	10.47	0.10	1.84	0.02	12.90	0.13	7.44	0.07
VD 0524	Chick-pea, dry, raw (Cicer arietinum)	RAC	0.01	5.34	0.05	0.13	0.00	0.10	0.00	4.69	0.05	7.24	0.07	5.52	0.06
VD 0533	Lentil, dry, raw (Ervum lens)	RAC	0.01	2.12	0.02	0.10	0.00	0.10	0.00	3.21	0.03	1.60	0.02	4.90	0.05
VD 0541	Soya bean, dry, raw (incl paste, incl curd, incl oil, incl sauce)	RAC	0.01	72.79	0.73	59.05	0.59	20.55	0.21	74.20	0.74	61.12	0.61	73.24	0.73
-	Pulses, NES,	RAC	0.01	1.70	0.02	0.10	0.00	3.00	0.03	1.80	0.02	1.64	0.02	1.33	0.01
VR 0577	Carrots, raw	RAC	0.09	9.51	0.86	30.78	2.77	0.37	0.03	8.75	0.79	2.80	0.25	6.10	0.55
VR 0589	Potato, raw	RAC	0.01	59.07	0.59	313.97	3.14	9.23	0.09	48.16	0.48	52.38	0.52	117.43	1.17
VR 0596	Sµg/ar beet, raw	RAC	0.01	NC	-	NC	-	NC	-	NC	-	0.10	0.00	NC	-
-	Sµg/ar beet, sµg/ar	PP	0.01	0.10	0.00	NC	-	0.10	0.00	0.10	0.00	0.10	0.00	12.63	0.13
VS 0621	Asparagus	RAC	0	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.21	0.00
TN 0085	Tree nuts, raw (incl processed)	RAC	0.01	4.06	0.04	3.27	0.03	7.01	0.07	13.93	0.14	14.01	0.14	9.36	0.09
SO 0495	Rape seed, raw	RAC	0.33	0.10	0.03	NC	-	NC	-	0.10	0.03	0.75	0.25	0.10	0.03
OR 0495	Rape seed oil, edible	PP	0.23	0.35	0.08	0.44	0.10	0.19	0.04	0.97	0.22	3.28	0.75	0.77	0.18
SO 0697	Peanuts, nutmeat, raw	RAC	0.01	0.40	0.00	1.01	0.01	6.60	0.07	1.47	0.01	1.17	0.01	1.82	0.02
OR 0697	Peanut oil, edible	PP	0.0001	0.36	0.00	0.10	0.00	2.57	0.00	0.10	0.00	2.29	0.00	0.36	0.00
-	Peanut butter	PP	0.002	0.10	0.00	0.10	0.00	0.10	0.00	0.19	0.00	0.10	0.00	0.10	0.00
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) -80% as muscle	RAC	0.16	24.96	3.99	57.95	9.27	16.70	2.67	38.38	6.14	26.46	4.23	29.00	4.64
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) - 20% as fat	RAC	0.14	6.24	0.87	14.49	2.03	4.18	0.58	9.60	1.34	6.62	0.93	7.25	1.02
MF 0100	Mammalian fats, raw, excl milk fats (incl rendered fats)	RAC	0.14	3.29	0.46	6.14	0.86	0.82	0.11	1.57	0.22	2.23	0.31	1.07	0.15
MO 0105	Edible offal (mammalian), raw	RAC	1	4.79	4.79	9.68	9.68	2.97	2.97	5.49	5.49	3.84	3.84	5.03	5.03
ML 0106	Milks, raw or skimmed (incl dairy products)	RAC	0.12	289.65	34.76	485.88	58.31	26.92	3.23	239.03	28.68	199.91	23.99	180.53	21.66
PM 0110	Poultry meat, raw (incl prepared) - 90% as muscle	RAC	0.058	13.17	0.76	26.78	1.55	7.24	0.42	116.71	6.77	22.54	1.31	32.09	1.86
PM 0110	Poultry meat, raw (incl prepared) - 10% as fat	RAC	0.086	1.46	0.13	2.98	0.26	0.80	0.07	12.97	1.12	2.50	0.22	3.57	0.31
PF 0111	Poultry fat, raw (incl rendered)	RAC	0.086	0.10	0.01	0.10	0.01	NC	-	0.10	0.01	0.10	0.01	0.10	0.01
PO 0111	Poultry edible offal, raw (incl prepared)	RAC	0.26	0.12	0.03	0.12	0.03	0.11	0.03	5.37	1.40	0.24	0.06	0.10	0.03
PE 0112	Eggs, raw, (incl dried)	RAC	0.13	7.84	1.02	23.08	3.00	2.88	0.37	14.89	1.94	9.81	1.28	14.83	1.93
	Total intake (µg//person)=				71.3		123.8		21.9		104.7		59.0		133.3
	Bodyweight per region (kg bw) =				60		60		60		60		60		60
	ADI (µg//person)=				600		600		600		600		600		600
	%ADI=				11.9%		20.6%		3.7%		17.5%		9.8%		22.2%
	Rounded %ADI=				10%		20%		4%		20%		10%		20%

Annex 3

FLUOPYRAM (243) International Estimated Daily Intake (IEDI) ADI = 0 - 0.01 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day G07 diet	Intake as µg//person/day G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
FP 0009	Pomefruits, raw	RAC	0.135	37.39	5.05	58.13	7.85	37.64	5.08	44.80	6.05	62.17	8.39	6.47	0.87
JF 0226	Apple juice, single strength (incl. concentrated)	PP	0.01	14.88	0.15	11.98	0.12	0.15	0.00	9.98	0.10	30.32	0.30	3.47	0.03
FS 0013	Cherries, raw	RAC	0.205	1.40	0.29	4.21	0.86	0.10	0.02	2.93	0.60	1.50	0.31	NC	-
FS 0014	Plums, raw (incl Chinese jujube)	RAC	0.13	3.75	0.49	3.33	0.43	5.94	0.77	2.64	0.34	2.50	0.33	0.10	0.01
DF 0014	Plum, dried (prunes)	PP	0.14	0.61	0.09	0.35	0.05	0.10	0.01	0.35	0.05	0.49	0.07	0.13	0.02
FS 2001	Peaches, nectarines, apricots, raw (incl dried apricots)	RAC	0.22	13.03	2.87	16.29	3.58	8.29	1.82	12.95	2.85	5.35	1.18	0.10	0.02
FB 0264	Blackberries, raw	RAC	0.7	0.10	0.07	0.52	0.36	0.14	0.10	0.24	0.17	NC	-	0.10	0.07
FB 0272	Raspberries, red, black, raw	RAC	0.7	0.47	0.33	0.91	0.64	0.10	0.07	0.99	0.69	1.14	0.80	NC	-
FB 0269	Grape, raw	RAC	0.58	6.33	3.67	11.22	6.51	5.21	3.02	9.38	5.44	4.55	2.64	0.78	0.45
DF 0269	Grape, dried (= currants, raisins and sultanas)	PP	1.68	3.09	5.19	1.51	2.54	0.10	0.17	1.38	2.32	4.26	7.16	0.42	0.71
JF 0269	Grape juice	PP	0.012	0.56	0.01	1.96	0.02	0.10	0.00	2.24	0.03	2.27	0.03	0.34	0.00
-	Grape wine (incl vermouths)	PP	0.1	88.93	8.89	62.41	6.24	1.84	0.18	25.07	2.51	61.17	6.12	5.84	0.58
FB 0275	Strawberry, raw	RAC	0.025	4.49	0.11	5.66	0.14	0.10	0.00	6.63	0.17	5.75	0.14	0.10	0.00
FI 0327	Banana, raw (incl plantains) (incl dried)	RAC	0.175	25.14	4.40	23.37	4.09	23.06	4.04	23.40	4.10	18.44	3.23	39.29	6.88
VA 0381	Garlic, raw	RAC	0.01	0.98	0.01	1.49	0.01	12.88	0.13	3.74	0.04	2.05	0.02	1.14	0.01
VA 0384	Leek, raw	RAC	0.01	4.01	0.04	4.41	0.04	0.72	0.01	0.54	0.01	16.41	0.16	0.10	0.00
-	Onions, mature bulbs, dry	RAC	0.01	19.69	0.20	29.83	0.30	24.64	0.25	31.35	0.31	9.72	0.10	12.59	0.13
VB 0041	Cabbages, head, raw	RAC	0.01	8.97	0.09	27.12	0.27	1.44	0.01	24.96	0.25	4.55	0.05	11.23	0.11
VB 0400	Broccoli, raw	RAC	0.05	4.24	0.21	1.76	0.09	NC	-	0.51	0.03	3.79	0.19	0.26	0.01
VB 0402	Brussels sprouts, raw	RAC	0.06	2.24	0.13	2.67	0.16	6.23	0.37	0.32	0.02	4.19	0.25	2.58	0.15
VB 0404	Cauliflower, raw	RAC	0.01	5.27	0.05	5.01	0.05	NC	-	2.70	0.03	5.57	0.06	0.49	0.00
VC 0424	Cucumber, raw	RAC	0.11	6.72	0.74	11.03	1.21	32.10	3.53	15.10	1.66	4.05	0.45	9.57	1.05
VO 0444	Peppers, chili, raw	RAC	0.085	5.57	0.47	14.00	1.19	8.25	0.70	5.77	0.49	6.44	0.55	2.53	0.22
-	Peppers, chili, dried	PP	0.85	0.11	0.09	0.21	0.18	0.36	0.31	0.21	0.18	0.25	0.21	0.15	0.13
VO 0445	Peppers, sweet, raw (incl dried)	RAC	0.085	0.82	0.07	1.53	0.13	10.85	0.92	4.59	0.39	1.84	0.16	2.00	0.17
VO 0448	Tomato, raw	RAC	0.09	32.13	2.89	51.27	4.61	34.92	3.14	73.37	6.60	15.15	1.36	8.88	0.80
-	Tomato, canned (& peeled)	PP	0.02	7.57	0.15	2.66	0.05	0.30	0.01	0.97	0.02	7.31	0.15	0.41	0.01
-	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	0.04	4.96	0.20	3.20	0.13	0.15	0.01	1.61	0.06	6.88	0.28	0.52	0.02
JF 0448	Tomato, juice (single strength, incl concentrated)	PP	0.03	0.80	0.02	0.10	0.00	0.10	0.00	0.61	0.02	0.40	0.01	0.10	0.00
VL 0482	Lettuce, head, raw	RAC	2.2	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
VL 0483	Lettuce, leaf, raw	RAC	2.2	14.50	31.90	11.76	25.87	13.14	28.91	19.50	42.90	4.81	10.58	2.23	4.91
VP 0061	Beans, green, with pods, raw: beans except broad bean & soya bean (i.e. immature seeds + pods) (Phaseolus spp)	RAC	0.2	5.07	1.01	0.83	0.17	0.17	0.03	3.70	0.74	NC	-	NC	-
VP 0062	Beans, green, without pods, raw: beans except broad bean & soya bean (i.e. immature seeds only) (Phaseolus spp..)	RAC	0.03	2.21	0.07	5.25	0.16	4.17	0.13	1.61	0.05	16.95	0.51	0.17	0.01
VP 0064	Peas, green, without pods, raw (i.e. immature seeds only) (Pisum spp)	RAC	0.03	10.72	0.32	1.99	0.06	2.72	0.08	4.26	0.13	4.23	0.13	NC	-
VD 0071	Beans, dry, raw (Phaseolus spp)	RAC	0.01	1.51	0.02	1.50	0.02	1.90	0.02	5.11	0.05	1.36	0.01	23.43	0.23
VD 0524	Chick-pea, dry, raw (Cicer arietinum)	RAC	0.01	0.27	0.00	1.33	0.01	0.32	0.00	0.15	0.00	0.10	0.00	0.10	0.00
VD 0533	Lentil, dry, raw (Ervum lens)	RAC	0.01	0.95	0.01	1.18	0.01	0.40	0.00	0.96	0.01	0.71	0.01	1.28	0.01

FLUOPYRAM (243) International Estimated Daily Intake (IEDI) ADI = 0 - 0.01 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day G07 diet	G07 intake	G08 diet	Intake as μg//person/day G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
VD 0541	Soya bean, dry, raw (incl paste, incl curd, incl oil, incl sauce)	RAC	0.01	106.33	1.06	117.78	1.18	42.12	0.42	195.70	1.96	222.52	2.23	80.47	0.80
-	Pulses, NES	RAC	0.01	0.10	0.00	NC	-	0.57	0.01	0.11	0.00	0.16	0.00	0.94	0.01
VR 0577	Carrots, raw	RAC	0.09	26.26	2.36	27.13	2.44	10.07	0.91	16.49	1.48	44.69	4.02	8.75	0.79
VR 0589	Potato, raw	RAC	0.01	202.90	2.03	215.82	2.16	69.98	0.70	166.61	1.67	214.41	2.14	25.32	0.25
VR 0596	Sμg/ar beet, raw	RAC	0.01	0.10	0.00	NC	-	0.10	0.00	0.10	0.00	NC	-	NC	-
-	Sμg/ar beet, sμg/ar	PP	0.01	0.10	0.00	NC	-	0.10	0.00	NC	-	NC	-	NC	-
VS 0621	Asparagus	RAC	0	0.84	0.00	2.08	0.00	7.11	0.00	1.01	0.00	1.69	0.00	0.10	0.00
TN 0085	Tree nuts, raw (incl processed)	RAC	0.01	8.52	0.09	8.94	0.09	15.09	0.15	9.60	0.10	14.57	0.15	26.26	0.26
SO 0495	Rape seed, raw	RAC	0.33	NC	-	NC	-	0.10	0.03	NC	-	NC	-	NC	-
OR 0495	Rape seed oil, edible	PP	0.23	12.52	2.88	7.63	1.75	3.00	0.69	6.01	1.38	NC	-	NC	-
SO 0697	Peanuts, nutmeat, raw	RAC	0.01	2.39	0.02	2.05	0.02	5.25	0.05	4.39	0.04	1.30	0.01	0.62	0.01
OR 0697	Peanut oil, edible	PP	0.0001	1.02	0.00	0.23	0.00	1.81	0.00	0.42	0.00	5.23	0.00	0.10	0.00
-	Peanut butter	PP	0.002	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.15	0.00	0.75	0.00
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) -80% as muscle	RAC	0.16	112.02	17.92	120.71	19.31	63.46	10.15	88.99	14.24	96.24	15.40	41.02	6.56
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) - 20% as fat	RAC	0.14	28.01	3.92	30.18	4.22	15.86	2.22	22.25	3.11	24.06	3.37	10.25	1.44
MF 0100	Mammalian fats, raw, excl milk fats (incl rendered fats)	RAC	0.14	6.44	0.90	15.51	2.17	3.79	0.53	8.29	1.16	18.44	2.58	8.00	1.12
MO 0105	Edible offal (mammalian), raw	RAC	1	15.17	15.17	5.19	5.19	6.30	6.30	6.78	6.78	3.32	3.32	3.17	3.17
ML 0106	Milks, raw or skimmed (incl dairy products)	RAC	0.12	388.92	46.67	335.88	40.31	49.15	5.90	331.25	39.75	468.56	56.23	245.45	29.45
PM 0110	Poultry meat, raw (incl prepared) - 90% as muscle	RAC	0.058	66.38	3.85	48.47	2.81	21.58	1.25	78.41	4.55	48.04	2.79	76.01	4.41
PM 0110	Poultry meat, raw (incl prepared) - 10% as fat	RAC	0.086	7.38	0.63	5.39	0.46	2.40	0.21	8.71	0.75	5.34	0.46	8.45	0.73
PF 0111	Poultry fat, raw (incl rendered)	RAC	0.086	0.10	0.01	0.10	0.01	NC	-	0.10	0.01	0.71	0.06	NC	-
PO 0111	Poultry edible offal, raw (incl prepared)	RAC	0.26	0.33	0.09	0.72	0.19	0.27	0.07	0.35	0.09	0.80	0.21	NC	-
PE 0112	Eggs, raw, (incl dried)	RAC	0.13	25.84	3.36	29.53	3.84	28.05	3.65	33.19	4.31	36.44	4.74	8.89	1.16
	Total intake (μg//person)=				171.3		154.3		87.1		160.8		143.6		67.8
	Bodyweight per region (kg bw) =				60		60		55		60		60		60
	ADI (μg//person)=				600		600		550		600		600		600
	%ADI=				28.5%		25.7%		15.8%		26.8%		23.9%		11.3%
	Rounded %ADI=				30%		30%		20%		30%		20%		10%

FLUOPYRAM (243) International Estimated Daily Intake (IEDI) ADI = 0 - 0.01 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day G13 diet	G13 intake	G14 diet	Intake = daily intake: μg//person G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
FP 0009	Pomefruits, raw	RAC	0.135	2.39	0.32	10.93	1.48	69.47	9.38	1.59	0.21	19.56	2.64
JF 0226	Apple juice, single strength (incl. concentrated)	PP	0.01	0.10	0.00	0.10	0.00	7.19	0.07	0.10	0.00	NC	-
FS 0013	Cherries, raw	RAC	0.205	0.10	0.02	0.10	0.02	5.96	1.22	0.10	0.02	NC	-
FS 0014	Plums, raw (incl Chinese jujube)	RAC	0.13	0.10	0.01	0.10	0.01	15.56	2.02	0.10	0.01	NC	-

Annex 3

FLUOPYRAM (243) International Estimated Daily Intake (IEDI) ADI = 0 - 0.01 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day			Intake = daily intake: µg//person						
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
DF 0014	Plum, dried (prunes)	PP	0.14	0.10	0.01	0.10	0.01	0.37	0.05	0.10	0.01	NC	-
FS 2001	Peaches, nectarines, apricots, raw (incl dried apricots)	RAC	0.22	0.10	0.02	0.10	0.02	10.76	2.37	0.10	0.02	NC	-
FB 0264	Blackberries, raw	RAC	0.7	0.10	0.07	7.29	5.10	0.25	0.18	0.10	0.07	NC	-
FB 0272	Raspberries, red, black, raw	RAC	0.7	0.10	0.07	0.10	0.07	2.04	1.43	0.10	0.07	NC	-
FB 0269	Grape, raw	RAC	0.58	0.14	0.08	0.36	0.21	15.22	8.83	0.10	0.06	0.10	0.06
DF 0269	Grape, dried (= currants, raisins and sultanas)	PP	1.68	0.10	0.17	0.13	0.22	1.06	1.78	0.10	0.17	0.10	0.17
JF 0269	Grape juice	PP	0.012	0.10	0.00	0.10	0.00	0.41	0.00	0.10	0.00	NC	-
-	Grape wine (incl vermouths)	PP	0.1	0.31	0.03	0.23	0.02	60.43	6.04	0.52	0.05	31.91	3.19
FB 0275	Strawberry, raw	RAC	0.025	0.10	0.00	0.10	0.00	3.35	0.08	0.10	0.00	0.10	0.00
FI 0327	Banana, raw (incl plantains) (incl dried)	RAC	0.175	20.88	3.65	81.15	14.20	24.58	4.30	37.92	6.64	310.23	54.29
VA 0381	Garlic, raw	RAC	0.01	0.82	0.01	2.06	0.02	3.79	0.04	0.10	0.00	0.29	0.00
VA 0384	Leek, raw	RAC	0.01	0.10	0.00	1.44	0.01	1.22	0.01	0.10	0.00	NC	-
-	Onions, mature bulbs, dry	RAC	0.01	9.01	0.09	20.24	0.20	30.90	0.31	9.61	0.10	2.11	0.02
VB 0041	Cabbages, head, raw	RAC	0.01	3.82	0.04	2.99	0.03	49.16	0.49	0.10	0.00	NC	-
VB 0400	Broccoli, raw	RAC	0.05	0.10	0.01	0.10	0.01	2.13	0.11	0.10	0.01	NC	-
VB 0402	Brussels sprouts, raw	RAC	0.06	0.88	0.05	0.69	0.04	2.89	0.17	0.10	0.01	NC	-
VB 0404	Cauliflower, raw	RAC	0.01	0.10	0.00	0.10	0.00	2.73	0.03	0.10	0.00	NC	-
VC 0424	Cucumber, raw	RAC	0.11	0.68	0.07	1.81	0.20	10.40	1.14	0.10	0.01	0.10	0.01
VO 0444	Peppers, chili, raw	RAC	0.085	3.47	0.29	3.56	0.30	16.30	1.39	0.10	0.01	NC	-
-	Peppers, chili, dried	PP	0.85	0.58	0.49	1.27	1.08	1.21	1.03	0.12	0.10	NC	-
VO 0445	Peppers, sweet, raw (incl dried)	RAC	0.085	5.49	0.47	10.57	0.90	8.84	0.75	0.91	0.08	NC	-
VO 0448	Tomato, raw	RAC	0.09	12.99	1.17	4.79	0.43	58.40	5.26	0.92	0.08	0.10	0.01
-	Tomato, canned (& peeled)	PP	0.02	0.10	0.00	0.10	0.00	2.42	0.05	0.10	0.00	NC	-
-	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	0.04	0.58	0.02	0.22	0.01	2.21	0.09	0.24	0.01	3.10	0.12
JF 0448	Tomato, juice (single strength, incl concentrated)	PP	0.03	0.10	0.00	0.10	0.00	0.42	0.01	0.10	0.00	0.10	0.00
VL 0482	Lettuce, head, raw	RAC	2.2	NC	-	NC	-	NC	-	NC	-	NC	-
VL 0483	Lettuce, leaf, raw	RAC	2.2	0.29	0.64	0.10	0.22	6.71	14.76	0.10	0.22	NC	-
VP 0061	Beans, green, with pods, raw: beans except broad bean & soya bean (i.e. immature seeds + pods) (Phaseolus spp)	RAC	0.2	NC	-	NC	-	NC	-	NC	-	NC	-
VP 0062	Beans, green, without pods, raw: beans except broad bean & soya bean (i.e. immature seeds only) (Phaseolus spp..)	RAC	0.03	0.30	0.01	3.13	0.09	4.11	0.12	0.10	0.00	NC	-
VP 0064	Peas, green, without pods, raw (i.e. immature seeds only) (Pisum spp)	RAC	0.03	0.21	0.01	0.10	0.00	5.51	0.17	0.10	0.00	NC	-
VD 0071	Beans, dry, raw (Phaseolus spp)	RAC	0.01	7.11	0.07	2.33	0.02	3.76	0.04	44.70	0.45	3.27	0.03
VD 0524	Chick-pea, dry, raw (Cicer arietinum)	RAC	0.01	1.09	0.01	1.56	0.02	0.33	0.00	0.18	0.00	0.47	0.00
VD 0533	Lentil, dry, raw (Ervum lens)	RAC	0.01	0.67	0.01	7.26	0.07	0.37	0.00	0.10	0.00	NC	-
VD 0541	Soya bean, dry, raw (incl paste, incl curd, incl oil, incl sauce)	RAC	0.01	15.80	0.16	14.29	0.14	104.36	1.04	17.11	0.17	35.20	0.35
-	Pulses, NES	RAC	0.01	2.54	0.03	1.77	0.02	0.10	0.00	0.10	0.00	3.99	0.04
VR 0577	Carrots, raw	RAC	0.09	2.07	0.19	3.00	0.27	25.29	2.28	0.10	0.01	NC	-
VR 0589	Potato, raw	RAC	0.01	22.45	0.22	10.47	0.10	193.10	1.93	98.00	0.98	8.03	0.08
VR 0596	Sµg/ar beet, raw	RAC	0.01	0.10	0.00	NC	-	NC	-	NC	-	NC	-
-	Sµg/ar beet, sµg/ar	PP	0.01	0.56	0.01	0.24	0.00	NC	-	NC	-	5.13	0.05
VS 0621	Asparagus	RAC	0	0.10	0.00	0.10	0.00	0.17	0.00	0.10	0.00	NC	-

FLUOPYRAM (243) International Estimated Daily Intake (IEDI) ADI = 0 - 0.01 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day			Intake = daily intake: µg//person						
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
TN 0085	Tree nuts, raw (incl processed)	RAC	0.01	4.39	0.04	135.53	1.36	6.11	0.06	0.72	0.01	317.74	3.18
SO 0495	Rape seed, raw	RAC	0.33	NC	-	0.10	0.03	NC	-	NC	-	NC	-
OR 0495	Rape seed oil, edible	PP	0.23	0.10	0.02	0.10	0.02	4.62	1.06	0.10	0.02	NC	-
SO 0697	Peanuts, nutmeat, raw	RAC	0.01	7.12	0.07	0.32	0.00	1.34	0.01	6.21	0.06	0.53	0.01
OR 0697	Peanut oil, edible	PP	0.0001	5.02	0.00	0.10	0.00	0.17	0.00	0.29	0.00	NC	-
-	Peanut butter	PP	0.002	0.10	0.00	0.10	0.00	0.10	0.00	NC	-	NC	-
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) -80% as muscle	RAC	0.16	23.34	3.74	40.71	6.51	97.15	15.54	18.06	2.89	57.71	9.23
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) - 20% as fat	RAC	0.14	5.84	0.82	10.18	1.42	24.29	3.40	4.52	0.63	14.43	2.02
MF 0100	Mammalian fats, raw, excl milk fats (incl rendered fats)	RAC	0.14	1.05	0.15	1.14	0.16	18.69	2.62	0.94	0.13	3.12	0.44
MO 0105	Edible offal (mammalian), raw	RAC	1	4.64	4.64	1.97	1.97	10.01	10.01	3.27	3.27	3.98	3.98
ML 0106	Milks, raw or skimmed (incl dairy products)	RAC	0.12	108.75	13.05	70.31	8.44	436.11	52.33	61.55	7.39	79.09	9.49
PM 0110	Poultry meat, raw (incl prepared) - 90% as muscle	RAC	0.058	3.53	0.20	10.83	0.63	51.36	2.98	4.53	0.26	50.00	2.90
PM 0110	Poultry meat, raw (incl prepared) - 10% as fat	RAC	0.086	0.39	0.03	1.20	0.10	5.71	0.49	0.50	0.04	5.56	0.48
PF 0111	Poultry fat, raw (incl rendered)	RAC	0.086	NC	-	NC	-	0.32	0.03	NC	-	NC	-
PO 0111	Poultry edible offal, raw (incl prepared)	RAC	0.26	0.10	0.03	0.70	0.18	0.97	0.25	0.10	0.03	NC	-
PE 0112	Eggs, raw, (incl dried)	RAC	0.13	3.84	0.50	4.41	0.57	27.25	3.54	1.13	0.15	7.39	0.96
	Total intake (µg//person)=				31.8		47.0		161.3		24.5		93.8
	Bodyweight per region (kg bw) =				60		60		60		60		60
	ADI (µg//person)=				600		600		600		600		600
	%ADI=				5.3%		7.8%		26.9%		4.1%		15.6%
	Rounded %ADI=				5%		8%		30%		4%		20%

FLUTRIAFOL (248) International Estimated Daily Intake (IEDI) ADI = 0 - 0.01 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day G01 diet	Intake as µg//person/day G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
FP 0009	Pome fruit, raw (incl cider, excl apple juice)	RAC	0.08	19.35	1.55	34.06	2.72	17.87	1.43	25.74	2.06	7.69	0.62	56.85	4.55
JF 0226	Apple juice, single strength (incl. concentrated)	PP	0.038	0.32	0.01	3.07	0.12	0.10	0.00	5.00	0.19	0.29	0.01	5.57	0.21
FS 0013	Cherries, raw	RAC	0.335	0.92	0.31	9.15	3.07	0.10	0.03	0.61	0.20	0.10	0.03	6.64	2.22
FS 0014	Plums, raw (incl Chinese jujube)	RAC	0.075	2.40	0.18	8.60	0.65	0.10	0.01	2.52	0.19	0.58	0.04	4.16	0.31
DF 0014	Plum, dried (prunes)	PP	0.165	0.10	0.02	0.10	0.02	0.10	0.02	0.18	0.03	0.10	0.02	0.10	0.02
FS 2001	Peaches, nectarines, apricots, raw (incl dried apricots)	RAC	0.17	8.01	1.36	5.87	1.00	0.18	0.03	8.19	1.39	1.64	0.28	22.46	3.82
FB 0269	Grape, raw (incl must, incl juice, excl dried, excl wine)	RAC	0.21	13.19	2.77	9.61	2.02	0.10	0.02	17.28	3.63	4.00	0.84	54.50	11.45
DF 0269	Grape, dried (= currants, raisins and sultanas)	PP	0.59	0.51	0.30	0.51	0.30	0.10	0.06	1.27	0.75	0.12	0.07	2.07	1.22
-	Grape wine (incl vermouths)	PP	0.3528	0.67	0.24	12.53	4.42	2.01	0.71	1.21	0.43	3.53	1.25	4.01	1.41
FB 0275	Strawberry, raw	RAC	0.42	0.70	0.29	2.01	0.84	0.10	0.04	1.36	0.57	0.37	0.16	2.53	1.06
FI 0327	Banana, raw (incl plantains) (incl dried)	RAC	0.05	5.06	0.25	6.91	0.35	37.17	1.86	31.16	1.56	40.21	2.01	18.96	0.95
VB 0040	Brassica vegetables, raw: head cabbages, flowerhead brassicas, Brussels sprouts & kohlrabi	RAC	0.14	6.41	0.90	35.79	5.01	0.71	0.10	9.81	1.37	12.07	1.69	16.58	2.32
VC 0045	Fruiting vegetables, cucurbits, raw	RAC	0.09	53.14	4.78	86.21	7.76	6.28	0.57	92.76	8.35	15.64	1.41	######	13.98
VO 0444	Peppers, chili, raw (incl dried)	RAC	0.28	6.93	1.94	10.97	3.07	8.83	2.47	9.13	2.56	6.65	1.86	20.01	5.60
VO 0445	Peppers, sweet, raw (incl dried)	RAC	0.28	4.49	1.26	6.44	1.80	7.21	2.02	5.68	1.59	9.52	2.67	8.92	2.50
VO 0448	Tomato, raw (incl juice, incl canned, excl paste)	RAC	0.1	42.41	4.24	76.50	7.65	10.69	1.07	85.07	8.51	24.98	2.50	######	20.34
-	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	0.286	2.34	0.67	1.33	0.38	1.57	0.45	4.24	1.21	0.34	0.10	2.83	0.81
VL 0482	Lettuce, head, raw	RAC	0.22	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
VL 0483	Lettuce, leaf, raw	RAC	0.34	0.53	0.18	0.36	0.12	0.16	0.05	6.21	2.11	1.90	0.65	6.05	2.06
VL 0485	Mustard greens, raw (i.e. Brassica)	RAC	2.12	0.10	0.21	0.31	0.66	0.10	0.21	0.10	0.21	0.47	1.00	0.11	0.23
VL 0502	Spinach, raw	RAC	1.665	0.74	1.23	0.22	0.37	0.10	0.17	0.91	1.52	0.10	0.17	2.92	4.86
VD 0541	Soya bean, dry, raw (incl flour, incl paste, incl curd, incl sauce, excl oil)	RAC	0.055	0.63	0.03	1.09	0.06	0.40	0.02	1.40	0.08	1.68	0.09	0.48	0.03
OR 0541	Soya oil, refined	PP	0.072	12.99	0.94	10.43	0.75	3.63	0.26	13.10	0.94	10.70	0.77	13.10	0.94
VR 0596	Sµg/ar beet, raw (incl sµg/ar)	RAC	0.01	0.13	0.00	NC	-	0.10	0.00	0.66	0.01	0.47	0.00	88.94	0.89
VS 0624	Celery	RAC	0.78	2.14	1.67	3.79	2.96	2.35	1.83	5.69	4.44	0.10	0.08	2.75	2.15
GC 0645	Maize, raw (incl glucose & dextrose & isoglucose, incl flour, incl oil, incl beer, incl germ, incl starch)	RAC	0	29.81	0.00	44.77	0.00	108.95	0.00	52.37	0.00	60.28	0.00	75.69	0.00
GC 0651	Sorghum, raw (incl flour, incl beer)	RAC	0.27	4.34	1.17	0.10	0.03	16.25	4.39	15.82	4.27	10.97	2.96	2.92	0.79

FLUTRIAFOL (248) International Estimated Daily Intake (IEDI) ADI = 0 - 0.01 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day			Intake as µg//person/day								
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
GC 0654	Wheat, raw (incl bulgur, incl fermented beverages, excl germ, excl wholemeal bread, excl white flour products, excl white bread)	RAC	0.015	0.10	0.00	1.12	0.02	0.10	0.00	0.10	0.00	0.61	0.01	0.10	0.00
CF 1210	Wheat, germ	PP	0.042	NC	-	NC	-	0.10	0.00	0.10	0.00	0.14	0.01	0.10	0.00
CF 0654	Wheat, bran	PP	0.032	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
CF 1211	Wheat, white flour (incl white flour products: starch, gluten, macaroni, pastry)	PP	0.005	301.49	1.51	269.27	1.35	30.33	0.15	222.94	1.11	136.12	0.68	343.34	1.72
SO 0495	Rape seed, raw (incl oil)	RAC	0.1	0.93	0.09	1.16	0.12	0.49	0.05	2.53	0.25	9.32	0.93	2.02	0.20
SO 0691	Cotton seed, raw	RAC	0.08	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
OR 0691	Cotton seed oil, edible	PP	0.0064	3.22	0.02	1.54	0.01	1.01	0.01	0.74	0.00	1.12	0.01	2.93	0.02
SO 0697	Peanuts, nutmeat, raw (incl roasted, incl oil, incl butter)	RAC	0.02	1.30	0.03	1.23	0.02	12.62	0.25	2.87	0.06	6.59	0.13	2.67	0.05
SB 0716	Coffee beans raw (incl roasted, incl instant coffee, incl substitutes)	RAC	0.05	1.36	0.07	3.59	0.18	1.44	0.07	5.18	0.26	2.02	0.10	1.70	0.09
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) -80% as muscle	RAC	0.008	24.96	0.20	57.95	0.46	16.70	0.13	38.38	0.31	26.46	0.21	29.00	0.23
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) - 20% as fat	RAC	0.008	6.24	0.05	14.49	0.12	4.18	0.03	9.60	0.08	6.62	0.05	7.25	0.06
MF 0100	Mammalian fats, raw, excl milk fats (incl rendered fats)	RAC	0.008	3.29	0.03	6.14	0.05	0.82	0.01	1.57	0.01	2.23	0.02	1.07	0.01
MO 0105	Edible offal (mammalian), raw	RAC	0.277	4.79	1.33	9.68	2.68	2.97	0.82	5.49	1.52	3.84	1.06	5.03	1.39
ML 0106	Milks, raw or skimmed (incl dairy products)	RAC	0.0026	289.65	0.75	485.88	1.26	26.92	0.07	239.03	0.62	199.91	0.52	180.53	0.47
PM 0110	Poultry meat, raw (incl prepared) - 90% as muscle	RAC	0.0015	13.17	0.02	26.78	0.04	7.24	0.01	116.71	0.18	22.54	0.03	32.09	0.05
PM 0110	Poultry meat, raw (incl prepared) - 10% as fat	RAC	0.009	1.46	0.01	2.98	0.03	0.80	0.01	12.97	0.12	2.50	0.02	3.57	0.03
PF 0111	Poultry fat, raw (incl rendered)	RAC	0.009	0.10	0.00	0.10	0.00	NC	-	0.10	0.00	0.10	0.00	0.10	0.00
PO 0111	Poultry edible offal, raw (incl prepared)	RAC	0.0105	0.12	0.00	0.12	0.00	0.11	0.00	5.37	0.06	0.24	0.00	0.10	0.00
PE 0112	Eggs, raw, (incl dried)	RAC	0.0045	7.84	0.04	23.08	0.10	2.88	0.01	14.89	0.07	9.81	0.04	14.83	0.07
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

	G01 intake	G02 intake	G03 intake	G04 intake	G05 intake	G06 intake
Total intake (µg//person)=	30.6	52.5	19.5	52.8	25.1	89.1
Bodyweight per region (kg bw) =	60	60	60	60	60	60
ADI (µg//person)=	600	600	600	600	600	600
%ADI=	5.1%	8.8%	3.2%	8.8%	4.2%	14.9%
Rounded %ADI=	5%	9%	3%	9%	4%	10%

FLUTRIAFOL (248) International Estimated Daily Intake (IEDI) ADI = 0 - 0.01 mg/kg bw

			STMR	Diets as g/person/day		Intake as µg//person/day									
Codex Code	Commodity description	Expr as	mg/kg	G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
FP 0009	Pome fruit, raw (incl cider, excl apple juice)	RAC	0.08	51.09	4.09	65.40	5.23	42.71	3.42	45.29	3.62	62.51	5.00	7.74	0.62
JF 0226	Apple juice, single strength (incl. concentrated)	PP	0.038	14.88	0.57	11.98	0.46	0.15	0.01	9.98	0.38	30.32	1.15	3.47	0.13
FS 0013	Cherries, raw	RAC	0.335	1.40	0.47	4.21	1.41	0.10	0.03	2.93	0.98	1.50	0.50	NC	-
FS 0014	Plums, raw (incl Chinese jujube)	RAC	0.075	3.75	0.28	3.33	0.25	5.94	0.45	2.64	0.20	2.50	0.19	0.10	0.01
DF 0014	Plum, dried (prunes)	PP	0.165	0.61	0.10	0.35	0.06	0.10	0.02	0.35	0.06	0.49	0.08	0.13	0.02
FS 2001	Peaches, nectarines, apricots, raw (incl dried apricots)	RAC	0.17	13.03	2.22	16.29	2.77	8.29	1.41	12.95	2.20	5.35	0.91	0.10	0.02
FB 0269	Grape, raw (incl must, incl juice, excl dried, excl wine)	RAC	0.21	7.18	1.51	13.73	2.88	5.24	1.10	12.27	2.58	7.46	1.57	1.21	0.25
DF 0269	Grape, dried (= currants, raisins and sultanas)	PP	0.59	3.09	1.82	1.51	0.89	0.10	0.06	1.38	0.81	4.26	2.51	0.42	0.25
-	Grape wine (incl vermouths)	PP	0.3528	88.93	31.37	62.41	22.02	1.84	0.65	25.07	8.84	61.17	21.58	5.84	2.06
FB 0275	Strawberry, raw	RAC	0.42	4.49	1.89	5.66	2.38	0.10	0.04	6.63	2.78	5.75	2.42	0.10	0.04
FI 0327	Banana, raw (incl plantains) (incl dried)	RAC	0.05	25.14	1.26	23.37	1.17	23.06	1.15	23.40	1.17	18.44	0.92	39.29	1.96
VB 0040	Brassica vegetables, raw: head cabbages, flowerhead brassicas, Brussels sprouts & kohlrabi	RAC	0.14	20.71	2.90	39.81	5.57	16.70	2.34	28.49	3.99	18.12	2.54	15.03	2.10
VC 0045	Fruiting vegetables, cucurbits, raw	RAC	0.09	27.81	2.50	41.93	3.77	123.30	11.10	49.47	4.45	15.95	1.44	35.99	3.24
VO 0444	Peppers, chili, raw (incl dried)	RAC	0.28	6.36	1.78	15.46	4.33	10.74	3.01	7.28	2.04	8.21	2.30	3.58	1.00
VO 0445	Peppers, sweet, raw (incl dried)	RAC	0.28	0.82	0.23	1.53	0.43	10.85	3.04	4.59	1.29	1.84	0.52	2.00	0.56
VO 0448	Tomato, raw (incl juice, incl canned, excl paste)	RAC	0.1	44.88	4.49	55.49	5.55	35.44	3.54	75.65	7.57	27.00	2.70	9.61	0.96
-	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	0.286	4.96	1.42	3.20	0.92	0.15	0.04	1.61	0.46	6.88	1.97	0.52	0.15
VL 0482	Lettuce, head, raw	RAC	0.22	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
VL 0483	Lettuce, leaf, raw	RAC	0.34	14.50	4.93	11.76	4.00	13.14	4.47	19.50	6.63	4.81	1.64	2.23	0.76
VL 0485	Mustard greens, raw (i.e. Brassica)	RAC	2.12	NC	-	NC	-	NC	-	NC	-	NC	-	0.13	0.28
VL 0502	Spinach, raw	RAC	1.665	2.20	3.66	1.76	2.93	13.38	22.28	2.94	4.90	5.53	9.21	0.10	0.17
VD 0541	Soya bean, dry, raw (incl flour, incl paste, incl curd, incl sauce, excl oil)	RAC	0.055	0.47	0.03	0.77	0.04	9.12	0.50	8.05	0.44	0.10	0.01	6.06	0.33
OR 0541	Soya oil, refined	PP	0.072	19.06	1.37	21.06	1.52	5.94	0.43	33.78	2.43	40.05	2.88	13.39	0.96
VR 0596	Sµg/ar beet, raw (incl sµg/ar)	RAC	0.01	0.10	0.00	NC	-	0.10	0.00	0.10	0.00	NC	-	NC	-
VS 0624	Celery	RAC	0.78	7.68	5.99	2.85	2.22	NC	-	3.34	2.61	16.83	13.13	4.04	3.15
GC 0645	Maize, raw (incl glucose & dextrose & isoglucose, incl flour, incl oil, incl beer, incl germ, incl starch)	RAC	0	18.51	0.00	26.18	0.00	26.04	0.00	39.99	0.00	7.36	0.00	64.58	0.00

FLUTRIAFOL (248) International Estimated Daily Intake (IEDI) ADI = 0 - 0.01 mg/kg bw

			STMR	Diets as g/person/day		Intake as µg//person/day									
Codex Code	Commodity description	Expr as	mg/kg	G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
GC 0651	Sorghum, raw (incl flour, incl beer)	RAC	0.27	NC	-	NC	-	1.44	0.39	1.15	0.31	NC	-	7.12	1.92
GC 0654	Wheat, raw (incl bulgur, incl fermented beverages, excl germ, excl wholemeal bread, excl white flour products, excl white bread)	RAC	0.015	0.37	0.01	0.10	0.00	0.10	0.00	0.10	0.00	NC	-	0.10	0.00
CF 1210	Wheat, germ	PP	0.042	0.97	0.04	0.10	0.00	0.10	0.00	0.10	0.00	NC	-	0.10	0.00
CF 0654	Wheat, bran	PP	0.032	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
CF 1211	Wheat, white flour (incl white flour products: starch, gluten, macaroni, pastry)	PP	0.005	199.38	1.00	193.50	0.97	106.30	0.53	185.31	0.93	171.11	0.86	132.37	0.66
SO 0495	Rape seed, raw (incl oil)	RAC	0.1	32.68	3.27	19.91	1.99	7.83	0.78	15.69	1.57	NC	-	NC	-
SO 0691	Cotton seed, raw	RAC	0.08	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
OR 0691	Cotton seed oil, edible	PP	0.0064	1.68	0.01	0.66	0.00	1.13	0.01	1.18	0.01	0.89	0.01	0.37	0.00
SO 0697	Peanuts, nutmeat, raw (incl roasted, incl oil, incl butter)	RAC	0.02	5.63	0.11	2.75	0.06	9.58	0.19	5.82	0.12	13.71	0.27	1.84	0.04
SB 0716	Coffee beans raw (incl roasted, incl instant coffee, incl substitutes)	RAC	0.05	10.90	0.55	12.44	0.62	0.77	0.04	9.48	0.47	22.07	1.10	8.15	0.41
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) - 80% as muscle	RAC	0.008	112.02	0.90	120.71	0.97	63.46	0.51	88.99	0.71	96.24	0.77	41.02	0.33
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) - 20% as fat	RAC	0.008	28.01	0.22	30.18	0.24	15.86	0.13	22.25	0.18	24.06	0.19	10.25	0.08
MF 0100	Mammalian fats, raw, excl milk fats (incl rendered fats)	RAC	0.008	6.44	0.05	15.51	0.12	3.79	0.03	8.29	0.07	18.44	0.15	8.00	0.06
MO 0105	Edible offal (mammalian), raw	RAC	0.277	15.17	4.20	5.19	1.44	6.30	1.75	6.78	1.88	3.32	0.92	3.17	0.88
ML 0106	Milks, raw or skimmed (incl dairy products)	RAC	0.0026	388.92	1.01	335.88	0.87	49.15	0.13	331.25	0.86	468.56	1.22	245.45	0.64
PM 0110	Poultry meat, raw (incl prepared) - 90% as muscle	RAC	0.0015	66.38	0.10	48.47	0.07	21.58	0.03	78.41	0.12	48.04	0.07	76.01	0.11
PM 0110	Poultry meat, raw (incl prepared) - 10% as fat	RAC	0.009	7.38	0.07	5.39	0.05	2.40	0.02	8.71	0.08	5.34	0.05	8.45	0.08
PF 0111	Poultry fat, raw (incl rendered)	RAC	0.009	0.10	0.00	0.10	0.00	NC	-	0.10	0.00	0.71	0.01	NC	-
PO 0111	Poultry edible offal, raw (incl prepared)	RAC	0.0105	0.33	0.00	0.72	0.01	0.27	0.00	0.35	0.00	0.80	0.01	NC	-
PE 0112	Eggs, raw, (incl dried)	RAC	0.0045	25.84	0.12	29.53	0.13	28.05	0.13	33.19	0.15	36.44	0.16	8.89	0.04
	Total intake (µg//person)=				86.5		78.3		63.7		67.9		80.9		24.3
	Bodyweight per region (kg bw) =				60		60		55		60		60		60
	ADI (µg//person)=				600		600		550		600		600		600
	%ADI=				14.4%		13.1%		11.6%		11.3%		13.5%		4.0%
	Rounded %ADI=				10%		10%		10%		10%		10%		4%

Annex 3

FLUTRIAFOL (248) International Estimated Daily Intake (IEDI) ADI = 0 - 0.01 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day G13 diet	G13 intake	G14 diet	Intake = daily intake: µg//person G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
FP 0009	Pome fruit, raw (incl cider, excl apple juice)	RAC	0.08	68.85	5.51	10.93	0.87	70.82	5.67	189.78	15.18	19.56	1.56
JF 0226	Apple juice, single strength (incl. concentrated)	PP	0.038	0.10	0.00	0.10	0.00	7.19	0.27	0.10	0.00	NC	-
FS 0013	Cherries, raw	RAC	0.335	0.10	0.03	0.10	0.03	5.96	2.00	0.10	0.03	NC	-
FS 0014	Plums, raw (incl Chinese jujube)	RAC	0.075	0.10	0.01	0.10	0.01	15.56	1.17	0.10	0.01	NC	-
DF 0014	Plum, dried (prunes)	PP	0.165	0.10	0.02	0.10	0.02	0.37	0.06	0.10	0.02	NC	-
FS 2001	Peaches, nectarines, apricots, raw (incl dried apricots)	RAC	0.17	0.10	0.02	0.10	0.02	10.76	1.83	0.10	0.02	NC	-
FB 0269	Grape, raw (incl must, incl juice, excl dried, excl wine)	RAC	0.21	0.15	0.03	0.38	0.08	15.84	3.33	0.10	0.02	0.28	0.06
DF 0269	Grape, dried (= currants, raisins and sultanas)	PP	0.59	0.10	0.06	0.13	0.08	1.06	0.63	0.10	0.06	0.10	0.06
-	Grape wine (incl vermouths)	PP	0.3528	0.31	0.11	0.23	0.08	60.43	21.32	0.52	0.18	31.91	11.26
FB 0275	Strawberry, raw	RAC	0.42	0.10	0.04	0.10	0.04	3.35	1.41	0.10	0.04	0.10	0.04
FI 0327	Banana, raw (incl plantains) (incl dried)	RAC	0.05	20.88	1.04	81.15	4.06	24.58	1.23	37.92	1.90	310.23	15.51
VB 0040	Brassica vegetables, raw: head cabbages, flowerhead brassicas, Brussels sprouts & kohlrabi	RAC	0.14	4.84	0.68	3.79	0.53	58.72	8.22	0.10	0.01	NC	-
VC 0045	Fruiting vegetables, cucurbits, raw	RAC	0.09	5.96	0.54	9.74	0.88	51.82	4.66	13.61	1.22	0.10	0.01
VO 0444	Peppers, chili, raw (incl dried)	RAC	0.28	7.55	2.11	12.48	3.49	24.78	6.94	0.87	0.24	NC	-
VO 0445	Peppers, sweet, raw (incl dried)	RAC	0.28	5.49	1.54	10.57	2.96	8.84	2.48	0.91	0.25	NC	-
VO 0448	Tomato, raw (incl juice, incl canned, excl paste)	RAC	0.1	13.17	1.32	4.92	0.49	62.69	6.27	1.04	0.10	0.11	0.01
-	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	0.286	0.58	0.17	0.22	0.06	2.21	0.63	0.24	0.07	3.10	0.89
VL 0482	Lettuce, head, raw	RAC	0.22	NC	-	NC	-	NC	-	NC	-	NC	-
VL 0483	Lettuce, leaf, raw	RAC	0.34	0.29	0.10	0.10	0.03	6.71	2.28	0.10	0.03	NC	-
VL 0485	Mustard greens, raw (i.e. Brassica)	RAC	2.12	0.10	0.21	0.10	0.21	NC	-	0.10	0.21	NC	-
VL 0502	Spinach, raw	RAC	1.665	0.17	0.28	0.10	0.17	0.81	1.35	0.10	0.17	NC	-
VD 0541	Soya bean, dry, raw (incl flour, incl paste, incl curd, incl sauce, excl oil)	RAC	0.055	2.89	0.16	0.21	0.01	0.48	0.03	3.16	0.17	0.26	0.01
OR 0541	Soya oil, refined	PP	0.072	2.32	0.17	2.54	0.18	18.70	1.35	2.51	0.18	6.29	0.45
VR 0596	Sµg/ar beet, raw (incl sµg/ar)	RAC	0.01	3.93	0.04	1.68	0.02	NC	-	NC	-	36.12	0.36
VS 0624	Celery	RAC	0.78	3.66	2.85	2.65	2.07	4.84	3.78	2.47	1.93	4.94	3.85
GC 0645	Maize, raw (incl glucose & dextrose & isoglucose, incl flour, incl oil, incl beer, incl germ, incl starch)	RAC	0	116.66	0.00	10.52	0.00	38.46	0.00	76.60	0.00	34.44	0.00

FLUTRIAFOL (248) International Estimated Daily Intake (IEDI) ADI = 0 - 0.01 mg/kg bw

			STMR	Diets: g/person/day			Intake = daily intake: µg//person						
Codex Code	Commodity description	Expr as	mg/kg	G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
GC 0651	Sorghum, raw (incl flour, incl beer)	RAC	0.27	89.16	24.07	2.02	0.55	NC	-	35.38	9.55	NC	-
GC 0654	Wheat, raw (incl bulgur, incl fermented beverages, excl germ, excl wholemeal bread, excl white flour products, excl white bread)	RAC	0.015	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.97	0.01
CF 1210	Wheat, germ	PP	0.042	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00	NC	-
CF 0654	Wheat, bran	PP	0.032	NC	-	NC	-	NC	-	NC	-	NC	-
CF 1211	Wheat, white flour (incl white flour products: starch, gluten, macaroni, pastry)	PP	0.005	45.21	0.23	87.37	0.44	215.61	1.08	20.42	0.10	103.67	0.52
SO 0495	Rape seed, raw (incl oil)	RAC	0.1	0.19	0.02	0.10	0.01	12.07	1.21	0.10	0.01	NC	-
SO 0691	Cotton seed, raw	RAC	0.08	NC	-	NC	-	NC	-	NC	-	NC	-
OR 0691	Cotton seed oil, edible	PP	0.0064	1.28	0.01	0.10	0.00	0.45	0.00	0.42	0.00	0.15	0.00
SO 0697	Peanuts, nutmeat, raw (incl roasted, incl oil, incl butter)	RAC	0.02	18.82	0.38	0.57	0.01	2.28	0.05	6.90	0.14	0.53	0.01
SB 0716	Coffee beans raw (incl roasted, incl instant coffee, incl substitutes)	RAC	0.05	0.95	0.05	1.32	0.07	11.64	0.58	2.96	0.15	14.73	0.74
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) -80% as muscle	RAC	0.008	23.34	0.19	40.71	0.33	97.15	0.78	18.06	0.14	57.71	0.46
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) - 20% as fat	RAC	0.008	5.84	0.05	10.18	0.08	24.29	0.19	4.52	0.04	14.43	0.12
MF 0100	Mammalian fats, raw, excl milk fats (incl rendered fats)	RAC	0.008	1.05	0.01	1.14	0.01	18.69	0.15	0.94	0.01	3.12	0.02
MO 0105	Edible offal (mammalian), raw	RAC	0.277	4.64	1.29	1.97	0.55	10.01	2.77	3.27	0.91	3.98	1.10
ML 0106	Milks, raw or skimmed (incl dairy products)	RAC	0.0026	108.75	0.28	70.31	0.18	436.11	1.13	61.55	0.16	79.09	0.21
PM 0110	Poultry meat, raw (incl prepared) - 90% as muscle	RAC	0.0015	3.53	0.01	10.83	0.02	51.36	0.08	4.53	0.01	50.00	0.08
PM 0110	Poultry meat, raw (incl prepared) - 10% as fat	RAC	0.009	0.39	0.00	1.20	0.01	5.71	0.05	0.50	0.00	5.56	0.05
PF 0111	Poultry fat, raw (incl rendered)	RAC	0.009	NC	-	NC	-	0.32	0.00	NC	-	NC	-
PO 0111	Poultry edible offal, raw (incl prepared)	RAC	0.0105	0.10	0.00	0.70	0.01	0.97	0.01	0.10	0.00	NC	-
PE 0112	Eggs, raw, (incl dried)	RAC	0.0045	3.84	0.02	4.41	0.02	27.25	0.12	1.13	0.01	7.39	0.03
	Total intake (µg//person)=				43.6		18.7		85.1		33.3		37.4
	Bodyweight per region (kg bw) =				60		60		60		60		60
	ADI (µg//person)=				600		600		600		600		600
	%ADI=				7.3%		3.1%		14.2%		5.5%		6.2%
	Rounded %ADI=				7%		3%		10%		6%		6%

Annex 3

FLUXAPYROXAD (256) International Estimated Daily Intake (IEDI) ADI = 0 - 0.02 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day	Intake as µg//person/day										
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
FC 0004	Oranges, sweet, sour, raw	RAC	0.01	20.66	0.21	5.23	0.05	11.90	0.12	37.90	0.38	21.16	0.21	56.46	0.56
JF 0004	Oranges, juice (single strength, incl. concentrated)	PP	0.00045	1.27	0.00	2.20	0.00	0.10	0.00	11.81	0.01	0.46	0.00	1.69	0.00
FP 0009	Pome fruit, raw (incl cider, excl apple juice)	RAC	0.3	19.35	5.81	34.06	10.22	17.87	5.36	25.74	7.72	7.69	2.31	56.85	17.06
JF 0226	Apple juice, single strength (incl. concentrated)	PP	0.05	0.32	0.02	3.07	0.15	0.10	0.01	5.00	0.25	0.29	0.01	5.57	0.28
FS 0013	Cherries, raw	RAC	0.755	0.92	0.69	9.15	6.91	0.10	0.08	0.61	0.46	0.10	0.08	6.64	5.01
FS 0014	Plums, raw (incl Chinese jujube)	RAC	0.44	2.40	1.06	8.60	3.78	0.10	0.04	2.52	1.11	0.58	0.26	4.16	1.83
DF 0014	Plum, dried (prunes)	PP	1.23	0.10	0.12	0.10	0.12	0.10	0.12	0.18	0.22	0.10	0.12	0.10	0.12
FS 2001	Peaches, nectarines, apricots, raw (incl dried apricots)	RAC	0.465	8.01	3.72	5.87	2.73	0.18	0.08	8.19	3.81	1.64	0.76	22.46	10.44
FB 0018	Berries and other small fruits, raw, (incl processed), excl small fruit vine climbing (group 004D)	RAC	2.4	2.29	5.50	4.71	11.30	0.78	1.87	4.48	10.75	0.39	0.94	6.27	15.05
FB 0269	Grape, raw	RAC	0.47	12.68	5.96	9.12	4.29	0.10	0.05	16.88	7.93	3.70	1.74	54.42	25.58
-	Grape must	PP	0.11	0.33	0.04	0.13	0.01	0.10	0.01	0.10	0.01	0.10	0.01	0.10	0.01
DF 0269	Grape, dried (= currants, raisins and sultanas)	PP	2	0.51	1.02	0.51	1.02	0.10	0.20	1.27	2.54	0.12	0.24	2.07	4.14
JF 0269	Grape juice	PP	0.16	0.14	0.02	0.29	0.05	0.10	0.02	0.30	0.05	0.24	0.04	0.10	0.02
-	Grape wine (incl vermouths)	PP	0.11	0.67	0.07	12.53	1.38	2.01	0.22	1.21	0.13	3.53	0.39	4.01	0.44
FI 0327	Banana, raw (incl plantains) (incl dried)	RAC	0.055	5.06	0.28	6.91	0.38	37.17	2.04	31.16	1.71	40.21	2.21	18.96	1.04
VA 0381	Garlic, raw	RAC	0.23	2.29	0.53	5.78	1.33	0.11	0.03	3.69	0.85	1.65	0.38	3.91	0.90
-	Onions, mature bulbs, dry	RAC	0.23	29.36	6.75	37.50	8.63	3.56	0.82	34.78	8.00	18.81	4.33	43.38	9.98
VB 0041	Cabbages, head, raw	RAC	0.04	2.73	0.11	27.92	1.12	0.55	0.02	4.47	0.18	4.27	0.17	10.25	0.41
VB 0042	Flowerhead brassicas, raw	RAC	0.22	2.96	0.65	0.57	0.13	0.10	0.02	4.17	0.92	7.79	1.71	3.64	0.80
VB 0402	Brussels sprouts, raw	RAC	0.22	0.63	0.14	6.41	1.41	0.13	0.03	1.03	0.23	NC	-	2.35	0.52
VB 0405	Kohlrabi, raw	RAC	0.22	0.10	0.02	0.89	0.20	0.10	0.02	0.14	0.03	NC	-	0.33	0.07
VC 0045	Fruiting vegetables, cucurbits, raw	RAC	0.0525	53.14	2.79	86.21	4.53	6.28	0.33	92.76	4.87	15.64	0.82	155.30	8.15
VO 0050	Fruiting vegetables other than cucurbits, raw, (incl processed commodities), excl tomato commodities, excl sweet corn commodities, excl mushroom commodities	RAC	0.07	18.97	1.33	21.73	1.52	20.61	1.44	27.35	1.91	35.54	2.49	50.62	3.54
VO 0447	Sweet corn on the cob, raw (incl frozen, incl canned) (i.e. kernels plus cob without husks)	RAC	0.01	0.14	0.00	0.94	0.01	5.70	0.06	2.61	0.03	1.94	0.02	0.22	0.00
VO 0448	Tomato, raw	RAC	0.07	41.73	2.92	75.65	5.30	10.66	0.75	82.87	5.80	24.75	1.73	200.93	14.07
-	Tomato, canned (& peeled)	PP	0.013	0.20	0.00	0.31	0.00	0.10	0.00	1.11	0.01	0.11	0.00	1.50	0.02
-	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	0.051	2.34	0.12	1.33	0.07	1.57	0.08	4.24	0.22	0.34	0.02	2.83	0.14
JF 0448	Tomato, juice (single strength, incl concentrated)	PP	0.013	0.29	0.00	0.29	0.00	0.10	0.00	0.38	0.00	0.10	0.00	0.14	0.00

FLUXAPYROXAD (256) International Estimated Daily Intake (IEDI) ADI = 0 - 0.02 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day Intake as µg//person/day											
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
VL 0054	Brassica leafy vegetables, raw	RAC	1.7	1.07	1.82	10.95	18.62	0.22	0.37	1.75	2.98	5.72	9.72	4.02	6.83
VL 0482	Lettuce, head, raw	RAC	0.51	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
VL 0483	Lettuce, leaf, raw	RAC	0.51	0.53	0.27	0.36	0.18	0.16	0.08	6.21	3.17	1.90	0.97	6.05	3.09
VL 0494	Radish leaves, raw	RAC	1.2	0.26	0.31	0.45	0.54	0.28	0.34	0.68	0.82	NC	-	0.33	0.40
VL 0502	Spinach, raw	RAC	6.8	0.74	5.03	0.22	1.50	0.10	0.68	0.91	6.19	0.10	0.68	2.92	19.86
VP 0061	Beans, green, with pods, raw: beans except broad bean & soya bean (i.e. immature seeds + pods) (Phaseolus spp)	RAC	0.65	0.68	0.44	NC	-	NC	-	0.39	0.25	0.22	0.14	0.49	0.32
VP 0062	Beans, green, without pods, raw: beans except broad bean & soya bean (i.e. immature seeds only) (Phaseolus spp..)	RAC	0.03	1.56	0.05	0.60	0.02	0.49	0.01	1.18	0.04	0.90	0.03	7.79	0.23
VP 0063	Peas green, with pods, raw (i.e. immature seeds + pods) (Pisum spp)	RAC	0.65	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
VP 0064	Peas, green, without pods, raw (i.e. immature seeds only) (Pisum spp)	RAC	0.03	1.97	0.06	0.51	0.02	0.10	0.00	0.79	0.02	3.68	0.11	3.80	0.11
VP 0541	Soya bean, green, without pods, raw (i.e. immature seeds only) (Glycine max)	RAC	0.01	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
VD 0071	Beans, dry, raw (Phaseolus spp)	RAC	0.04	2.39	0.10	1.61	0.06	10.47	0.42	1.84	0.07	12.90	0.52	7.44	0.30
VD 0072	Peas, dry, raw (Pisum spp, Vigna spp): garden peas & field peas & cow peas	RAC	0.04	1.67	0.07	3.22	0.13	2.66	0.11	1.51	0.06	2.91	0.12	0.24	0.01
VD 0524	Chick-pea, dry, raw (Cicer arietinum)	RAC	0.04	5.34	0.21	0.13	0.01	0.10	0.00	4.69	0.19	7.24	0.29	5.52	0.22
VD 0533	Lentil, dry, raw (Ervum lens)	RAC	0.04	2.12	0.08	0.10	0.00	0.10	0.00	3.21	0.13	1.60	0.06	4.90	0.20
VD 0541	Soya bean, dry, raw (Glycine soja)	RAC	0.01	0.58	0.01	0.10	0.00	0.37	0.00	0.10	0.00	1.65	0.02	0.30	0.00
-	Soya paste (i.e. miso)	PP	0.005	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
-	Soya curd (i.e. tofu)	PP	0.005	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
OR 0541	Soya oil, refined	PP	0.055	12.99	0.71	10.43	0.57	3.63	0.20	13.10	0.72	10.70	0.59	13.10	0.72
-	Soya sauce	PP	0.005	0.10	0.00	0.10	0.00	0.10	0.00	0.34	0.00	0.10	0.00	0.10	0.00
-	Soya flour	PP	0.005	0.10	0.00	0.86	0.00	0.10	0.00	1.02	0.01	0.10	0.00	0.15	0.00
VR 0494	Radish roots, raw	RAC	0.05	2.31	0.12	4.09	0.20	2.53	0.13	6.15	0.31	5.88	0.29	2.97	0.15
VR 0577	Carrots, raw	RAC	0.06	9.51	0.57	30.78	1.85	0.37	0.02	8.75	0.53	2.80	0.17	6.10	0.37
VR 0588	Parsnip, raw	RAC	0.06	0.59	0.04	1.05	0.06	0.65	0.04	1.58	0.09	NC	-	0.76	0.05
VR 0589	Potato, raw (incl flour, incl frozen, incl starch, incl tapioca)	RAC	0.01	59.74	0.60	316.14	3.16	9.78	0.10	60.26	0.60	54.12	0.54	119.82	1.20
VR 0596	Sµg/ar beet, raw	RAC	0.04	NC	-	NC	-	NC	-	NC	-	0.10	0.00	NC	-
-	Sµg/ar beet, sµg/ar	PP	0.007	0.10	0.00	NC	-	0.10	0.00	0.10	0.00	0.10	0.00	12.63	0.09
VS 0624	Celery	RAC	1.6	2.14	3.42	3.79	6.06	2.35	3.76	5.69	9.10	0.10	0.16	2.75	4.40
GC 0640	Barley, raw	RAC	0.535	2.49	1.33	NC	-	0.10	0.05	0.10	0.05	0.18	0.10	0.38	0.20

FLUXAPYROXAD (256) International Estimated Daily Intake (IEDI) ADI = 0 - 0.02 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day G01 diet	Intake as µg//person/day G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
-	Barley, pot&pearled	PP	0.086	7.12	0.61	7.34	0.63	0.10	0.01	0.10	0.01	0.67	0.06	0.20	0.02
-	Barley, flour (white flour and wholemeal flour)	PP	0.08	2.93	0.23	0.30	0.02	0.10	0.01	0.10	0.01	0.48	0.04	0.10	0.01
-	Barley beer	PP	0.011	4.87	0.05	93.78	1.03	24.28	0.27	12.76	0.14	39.28	0.43	18.15	0.20
-	Barley Malt	PP	0.0054	0.10	0.00	1.04	0.01	0.18	0.00	0.33	0.00	0.10	0.00	0.10	0.00
-	Barley Malt Extract	PP	0.0054	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00
GC 0645	Maize, raw (incl glucose & dextrose & isoglucose, incl oil, incl beer, incl germ, excl starch, excl flour)	RAC	0.01	1.80	0.02	1.08	0.01	1.85	0.02	5.89	0.06	2.85	0.03	15.24	0.15
CF 1255	Maize, flour (white flour and wholemeal flour)	PP	0.009	22.72	0.20	35.61	0.32	87.27	0.79	34.92	0.31	46.71	0.42	49.12	0.44
-	Maize starch	PP	0.001	0.10	0.00	NC	-	0.10	0.00	2.29	0.00	0.10	0.00	0.11	0.00
GC 0647	Oats, raw (incl rolled)	RAC	0.535	0.10	0.05	7.05	3.77	0.10	0.05	1.71	0.91	0.96	0.51	0.10	0.05
CM 0649 (GC 0649)	Rice, husked, dry (incl oil, incl beverages, incl starch, excl polished, excl flour)	REP	0.55	1.20	0.66	1.30	0.72	31.05	17.08	4.79	2.63	0.61	0.34	2.16	1.19
CM 1205	Rice polished, dry	PP	0.07	34.21	2.39	10.39	0.73	41.72	2.92	82.38	5.77	150.24	10.52	70.47	4.93
-	Rice flour	PP	0.08	0.10	0.01	0.22	0.02	0.10	0.01	0.50	0.04	0.22	0.02	0.10	0.01
GC 0650	Rye, raw (incl flour)	RAC	0.085	0.13	0.01	19.38	1.65	0.10	0.01	0.12	0.01	0.10	0.01	2.15	0.18
GC 0651	Sorghum, raw (incl flour, incl beer)	RAC	0.2	4.34	0.87	0.10	0.02	16.25	3.25	15.82	3.16	10.97	2.19	2.92	0.58
GC 0653	Triticale, raw (incl flour)	RAC	0.085	NC	-	NC	-	NC	-	0.10	0.01	0.39	0.03	NC	-
GC 0654	Wheat, raw (incl bulgur, incl fermented beverages, excl germ, excl wholemeal bread, excl white flour products, excl white bread)	RAC	0.085	0.10	0.01	1.12	0.10	0.10	0.01	0.10	0.01	0.61	0.05	0.10	0.01
CF 1210	Wheat, germ	PP	0.1	NC	-	NC	-	0.10	0.01	0.10	0.01	0.14	0.01	0.10	0.01
CF 0654	Wheat, bran	PP	0.25	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
CF 1212	Wheat, wholemeal flour	PP	0.082	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
CP 1212	Wheat, wholemeal bread	PP	0.054	0.10	0.01	0.10	0.01	0.10	0.01	0.10	0.01	0.10	0.01	0.10	0.01
CP 1211	Wheat, white bread	PP	0.01	0.25	0.00	0.63	0.01	0.12	0.00	0.43	0.00	1.39	0.01	0.22	0.00
CF 1211	Wheat, white flour (incl white flour products: starch, gluten, macaroni, pastry)	PP	0.014	301.49	4.22	269.27	3.77	30.33	0.42	222.94	3.12	136.12	1.91	343.34	4.81
TN 0085	Tree nuts, raw (incl processed)	RAC	0.01	4.06	0.04	3.27	0.03	7.01	0.07	13.93	0.14	14.01	0.14	9.36	0.09
SO 0090	Mustard seeds, raw (incl flour, incl oil)	RAC	0.09	0.10	0.01	0.10	0.01	0.10	0.01	0.31	0.03	0.10	0.01	0.10	0.01
SO 0305	Olives for oil production, raw (incl oil)	RAC	0.09	12.61	1.13	1.35	0.12	0.27	0.02	8.04	0.72	0.58	0.05	21.80	1.96
SO 0495	Rape seed, raw	RAC	0.11	0.10	0.01	NC	-	NC	-	0.10	0.01	0.75	0.08	0.10	0.01
OR 0495	Rape seed oil, edible	PP	0.025	0.35	0.01	0.44	0.01	0.19	0.00	0.97	0.02	3.28	0.08	0.77	0.02
SO 0691	Cotton seed, raw	RAC	0.07	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
OR 0691	Cotton seed oil, edible	PP	0.003	3.22	0.01	1.54	0.00	1.01	0.00	0.74	0.00	1.12	0.00	2.93	0.01

Annex 3

FLUXAPYROXAD (256) International Estimated Daily Intake (IEDI) ADI = 0 - 0.02 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day G01 diet	G01 intake	G02 diet	Intake as µg//person/day G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
SO 0693	Linseed, raw (incl oil)	RAC	0.09	0.10	0.01	NC	-	NC	-	0.10	0.01	0.13	0.01	NC	-
SO 0696	Palm kernels, raw (incl oil)	RAC	0.09	5.81	0.52	3.77	0.34	20.07	1.81	24.53	2.21	5.94	0.53	8.99	0.81
SO 0697	Peanuts, nutmeat, raw (incl roasted, incl oil, incl butter)	RAC	0.01	1.30	0.01	1.23	0.01	12.62	0.13	2.87	0.03	6.59	0.07	2.67	0.03
SO 0698	Poppy seed, raw (incl oil)	RAC	0.09	0.10	0.01	0.10	0.01	0.10	0.01	0.10	0.01	0.10	0.01	0.10	0.01
SO 0699	Safflower seed, raw (incl oil)	RAC	0.09	0.10	0.01	0.20	0.02	0.10	0.01	0.10	0.01	0.29	0.03	0.10	0.01
SO 0700	Sesame seed, raw (incl oil)	RAC	0.09	1.22	0.11	0.10	0.01	0.54	0.05	4.23	0.38	0.82	0.07	2.77	0.25
SO 0701	Shea nut (karite nuts), nutmeat, raw (incl butter)	RAC	0.09	NC	-	NC	-	0.34	0.03	NC	-	NC	-	NC	-
SO 0702	Sunflower seed, raw	RAC	0.055	0.10	0.01	0.33	0.02	0.10	0.01	0.24	0.01	0.10	0.01	0.10	0.01
OR 0702	Sunflower seed oil, edible	PP	0.004	2.97	0.01	14.42	0.06	0.43	0.00	3.46	0.01	2.20	0.01	5.53	0.02
-	Castor bean, raw (incl oil)	RAC	0.09	NC	-	0.10	0.01	NC	-	NC	-	NC	-	0.10	0.01
-	Cucurbitaceae seeds, raw (melonseeds, pumpkin seeds, watermelon seeds)	RAC	0.09	0.10	0.01	NC	-	1.08	0.10	0.38	0.03	0.10	0.01	0.25	0.02
-	Oilseeds, NES, raw (including flour, incl myrtle wax, incl Japan wax): beech nut, Aleurites moluccana; Carapa guineensis; Croton tiglium; Bassia latifolia; Guizotia abyssinia; Licania rigida; Perilla frutescens; Jatropha curcas; Shorea robusta; Pongamia glabra; Astrocaryum spp., as well as tea seeds, grape seed and tomato seeds for oil extraction	RAC	0.09	0.51	0.05	0.23	0.02	0.66	0.06	0.68	0.06	0.58	0.05	0.15	0.01
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) -80% as muscle	RAC	0.02	24.96	0.50	57.95	1.16	16.70	0.33	38.38	0.77	26.46	0.53	29.00	0.58
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) - 20% as fat	RAC	0.047	6.24	0.29	14.49	0.68	4.18	0.20	9.60	0.45	6.62	0.31	7.25	0.34
MF 0100	Mammalian fats, raw, excl milk fats (incl rendered fats)	RAC	0.047	3.29	0.15	6.14	0.29	0.82	0.04	1.57	0.07	2.23	0.10	1.07	0.05
MO 0105	Edible offal (mammalian), raw	RAC	0.081	4.79	0.39	9.68	0.78	2.97	0.24	5.49	0.44	3.84	0.31	5.03	0.41
ML 0106	Milks, raw or skimmed (incl dairy products)	RAC	0.004	289.65	1.16	485.88	1.94	26.92	0.11	239.03	0.96	199.91	0.80	180.53	0.72
PM 0110	Poultry meat, raw (incl prepared) - 90% as muscle	RAC	0.02	13.17	0.26	26.78	0.54	7.24	0.14	116.71	2.33	22.54	0.45	32.09	0.64
PM 0110	Poultry meat, raw (incl prepared) - 10% as fat	RAC	0.021	1.46	0.03	2.98	0.06	0.80	0.02	12.97	0.27	2.50	0.05	3.57	0.07
PF 0111	Poultry fat, raw (incl rendered)	RAC	0.021	0.10	0.00	0.10	0.00	NC	-	0.10	0.00	0.10	0.00	0.10	0.00
PO 0111	Poultry edible offal, raw (incl prepared)	RAC	0.021	0.12	0.00	0.12	0.00	0.11	0.00	5.37	0.11	0.24	0.01	0.10	0.00
PE 0112	Eggs, raw, (incl dried)	RAC	0.006	7.84	0.05	23.08	0.14	2.88	0.02	14.89	0.09	9.81	0.06	14.83	0.09
	Total intake (µg//person)=				69.3		118.7		48.4		110.9		55.9		177.7
	Bodyweight per region (kg bw) =				60		60		60		60		60		60
	ADI (µg//person)=				1200		1200		1200		1200		1200		1200

FLUXAPYROXAD (256) International Estimated Daily Intake (IEDI) ADI = 0 - 0.02 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day G01 diet	Intake as µg//person/day G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
	%ADI=				5.8%		9.9%		4.0%		9.2%		4.7%		14.8%
	Rounded %ADI=				6%		10%		4%		9%		5%		10%

FLUXAPYROXAD (256) International Estimated Daily Intake (IEDI) ADI = 0 - 0.02 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day G07 diet	Intake as µg//person/day G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
FC 0004	Oranges, sweet, sour, raw	RAC	0.01	15.68	0.16	24.00	0.24	6.80	0.07	29.09	0.29	15.39	0.15	160.47	1.60
JF 0004	Oranges, juice (single strength, incl. concentrated)	PP	0.00045	33.31	0.01	1.78	0.00	0.28	0.00	18.97	0.01	14.01	0.01	13.36	0.01
FP 0009	Pome fruit, raw (incl cider, excl apple juice)	RAC	0.3	51.09	15.33	65.40	19.62	42.71	12.81	45.29	13.59	62.51	18.75	7.74	2.32
JF 0226	Apple juice, single strength (incl. concentrated)	PP	0.05	14.88	0.74	11.98	0.60	0.15	0.01	9.98	0.50	30.32	1.52	3.47	0.17
FS 0013	Cherries, raw	RAC	0.755	1.40	1.06	4.21	3.18	0.10	0.08	2.93	2.21	1.50	1.13	NC	-
FS 0014	Plums, raw (incl Chinese jujube)	RAC	0.44	3.75	1.65	3.33	1.47	5.94	2.61	2.64	1.16	2.50	1.10	0.10	0.04
DF 0014	Plum, dried (prunes)	PP	1.23	0.61	0.75	0.35	0.43	0.10	0.12	0.35	0.43	0.49	0.60	0.13	0.16
FS 2001	Peaches, nectarines, apricots, raw (incl dried apricots)	RAC	0.465	13.03	6.06	16.29	7.57	8.29	3.85	12.95	6.02	5.35	2.49	0.10	0.05
FB 0018	Berries and other small fruits, raw, (incl processed), excl small fruit vine climbing (group 004D)	RAC	2.4	14.68	35.23	12.74	30.58	0.23	0.55	11.77	28.25	8.01	19.22	4.08	9.79
FB 0269	Grape, raw	RAC	0.47	6.33	2.98	11.22	5.27	5.21	2.45	9.38	4.41	4.55	2.14	0.78	0.37
-	Grape must	PP	0.11	0.16	0.02	0.10	0.01	0.10	0.01	0.12	0.01	0.11	0.01	NC	-
DF 0269	Grape, dried (= currants, raisins and sultanas)	PP	2	3.09	6.18	1.51	3.02	0.10	0.20	1.38	2.76	4.26	8.52	0.42	0.84
JF 0269	Grape juice	PP	0.16	0.56	0.09	1.96	0.31	0.10	0.02	2.24	0.36	2.27	0.36	0.34	0.05
-	Grape wine (incl vermouths)	PP	0.11	88.93	9.78	62.41	6.87	1.84	0.20	25.07	2.76	61.17	6.73	5.84	0.64
FI 0327	Banana, raw (incl plantains) (incl dried)	RAC	0.055	25.14	1.38	23.37	1.29	23.06	1.27	23.40	1.29	18.44	1.01	39.29	2.16
VA 0381	Garlic, raw	RAC	0.23	0.98	0.23	1.49	0.34	12.88	2.96	3.74	0.86	2.05	0.47	1.14	0.26
-	Onions, mature bulbs, dry	RAC	0.23	19.69	4.53	29.83	6.86	24.64	5.67	31.35	7.21	9.72	2.24	12.59	2.90
VB 0041	Cabbages, head, raw	RAC	0.04	8.97	0.36	27.12	1.08	1.44	0.06	24.96	1.00	4.55	0.18	11.23	0.45
VB 0042	Flowerhead brassicas, raw	RAC	0.22	9.50	2.09	6.77	1.49	9.03	1.99	3.21	0.71	9.36	2.06	0.87	0.19
VB 0402	Brussels sprouts, raw	RAC	0.22	2.24	0.49	2.67	0.59	6.23	1.37	0.32	0.07	4.19	0.92	2.58	0.57
VB 0405	Kohlrabi, raw	RAC	0.22	NC	-	3.25	0.72	NC	-	NC	-	0.10	0.02	0.36	0.08
VC 0045	Fruiting vegetables, cucurbits, raw	RAC	0.0525	27.81	1.46	41.93	2.20	123.30	6.47	49.47	2.60	15.95	0.84	35.99	1.89
VO 0050	Fruiting vegetables other than cucurbits, raw, (incl processed commodities), excl tomato commodities,	RAC	0.07	8.19	0.57	18.68	1.31	42.99	3.01	15.04	1.05	11.46	0.80	6.30	0.44

Annex 3

FLUXAPYROXAD (256) International Estimated Daily Intake (IEDI) ADI = 0 - 0.02 mg/kg bw

			STMR	Diets as g/person/day			Intake as µg//person/day								
Codex Code	Commodity description	Expr as	mg/kg	G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
	excl sweet corn commodities, excl mushroom commodities														
VO 0447	Sweet corn on the cob, raw (incl frozen, incl canned) (i.e. kernels plus cob without husks)	RAC	0.01	11.43	0.11	3.71	0.04	0.74	0.01	13.63	0.14	3.07	0.03	1.50	0.02
VO 0448	Tomato, raw	RAC	0.07	32.13	2.25	51.27	3.59	34.92	2.44	73.37	5.14	15.15	1.06	8.88	0.62
-	Tomato, canned (& peeled)	PP	0.013	7.57	0.10	2.66	0.03	0.30	0.00	0.97	0.01	7.31	0.10	0.41	0.01
-	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	0.051	4.96	0.25	3.20	0.16	0.15	0.01	1.61	0.08	6.88	0.35	0.52	0.03
JF 0448	Tomato, juice (single strength, incl concentrated)	PP	0.013	0.80	0.01	0.10	0.00	0.10	0.00	0.61	0.01	0.40	0.01	0.10	0.00
VL 0054	Brassica leafy vegetables, raw	RAC	1.7	NC	-	NC	-	33.86	57.56	9.44	16.05	NC	-	4.40	7.48
VL 0482	Lettuce, head, raw	RAC	0.51	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
VL 0483	Lettuce, leaf, raw	RAC	0.51	14.50	7.40	11.76	6.00	13.14	6.70	19.50	9.95	4.81	2.45	2.23	1.14
VL 0494	Radish leaves, raw	RAC	1.2	NC	-	NC	-	NC	-	3.78	4.54	NC	-	0.48	0.58
VL 0502	Spinach, raw	RAC	6.8	2.20	14.96	1.76	11.97	13.38	90.98	2.94	19.99	5.53	37.60	0.10	0.68
VP 0061	Beans, green, with pods, raw: beans except broad bean & soya bean (i.e. immature seeds + pods) (Phaseolus spp)	RAC	0.65	5.07	3.30	0.83	0.54	0.17	0.11	3.70	2.41	NC	-	NC	-
VP 0062	Beans, green, without pods, raw: beans except broad bean & soya bean (i.e. immature seeds only) (Phaseolus spp..)	RAC	0.03	2.21	0.07	5.25	0.16	4.17	0.13	1.61	0.05	16.95	0.51	0.17	0.01
VP 0063	Peas green, with pods, raw (i.e. immature seeds + pods) (Pisum spp)	RAC	0.65	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
VP 0064	Peas, green, without pods, raw (i.e. immature seeds only) (Pisum spp)	RAC	0.03	10.72	0.32	1.99	0.06	2.72	0.08	4.26	0.13	4.23	0.13	NC	-
VP 0541	Soya bean, green, without pods, raw (i.e. immature seeds only) (Glycine max)	RAC	0.01	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
VD 0071	Beans, dry, raw (Phaseolus spp)	RAC	0.04	1.51	0.06	1.50	0.06	1.90	0.08	5.11	0.20	1.36	0.05	23.43	0.94
VD 0072	Peas, dry, raw (Pisum spp, Vigna spp): garden peas & field peas & cow peas	RAC	0.04	3.80	0.15	1.25	0.05	1.06	0.04	2.33	0.09	2.70	0.11	3.83	0.15
VD 0524	Chick-pea, dry, raw (Cicer arietinum)	RAC	0.04	0.27	0.01	1.33	0.05	0.32	0.01	0.15	0.01	0.10	0.00	0.10	0.00
VD 0533	Lentil, dry, raw (Ervum lens)	RAC	0.04	0.95	0.04	1.18	0.05	0.40	0.02	0.96	0.04	0.71	0.03	1.28	0.05
VD 0541	Soya bean, dry, raw (Glycine soja)	RAC	0.01	0.10	0.00	0.33	0.00	6.64	0.07	3.94	0.04	NC	-	5.78	0.06
-	Soya paste (i.e. miso)	PP	0.005	NC	-	NC	-	NC	-	1.87	0.01	NC	-	NC	-
-	Soya curd (i.e. tofu)	PP	0.005	NC	-	NC	-	0.68	0.00	0.87	0.00	NC	-	NC	-
OR 0541	Soya oil, refined	PP	0.055	19.06	1.05	21.06	1.16	5.94	0.33	33.78	1.86	40.05	2.20	13.39	0.74
-	Soya sauce	PP	0.005	0.45	0.00	0.29	0.00	2.93	0.01	4.35	0.02	0.10	0.00	0.70	0.00
-	Soya flour	PP	0.005	0.22	0.00	0.27	0.00	0.29	0.00	0.17	0.00	NC	-	NC	-
VR 0494	Radish roots, raw	RAC	0.05	3.83	0.19	11.99	0.60	NC	-	5.26	0.26	2.19	0.11	4.37	0.22
VR 0577	Carrots, raw	RAC	0.06	26.26	1.58	27.13	1.63	10.07	0.60	16.49	0.99	44.69	2.68	8.75	0.53

FLUXAPYROXAD (256) International Estimated Daily Intake (IEDI) ADI = 0 - 0.02 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day G07 diet	G07 intake	G08 diet	Intake as µg//person/day G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
VR 0588	Parsnip, raw	RAC	0.06	4.42	0.27	0.10	0.01	NC	-	NC	-	NC	-	1.12	0.07
VR 0589	Potato, raw (incl flour, incl frozen, incl starch, incl tapioca)	RAC	0.01	225.03	2.25	234.24	2.34	71.48	0.71	177.55	1.78	234.55	2.35	37.71	0.38
VR 0596	Sµg/ar beet, raw	RAC	0.04	0.10	0.00	NC	-	0.10	0.00	0.10	0.00	NC	-	NC	-
-	Sµg/ar beet, sµg/ar	PP	0.007	0.10	0.00	NC	-	0.10	0.00	NC	-	NC	-	NC	-
VS 0624	Celery	RAC	1.6	7.68	12.29	2.85	4.56	NC	-	3.34	5.34	16.83	26.93	4.04	6.46
GC 0640	Barley, raw	RAC	0.535	0.10	0.05	NC	-	0.10	0.05	1.36	0.73	NC	-	NC	-
-	Barley, pot&pearled	PP	0.086	0.57	0.05	2.56	0.22	0.33	0.03	0.56	0.05	0.36	0.03	NC	-
-	Barley, flour (white flour and wholemeal flour)	PP	0.08	0.10	0.01	0.10	0.01	0.10	0.01	0.10	0.01	0.68	0.05	0.10	0.01
-	Barley beer	PP	0.011	180.21	1.98	259.46	2.85	45.91	0.51	172.36	1.90	234.42	2.58	65.30	0.72
-	Barley Malt	PP	0.0054	0.19	0.00	NC	-	0.10	0.00	0.10	0.00	NC	-	2.14	0.01
-	Barley Malt Extract	PP	0.0054	0.37	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.18	0.00	0.29	0.00
GC 0645	Maize, raw (incl glucose & dextrose & isoglucose, incl oil, incl beer, incl germ, excl starch, excl flour)	RAC	0.01	0.99	0.01	10.40	0.10	1.55	0.02	13.27	0.13	2.19	0.02	0.41	0.00
CF 1255	Maize, flour (white flour and wholemeal flour)	PP	0.009	14.27	0.13	12.86	0.12	19.71	0.18	12.55	0.11	4.21	0.04	52.30	0.47
-	Maize starch	PP	0.001	NC	-	NC	-	0.19	0.00	7.13	0.01	NC	-	NC	-
GC 0647	Oats, raw (incl rolled)	RAC	0.535	7.50	4.01	6.26	3.35	0.15	0.08	4.87	2.61	3.16	1.69	2.98	1.59
CM 0649 (GC 0649)	Rice, husked, dry (incl oil, incl beverages, incl starch, excl polished, excl flour)	REP	0.55	2.43	1.34	1.62	0.89	0.58	0.32	1.69	0.93	NC	-	5.03	2.77
CM 1205	Rice polished, dry	PP	0.07	13.38	0.94	10.80	0.76	262.08	18.35	57.16	4.00	12.83	0.90	62.78	4.39
-	Rice flour	PP	0.08	0.98	0.08	0.38	0.03	0.72	0.06	0.10	0.01	0.23	0.02	0.10	0.01
GC 0650	Rye, raw (incl flour)	RAC	0.085	3.21	0.27	35.38	3.01	0.21	0.02	6.50	0.55	1.49	0.13	NC	-
GC 0651	Sorghum, raw (incl flour, incl beer)	RAC	0.2	NC	-	NC	-	1.44	0.29	1.15	0.23	NC	-	7.12	1.42
GC 0653	Triticale, raw (incl flour)	RAC	0.085	0.10	0.01	0.17	0.01	0.29	0.02	0.10	0.01	NC	-	NC	-
GC 0654	Wheat, raw (incl bulgur, incl fermented beverages, excl germ, excl wholemeal bread, excl white flour products, excl white bread)	RAC	0.085	0.37	0.03	0.10	0.01	0.10	0.01	0.10	0.01	NC	-	0.10	0.01
CF 1210	Wheat, germ	PP	0.1	0.97	0.10	0.10	0.01	0.10	0.01	0.10	0.01	NC	-	0.10	0.01
CF 0654	Wheat, bran	PP	0.25	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
CF 1212	Wheat, wholemeal flour	PP	0.082	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
CP 1212	Wheat, wholemeal bread	PP	0.054	0.10	0.01	0.10	0.01	0.10	0.01	0.10	0.01	0.10	0.01	0.10	0.01
CP 1211	Wheat, white bread	PP	0.01	1.30	0.01	0.46	0.00	0.10	0.00	0.22	0.00	2.44	0.02	0.77	0.01
CF 1211	Wheat, white flour (incl white flour products: starch, gluten, macaroni, pastry)	PP	0.014	199.38	2.79	193.50	2.71	106.30	1.49	185.31	2.59	171.11	2.40	132.37	1.85
TN 0085	Tree nuts, raw (incl processed)	RAC	0.01	8.52	0.09	8.94	0.09	15.09	0.15	9.60	0.10	14.57	0.15	26.26	0.26
SO 0090	Mustard seeds, raw (incl flour, incl oil)	RAC	0.09	0.30	0.03	0.48	0.04	0.33	0.03	0.63	0.06	1.03	0.09	0.40	0.04

FLUXAPYROXAD (256) International Estimated Daily Intake (IEDI) ADI = 0 - 0.02 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day G07 diet	G07 intake	G08 diet	Intake as µg//person/day G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
SO 0305	Olives for oil production, raw (incl oil)	RAC	0.09	17.78	1.60	48.67	4.38	0.10	0.01	22.50	2.03	14.09	1.27	2.46	0.22
SO 0495	Rape seed, raw	RAC	0.11	NC	-	NC	-	0.10	0.01	NC	-	NC	-	NC	-
OR 0495	Rape seed oil, edible	PP	0.025	12.52	0.31	7.63	0.19	3.00	0.08	6.01	0.15	NC	-	NC	-
SO 0691	Cotton seed, raw	RAC	0.07	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
OR 0691	Cotton seed oil, edible	PP	0.003	1.68	0.01	0.66	0.00	1.13	0.00	1.18	0.00	0.89	0.00	0.37	0.00
SO 0693	Linseed, raw (incl oil)	RAC	0.09	NC	-	NC	-	0.10	0.01	0.10	0.01	NC	-	NC	-
SO 0696	Palm kernels, raw (incl oil)	RAC	0.09	5.33	0.48	5.04	0.45	11.83	1.06	7.94	0.71	10.77	0.97	4.53	0.41
SO 0697	Peanuts, nutmeat, raw (incl roasted, incl oil, incl butter)	RAC	0.01	5.63	0.06	2.75	0.03	9.58	0.10	5.82	0.06	13.71	0.14	1.84	0.02
SO 0698	Poppy seed, raw (incl oil)	RAC	0.09	0.10	0.01	0.25	0.02	0.10	0.01	0.10	0.01	NC	-	NC	-
SO 0699	Safflower seed, raw (incl oil)	RAC	0.09	0.10	0.01	0.10	0.01	0.10	0.01	0.16	0.01	NC	-	NC	-
SO 0700	Sesame seed, raw (incl oil)	RAC	0.09	0.61	0.05	0.10	0.01	1.53	0.14	0.85	0.08	0.10	0.01	0.14	0.01
SO 0701	Shea nut (karite nuts), nutmeat, raw (incl butter)	RAC	0.09	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
SO 0702	Sunflower seed, raw	RAC	0.055	0.10	0.01	1.32	0.07	0.10	0.01	1.17	0.06	NC	-	0.10	0.01
OR 0702	Sunflower seed oil, edible	PP	0.004	9.50	0.04	11.37	0.05	0.49	0.00	5.15	0.02	2.63	0.01	2.80	0.01
-	Castor bean, raw (incl oil)	RAC	0.09	NC	-	NC	-	0.10	0.01	NC	-	NC	-	NC	-
-	Cucurbitaceae seeds, raw (melonseeds, pumpkin seeds, watermelon seeds)	RAC	0.09	NC	-	NC	-	0.10	0.01	NC	-	NC	-	NC	-
-	Oilseeds, NES, raw (including flour, incl myrtle wax, incl Japan wax): beech nut, Aleurites moluccana; Carapa guineensis; Croton tiglium; Bassia latifolia; Guizotia abyssinia; Licania rigida; Perilla frutescens; Jatropha curcas; Shorea robusta; Pongamia glabra; Astrocaryum spp., as well as tea seeds, grape seed and tomato seeds for oil extraction	RAC	0.09	0.10	0.01	0.10	0.01	0.17	0.02	0.22	0.02	NC	-	0.32	0.03
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) -80% as muscle	RAC	0.02	112.02	2.24	120.71	2.41	63.46	1.27	88.99	1.78	96.24	1.92	41.02	0.82
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) - 20% as fat	RAC	0.047	28.01	1.32	30.18	1.42	15.86	0.75	22.25	1.05	24.06	1.13	10.25	0.48
MF 0100	Mammalian fats, raw, excl milk fats (incl rendered fats)	RAC	0.047	6.44	0.30	15.51	0.73	3.79	0.18	8.29	0.39	18.44	0.87	8.00	0.38
MO 0105	Edible offal (mammalian), raw	RAC	0.081	15.17	1.23	5.19	0.42	6.30	0.51	6.78	0.55	3.32	0.27	3.17	0.26
ML 0106	Milks, raw or skimmed (incl dairy products)	RAC	0.004	388.92	1.56	335.88	1.34	49.15	0.20	331.25	1.33	468.56	1.87	245.45	0.98
PM 0110	Poultry meat, raw (incl prepared) - 90% as muscle	RAC	0.02	66.38	1.33	48.47	0.97	21.58	0.43	78.41	1.57	48.04	0.96	76.01	1.52
PM 0110	Poultry meat, raw (incl prepared) - 10% as fat	RAC	0.021	7.38	0.15	5.39	0.11	2.40	0.05	8.71	0.18	5.34	0.11	8.45	0.18
PF 0111	Poultry fat, raw (incl rendered)	RAC	0.021	0.10	0.00	0.10	0.00	NC	-	0.10	0.00	0.71	0.01	NC	-
PO 0111	Poultry edible offal, raw (incl prepared)	RAC	0.021	0.33	0.01	0.72	0.02	0.27	0.01	0.35	0.01	0.80	0.02	NC	-
PE 0112	Eggs, raw, (incl dried)	RAC	0.006	25.84	0.16	29.53	0.18	28.05	0.17	33.19	0.20	36.44	0.22	8.89	0.05

FLUXAPYROXAD (256) International Estimated Daily Intake (IEDI) ADI = 0 - 0.02 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day G07 diet	Intake as µg//person/day G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
	Total intake (µg//person)=				160.6		155.1		232.3		170.9		165.9		64.1
	Bodyweight per region (kg bw) =				60		60		55		60		60		60
	ADI (µg//person)=				1200		1200		1100		1200		1200		1200
	%ADI=				13.4%		12.9%		21.1%		14.2%		13.8%		5.3%
	Rounded %ADI=				10%		10%		20%		10%		10%		5%

FLUXAPYROXAD (256) International Estimated Daily Intake (IEDI) ADI = 0 - 0.02 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day G13 diet	G13 intake	G14 diet	Intake = daily intake: µg//person G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
FC 0004	Oranges, sweet, sour, raw	RAC	0.01	1.18	0.01	1.11	0.01	14.28	0.14	0.10	0.00	1.08	0.01
JF 0004	Oranges, juice (single strength, incl. concentrated)	PP	0.00045	0.10	0.00	0.26	0.00	12.61	0.01	0.14	0.00	0.33	0.00
FP 0009	Pome fruit, raw (incl cider, excl apple juice)	RAC	0.3	68.85	20.66	10.93	3.28	70.82	21.25	189.78	56.93	19.56	5.87
JF 0226	Apple juice, single strength (incl. concentrated)	PP	0.05	0.10	0.01	0.10	0.01	7.19	0.36	0.10	0.01	NC	-
FS 0013	Cherries, raw	RAC	0.755	0.10	0.08	0.10	0.08	5.96	4.50	0.10	0.08	NC	-
FS 0014	Plums, raw (incl Chinese jujube)	RAC	0.44	0.10	0.04	0.10	0.04	15.56	6.85	0.10	0.04	NC	-
DF 0014	Plum, dried (prunes)	PP	1.23	0.10	0.12	0.10	0.12	0.37	0.46	0.10	0.12	NC	-
FS 2001	Peaches, nectarines, apricots, raw (incl dried apricots)	RAC	0.465	0.10	0.05	0.10	0.05	10.76	5.00	0.10	0.05	NC	-
FB 0018	Berries and other small fruits, raw, (incl processed), excl small fruit vine climbing (group 004D)	RAC	2.4	1.54	3.70	18.66	44.78	11.59	27.82	0.81	1.94	4.99	11.98
FB 0269	Grape, raw	RAC	0.47	0.14	0.07	0.36	0.17	15.22	7.15	0.10	0.05	0.10	0.05
-	Grape must	PP	0.11	0.10	0.01	0.10	0.01	0.11	0.01	0.10	0.01	0.19	0.02
DF 0269	Grape, dried (= currants, raisins and sultanas)	PP	2	0.10	0.20	0.13	0.26	1.06	2.12	0.10	0.20	0.10	0.20
JF 0269	Grape juice	PP	0.16	0.10	0.02	0.10	0.02	0.41	0.07	0.10	0.02	NC	-
-	Grape wine (incl vermouths)	PP	0.11	0.31	0.03	0.23	0.03	60.43	6.65	0.52	0.06	31.91	3.51
FI 0327	Banana, raw (incl plantains) (incl dried)	RAC	0.055	20.88	1.15	81.15	4.46	24.58	1.35	37.92	2.09	310.23	17.06
VA 0381	Garlic, raw	RAC	0.23	0.82	0.19	2.06	0.47	3.79	0.87	0.10	0.02	0.29	0.07
-	Onions, mature bulbs, dry	RAC	0.23	9.01	2.07	20.24	4.66	30.90	7.11	9.61	2.21	2.11	0.49
VB 0041	Cabbages, head, raw	RAC	0.04	3.82	0.15	2.99	0.12	49.16	1.97	0.10	0.00	NC	-
VB 0042	Flowerhead brassicas, raw	RAC	0.22	0.10	0.02	0.10	0.02	4.86	1.07	0.10	0.02	NC	-
VB 0402	Brussels sprouts, raw	RAC	0.22	0.88	0.19	0.69	0.15	2.89	0.64	0.10	0.02	NC	-

FLUXAPYROXAD (256) International Estimated Daily Intake (IEDI) ADI = 0 - 0.02 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day G13 diet	Intake = daily intake: µg//person G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
VB 0405	Kohlrabi, raw	RAC	0.22	0.12	0.03	0.10	0.02	1.81	0.40	0.10	0.02	NC	-
VC 0045	Fruiting vegetables, cucurbits, raw	RAC	0.0525	5.96	0.31	9.74	0.51	51.82	2.72	13.61	0.71	0.10	0.01
VO 0050	Fruiting vegetables other than cucurbits, raw, (incl processed commodities), excl tomato commodities, excl sweet corn commodities, excl mushroom commodities	RAC	0.07	20.58	1.44	31.41	2.20	37.56	2.63	1.79	0.13	NC	-
VO 0447	Sweet corn on the cob, raw (incl frozen, incl canned) (i.e. kernels plus cob without husks)	RAC	0.01	3.63	0.04	20.50	0.21	8.78	0.09	0.10	0.00	0.17	0.00
VO 0448	Tomato, raw	RAC	0.07	12.99	0.91	4.79	0.34	58.40	4.09	0.92	0.06	0.10	0.01
-	Tomato, canned (& peeled)	PP	0.013	0.10	0.00	0.10	0.00	2.42	0.03	0.10	0.00	NC	-
-	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	0.051	0.58	0.03	0.22	0.01	2.21	0.11	0.24	0.01	3.10	0.16
JF 0448	Tomato, juice (single strength, incl concentrated)	PP	0.013	0.10	0.00	0.10	0.00	0.42	0.01	0.10	0.00	0.10	0.00
VL 0054	Brassica leafy vegetables, raw	RAC	1.7	1.50	2.55	1.17	1.99	NC	-	0.10	0.17	NC	-
VL 0482	Lettuce, head, raw	RAC	0.51	NC	-	NC	-	NC	-	NC	-	NC	-
VL 0483	Lettuce, leaf, raw	RAC	0.51	0.29	0.15	0.10	0.05	6.71	3.42	0.10	0.05	NC	-
VL 0494	Radish leaves, raw	RAC	1.2	0.44	0.53	0.32	0.38	NC	-	0.30	0.36	0.59	0.71
VL 0502	Spinach, raw	RAC	6.8	0.17	1.16	0.10	0.68	0.81	5.51	0.10	0.68	NC	-
VP 0061	Beans, green, with pods, raw: beans except broad bean & soya bean (i.e. immature seeds + pods) (Phaseolus spp)	RAC	0.65	NC	-	NC	-	NC	-	NC	-	NC	-
VP 0062	Beans, green, without pods, raw: beans except broad bean & soya bean (i.e. immature seeds only) (Phaseolus spp..)	RAC	0.03	0.30	0.01	3.13	0.09	4.11	0.12	0.10	0.00	NC	-
VP 0063	Peas green, with pods, raw (i.e. immature seeds + pods) (Pisum spp)	RAC	0.65	NC	-	NC	-	NC	-	NC	-	NC	-
VP 0064	Peas, green, without pods, raw (i.e. immature seeds only) (Pisum spp)	RAC	0.03	0.21	0.01	0.10	0.00	5.51	0.17	0.10	0.00	NC	-
VP 0541	Soya bean, green, without pods, raw (i.e. immature seeds only) (Glycine max)	RAC	0.01	NC	-	NC	-	NC	-	NC	-	NC	-
VD 0071	Beans, dry, raw (Phaseolus spp)	RAC	0.04	7.11	0.28	2.33	0.09	3.76	0.15	44.70	1.79	3.27	0.13
VD 0072	Peas, dry, raw (Pisum spp, Vigna spp): garden peas & field peas & cow peas	RAC	0.04	14.30	0.57	3.51	0.14	3.52	0.14	7.89	0.32	0.74	0.03
VD 0524	Chick-pea, dry, raw (Cicer arietinum)	RAC	0.04	1.09	0.04	1.56	0.06	0.33	0.01	0.18	0.01	0.47	0.02
VD 0533	Lentil, dry, raw (Ervum lens)	RAC	0.04	0.67	0.03	7.26	0.29	0.37	0.01	0.10	0.00	NC	-
VD 0541	Soya bean, dry, raw (Glycine soja)	RAC	0.01	2.76	0.03	0.10	0.00	0.33	0.00	3.16	0.03	NC	-
-	Soya paste (i.e. miso)	PP	0.005	NC	-	NC	-	NC	-	NC	-	NC	-
-	Soya curd (i.e. tofu)	PP	0.005	NC	-	NC	-	NC	-	NC	-	NC	-
OR 0541	Soya oil, refined	PP	0.055	2.32	0.13	2.54	0.14	18.70	1.03	2.51	0.14	6.29	0.35

FLUXAPYROXAD (256) International Estimated Daily Intake (IEDI) ADI = 0 - 0.02 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day			Intake = daily intake: µg//person						
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
-	Soya sauce	PP	0.005	0.10	0.00	0.13	0.00	0.17	0.00	0.10	0.00	0.56	0.00
-	Soya flour	PP	0.005	0.11	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00
VR 0494	Radish roots, raw	RAC	0.05	3.96	0.20	2.86	0.14	3.30	0.17	2.67	0.13	5.34	0.27
VR 0577	Carrots, raw	RAC	0.06	2.07	0.12	3.00	0.18	25.29	1.52	0.10	0.01	NC	-
VR 0588	Parsnip, raw	RAC	0.06	1.02	0.06	0.74	0.04	3.50	0.21	0.69	0.04	1.37	0.08
VR 0589	Potato, raw (incl flour, incl frozen, incl starch, incl tapioca)	RAC	0.01	23.96	0.24	13.56	0.14	213.41	2.13	104.35	1.04	8.56	0.09
VR 0596	Sµg/ar beet, raw	RAC	0.04	0.10	0.00	NC	-	NC	-	NC	-	NC	-
-	Sµg/ar beet, sµg/ar	PP	0.007	0.56	0.00	0.24	0.00	NC	-	NC	-	5.13	0.04
VS 0624	Celery	RAC	1.6	3.66	5.86	2.65	4.24	4.84	7.74	2.47	3.95	4.94	7.90
GC 0640	Barley, raw	RAC	0.535	0.10	0.05	0.10	0.05	0.16	0.09	NC	-	NC	-
-	Barley, pot&pearled	PP	0.086	5.46	0.47	0.10	0.01	1.44	0.12	0.10	0.01	NC	-
-	Barley, flour (white flour and wholemeal flour)	PP	0.08	0.10	0.01	NC	-	0.32	0.03	0.10	0.01	NC	-
-	Barley beer	PP	0.011	16.25	0.18	11.36	0.12	225.21	2.48	19.49	0.21	52.17	0.57
-	Barley Malt	PP	0.0054	0.10	0.00	0.11	0.00	0.67	0.00	0.10	0.00	4.61	0.02
-	Barley Malt Extract	PP	0.0054	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00
GC 0645	Maize, raw (incl glucose & dextrose & isoglucose, incl oil, incl beer, incl germ, excl starch, excl flour)	RAC	0.01	0.88	0.01	0.58	0.01	4.07	0.04	7.96	0.08	NC	-
CF 1255	Maize, flour (white flour and wholemeal flour)	PP	0.009	94.34	0.85	8.09	0.07	28.03	0.25	55.94	0.50	28.07	0.25
-	Maize starch	PP	0.001	0.10	0.00	0.10	0.00	NC	-	NC	-	NC	-
GC 0647	Oats, raw (incl rolled)	RAC	0.535	0.37	0.20	0.10	0.05	2.79	1.49	0.10	0.05	NC	-
CM 0649 (GC 0649)	Rice, husked, dry (incl oil, incl beverages, incl starch, excl polished, excl flour)	REP	0.55	13.54	7.45	4.12	2.27	1.96	1.08	0.10	0.06	8.84	4.86
CM 1205	Rice polished, dry	PP	0.07	30.20	2.11	218.34	15.28	12.77	0.89	15.24	1.07	51.35	3.59
-	Rice flour	PP	0.08	0.10	0.01	0.13	0.01	0.16	0.01	0.10	0.01	NC	-
GC 0650	Rye, raw (incl flour)	RAC	0.085	0.10	0.01	0.10	0.01	13.95	1.19	0.10	0.01	0.88	0.07
GC 0651	Sorghum, raw (incl flour, incl beer)	RAC	0.2	89.16	17.83	2.02	0.40	NC	-	35.38	7.08	NC	-
GC 0653	Triticale, raw (incl flour)	RAC	0.085	0.10	0.01	NC	-	NC	-	NC	-	NC	-
GC 0654	Wheat, raw (incl bulgur, incl fermented beverages, excl germ, excl wholemeal bread, excl white flour products, excl white bread)	RAC	0.085	0.10	0.01	0.10	0.01	0.10	0.01	0.10	0.01	0.97	0.08
CF 1210	Wheat, germ	PP	0.1	0.10	0.01	0.10	0.01	0.10	0.01	0.10	0.01	NC	-
CF 0654	Wheat, bran	PP	0.25	NC	-	NC	-	NC	-	NC	-	NC	-
CF 1212	Wheat, wholemeal flour	PP	0.082	NC	-	NC	-	NC	-	NC	-	NC	-
CP 1212	Wheat, wholemeal bread	PP	0.054	0.10	0.01	0.10	0.01	0.10	0.01	0.10	0.01	0.10	0.01

Annex 3

FLUXAPYROXAD (256) International Estimated Daily Intake (IEDI) ADI = 0 - 0.02 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day G13 diet	Intake = daily intake: µg//person G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
CP 1211	Wheat, white bread	PP	0.01	0.43	0.00	0.41	0.00	1.56	0.02	0.11	0.00	0.10	0.00
CF 1211	Wheat, white flour (incl white flour products: starch, gluten, macaroni, pastry)	PP	0.014	45.21	0.63	87.37	1.22	215.61	3.02	20.42	0.29	103.67	1.45
TN 0085	Tree nuts, raw (incl processed)	RAC	0.01	4.39	0.04	135.53	1.36	6.11	0.06	0.72	0.01	317.74	3.18
SO 0090	Mustard seeds, raw (incl flour, incl oil)	RAC	0.09	0.10	0.01	0.19	0.02	0.32	0.03	0.10	0.01	0.10	0.01
SO 0305	Olives for oil production, raw (incl oil)	RAC	0.09	0.18	0.02	0.11	0.01	11.00	0.99	0.10	0.01	0.49	0.04
SO 0495	Rape seed, raw	RAC	0.11	NC	-	0.10	0.01	NC	-	NC	-	NC	-
OR 0495	Rape seed oil, edible	PP	0.025	0.10	0.00	0.10	0.00	4.62	0.12	0.10	0.00	NC	-
SO 0691	Cotton seed, raw	RAC	0.07	NC	-	NC	-	NC	-	NC	-	NC	-
OR 0691	Cotton seed oil, edible	PP	0.003	1.28	0.00	0.10	0.00	0.45	0.00	0.42	0.00	0.15	0.00
SO 0693	Linseed, raw (incl oil)	RAC	0.09	0.10	0.01	NC	-	0.10	0.01	NC	-	NC	-
SO 0696	Palm kernels, raw (incl oil)	RAC	0.09	60.84	5.48	12.77	1.15	5.41	0.49	0.57	0.05	53.45	4.81
SO 0697	Peanuts, nutmeat, raw (incl roasted, incl oil, incl butter)	RAC	0.01	18.82	0.19	0.57	0.01	2.28	0.02	6.90	0.07	0.53	0.01
SO 0698	Poppy seed, raw (incl oil)	RAC	0.09	0.10	0.01	0.10	0.01	0.11	0.01	NC	-	NC	-
SO 0699	Safflower seed, raw (incl oil)	RAC	0.09	0.10	0.01	NC	-	NC	-	NC	-	NC	-
SO 0700	Sesame seed, raw (incl oil)	RAC	0.09	2.34	0.21	0.66	0.06	0.26	0.02	9.84	0.89	NC	-
SO 0701	Shea nut (karite nuts), nutmeat, raw (incl butter)	RAC	0.09	0.95	0.09	NC	-	NC	-	NC	-	NC	-
SO 0702	Sunflower seed, raw	RAC	0.055	0.10	0.01	0.10	0.01	0.10	0.01	2.23	0.12	NC	-
OR 0702	Sunflower seed oil, edible	PP	0.004	0.37	0.00	0.10	0.00	12.98	0.05	4.01	0.02	0.20	0.00
-	Castor bean, raw (incl oil)	RAC	0.09	NC	-	NC	-	NC	-	NC	-	NC	-
-	Cucurbitaceae seeds, raw (melonseeds, pumpkin seeds, watermelon seeds)	RAC	0.09	1.81	0.16	NC	-	0.10	0.01	NC	-	NC	-
-	Oilseeds, NES, raw (including flour, incl myrtle wax, incl Japan wax): beech nut, Aleurites moluccana; Carapa guineensis; Croton tiglium; Bassia latifolia; Guizotia abyssinia; Licania rigida; Perilla frutescens; Jatropha curcas; Shorea robusta; Pongamia glabra; Astrocaryum spp., as well as tea seeds, grape seed and tomato seeds for oil extraction	RAC	0.09	1.00	0.09	0.42	0.04	NC	-	2.47	0.22	2.43	0.22
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) -80% as muscle	RAC	0.02	23.34	0.47	40.71	0.81	97.15	1.94	18.06	0.36	57.71	1.15
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) - 20% as fat	RAC	0.047	5.84	0.27	10.18	0.48	24.29	1.14	4.52	0.21	14.43	0.68
MF 0100	Mammalian fats, raw, excl milk fats (incl rendered fats)	RAC	0.047	1.05	0.05	1.14	0.05	18.69	0.88	0.94	0.04	3.12	0.15
MO 0105	Edible offal (mammalian), raw	RAC	0.081	4.64	0.38	1.97	0.16	10.01	0.81	3.27	0.26	3.98	0.32
ML 0106	Milks, raw or skimmed (incl dairy products)	RAC	0.004	108.75	0.44	70.31	0.28	436.11	1.74	61.55	0.25	79.09	0.32

FLUXAPYROXAD (256) International Estimated Daily Intake (IEDI) ADI = 0 - 0.02 mg/kg bw

			STMR	Diets: g/person/day			Intake = daily intake: µg//person						
Codex Code	Commodity description	Expr as	mg/kg	G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
PM 0110	Poultry meat, raw (incl prepared) - 90% as muscle	RAC	0.02	3.53	0.07	10.83	0.22	51.36	1.03	4.53	0.09	50.00	1.00
PM 0110	Poultry meat, raw (incl prepared) - 10% as fat	RAC	0.021	0.39	0.01	1.20	0.03	5.71	0.12	0.50	0.01	5.56	0.12
PF 0111	Poultry fat, raw (incl rendered)	RAC	0.021	NC	-	NC	-	0.32	0.01	NC	-	NC	-
PO 0111	Poultry edible offal, raw (incl prepared)	RAC	0.021	0.10	0.00	0.70	0.01	0.97	0.02	0.10	0.00	NC	-
PE 0112	Eggs, raw, (incl dried)	RAC	0.006	3.84	0.02	4.41	0.03	27.25	0.16	1.13	0.01	7.39	0.04
	Total intake (µg//person)=				81.4		95.0		148.2		85.6		72.0
	Bodyweight per region (kg bw) =				60		60		60		60		60
	ADI (µg//person)=				1200		1200		1200		1200		1200
	%ADI=				6.8%		7.9%		12.3%		7.1%		6.0%
	Rounded %ADI=				7%		8%		10%		7%		6%

Annex 3

IMAZAPIC (266) International Estimated Daily Intake (IEDI) ADI = 0 - 0.7 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
				Diets as g/person/day			Intake as µg//person/day								
GC 0640	Barley, raw (incl malt extract, incl flour & grits, incl beer, incl malt, excl pot&pearled)	RAC	0.13	8.95	1.16	19.87	2.58	5.01	0.65	3.04	0.40	8.73	1.13	4.00	0.52
MO 0105	Edible offal (mammalian), raw	RAC	0.287	4.79	1.37	9.68	2.78	2.97	0.85	5.49	1.58	3.84	1.10	5.03	1.44
PE 0112	Eggs, raw, (incl dried)	RAC	0	7.84	0.00	23.08	0.00	2.88	0.00	14.89	0.00	9.81	0.00	14.83	0.00
GC 0645	Maize, raw (incl glucose & dextrose & isoglucose, incl flour, incl oil, incl beer, incl germ, incl starch)	RAC	0.01	29.81	0.30	44.77	0.45	108.95	1.09	52.37	0.52	60.28	0.60	75.69	0.76
MF 0100	Mammalian fats, raw, excl milk fats (incl rendered fats)	RAC	0.05	3.29	0.16	6.14	0.31	0.82	0.04	1.57	0.08	2.23	0.11	1.07	0.05
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat)	RAC	0.05	31.20	1.56	72.44	3.62	20.88	1.04	47.98	2.40	33.08	1.65	36.25	1.81
ML 0106	Milks, raw or skimmed (incl dairy products)	RAC	0.019	289.65	5.50	485.88	9.23	26.92	0.51	239.03	4.54	199.91	3.80	180.53	3.43
SO 0697	Peanuts, nutmeat, raw (incl roasted, incl oil, incl butter)	RAC	0	1.30	0.00	1.23	0.00	12.62	0.00	2.87	0.00	6.59	0.00	2.67	0.00
PO 0111	Poultry edible offal, raw (incl prepared)	RAC	0	0.12	0.00	0.12	0.00	0.11	0.00	5.37	0.00	0.24	0.00	0.10	0.00
PF 0111	Poultry fat, raw (incl rendered)	RAC	0	0.10	0.00	0.10	0.00	NC	-	0.10	0.00	0.10	0.00	0.10	0.00
PM 0110	Poultry meat, raw (incl prepared)	RAC	0	14.63	0.00	29.76	0.00	8.04	0.00	129.68	0.00	25.04	0.00	35.66	0.00
SO 0495	Rape seed, raw (incl oil)	RAC	0	0.93	0.00	1.16	0.00	0.49	0.00	2.53	0.00	9.32	0.00	2.02	0.00
CM 0649 (GC 0649)	Rice, husked, dry (incl polished, incl flour, incl starch, incl oil, incl beverages)	REP	0	45.40	0.00	14.99	0.00	84.88	0.00	111.73	0.00	194.75	0.00	93.12	0.00
VD 0541	Soya bean, dry, raw (incl flour, incl paste, incl curd, incl sauce, excl oil)	RAC	0.07	0.63	0.04	1.09	0.08	0.40	0.03	1.40	0.10	1.68	0.12	0.48	0.03
OR 0541	Soya oil, refined	PP	0.01	12.99	0.13	10.43	0.10	3.63	0.04	13.10	0.13	10.70	0.11	13.10	0.13
GS 0659	Sµg/ar cane, raw (incl sµg/ar, incl molasses)	RAC	0	99.68	0.00	86.27	0.00	31.38	0.00	80.36	0.00	84.18	0.00	99.10	0.00
GC 0654	Wheat, raw (incl bulgur, incl fermented beverages, incl germ, incl wholemeal bread, incl white flour products, incl white bread)	RAC	0	381.15	0.00	341.55	0.00	38.35	0.00	281.89	0.00	172.83	0.00	434.07	0.00
	Total intake (µg//person)=				10.2		19.2		4.3		9.7		8.6		8.2
	Bodyweight per region (kg bw) =				60		60		60		60		60		60
	ADI (µg//person)=				42000		42000		42000		42000		42000		42000
	%ADI=				0.0%		0.0%		0.0%		0.0%		0.0%		0.0%
	Rounded %ADI=				0%		0%		0%		0%		0%		0%

IMAZAPIC (266) International Estimated Daily Intake (IEDI) ADI = 0 - 0.7 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day G07 diet	G07 intake	G08 diet	Intake as µg//person/day G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
GC 0640	Barley, raw (incl malt extract, incl flour & grits, incl beer, incl malt, excl pot&pearled)	RAC	0.13	35.31	4.59	49.50	6.44	8.87	1.15	34.39	4.47	46.12	6.00	15.92	2.07
MO 0105	Edible offal (mammalian), raw	RAC	0.287	15.17	4.35	5.19	1.49	6.30	1.81	6.78	1.95	3.32	0.95	3.17	0.91
PE 0112	Eggs, raw, (incl dried)	RAC	0	25.84	0.00	29.53	0.00	28.05	0.00	33.19	0.00	36.44	0.00	8.89	0.00
GC 0645	Maize, raw (incl glucose & dextrose & isoglucose, incl flour, incl oil, incl beer, incl germ, incl starch)	RAC	0.01	18.51	0.19	26.18	0.26	26.04	0.26	39.99	0.40	7.36	0.07	64.58	0.65
MF 0100	Mammalian fats, raw, excl milk fats (incl rendered fats)	RAC	0.05	6.44	0.32	15.51	0.78	3.79	0.19	8.29	0.41	18.44	0.92	8.00	0.40
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat)	RAC	0.05	140.03	7.00	150.89	7.54	79.32	3.97	111.24	5.56	120.30	6.02	51.27	2.56
ML 0106	Milks, raw or skimmed (incl dairy products)	RAC	0.019	388.92	7.39	335.88	6.38	49.15	0.93	331.25	6.29	468.56	8.90	245.45	4.66
SO 0697	Peanuts, nutmeat, raw (incl roasted, incl oil, incl butter)	RAC	0	5.63	0.00	2.75	0.00	9.58	0.00	5.82	0.00	13.71	0.00	1.84	0.00
PO 0111	Poultry edible offal, raw (incl prepared)	RAC	0	0.33	0.00	0.72	0.00	0.27	0.00	0.35	0.00	0.80	0.00	NC	-
PF 0111	Poultry fat, raw (incl rendered)	RAC	0	0.10	0.00	0.10	0.00	NC	-	0.10	0.00	0.71	0.00	NC	-
PM 0110	Poultry meat, raw (incl prepared)	RAC	0	73.76	0.00	53.86	0.00	23.98	0.00	87.12	0.00	53.38	0.00	84.45	0.00
SO 0495	Rape seed, raw (incl oil)	RAC	0	32.68	0.00	19.91	0.00	7.83	0.00	15.69	0.00	NC	-	NC	-
CM 0649 (GC 0649)	Rice, husked, dry (incl polished, incl flour, incl starch, incl oil, incl beverages)	REP	0	20.96	0.00	16.04	0.00	339.67	0.00	75.51	0.00	16.86	0.00	86.13	0.00
VD 0541	Soya bean, dry, raw (incl flour, incl paste, incl curd, incl sauce, excl oil)	RAC	0.07	0.47	0.03	0.77	0.05	9.12	0.64	8.05	0.56	0.10	0.01	6.06	0.42
OR 0541	Soya oil, refined	PP	0.01	19.06	0.19	21.06	0.21	5.94	0.06	33.78	0.34	40.05	0.40	13.39	0.13
GS 0659	Sµg/ar cane, raw (incl sµg/ar, incl molasses)	RAC	0	92.24	0.00	95.72	0.00	28.47	0.00	77.39	0.00	117.73	0.00	103.90	0.00
GC 0654	Wheat, raw (incl bulgur, incl fermented beverages, incl germ, incl wholemeal bread, incl white flour products, incl white bread)	RAC	0	253.07	0.00	244.73	0.00	134.44	0.00	235.10	0.00	216.39	0.00	167.40	0.00
	Total intake (µg//person)=				24.1		23.2		9.0		20.0		23.3		11.8
	Bodyweight per region (kg bw) =				60		60		55		60		60		60
	ADI (µg//person)=				42000		42000		38500		42000		42000		42000
	%ADI=				0.1%		0.1%		0.0%		0.0%		0.1%		0.0%
	Rounded %ADI=				0%		0%		0%		0%		0%		0%

Annex 3

IMAZAPIC (266) International Estimated Daily Intake (IEDI) ADI = 0 - 0.7 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
				Diets: g/person/day			Intake = daily intake: µg//person						
GC 0640	Barley, raw (incl malt extract, incl flour & grits, incl beer, incl malt, excl pot&pearled)	RAC	0.13	3.19	0.41	2.31	0.30	44.50	5.79	3.72	0.48	16.26	2.11
MO 0105	Edible offal (mammalian), raw	RAC	0.287	4.64	1.33	1.97	0.57	10.01	2.87	3.27	0.94	3.98	1.14
PE 0112	Eggs, raw, (incl dried)	RAC	0	3.84	0.00	4.41	0.00	27.25	0.00	1.13	0.00	7.39	0.00
GC 0645	Maize, raw (incl glucose & dextrose & isoglucose, incl flour, incl oil, incl beer, incl germ, incl starch)	RAC	0.01	116.66	1.17	10.52	0.11	38.46	0.38	76.60	0.77	34.44	0.34
MF 0100	Mammalian fats, raw, excl milk fats (incl rendered fats)	RAC	0.05	1.05	0.05	1.14	0.06	18.69	0.93	0.94	0.05	3.12	0.16
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat)	RAC	0.05	29.18	1.46	50.89	2.54	121.44	6.07	22.58	1.13	72.14	3.61
ML 0106	Milks, raw or skimmed (incl dairy products)	RAC	0.019	108.75	2.07	70.31	1.34	436.11	8.29	61.55	1.17	79.09	1.50
SO 0697	Peanuts, nutmeat, raw (incl roasted, incl oil, incl butter)	RAC	0	18.82	0.00	0.57	0.00	2.28	0.00	6.90	0.00	0.53	0.00
PO 0111	Poultry edible offal, raw (incl prepared)	RAC	0	0.10	0.00	0.70	0.00	0.97	0.00	0.10	0.00	NC	-
PF 0111	Poultry fat, raw (incl rendered)	RAC	0	NC	-	NC	-	0.32	0.00	NC	-	NC	-
PM 0110	Poultry meat, raw (incl prepared)	RAC	0	3.92	0.00	12.03	0.00	57.07	0.00	5.03	0.00	55.56	0.00
SO 0495	Rape seed, raw (incl oil)	RAC	0	0.19	0.00	0.10	0.00	12.07	0.00	0.10	0.00	NC	-
CM 0649 (GC 0649)	Rice, husked, dry (incl polished, incl flour, incl starch, incl oil, incl beverages)	REP	0	52.55	0.00	286.02	0.00	18.64	0.00	19.67	0.00	75.09	0.00
VD 0541	Soya bean, dry, raw (incl flour, incl paste, incl curd, incl sauce, excl oil)	RAC	0.07	2.89	0.20	0.21	0.01	0.48	0.03	3.16	0.22	0.26	0.02
OR 0541	Soya oil, refined	PP	0.01	2.32	0.02	2.54	0.03	18.70	0.19	2.51	0.03	6.29	0.06
GS 0659	Sµg/ar cane, raw (incl sµg/ar, incl molasses)	RAC	0	33.75	0.00	106.29	0.00	78.09	0.00	29.09	0.00	45.70	0.00
GC 0654	Wheat, raw (incl bulgur, incl fermented beverages, incl germ, incl wholemeal bread, incl white flour products, incl white bread)	RAC	0	57.20	0.00	110.47	0.00	272.62	0.00	25.82	0.00	132.04	0.00
	Total intake (µg//person)=				6.7		4.9		24.6		4.8		8.9
	Bodyweight per region (kg bw) =				60		60		60		60		60
	ADI (µg//person)=				42000		42000		42000		42000		42000
	%ADI=				0.0%		0.0%		0.1%		0.0%		0.0%
	Rounded %ADI=				0%		0%		0%		0%		0%

IMAZAPYR (267) International Estimated Daily Intake (IEDI) ADI = 0 - 3 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
				Diets as g/person/day	Intake as µg//person/day										
MO 0105	Edible offal (mammalian), raw	RAC	0.041	4.79	0.20	9.68	0.40	2.97	0.12	5.49	0.23	3.84	0.16	5.03	0.21
PE 0112	Eggs, raw, (incl dried)	RAC	0	7.84	0.00	23.08	0.00	2.88	0.00	14.89	0.00	9.81	0.00	14.83	0.00
VD 0533	Lentil, dry, raw (Ervum lens)	RAC	0.07	2.12	0.15	0.10	0.01	0.10	0.01	3.21	0.22	1.60	0.11	4.90	0.34
OR 0645	Maize oil	PP	0.025	0.96	0.02	0.85	0.02	0.29	0.01	5.42	0.14	0.42	0.01	2.10	0.05
GC 0645	Maize, raw (incl glucose & dextrose & isoglucose, incl flour, incl beer, incl germ, incl starch, excl oil)	RAC	0.05	28.85	1.44	43.93	2.20	108.66	5.43	46.94	2.35	59.87	2.99	73.58	3.68
MF 0100	Mammalian fats, raw, excl milk fats (incl rendered fats)	RAC	0	3.29	0.00	6.14	0.00	0.82	0.00	1.57	0.00	2.23	0.00	1.07	0.00
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat)	RAC	0	31.20	0.00	72.44	0.00	20.88	0.00	47.98	0.00	33.08	0.00	36.25	0.00
ML 0106	Milks, raw or skimmed (incl dairy products)	RAC	0	289.65	0.00	485.88	0.00	26.92	0.00	239.03	0.00	199.91	0.00	180.53	0.00
PO 0111	Poultry edible offal, raw (incl prepared)	RAC	0	0.12	0.00	0.12	0.00	0.11	0.00	5.37	0.00	0.24	0.00	0.10	0.00
PF 0111	Poultry fat, raw (incl rendered)	RAC	0	0.10	0.00	0.10	0.00	NC	-	0.10	0.00	0.10	0.00	0.10	0.00
PM 0110	Poultry meat, raw (incl prepared)	RAC	0	14.63	0.00	29.76	0.00	8.04	0.00	129.68	0.00	25.04	0.00	35.66	0.00
SO 0495	Rape seed, raw (incl oil)	RAC	0	0.93	0.00	1.16	0.00	0.49	0.00	2.53	0.00	9.32	0.00	2.02	0.00
VD 0541	Soya bean, dry, raw (incl flour, incl paste, incl curd, incl sauce, excl oil)	RAC	0.69	0.63	0.43	1.09	0.75	0.40	0.28	1.40	0.97	1.68	1.16	0.48	0.33
OR 0541	Soya oil, refined	PP	0	12.99	0.00	10.43	0.00	3.63	0.00	13.10	0.00	10.70	0.00	13.10	0.00
SO 0702	Sunflower seed, raw (incl oil)	RAC	0.01	7.40	0.07	35.86	0.36	1.15	0.01	8.76	0.09	5.45	0.05	13.62	0.14
GC 0654	Wheat, raw (incl bulgur, incl fermented beverages, incl germ, incl wholemeal bread, incl white flour products, incl white bread)	RAC	0	381.15	0.00	341.55	0.00	38.35	0.00	281.89	0.00	172.83	0.00	434.07	0.00
	Total intake (µg//person)=				2.3		3.7		5.9		4.0		4.5		4.7
	Bodyweight per region (kg bw) =				60		60		60		60		60		60
	ADI (µg//person)=				180000		180000		180000		180000		180000		180000
	%ADI=				0.0%		0.0%		0.0%		0.0%		0.0%		0.0%
	Rounded %ADI=				0%		0%		0%		0%		0%		0%

IMAZAPYR (267) International Estimated Daily Intake (IEDI) ADI = 0 - 3 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day		Intake as µg//person/day									
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
MO 0105	Edible offal (mammalian), raw	RAC	0.041	15.17	0.62	5.19	0.21	6.30	0.26	6.78	0.28	3.32	0.14	3.17	0.13
PE 0112	Eggs, raw, (incl dried)	RAC	0	25.84	0.00	29.53	0.00	28.05	0.00	33.19	0.00	36.44	0.00	8.89	0.00
VD 0533	Lentil, dry, raw (Ervum lens)	RAC	0.07	0.95	0.07	1.18	0.08	0.40	0.03	0.96	0.07	0.71	0.05	1.28	0.09
OR 0645	Maize oil	PP	0.025	0.90	0.02	0.47	0.01	0.15	0.00	3.01	0.08	1.86	0.05	0.36	0.01
GC 0645	Maize, raw (incl glucose & dextrose & isoglucose, incl flour, incl beer, incl germ, incl starch, excl oil)	RAC	0.05	17.61	0.88	25.71	1.29	25.89	1.29	36.98	1.85	5.49	0.27	64.23	3.21
MF 0100	Mammalian fats, raw, excl milk fats (incl rendered fats)	RAC	0	6.44	0.00	15.51	0.00	3.79	0.00	8.29	0.00	18.44	0.00	8.00	0.00
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat)	RAC	0	140.03	0.00	150.89	0.00	79.32	0.00	111.24	0.00	120.30	0.00	51.27	0.00
ML 0106	Milks, raw or skimmed (incl dairy products)	RAC	0	388.92	0.00	335.88	0.00	49.15	0.00	331.25	0.00	468.56	0.00	245.45	0.00
PO 0111	Poultry edible offal, raw (incl prepared)	RAC	0	0.33	0.00	0.72	0.00	0.27	0.00	0.35	0.00	0.80	0.00	NC	-
PF 0111	Poultry fat, raw (incl rendered)	RAC	0	0.10	0.00	0.10	0.00	NC	-	0.10	0.00	0.71	0.00	NC	-
PM 0110	Poultry meat, raw (incl prepared)	RAC	0	73.76	0.00	53.86	0.00	23.98	0.00	87.12	0.00	53.38	0.00	84.45	0.00
SO 0495	Rape seed, raw (incl oil)	RAC	0	32.68	0.00	19.91	0.00	7.83	0.00	15.69	0.00	NC	-	NC	-
VD 0541	Soya bean, dry, raw (incl flour, incl paste, incl curd, incl sauce, excl oil)	RAC	0.69	0.47	0.32	0.77	0.53	9.12	6.29	8.05	5.55	0.10	0.07	6.06	4.18
OR 0541	Soya oil, refined	PP	0	19.06	0.00	21.06	0.00	5.94	0.00	33.78	0.00	40.05	0.00	13.39	0.00
SO 0702	Sunflower seed, raw (incl oil)	RAC	0.01	23.40	0.23	29.33	0.29	1.24	0.01	13.85	0.14	6.48	0.06	6.91	0.07
GC 0654	Wheat, raw (incl bulgur, incl fermented beverages, incl germ, incl wholemeal bread, incl white flour products, incl white bread)	RAC	0	253.07	0.00	244.73	0.00	134.44	0.00	235.10	0.00	216.39	0.00	167.40	0.00
	Total intake (µg//person)=				2.1		2.4		7.9		8.0		0.6		7.7
	Bodyweight per region (kg bw) =				60		60		55		60		60		60
	ADI (µg//person)=				180000		180000		165000		180000		180000		180000
	%ADI=				0.0%		0.0%		0.0%		0.0%		0.0%		0.0%
	Rounded %ADI=				0%		0%		0%		0%		0%		0%

IMAZAPYR (267) International Estimated Daily Intake (IEDI) ADI = 0 - 3 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day	Intake = daily intake: µg//person								
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
MO 0105	Edible offal (mammalian), raw	RAC	0.041	4.64	0.19	1.97	0.08	10.01	0.41	3.27	0.13	3.98	0.16
PE 0112	Eggs, raw, (incl dried)	RAC	0	3.84	0.00	4.41	0.00	27.25	0.00	1.13	0.00	7.39	0.00
VD 0533	Lentil, dry, raw (Ervum lens)	RAC	0.07	0.67	0.05	7.26	0.51	0.37	0.03	0.10	0.01	NC	-
OR 0645	Maize oil	PP	0.025	0.33	0.01	0.10	0.00	0.81	0.02	0.10	0.00	NC	-
GC 0645	Maize, raw (incl glucose & dextrose & isoglucose, incl flour, incl beer, incl germ, incl starch, excl oil)	RAC	0.05	116.33	5.82	10.45	0.52	37.65	1.88	76.60	3.83	34.44	1.72
MF 0100	Mammalian fats, raw, excl milk fats (incl rendered fats)	RAC	0	1.05	0.00	1.14	0.00	18.69	0.00	0.94	0.00	3.12	0.00
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat)	RAC	0	29.18	0.00	50.89	0.00	121.44	0.00	22.58	0.00	72.14	0.00
ML 0106	Milks, raw or skimmed (incl dairy products)	RAC	0	108.75	0.00	70.31	0.00	436.11	0.00	61.55	0.00	79.09	0.00
PO 0111	Poultry edible offal, raw (incl prepared)	RAC	0	0.10	0.00	0.70	0.00	0.97	0.00	0.10	0.00	NC	-
PF 0111	Poultry fat, raw (incl rendered)	RAC	0	NC	-	NC	-	0.32	0.00	NC	-	NC	-
PM 0110	Poultry meat, raw (incl prepared)	RAC	0	3.92	0.00	12.03	0.00	57.07	0.00	5.03	0.00	55.56	0.00
SO 0495	Rape seed, raw (incl oil)	RAC	0	0.19	0.00	0.10	0.00	12.07	0.00	0.10	0.00	NC	-
VD 0541	Soya bean, dry, raw (incl flour, incl paste, incl curd, incl sauce, excl oil)	RAC	0.69	2.89	1.99	0.21	0.14	0.48	0.33	3.16	2.18	0.26	0.18
OR 0541	Soya oil, refined	PP	0	2.32	0.00	2.54	0.00	18.70	0.00	2.51	0.00	6.29	0.00
SO 0702	Sunflower seed, raw (incl oil)	RAC	0.01	0.94	0.01	0.22	0.00	32.01	0.32	12.12	0.12	0.48	0.00
GC 0654	Wheat, raw (incl bulgur, incl fermented beverages, incl germ, incl wholemeal bread, incl white flour products, incl white bread)	RAC	0	57.20	0.00	110.47	0.00	272.62	0.00	25.82	0.00	132.04	0.00
	Total intake (µg//person)=				8.1		1.3		3.0		6.3		2.1
	Bodyweight per region (kg bw) =				60		60		60		60		60
	ADI (µg//person)=				180000		180000		180000		180000		180000
	%ADI=				0.0%		0.0%		0.0%		0.0%		0.0%
	Rounded %ADI=				0%		0%		0%		0%		0%

IMIDACLOPRID (206) International Estimated Daily Intake (IEDI) ADI = 0 - 0.06 mg/kg bw

			STMR	Diets as g/person/day		Intake as µg//person/day									
Codex Code	Commodity description	Expr as	mg/kg	G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
JF 0226	Apple juice, single strength (incl. concentrated)	PP	0.046	0.32	0.01	3.07	0.14	0.10	0.00	5.00	0.23	0.29	0.01	5.57	0.26
FP 0226	Apple, raw (incl cider, excl juice)	RAC	0.07	13.49	0.94	26.63	1.86	15.05	1.05	16.28	1.14	6.47	0.45	47.88	3.35
FI 0327	Banana, raw (incl plantains) (incl dried)	RAC	0.01	5.06	0.05	6.91	0.07	37.17	0.37	31.16	0.31	40.21	0.40	18.96	0.19
HH 0722	Basil, raw (incl dried)	RAC	5	0.14	0.70	0.26	1.30	0.16	0.80	0.38	1.90	NC	-	0.19	0.95
VP 0061	Beans, green, with pods, raw: beans except broad bean & soya bean (i.e. immature seeds + pods) (Phaseolus spp)	RAC	0.4	0.68	0.27	NC	-	NC	-	0.39	0.16	0.22	0.09	0.49	0.20
VB 0400	Broccoli, raw	RAC	0.08	0.88	0.07	0.17	0.01	0.10	0.01	1.25	0.10	3.00	0.24	1.09	0.09
VB 0402	Brussels sprouts, raw	RAC	0.08	0.63	0.05	6.41	0.51	0.13	0.01	1.03	0.08	NC	-	2.35	0.19
FB 2006	Bush berries, raw (including processed) (i.e. blueberries, currants, gooseberries, rose hips)	RAC	0.89	0.53	0.47	1.31	1.17	0.40	0.36	1.66	1.48	0.10	0.09	0.99	0.88
VB 0041	Cabbages, head, raw	RAC	0.08	2.73	0.22	27.92	2.23	0.55	0.04	4.47	0.36	4.27	0.34	10.25	0.82
FB 2005	Caneberries, raw	RAC	0.89	0.42	0.37	1.05	0.93	0.10	0.09	0.10	0.09	0.10	0.09	1.24	1.10
VB 0404	Cauliflower, raw	RAC	0.08	1.65	0.13	0.32	0.03	0.10	0.01	2.33	0.19	4.79	0.38	2.03	0.16
VS 0624	Celery	RAC	0.365	2.14	0.78	3.79	1.38	2.35	0.86	5.69	2.08	0.10	0.04	2.75	1.00
GC 0080	Cereal grains, raw, (incl processed)	RAC	0.05	484.29	24.21	464.63	23.23	262.36	13.12	486.81	24.34	469.62	23.48	614.04	30.70
FS 0013	Cherries, raw	RAC	0.55	0.92	0.51	9.15	5.03	0.10	0.06	0.61	0.34	0.10	0.06	6.64	3.65
JF 0001	Citrus fruit, juice	PP	0.014	1.30	0.02	2.37	0.03	0.22	0.00	13.88	0.19	0.75	0.01	2.63	0.04
FC 0001	Citrus fruit, raw (incl citrus fruit juice, incl kumquat commodities)	RAC	0.05	34.91	1.75	16.51	0.83	17.23	0.86	104.48	5.22	35.57	1.78	98.49	4.92
SB 0716	Coffee beans, raw (i.e. green coffee)	RAC	0.35	0.96	0.34	0.16	0.06	0.91	0.32	0.27	0.09	1.37	0.48	0.46	0.16
FB 0265	Cranberries, raw	RAC	0.05	0.10	0.01	0.10	0.01	NC	-	0.10	0.01	0.10	0.01	0.10	0.01
VC 0424	Cucumber, raw	RAC	0.31	8.01	2.48	30.66	9.50	1.45	0.45	19.84	6.15	0.27	0.08	34.92	10.83
MO 0105	Edible offal (mammalian), raw	RAC	0.06	4.79	0.29	9.68	0.58	2.97	0.18	5.49	0.33	3.84	0.23	5.03	0.30
VO 0440	Egg plants, raw (= aubergines)	RAC	0.05	5.58	0.28	4.31	0.22	0.89	0.04	9.31	0.47	13.64	0.68	20.12	1.01
PE 0112	Eggs, raw, (incl dried)	RAC	0.003	7.84	0.02	23.08	0.07	2.88	0.01	14.89	0.04	9.81	0.03	14.83	0.04
JF 0269	Grape juice	PP	0.08	0.14	0.01	0.29	0.02	0.10	0.01	0.30	0.02	0.24	0.02	0.10	0.01
-	Grape wine (incl vermouths)	PP	0.13	0.67	0.09	12.53	1.63	2.01	0.26	1.21	0.16	3.53	0.46	4.01	0.52
DF 0269	Grape, dried (= currants, raisins and sultanas)	PP	0.12	0.51	0.06	0.51	0.06	0.10	0.01	1.27	0.15	0.12	0.01	2.07	0.25
FB 0269	Grape, raw (incl must, excl dried, excl juice, excl wine)	RAC	0.11	13.02	1.43	9.25	1.02	0.10	0.01	16.91	1.86	3.70	0.41	54.44	5.99
DH 1100	Hops, dry	RAC	0.7	0.10	0.07	0.10	0.07	0.10	0.07	0.10	0.07	NC	-	0.10	0.07
VL 0480	Kale, raw (i.e. collards) (i.e. Brassica)	RAC	1.3	0.57	0.74	5.77	7.50	0.11	0.14	0.92	1.20	5.25	6.83	2.12	2.76
FB 2007	Large shrub/tree berries, raw (including processed) (i.e. elderberries, mulberries)	RAC	0.89	0.62	0.55	0.33	0.29	0.34	0.30	1.42	1.26	0.10	0.09	1.51	1.34
VA 0384	Leek, raw	RAC	0.05	0.18	0.01	1.59	0.08	0.10	0.01	0.28	0.01	0.10	0.01	3.21	0.16
VL 0482	Lettuce, head, raw	RAC	0.9	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
MF 0100	Mammalian fats, raw, excl milk fats (incl rendered fats)	RAC	0.007	3.29	0.02	6.14	0.04	0.82	0.01	1.57	0.01	2.23	0.02	1.07	0.01
FI 0345	Mango, raw	RAC	0.05	10.38	0.52	0.10	0.01	7.24	0.36	6.85	0.34	19.53	0.98	4.52	0.23
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) - 20% as fat	RAC	0.007	6.24	0.04	14.49	0.10	4.18	0.03	9.60	0.07	6.62	0.05	7.25	0.05

	IMIDACLOPRID (206)			International Estimated Daily Intake (IEDI)						ADI = 0 - 0.06 mg/kg bw					
			STMR	Diets as g/person/day			Intake as μg//person/day								
Codex Code	Commodity description	Expr as	mg/kg	G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) -80% as muscle	RAC	0.012	24.96	0.30	57.95	0.70	16.70	0.20	38.38	0.46	26.46	0.32	29.00	0.35
VC 0046	Melons, raw (excl watermelons)	RAC	0.05	8.90	0.45	8.64	0.43	0.80	0.04	17.90	0.90	2.80	0.14	29.17	1.46
ML 0106	Milks, raw or skimmed (incl dairy products)	RAC	0.018	289.65	5.21	485.88	8.75	26.92	0.48	239.03	4.30	199.91	3.60	180.53	3.25
-	Olive oil (virgin and residue oil)	PP	0.04	2.17	0.09	0.13	0.01	0.10	0.00	1.32	0.05	0.10	0.00	2.76	0.11
SO 0305	Olives for oil production, raw	RAC	0.355	1.47	0.52	0.67	0.24	NC	-	1.26	0.45	0.10	0.04	7.63	2.71
-	Onions, mature bulbs, dry	RAC	0.05	29.36	1.47	37.50	1.88	3.56	0.18	34.78	1.74	18.81	0.94	43.38	2.17
FS 2001	Peaches, nectarines, apricots, raw (incl dried apricots)	RAC	0.355	8.01	2.84	5.87	2.08	0.18	0.06	8.19	2.91	1.64	0.58	22.46	7.97
SO 0697	Peanuts, nutmeat, raw (incl roasted, incl oil, incl butter)	RAC	0.12	1.30	0.16	1.23	0.15	12.62	1.51	2.87	0.34	6.59	0.79	2.67	0.32
FP 0230	Pear, raw	RAC	0.38	2.16	0.82	6.24	2.37	0.10	0.04	4.07	1.55	1.16	0.44	5.34	2.03
VP 0063	Peas green, with pods, raw (i.e. immature seeds + pods) (Pisum spp)	RAC	0.6	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
VP 0064	Peas, green, without pods, raw (i.e. immature seeds only) (Pisum spp)	RAC	0.58	1.97	1.14	0.51	0.30	0.10	0.06	0.79	0.46	3.68	2.13	3.80	2.20
VO 0444	Peppers, chili, raw (incl dried)	RAC	0.15	6.93	1.04	10.97	1.65	8.83	1.32	9.13	1.37	6.65	1.00	20.01	3.00
VO 0445	Peppers, sweet, raw (incl dried)	RAC	0.15	4.49	0.67	6.44	0.97	7.21	1.08	5.68	0.85	9.52	1.43	8.92	1.34
DF 0014	Plum, dried (prunes)	PP	0.87	0.10	0.09	0.10	0.09	0.10	0.09	0.18	0.16	0.10	0.09	0.10	0.09
FS 0014	Plums, raw (incl dried plums, incl Chinese jujube)	RAC	0.28	2.67	0.75	8.77	2.46	0.10	0.03	3.03	0.85	0.70	0.20	4.34	1.22
FI 0355	Pomegranate, raw, (incl processed)	RAC	0.43	3.40	1.46	2.10	0.90	2.65	1.14	10.89	4.68	NC	-	6.67	2.87
PO 0111	Poultry edible offal, raw (incl prepared)	RAC	0.007	0.12	0.00	0.12	0.00	0.11	0.00	5.37	0.04	0.24	0.00	0.10	0.00
PF 0111	Poultry fat, raw (incl rendered)	RAC	0.0004	0.10	0.00	0.10	0.00	NC	-	0.10	0.00	0.10	0.00	0.10	0.00
PM 0110	Poultry meat, raw (incl prepared) - 10% as fat	RAC	0.0004	1.46	0.00	2.98	0.00	0.80	0.00	12.97	0.01	2.50	0.00	3.57	0.00
PM 0110	Poultry meat, raw (incl prepared) - 90% as muscle	RAC	0.001	13.17	0.01	26.78	0.03	7.24	0.01	116.71	0.12	22.54	0.02	32.09	0.03
VD 0070	Pulses, raw (incl processed), excl soya bean commodities	RAC	0.62	12.80	7.94	4.97	3.08	13.60	8.43	13.82	8.57	28.25	17.52	23.64	14.66
VL 0494	Radish leaves, raw	RAC	0.7	0.26	0.18	0.45	0.32	0.28	0.20	0.68	0.48	NC	-	0.33	0.23
SO 0495	Rape seed, raw (incl oil)	RAC	0.05	0.93	0.05	1.16	0.06	0.49	0.02	2.53	0.13	9.32	0.47	2.02	0.10
VR 0075	Root and tuber vegetables, raw (incl processed)	RAC	0.05	87.83	4.39	374.04	18.70	668.92	33.45	121.64	6.08	94.20	4.71	247.11	12.36
VD 0541	Soya bean, dry, raw (incl flour, incl paste, incl curd, incl sauce, excl oil)	RAC	0.38	0.63	0.24	1.09	0.41	0.40	0.15	1.40	0.53	1.68	0.64	0.48	0.18
OR 0541	Soya oil, refined	PP	0.09	12.99	1.17	10.43	0.94	3.63	0.33	13.10	1.18	10.70	0.96	13.10	1.18
VC 0431	Squash, summer, raw (= courgette, zuchini)	RAC	0.31	0.78	0.24	2.06	0.64	0.30	0.09	1.61	0.50	2.25	0.70	2.36	0.73
FB 0275	Strawberry, raw	RAC	0.17	0.70	0.12	2.01	0.34	0.10	0.02	1.36	0.23	0.37	0.06	2.53	0.43
SO 0702	Sunflower seed, raw (incl oil)	RAC	0.05	7.40	0.37	35.86	1.79	1.15	0.06	8.76	0.44	5.45	0.27	13.62	0.68
VO 0447	Sweet corn on the cob, raw (incl frozen, incl canned) (i.e. kernels plus cob without husks)	RAC	0.01	0.14	0.00	0.94	0.01	5.70	0.06	2.61	0.03	1.94	0.02	0.22	0.00
FT 0305	Table olive, raw (incl preserved)	RAC	0.355	0.70	0.25	0.32	0.11	0.10	0.04	1.53	0.54	0.17	0.06	1.85	0.66
-	Tea concentrates	PP	1.6	0.10	0.16	0.10	0.16	0.10	0.16	0.10	0.16	0.10	0.16	0.10	0.16

IMIDACLOPRID (206) International Estimated Daily Intake (IEDI) ADI = 0 - 0.06 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
				Diets as g/person/day			Intake as µg//person/day								
DT 1114	Tea, green or black, fermented and dried	RAC	6.4	2.28	14.59	1.92	12.29	0.46	2.94	2.40	15.36	1.29	8.26	3.04	19.46
-	Tomato, canned (& peeled)	PP	0.073	0.20	0.01	0.31	0.02	0.10	0.01	1.11	0.08	0.11	0.01	1.50	0.11
JF 0448	Tomato, juice (single strength, incl concentrated)	PP	0.11	0.29	0.03	0.29	0.03	0.10	0.01	0.38	0.04	0.10	0.01	0.14	0.02
-	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	0.458	2.34	1.07	1.33	0.61	1.57	0.72	4.24	1.94	0.34	0.16	2.83	1.30
VO 0448	Tomato, raw	RAC	0.08	41.73	3.34	75.65	6.05	10.66	0.85	82.87	6.63	24.75	1.98	200.93	16.07
TN 0085	Tree nuts, raw (incl processed)	RAC	0.01	4.06	0.04	3.27	0.03	7.01	0.07	13.93	0.14	14.01	0.14	9.36	0.09
VC 0432	Watermelon, raw	RAC	0.05	28.96	1.45	25.65	1.28	1.56	0.08	39.26	1.96	4.94	0.25	66.90	3.35
CF 0654	Wheat, bran	PP	0.175	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
CF 1212	Wheat, wholemeal flour	PP	0.025	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
	Total intake (µg//person)=				90.2		129.9		73.8		116.7		85.9		175.1
	Bodyweight per region (kg bw) =				60		60		60		60		60		60
	ADI (µg//person)=				3600		3600		3600		3600		3600		3600
	%ADI=				2.5%		3.6%		2.0%		3.2%		2.4%		4.9%
	Rounded %ADI=				3%		4%		2%		3%		2%		5%

IMIDACLOPRID (206) International Estimated Daily Intake (IEDI) ADI = 0 - 0.06 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
				Diets as g/person/day			Intake as µg//person/day								
JF 0226	Apple juice, single strength (incl. concentrated)	PP	0.046	14.88	0.68	11.98	0.55	0.15	0.01	9.98	0.46	30.32	1.39	3.47	0.16
FP 0226	Apple, raw (incl cider, excl juice)	RAC	0.07	41.14	2.88	56.49	3.95	26.64	1.86	31.58	2.21	51.94	3.64	3.05	0.21
FI 0327	Banana, raw (incl plantains) (incl dried)	RAC	0.01	25.14	0.25	23.37	0.23	23.06	0.23	23.40	0.23	18.44	0.18	39.29	0.39
HH 0722	Basil, raw (incl dried)	RAC	5	0.52	2.60	0.10	0.50	3.23	16.15	0.18	0.90	0.12	0.60	0.27	1.35
VP 0061	Beans, green, with pods, raw: beans except broad bean & soya bean (i.e. immature seeds + pods) (Phaseolus spp)	RAC	0.4	5.07	2.03	0.83	0.33	0.17	0.07	3.70	1.48	NC	-	NC	-
VB 0400	Broccoli, raw	RAC	0.08	4.24	0.34	1.76	0.14	NC	-	0.51	0.04	3.79	0.30	0.26	0.02
VB 0402	Brussels sprouts, raw	RAC	0.08	2.24	0.18	2.67	0.21	6.23	0.50	0.32	0.03	4.19	0.34	2.58	0.21
FB 2006	Bush berries, raw (including processed) (i.e. blueberries, currants, gooseberries, rose hips)	RAC	0.89	1.31	1.17	5.50	4.90	0.10	0.09	2.57	2.29	0.82	0.73	2.15	1.91
VB 0041	Cabbages, head, raw	RAC	0.08	8.97	0.72	27.12	2.17	1.44	0.12	24.96	2.00	4.55	0.36	11.23	0.90
FB 2005	Caneberries, raw	RAC	0.89	0.56	0.50	1.43	1.27	0.14	0.12	1.23	1.09	1.14	1.01	0.10	0.09
VB 0404	Cauliflower, raw	RAC	0.08	5.27	0.42	5.01	0.40	NC	-	2.70	0.22	5.57	0.45	0.49	0.04
VS 0624	Celery	RAC	0.365	7.68	2.80	2.85	1.04	NC	-	3.34	1.22	16.83	6.14	4.04	1.47

IMIDACLOPRID (206) International Estimated Daily Intake (IEDI) ADI = 0 - 0.06 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day G07 diet	Intake as µg//person/day G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
GC 0080	Cereal grains, raw, (incl processed)	RAC	0.05	345.63	17.28	386.16	19.31	514.33	25.72	402.72	20.14	295.30	14.77	359.97	18.00
FS 0013	Cherries, raw	RAC	0.55	1.40	0.77	4.21	2.32	0.10	0.06	2.93	1.61	1.50	0.83	NC	-
JF 0001	Citrus fruit, juice	PP	0.014	36.84	0.52	3.75	0.05	0.30	0.00	21.62	0.30	21.82	0.31	46.67	0.65
FC 0001	Citrus fruit, raw (incl citrus fruit juice, incl kumquat commodities)	RAC	0.05	114.42	5.72	62.91	3.15	26.97	1.35	96.72	4.84	96.22	4.81	563.19	28.16
SB 0716	Coffee beans, raw (i.e. green coffee)	RAC	0.35	0.60	0.21	NC	-	0.62	0.22	1.71	0.60	NC	-	3.51	1.23
FB 0265	Cranberries, raw	RAC	0.05	0.10	0.01	0.10	0.01	0.10	0.01	1.22	0.06	0.11	0.01	NC	-
VC 0424	Cucumber, raw	RAC	0.31	6.72	2.08	11.03	3.42	32.10	9.95	15.10	4.68	4.05	1.26	9.57	2.97
MO 0105	Edible offal (mammalian), raw	RAC	0.06	15.17	0.91	5.19	0.31	6.30	0.38	6.78	0.41	3.32	0.20	3.17	0.19
VO 0440	Egg plants, raw (= aubergines)	RAC	0.05	1.01	0.05	1.69	0.08	21.37	1.07	3.00	0.15	1.40	0.07	NC	-
PE 0112	Eggs, raw, (incl dried)	RAC	0.003	25.84	0.08	29.53	0.09	28.05	0.08	33.19	0.10	36.44	0.11	8.89	0.03
JF 0269	Grape juice	PP	0.08	0.56	0.04	1.96	0.16	0.10	0.01	2.24	0.18	2.27	0.18	0.34	0.03
-	Grape wine (incl vermouths)	PP	0.13	88.93	11.56	62.41	8.11	1.84	0.24	25.07	3.26	61.17	7.95	5.84	0.76
DF 0269	Grape, dried (= currants, raisins and sultanas)	PP	0.12	3.09	0.37	1.51	0.18	0.10	0.01	1.38	0.17	4.26	0.51	0.42	0.05
FB 0269	Grape, raw (incl must, excl dried, excl juice, excl wine)	RAC	0.11	6.48	0.71	11.31	1.24	5.21	0.57	9.50	1.05	4.66	0.51	0.78	0.09
DH 1100	Hops, dry	RAC	0.7	NC	-	NC	-	0.10	0.07	0.10	0.07	NC	-	NC	-
VL 0480	Kale, raw (i.e. collards) (i.e. Brassica)	RAC	1.3	NC	-	NC	-	14.54	18.90	NC	-	NC	-	2.32	3.02
FB 2007	Large shrub/tree berries, raw (including processed) (i.e. elderberries, mulberries)	RAC	0.89	8.26	7.35	0.14	0.12	0.10	0.09	0.13	0.12	0.19	0.17	1.87	1.66
VA 0384	Leek, raw	RAC	0.05	4.01	0.20	4.41	0.22	0.72	0.04	0.54	0.03	16.41	0.82	0.10	0.01
VL 0482	Lettuce, head, raw	RAC	0.9	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
MF 0100	Mammalian fats, raw, excl milk fats (incl rendered fats)	RAC	0.007	6.44	0.05	15.51	0.11	3.79	0.03	8.29	0.06	18.44	0.13	8.00	0.06
FI 0345	Mango, raw	RAC	0.05	1.80	0.09	0.63	0.03	9.73	0.49	1.07	0.05	3.52	0.18	16.44	0.82
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) - 20% as fat	RAC	0.007	28.01	0.20	30.18	0.21	15.86	0.11	22.25	0.16	24.06	0.17	10.25	0.07
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) -80% as muscle	RAC	0.012	112.02	1.34	120.71	1.45	63.46	0.76	88.99	1.07	96.24	1.15	41.02	0.49
VC 0046	Melons, raw (excl watermelons)	RAC	0.05	9.20	0.46	11.95	0.60	14.63	0.73	8.99	0.45	7.86	0.39	2.46	0.12
ML 0106	Milks, raw or skimmed (incl dairy products)	RAC	0.018	388.92	7.00	335.88	6.05	49.15	0.88	331.25	5.96	468.56	8.43	245.45	4.42
-	Olive oil (virgin and residue oil)	PP	0.04	3.40	0.14	9.49	0.38	0.10	0.00	4.28	0.17	2.74	0.11	0.48	0.02
SO 0305	Olives for oil production, raw	RAC	0.355	0.35	0.12	0.10	0.04	0.10	0.04	0.57	0.20	0.10	0.04	NC	-
-	Onions, mature bulbs, dry	RAC	0.05	19.69	0.98	29.83	1.49	24.64	1.23	31.35	1.57	9.72	0.49	12.59	0.63

IMIDACLOPRID (206) International Estimated Daily Intake (IEDI) ADI = 0 - 0.06 mg/kg bw

			STMR	Diets as g/person/day			Intake as µg//person/day								
Codex Code	Commodity description	Expr as	mg/kg	G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
FS 2001	Peaches, nectarines, apricots, raw (incl dried apricots)	RAC	0.355	13.03	4.63	16.29	5.78	8.29	2.94	12.95	4.60	5.35	1.90	0.10	0.04
SO 0697	Peanuts, nutmeat, raw (incl roasted, incl oil, incl butter)	RAC	0.12	5.63	0.68	2.75	0.33	9.58	1.15	5.82	0.70	13.71	1.65	1.84	0.22
FP 0230	Pear, raw	RAC	0.38	8.79	3.34	8.44	3.21	12.37	4.70	9.60	3.65	10.27	3.90	0.23	0.09
VP 0063	Peas green, with pods, raw (i.e. immature seeds + pods) (Pisum spp)	RAC	0.6	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
VP 0064	Peas, green, without pods, raw (i.e. immature seeds only) (Pisum spp)	RAC	0.58	10.72	6.22	1.99	1.15	2.72	1.58	4.26	2.47	4.23	2.45	NC	-
VO 0444	Peppers, chili, raw (incl dried)	RAC	0.15	6.36	0.95	15.46	2.32	10.74	1.61	7.28	1.09	8.21	1.23	3.58	0.54
VO 0445	Peppers, sweet, raw (incl dried)	RAC	0.15	0.82	0.12	1.53	0.23	10.85	1.63	4.59	0.69	1.84	0.28	2.00	0.30
DF 0014	Plum, dried (prunes)	PP	0.87	0.61	0.53	0.35	0.30	0.10	0.09	0.35	0.30	0.49	0.43	0.13	0.11
FS 0014	Plums, raw (incl dried plums, incl Chinese jujube)	RAC	0.28	5.55	1.55	4.37	1.22	6.08	1.70	3.66	1.02	3.93	1.10	0.46	0.13
FI 0355	Pomegranate, raw, (incl processed)	RAC	0.43	7.91	3.40	9.72	4.18	7.67	3.30	5.26	2.26	9.04	3.89	14.43	6.20
PO 0111	Poultry edible offal, raw (incl prepared)	RAC	0.007	0.33	0.00	0.72	0.01	0.27	0.00	0.35	0.00	0.80	0.01	NC	-
PF 0111	Poultry fat, raw (incl rendered)	RAC	0.0004	0.10	0.00	0.10	0.00	NC	-	0.10	0.00	0.71	0.00	NC	-
PM 0110	Poultry meat, raw (incl prepared) - 10% as fat	RAC	0.0004	7.38	0.00	5.39	0.00	2.40	0.00	8.71	0.00	5.34	0.00	8.45	0.00
PM 0110	Poultry meat, raw (incl prepared) - 90% as muscle	RAC	0.001	66.38	0.07	48.47	0.05	21.58	0.02	78.41	0.08	48.04	0.05	76.01	0.08
VD 0070	Pulses, raw (incl processed), excl soya bean commodities	RAC	0.62	6.54	4.05	5.27	3.27	5.03	3.12	8.94	5.54	4.84	3.00	28.65	17.76
VL 0494	Radish leaves, raw	RAC	0.7	NC	-	NC	-	NC	-	3.78	2.65	NC	-	0.48	0.34
SO 0495	Rape seed, raw (incl oil)	RAC	0.05	32.68	1.63	19.91	1.00	7.83	0.39	15.69	0.78	NC	-	NC	-
VR 0075	Root and tuber vegetables, raw (incl processed)	RAC	0.05	290.31	14.52	300.35	15.02	214.25	10.71	242.72	12.14	348.67	17.43	137.52	6.88
VD 0541	Soya bean, dry, raw (incl flour, incl paste, incl curd, incl sauce, excl oil)	RAC	0.38	0.47	0.18	0.77	0.29	9.12	3.47	8.05	3.06	0.10	0.04	6.06	2.30
OR 0541	Soya oil, refined	PP	0.09	19.06	1.72	21.06	1.90	5.94	0.53	33.78	3.04	40.05	3.60	13.39	1.21
VC 0431	Squash, summer, raw (= courgette, zuchini)	RAC	0.31	NC	-	NC	-	5.48	1.70	NC	-	NC	-	1.03	0.32
FB 0275	Strawberry, raw	RAC	0.17	4.49	0.76	5.66	0.96	0.10	0.02	6.63	1.13	5.75	0.98	0.10	0.02
SO 0702	Sunflower seed, raw (incl oil)	RAC	0.05	23.40	1.17	29.33	1.47	1.24	0.06	13.85	0.69	6.48	0.32	6.91	0.35
VO 0447	Sweet corn on the cob, raw (incl frozen, incl canned) (i.e. kernels plus cob without husks)	RAC	0.01	11.43	0.11	3.71	0.04	0.74	0.01	13.63	0.14	3.07	0.03	1.50	0.02
FT 0305	Table olive, raw (incl preserved)	RAC	0.355	2.00	0.71	2.48	0.88	0.10	0.04	1.21	0.43	1.64	0.58	0.27	0.10
-	Tea concentrates	PP	1.6	0.20	0.32	0.91	1.46	0.10	0.16	0.26	0.42	0.47	0.75	0.21	0.34
DT 1114	Tea, green or black, fermented and dried	RAC	6.4	2.71	17.34	0.82	5.25	1.14	7.30	1.59	10.18	1.82	11.65	0.53	3.39
-	Tomato, canned (& peeled)	PP	0.073	7.57	0.55	2.66	0.19	0.30	0.02	0.97	0.07	7.31	0.53	0.41	0.03
JF 0448	Tomato, juice (single strength, incl concentrated)	PP	0.11	0.80	0.09	0.10	0.01	0.10	0.01	0.61	0.07	0.40	0.04	0.10	0.01

IMIDACLOPRID (206) International Estimated Daily Intake (IEDI) ADI = 0 - 0.06 mg/kg bw

			STMR	Diets as g/person/day			Intake as µg//person/day								
Codex Code	Commodity description	Expr as	mg/kg	G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
-	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	0.458	4.96	2.27	3.20	1.47	0.15	0.07	1.61	0.74	6.88	3.15	0.52	0.24
VO 0448	Tomato, raw	RAC	0.08	32.13	2.57	51.27	4.10	34.92	2.79	73.37	5.87	15.15	1.21	8.88	0.71
TN 0085	Tree nuts, raw (incl processed)	RAC	0.01	8.52	0.09	8.94	0.09	15.09	0.15	9.60	0.10	14.57	0.15	26.26	0.26
VC 0432	Watermelon, raw	RAC	0.05	4.60	0.23	9.82	0.49	68.50	3.43	13.19	0.66	1.99	0.10	14.56	0.73
CF 0654	Wheat, bran	PP	0.175	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
CF 1212	Wheat, wholemeal flour	PP	0.025	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
	Total intake (µg//person)=				142.6		121.5		134.9		124.2		119.2		112.9
	Bodyweight per region (kg bw) =				60		60		55		60		60		60
	ADI (µg//person)=				3600		3600		3300		3600		3600		3600
	%ADI=				4.0%		3.4%		4.1%		3.4%		3.3%		3.1%
	Rounded %ADI=				4%		3%		4%		3%		3%		3%

IMIDACLOPRID (206) International Estimated Daily Intake (IEDI) ADI = 0 - 0.06 mg/kg bw

			STMR	Diets: g/person/day			Intake = daily intake: µg//person						
Codex Code	Commodity description	Expr as	mg/kg	G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
JF 0226	Apple juice, single strength (incl. concentrated)	PP	0.046	0.10	0.00	0.10	0.00	7.19	0.33	0.10	0.00	NC	-
FP 0226	Apple, raw (incl cider, excl juice)	RAC	0.07	66.67	4.67	2.06	0.14	55.83	3.91	188.29	13.18	1.38	0.10
FI 0327	Banana, raw (incl plantains) (incl dried)	RAC	0.01	20.88	0.21	81.15	0.81	24.58	0.25	37.92	0.38	310.23	3.10
HH 0722	Basil, raw (incl dried)	RAC	5	0.25	1.25	0.18	0.90	0.13	0.65	0.17	0.85	0.33	1.65
VP 0061	Beans, green, with pods, raw: beans except broad bean & soya bean (i.e. immature seeds + pods) (Phaseolus spp)	RAC	0.4	NC	-	NC	-	NC	-	NC	-	NC	-
VB 0400	Broccoli, raw	RAC	0.08	0.10	0.01	0.10	0.01	2.13	0.17	0.10	0.01	NC	-
VB 0402	Brussels sprouts, raw	RAC	0.08	0.88	0.07	0.69	0.06	2.89	0.23	0.10	0.01	NC	-
FB 2006	Bush berries, raw (including processed) (i.e. blueberries, currants, gooseberries, rose hips)	RAC	0.89	0.82	0.73	4.05	3.60	5.94	5.29	0.43	0.38	2.66	2.37
VB 0041	Cabbages, head, raw	RAC	0.08	3.82	0.31	2.99	0.24	49.16	3.93	0.10	0.01	NC	-
FB 2005	Caneberries, raw	RAC	0.89	0.10	0.09	7.30	6.50	2.29	2.04	0.10	0.09	NC	-
VB 0404	Cauliflower, raw	RAC	0.08	0.10	0.01	0.10	0.01	2.73	0.22	0.10	0.01	NC	-
VS 0624	Celery	RAC	0.365	3.66	1.34	2.65	0.97	4.84	1.77	2.47	0.90	4.94	1.80
GC 0080	Cereal grains, raw, (incl processed)	RAC	0.05	407.04	20.35	417.04	20.85	402.79	20.14	195.30	9.77	263.26	13.16

Annex 3

IMIDACLOPRID (206) International Estimated Daily Intake (IEDI) ADI = 0 - 0.06 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day G13 diet	G13 intake	G14 diet	Intake = daily intake: µg//person G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
FS 0013	Cherries, raw	RAC	0.55	0.10	0.06	0.10	0.06	5.96	3.28	0.10	0.06	NC	-
JF 0001	Citrus fruit, juice	PP	0.014	0.11	0.00	0.29	0.00	13.55	0.19	0.14	0.00	0.33	0.00
FC 0001	Citrus fruit, raw (incl citrus fruit juice, incl kumquat commodities)	RAC	0.05	21.16	1.06	2.94	0.15	58.52	2.93	0.44	0.02	5.13	0.26
SB 0716	Coffee beans, raw (i.e. green coffee)	RAC	0.35	0.83	0.29	0.69	0.24	1.09	0.38	2.91	1.02	0.82	0.29
FB 0265	Cranberries, raw	RAC	0.05	NC	-	NC	-	0.10	0.01	NC	-	NC	-
VC 0424	Cucumber, raw	RAC	0.31	0.68	0.21	1.81	0.56	10.40	3.22	0.10	0.03	0.10	0.03
MO 0105	Edible offal (mammalian), raw	RAC	0.06	4.64	0.28	1.97	0.12	10.01	0.60	3.27	0.20	3.98	0.24
VO 0440	Egg plants, raw (= aubergines)	RAC	0.05	1.31	0.07	8.26	0.41	3.95	0.20	0.10	0.01	NC	-
PE 0112	Eggs, raw, (incl dried)	RAC	0.003	3.84	0.01	4.41	0.01	27.25	0.08	1.13	0.00	7.39	0.02
JF 0269	Grape juice	PP	0.08	0.10	0.01	0.10	0.01	0.41	0.03	0.10	0.01	NC	-
-	Grape wine (incl vermouths)	PP	0.13	0.31	0.04	0.23	0.03	60.43	7.86	0.52	0.07	31.91	4.15
DF 0269	Grape, dried (= currants, raisins and sultanas)	PP	0.12	0.10	0.01	0.13	0.02	1.06	0.13	0.10	0.01	0.10	0.01
FB 0269	Grape, raw (incl must, excl dried, excl juice, excl wine)	RAC	0.11	0.14	0.02	0.36	0.04	15.33	1.69	0.10	0.01	0.28	0.03
DH 1100	Hops, dry	RAC	0.7	NC	-	NC	-	0.10	0.07	NC	-	NC	-
VL 0480	Kale, raw (i.e. collards) (i.e. Brassica)	RAC	1.3	0.79	1.03	0.62	0.81	NC	-	0.10	0.13	NC	-
FB 2007	Large shrub/tree berries, raw (including processed) (i.e. elderberries, mulberries)	RAC	0.89	0.71	0.63	7.32	6.51	NC	-	0.38	0.34	2.32	2.06
VA 0384	Leek, raw	RAC	0.05	0.10	0.01	1.44	0.07	1.22	0.06	0.10	0.01	NC	-
VL 0482	Lettuce, head, raw	RAC	0.9	NC	-	NC	-	NC	-	NC	-	NC	-
MF 0100	Mammalian fats, raw, excl milk fats (incl rendered fats)	RAC	0.007	1.05	0.01	1.14	0.01	18.69	0.13	0.94	0.01	3.12	0.02
FI 0345	Mango, raw	RAC	0.05	12.25	0.61	6.74	0.34	0.76	0.04	0.10	0.01	20.12	1.01
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) - 20% as fat	RAC	0.007	5.84	0.04	10.18	0.07	24.29	0.17	4.52	0.03	14.43	0.10
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) -80% as muscle	RAC	0.012	23.34	0.28	40.71	0.49	97.15	1.17	18.06	0.22	57.71	0.69
VC 0046	Melons, raw (excl watermelons)	RAC	0.05	0.19	0.01	0.10	0.01	4.98	0.25	0.10	0.01	NC	-
ML 0106	Milks, raw or skimmed (incl dairy products)	RAC	0.018	108.75	1.96	70.31	1.27	436.11	7.85	61.55	1.11	79.09	1.42
-	Olive oil (virgin and residue oil)	PP	0.04	0.10	0.00	0.10	0.00	2.14	0.09	0.10	0.00	0.10	0.00
SO 0305	Olives for oil production, raw	RAC	0.355	NC	-	NC	-	0.10	0.04	NC	-	NC	-
-	Onions, mature bulbs, dry	RAC	0.05	9.01	0.45	20.24	1.01	30.90	1.55	9.61	0.48	2.11	0.11
FS 2001	Peaches, nectarines, apricots, raw (incl dried apricots)	RAC	0.355	0.10	0.04	0.10	0.04	10.76	3.82	0.10	0.04	NC	-
SO 0697	Peanuts, nutmeat, raw (incl roasted, incl oil, incl butter)	RAC	0.12	18.82	2.26	0.57	0.07	2.28	0.27	6.90	0.83	0.53	0.06

IMIDACLOPRID (206) International Estimated Daily Intake (IEDI) ADI = 0 - 0.06 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day			Intake = daily intake: µg//person						
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
FP 0230	Pear, raw	RAC	0.38	0.10	0.04	0.14	0.05	9.45	3.59	0.10	0.04	0.14	0.05
VP 0063	Peas green, with pods, raw (i.e. immature seeds + pods) (Pisum spp)	RAC	0.6	NC	-	NC	-	NC	-	NC	-	NC	-
VP 0064	Peas, green, without pods, raw (i.e. immature seeds only) (Pisum spp)	RAC	0.58	0.21	0.12	0.10	0.06	5.51	3.20	0.10	0.06	NC	-
VO 0444	Peppers, chili, raw (incl dried)	RAC	0.15	7.55	1.13	12.48	1.87	24.78	3.72	0.87	0.13	NC	-
VO 0445	Peppers, sweet, raw (incl dried)	RAC	0.15	5.49	0.82	10.57	1.59	8.84	1.33	0.91	0.14	NC	-
DF 0014	Plum, dried (prunes)	PP	0.87	0.10	0.09	0.10	0.09	0.37	0.32	0.10	0.09	NC	-
FS 0014	Plums, raw (incl dried plums, incl Chinese jujube)	RAC	0.28	0.10	0.03	0.10	0.03	16.65	4.66	0.10	0.03	NC	-
FI 0355	Pomegranate, raw, (incl processed)	RAC	0.43	5.49	2.36	27.17	11.68	NC	-	2.89	1.24	17.87	7.68
PO 0111	Poultry edible offal, raw (incl prepared)	RAC	0.007	0.10	0.00	0.70	0.00	0.97	0.01	0.10	0.00	NC	-
PF 0111	Poultry fat, raw (incl rendered)	RAC	0.0004	NC	-	NC	-	0.32	0.00	NC	-	NC	-
PM 0110	Poultry meat, raw (incl prepared) - 10% as fat	RAC	0.0004	0.39	0.00	1.20	0.00	5.71	0.00	0.50	0.00	5.56	0.00
PM 0110	Poultry meat, raw (incl prepared) - 90% as muscle	RAC	0.001	3.53	0.00	10.83	0.01	51.36	0.05	4.53	0.00	50.00	0.05
VD 0070	Pulses, raw (incl processed), excl soya bean commodities	RAC	0.62	28.22	17.50	14.71	9.12	8.15	5.05	58.39	36.20	4.48	2.78
VL 0494	Radish leaves, raw	RAC	0.7	0.44	0.31	0.32	0.22	NC	-	0.30	0.21	0.59	0.41
SO 0495	Rape seed, raw (incl oil)	RAC	0.05	0.19	0.01	0.10	0.01	12.07	0.60	0.10	0.01	NC	-
VR 0075	Root and tuber vegetables, raw (incl processed)	RAC	0.05	282.25	14.11	232.11	11.61	281.91	14.10	620.21	31.01	459.96	23.00
VD 0541	Soya bean, dry, raw (incl flour, incl paste, incl curd, incl sauce, excl oil)	RAC	0.38	2.89	1.10	0.21	0.08	0.48	0.18	3.16	1.20	0.26	0.10
OR 0541	Soya oil, refined	PP	0.09	2.32	0.21	2.54	0.23	18.70	1.68	2.51	0.23	6.29	0.57
VC 0431	Squash, summer, raw (= courgette, zuchini)	RAC	0.31	0.10	0.03	1.01	0.31	NC	-	1.91	0.59	NC	-
FB 0275	Strawberry, raw	RAC	0.17	0.10	0.02	0.10	0.02	3.35	0.57	0.10	0.02	0.10	0.02
SO 0702	Sunflower seed, raw (incl oil)	RAC	0.05	0.94	0.05	0.22	0.01	32.01	1.60	12.12	0.61	0.48	0.02
VO 0447	Sweet corn on the cob, raw (incl frozen, incl canned) (i.e. kernels plus cob without husks)	RAC	0.01	3.63	0.04	20.50	0.21	8.78	0.09	0.10	0.00	0.17	0.00
FT 0305	Table olive, raw (incl preserved)	RAC	0.355	0.10	0.04	0.10	0.04	1.75	0.62	0.10	0.04	0.24	0.09
-	Tea concentrates	PP	1.6	0.10	0.16	0.10	0.16	0.23	0.37	0.10	0.16	0.10	0.16
DT 1114	Tea, green or black, fermented and dried	RAC	6.4	0.53	3.39	5.25	33.60	0.63	4.03	0.56	3.58	0.82	5.25
-	Tomato, canned (& peeled)	PP	0.073	0.10	0.01	0.10	0.01	2.42	0.18	0.10	0.01	NC	-
JF 0448	Tomato, juice (single strength, incl concentrated)	PP	0.11	0.10	0.01	0.10	0.01	0.42	0.05	0.10	0.01	0.10	0.01
-	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	0.458	0.58	0.27	0.22	0.10	2.21	1.01	0.24	0.11	3.10	1.42
VO 0448	Tomato, raw	RAC	0.08	12.99	1.04	4.79	0.38	58.40	4.67	0.92	0.07	0.10	0.01
TN 0085	Tree nuts, raw (incl processed)	RAC	0.01	4.39	0.04	135.53	1.36	6.11	0.06	0.72	0.01	317.74	3.18

IMIDACLOPRID (206)				International Estimated Daily Intake (IEDI)					ADI = 0 - 0.06 mg/kg bw				
			STMR	Diets: g/person/day		Intake = daily intake: µg//person							
Codex Code	Commodity description	Expr as	mg/kg	G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
VC 0432	Watermelon, raw	RAC	0.05	4.29	0.21	0.30	0.02	28.70	1.44	0.10	0.01	NC	-
CF 0654	Wheat, bran	PP	0.175	NC	-	NC	-	NC	-	NC	-	NC	-
CF 1212	Wheat, wholemeal flour	PP	0.025	NC	-	NC	-	NC	-	NC	-	NC	-
	Total intake (µg//person)=				81.5		119.3		128.2		106.0		77.5
	Bodyweight per region (kg bw) =				60		60		60		60		60
	ADI (µg//person)=				3600		3600		3600		3600		3600
	%ADI=				2.3%		3.3%		3.6%		2.9%		2.2%
	Rounded %ADI=				2%		3%		4%		3%		2%

CYHALOTHRIN (including Lambda-cyhalothrin) (146) International Estimated Daily Intake (IEDI) ADI = 0 - 0.02 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day G01 diet	Intake as µg//person/day G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
JF 0226	Apple juice, single strength (incl. concentrated)	PP	0.008	0.32	0.00	3.07	0.02	0.10	0.00	5.00	0.04	0.29	0.00	5.57	0.04
VS 0621	Asparagus	RAC	0.01	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.21	0.00
GC 0640	Barley, raw (incl malt extract, incl pot&pearled, incl flour & grits, incl beer, incl malt)	RAC	0.02	19.91	0.40	31.16	0.62	5.04	0.10	3.10	0.06	9.77	0.20	4.31	0.09
HH 0722	Basil, raw (incl dried)	RAC	0.19	0.14	0.03	0.26	0.05	0.16	0.03	0.38	0.07	NC	-	0.19	0.04
FB 0018	Berries and other small fruits, raw, (incl processed), excl small fruit vine climbing (group 004D)	RAC	0.02	2.29	0.05	4.71	0.09	0.78	0.02	4.48	0.09	0.39	0.01	6.27	0.13
VA 0035	Bulb vegetables, raw	RAC	0.05	34.29	1.71	46.37	2.32	4.73	0.24	41.36	2.07	21.08	1.05	52.54	2.63
VB 0041	Cabbages, head, raw	RAC	0.08	2.73	0.22	27.92	2.23	0.55	0.04	4.47	0.36	4.27	0.34	10.25	0.82
FS 0013	Cherries, raw	RAC	0.125	0.92	0.12	9.15	1.14	0.10	0.01	0.61	0.08	0.10	0.01	6.64	0.83
FC 0001	Citrus fruit, raw (incl citrus fruit juice, incl kumquat commodities)	RAC	0.01	34.91	0.35	16.51	0.17	17.23	0.17	104.48	1.04	35.57	0.36	98.49	0.98
SB 0716	Coffee beans, raw (i.e. green coffee)	RAC	0.01	0.96	0.01	0.16	0.00	0.91	0.01	0.27	0.00	1.37	0.01	0.46	0.00
OR 0691	Cotton seed oil, edible	PP	0.001	3.22	0.00	1.54	0.00	1.01	0.00	0.74	0.00	1.12	0.00	2.93	0.00
MO 0105	Edible offal (mammalian), raw	RAC	0.03	4.79	0.14	9.68	0.29	2.97	0.09	5.49	0.16	3.84	0.12	5.03	0.15
VO 0440	Egg plants, raw (= aubergines)	RAC	0.03	5.58	0.17	4.31	0.13	0.89	0.03	9.31	0.28	13.64	0.41	20.12	0.60
VB 0042	Flowerhead brassicas, raw	RAC	0.215	2.96	0.64	0.57	0.12	0.10	0.02	4.17	0.90	7.79	1.67	3.64	0.78
VC 0045	Fruiting vegetables, cucurbits, raw	RAC	0.01	53.14	0.53	86.21	0.86	6.28	0.06	92.76	0.93	15.64	0.16	155.30	1.55
JF 0269	Grape juice	PP	0.01	0.14	0.00	0.29	0.00	0.10	0.00	0.30	0.00	0.24	0.00	0.10	0.00
-	Grape wine (incl vermouths)	PP	0.01	0.67	0.01	12.53	0.13	2.01	0.02	1.21	0.01	3.53	0.04	4.01	0.04
DF 0269	Grape, dried (= currants, raisins and sultanas)	PP	0.06	0.51	0.03	0.51	0.03	0.10	0.01	1.27	0.08	0.12	0.01	2.07	0.12
FB 0269	Grape, raw (incl must, excl dried, excl juice, excl wine)	RAC	0.02	13.02	0.26	9.25	0.19	0.10	0.00	16.91	0.34	3.70	0.07	54.44	1.09
VP 0060	Legume vegetables, raw	RAC	0.02	7.73	0.15	1.53	0.03	0.51	0.01	2.95	0.06	5.08	0.10	12.86	0.26
GC 0645	Maize, raw (incl glucose & dextrose & isoglucose, incl flour, incl oil, incl beer, incl germ, incl starch)	RAC	0.01	29.81	0.30	44.77	0.45	108.95	1.09	52.37	0.52	60.28	0.60	75.69	0.76
MF 0100	Mammalian fats, raw, excl milk fats (incl rendered fats)	RAC	1	3.29	3.29	6.14	6.14	0.82	0.82	1.57	1.57	2.23	2.23	1.07	1.07
FI 0345	Mango, raw (incl canned mango, incl mango juice)	RAC	0.03	10.48	0.31	0.10	0.00	7.24	0.22	6.87	0.21	19.98	0.60	6.25	0.19
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) - 20% as fat	RAC	1	6.24	6.24	14.49	14.49	4.18	4.18	9.60	9.60	6.62	6.62	7.25	7.25
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) -80% as muscle	RAC	0.04	24.96	1.00	57.95	2.32	16.70	0.67	38.38	1.54	26.46	1.06	29.00	1.16
ML 0106	Milks, raw or skimmed (incl dairy products)	RAC	0.08	289.65	23.17	485.88	38.87	26.92	2.15	239.03	19.12	199.91	15.99	180.53	14.44

Annex 3

CYHALOTHRIN (including Lambda-cyhalothrin) (146) International Estimated Daily Intake (IEDI) ADI = 0 - 0.02 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day G01 diet	Intake as µg//person/day G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
GC 0647	Oats, raw (incl rolled)	RAC	0.01	0.10	0.00	7.05	0.07	0.10	0.00	1.71	0.02	0.96	0.01	0.10	0.00
SO 0089	Oilseeds, raw	RAC	0.01	3.32	0.03	2.25	0.02	9.23	0.09	5.70	0.06	2.84	0.03	11.16	0.11
VO 0442	Okra, raw	RAC	0.03	1.97	0.06	NC	-	3.68	0.11	3.24	0.10	5.72	0.17	1.57	0.05
-	Olive oil (virgin and residue oil)	PP	0.091	2.17	0.20	0.13	0.01	0.10	0.01	1.32	0.12	0.10	0.01	2.76	0.25
JF 0004	Oranges, juice (single strength, incl. concentrated)	PP	0.0165	1.27	0.02	2.20	0.04	0.10	0.00	11.81	0.19	0.46	0.01	1.69	0.03
FS 2001	Peaches, nectarines, apricots, raw	RAC	0.1	7.50	0.75	4.98	0.50	0.18	0.02	7.33	0.73	1.59	0.16	21.11	2.11
VO 0443	Pepino (Melon pear, Tree melon)	RAC	0.03	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
-	Peppers, chili, dried	PP	0.35	0.42	0.15	0.53	0.19	0.84	0.29	0.50	0.18	0.95	0.33	0.37	0.13
VO 0444	Peppers, chili, raw	RAC	0.03	3.99	0.12	7.30	0.22	2.93	0.09	5.62	0.17	NC	-	17.44	0.52
VO 0445	Peppers, sweet, raw (incl dried)	RAC	0.03	4.49	0.13	6.44	0.19	7.21	0.22	5.68	0.17	9.52	0.29	8.92	0.27
FS 0014	Plums, raw (incl dried plums, incl Chinese jujube)	RAC	0.02	2.67	0.05	8.77	0.18	0.10	0.00	3.03	0.06	0.70	0.01	4.34	0.09
FP 0009	Pome fruit, raw (incl cider, excl apple juice)	RAC	0.08	19.35	1.55	34.06	2.72	17.87	1.43	25.74	2.06	7.69	0.62	56.85	4.55
VD 0070	Pulses, raw (incl processed)	RAC	0.01	85.59	0.86	64.02	0.64	34.15	0.34	88.02	0.88	89.38	0.89	96.88	0.97
CM 1205	Rice polished, dry	PP	0.003	34.21	0.10	10.39	0.03	41.72	0.13	82.38	0.25	150.24	0.45	70.47	0.21
CM 0649 (GC 0649)	Rice, husked, dry (incl flour, incl oil, incl beverages, incl starch, excl polished)	REP	0.295	1.26	0.37	1.58	0.47	31.05	9.16	5.43	1.60	0.90	0.27	2.18	0.64
VR 0075	Root and tuber vegetables, raw (incl processed)	RAC	0	87.83	0.00	374.04	0.00	668.92	0.00	121.64	0.00	94.20	0.00	247.11	0.00
GC 0650	Rye, raw (incl flour)	RAC	0.01	0.13	0.00	19.38	0.19	0.10	0.00	0.12	0.00	0.10	0.00	2.15	0.02
-	Sµg/ar cane, molasses	PP	0.001	NC	-	NC	-	NC	-	NC	-	0.10	0.00	NC	-
GS 0659	Sµg/ar cane, raw	RAC	0.02	38.16	0.76	NC	-	12.58	0.25	0.34	0.01	17.79	0.36	42.78	0.86
-	Sµg/ar cane, sµg/ar (incl non-centrifµg/al sµg/ar, incl refined sµg/ar and maltose)	PP	0.001	61.52	0.06	86.27	0.09	18.80	0.02	80.02	0.08	66.39	0.07	56.32	0.06
VO 0447	Sweet corn on the cob, raw (incl frozen, incl canned) (i.e. kernels plus cob without husks)	RAC	0.03	0.14	0.00	0.94	0.03	5.70	0.17	2.61	0.08	1.94	0.06	0.22	0.01
FT 0305	Table olive, raw (incl preserved)	RAC	0.125	0.70	0.09	0.32	0.04	0.10	0.01	1.53	0.19	0.17	0.02	1.85	0.23
JF 0448	Tomato, juice (single strength, incl concentrated)	PP	0.002	0.29	0.00	0.29	0.00	0.10	0.00	0.38	0.00	0.10	0.00	0.14	0.00
-	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	0.007	2.34	0.02	1.33	0.01	1.57	0.01	4.24	0.03	0.34	0.00	2.83	0.02
VO 0448	Tomato, raw (incl canned, excl juice, excl paste)	RAC	0.03	42.04	1.26	76.13	2.28	10.69	0.32	84.59	2.54	24.92	0.75	203.27	6.10
TN 0085	Tree nuts, raw (incl processed)	RAC	0.01	4.06	0.04	3.27	0.03	7.01	0.07	13.93	0.14	14.01	0.14	9.36	0.09
GC 0653	Triticale, raw (incl flour)	RAC	0.01	NC	-	NC	-	NC	-	0.10	0.00	0.39	0.00	NC	-
CF 0654	Wheat, bran	PP	0.045	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
GC 0654	Wheat, raw (incl bulgur, incl fermented beverages, incl germ, incl wholemeal bread, incl	RAC	0.01	381.15	3.81	341.55	3.42	38.35	0.38	281.89	2.82	172.83	1.73	434.07	4.34

CYHALOTHRIN (including Lambda-cyhalothrin) (146) International Estimated Daily Intake (IEDI) ADI = 0 - 0.02 mg/kg bw

			STMR	Diets as g/person/day	Intake as μg//person/day										
Codex Code	Commodity description	Expr as	mg/kg	G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
	white flour products, incl white bread)														
	Total intake (μg//person)=				49.6		82.1		23.1		51.6		38.0		56.7
	Bodyweight per region (kg bw) =				60		60		60		60		60		60
	ADI (μg//person)=				1200		1200		1200		1200		1200		1200
	%ADI=				4.1%		6.8%		1.9%		4.3%		3.2%		4.7%
	Rounded %ADI=				4%		7%		2%		4%		3%		5%

CYHALOTHRIN (including Lambda-cyhalothrin) (146) International Estimated Daily Intake (IEDI) ADI = 0 - 0.02 mg/kg bw

			STMR	Diets as g/person/day	Intake as μg//person/day										
Codex Code	Commodity description	Expr as	mg/kg	G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
JF 0226	Apple juice, single strength (incl. concentrated)	PP	0.008	14.88	0.12	11.98	0.10	0.15	0.00	9.98	0.08	30.32	0.24	3.47	0.03
VS 0621	Asparagus	RAC	0.01	0.84	0.01	2.08	0.02	7.11	0.07	1.01	0.01	1.69	0.02	0.10	0.00
GC 0640	Barley, raw (incl malt extract, incl pot&pearled, incl flour & grits, incl beer, incl malt)	RAC	0.02	36.18	0.72	53.45	1.07	9.39	0.19	35.25	0.71	46.68	0.93	15.92	0.32
HH 0722	Basil, raw (incl dried)	RAC	0.19	0.52	0.10	0.10	0.02	3.23	0.61	0.18	0.03	0.12	0.02	0.27	0.05
FB 0018	Berries and other small fruits, raw, (incl processed), excl small fruit vine climbing (group 004D)	RAC	0.02	14.68	0.29	12.74	0.25	0.23	0.00	11.77	0.24	8.01	0.16	4.08	0.08
VA 0035	Bulb vegetables, raw	RAC	0.05	26.24	1.31	36.47	1.82	39.29	1.96	39.37	1.97	29.12	1.46	20.21	1.01
VB 0041	Cabbages, head, raw	RAC	0.08	8.97	0.72	27.12	2.17	1.44	0.12	24.96	2.00	4.55	0.36	11.23	0.90
FS 0013	Cherries, raw	RAC	0.125	1.40	0.18	4.21	0.53	0.10	0.01	2.93	0.37	1.50	0.19	NC	-
FC 0001	Citrus fruit, raw (incl citrus fruit juice, incl kumquat commodities)	RAC	0.01	114.42	1.14	62.91	0.63	26.97	0.27	96.72	0.97	96.22	0.96	563.19	5.63
SB 0716	Coffee beans, raw (i.e. green coffee)	RAC	0.01	0.60	0.01	NC	-	0.62	0.01	1.71	0.02	NC	-	3.51	0.04
OR 0691	Cotton seed oil, edible	PP	0.001	1.68	0.00	0.66	0.00	1.13	0.00	1.18	0.00	0.89	0.00	0.37	0.00
MO 0105	Edible offal (mammalian), raw	RAC	0.03	15.17	0.46	5.19	0.16	6.30	0.19	6.78	0.20	3.32	0.10	3.17	0.10
VO 0440	Egg plants, raw (= aubergines)	RAC	0.03	1.01	0.03	1.69	0.05	21.37	0.64	3.00	0.09	1.40	0.04	NC	-
VB 0042	Flowerhead brassicas, raw	RAC	0.215	9.50	2.04	6.77	1.46	9.03	1.94	3.21	0.69	9.36	2.01	0.87	0.19
VC 0045	Fruiting vegetables, cucurbits, raw	RAC	0.01	27.81	0.28	41.93	0.42	123.30	1.23	49.47	0.49	15.95	0.16	35.99	0.36
JF 0269	Grape juice	PP	0.01	0.56	0.01	1.96	0.02	0.10	0.00	2.24	0.02	2.27	0.02	0.34	0.00
-	Grape wine (incl vermouths)	PP	0.01	88.93	0.89	62.41	0.62	1.84	0.02	25.07	0.25	61.17	0.61	5.84	0.06
DF 0269	Grape, dried (= currants, raisins and sultanas)	PP	0.06	3.09	0.19	1.51	0.09	0.10	0.01	1.38	0.08	4.26	0.26	0.42	0.03

Annex 3

CYHALOTHRIN (including Lambda-cyhalothrin) (146) International Estimated Daily Intake (IEDI) ADI = 0 - 0.02 mg/kg bw

			STMR	Diets as g/person/day			Intake as µg//person/day								
Codex Code	Commodity description	Expr as	mg/kg	G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
FB 0269	Grape, raw (incl must, excl dried, excl juice, excl wine)	RAC	0.02	6.48	0.13	11.31	0.23	5.21	0.10	9.50	0.19	4.66	0.09	0.78	0.02
VP 0060	Legume vegetables, raw	RAC	0.02	18.21	0.36	8.91	0.18	7.22	0.14	10.04	0.20	23.22	0.46	0.17	0.00
GC 0645	Maize, raw (incl glucose & dextrose & isoglucose, incl flour, incl oil, incl beer, incl germ, incl starch)	RAC	0.01	18.51	0.19	26.18	0.26	26.04	0.26	39.99	0.40	7.36	0.07	64.58	0.65
MF 0100	Mammalian fats, raw, excl milk fats (incl rendered fats)	RAC	1	6.44	6.44	15.51	15.51	3.79	3.79	8.29	8.29	18.44	18.44	8.00	8.00
FI 0345	Mango, raw (incl canned mango, incl mango juice)	RAC	0.03	1.80	0.05	0.63	0.02	10.05	0.30	1.07	0.03	3.52	0.11	16.44	0.49
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) - 20% as fat	RAC	1	28.01	28.01	30.18	30.18	15.86	15.86	22.25	22.25	24.06	24.06	10.25	10.25
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) -80% as muscle	RAC	0.04	112.02	4.48	120.71	4.83	63.46	2.54	88.99	3.56	96.24	3.85	41.02	1.64
ML 0106	Milks, raw or skimmed (incl dairy products)	RAC	0.08	388.92	31.11	335.88	26.87	49.15	3.93	331.25	26.50	468.56	37.48	245.45	19.64
GC 0647	Oats, raw (incl rolled)	RAC	0.01	7.50	0.08	6.26	0.06	0.15	0.00	4.87	0.05	3.16	0.03	2.98	0.03
SO 0089	Oilseeds, raw	RAC	0.01	2.97	0.03	4.12	0.04	5.94	0.06	7.42	0.07	1.87	0.02	0.96	0.01
VO 0442	Okra, raw	RAC	0.03	NC	-	NC	-	0.10	0.00	0.17	0.01	NC	-	0.72	0.02
-	Olive oil (virgin and residue oil)	PP	0.091	3.40	0.31	9.49	0.86	0.10	0.01	4.28	0.39	2.74	0.25	0.48	0.04
JF 0004	Oranges, juice (single strength, incl. concentrated)	PP	0.0165	33.31	0.55	1.78	0.03	0.28	0.00	18.97	0.31	14.01	0.23	13.36	0.22
FS 2001	Peaches, nectarines, apricots, raw	RAC	0.1	10.82	1.08	15.31	1.53	8.28	0.83	11.82	1.18	4.08	0.41	0.10	0.01
VO 0443	Pepino (Melon pear, Tree melon)	RAC	0.03	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
-	Peppers, chili, dried	PP	0.35	0.11	0.04	0.21	0.07	0.36	0.13	0.21	0.07	0.25	0.09	0.15	0.05
VO 0444	Peppers, chili, raw	RAC	0.03	5.57	0.17	14.00	0.42	8.25	0.25	5.77	0.17	6.44	0.19	2.53	0.08
VO 0445	Peppers, sweet, raw (incl dried)	RAC	0.03	0.82	0.02	1.53	0.05	10.85	0.33	4.59	0.14	1.84	0.06	2.00	0.06
FS 0014	Plums, raw (incl dried plums, incl Chinese jujube)	RAC	0.02	5.55	0.11	4.37	0.09	6.08	0.12	3.66	0.07	3.93	0.08	0.46	0.01
FP 0009	Pome fruit, raw (incl cider, excl apple juice)	RAC	0.08	51.09	4.09	65.40	5.23	42.71	3.42	45.29	3.62	62.51	5.00	7.74	0.62
VD 0070	Pulses, raw (incl processed)	RAC	0.01	112.88	1.13	123.05	1.23	47.15	0.47	204.64	2.05	227.37	2.27	109.11	1.09
CM 1205	Rice polished, dry	PP	0.003	13.38	0.04	10.80	0.03	262.08	0.79	57.16	0.17	12.83	0.04	62.78	0.19
CM 0649 (GC 0649)	Rice, husked, dry (incl flour, incl oil, incl beverages, incl starch, excl polished)	REP	0.295	3.70	1.09	2.11	0.62	1.51	0.45	1.75	0.52	0.29	0.09	5.12	1.51
VR 0075	Root and tuber vegetables, raw (incl processed)	RAC	0	290.31	0.00	300.35	0.00	214.25	0.00	242.72	0.00	348.67	0.00	137.52	0.00

CYHALOTHRIN (including Lambda-cyhalothrin) (146) International Estimated Daily Intake (IEDI) ADI = 0 - 0.02 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
				Diets as g/person/day			Intake as µg//person/day								
GC 0650	Rye, raw (incl flour)	RAC	0.01	3.21	0.03	35.38	0.35	0.21	0.00	6.50	0.07	1.49	0.01	NC	-
-	Sµg/ar cane, molasses	PP	0.001	NC	-	NC	-	0.10	0.00	NC	-	NC	-	NC	-
GS 0659	Sµg/ar cane, raw	RAC	0.02	NC	-	NC	-	4.27	0.09	0.10	0.00	NC	-	3.24	0.06
-	Sµg/ar cane, sµg/ar (incl non-centrifµg/al sµg/ar, incl refined sµg/ar and maltose)	PP	0.001	92.24	0.09	95.72	0.10	24.12	0.02	77.39	0.08	117.73	0.12	100.67	0.10
VO 0447	Sweet corn on the cob, raw (incl frozen, incl canned) (i.e. kernels plus cob without husks)	RAC	0.03	11.43	0.34	3.71	0.11	0.74	0.02	13.63	0.41	3.07	0.09	1.50	0.05
FT 0305	Table olive, raw (incl preserved)	RAC	0.125	2.00	0.25	2.48	0.31	0.10	0.01	1.21	0.15	1.64	0.21	0.27	0.03
JF 0448	Tomato, juice (single strength, incl concentrated)	PP	0.002	0.80	0.00	0.10	0.00	0.10	0.00	0.61	0.00	0.40	0.00	0.10	0.00
-	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	0.007	4.96	0.03	3.20	0.02	0.15	0.00	1.61	0.01	6.88	0.05	0.52	0.00
VO 0448	Tomato, raw (incl canned, excl juice, excl paste)	RAC	0.03	43.88	1.32	55.41	1.66	35.38	1.06	74.88	2.25	26.50	0.80	9.51	0.29
TN 0085	Tree nuts, raw (incl processed)	RAC	0.01	8.52	0.09	8.94	0.09	15.09	0.15	9.60	0.10	14.57	0.15	26.26	0.26
GC 0653	Triticale, raw (incl flour)	RAC	0.01	0.10	0.00	0.17	0.00	0.29	0.00	0.10	0.00	NC	-	NC	-
CF 0654	Wheat, bran	PP	0.045	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
GC 0654	Wheat, raw (incl bulgur, incl fermented beverages, incl germ, incl wholemeal bread, incl white flour products, incl white bread)	RAC	0.01	253.07	2.53	244.73	2.45	134.44	1.34	235.10	2.35	216.39	2.16	167.40	1.67
	Total intake (µg//person)=				92.7		102.9		43.8		83.9		104.5		55.9
	Bodyweight per region (kg bw) =				60		60		55		60		60		60
	ADI (µg//person)=				1200		1200		1100		1200		1200		1200
	%ADI=				7.7%		8.6%		4.0%		7.0%		8.7%		4.7%
	Rounded %ADI=				8%		9%		4%		7%		9%		5%

CYHALOTHRIN (including Lambda-cyhalothrin) (146) International Estimated Daily Intake (IEDI) ADI = 0 - 0.02 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
				Diets: g/person/day			Intake = daily intake: µg//person						
JF 0226	Apple juice, single strength (incl. concentrated)	PP	0.008	0.10	0.00	0.10	0.00	7.19	0.06	0.10	0.00	NC	-
VS 0621	Asparagus	RAC	0.01	0.10	0.00	0.10	0.00	0.17	0.00	0.10	0.00	NC	-
GC 0640	Barley, raw (incl malt extract, incl pot&pearled, incl flour & grits, incl beer, incl malt)	RAC	0.02	11.58	0.23	2.33	0.05	46.71	0.93	3.72	0.07	16.26	0.33
HH 0722	Basil, raw (incl dried)	RAC	0.19	0.25	0.05	0.18	0.03	0.13	0.02	0.17	0.03	0.33	0.06

Annex 3

CYHALOTHRIN (including Lambda-cyhalothrin) (146) International Estimated Daily Intake (IEDI) ADI = 0 - 0.02 mg/kg bw

			STMR	Diets: g/person/day		Intake = daily intake: µg//person							
Codex Code	Commodity description	Expr as	mg/kg	G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
FB 0018	Berries and other small fruits, raw, (incl processed), excl small fruit vine climbing (group 004D)	RAC	0.02	1.54	0.03	18.66	0.37	11.59	0.23	0.81	0.02	4.99	0.10
VA 0035	Bulb vegetables, raw	RAC	0.05	11.28	0.56	23.80	1.19	36.11	1.81	9.66	0.48	8.69	0.43
VB 0041	Cabbages, head, raw	RAC	0.08	3.82	0.31	2.99	0.24	49.16	3.93	0.10	0.01	NC	-
FS 0013	Cherries, raw	RAC	0.125	0.10	0.01	0.10	0.01	5.96	0.75	0.10	0.01	NC	-
FC 0001	Citrus fruit, raw (incl citrus fruit juice, incl kumquat commodities)	RAC	0.01	21.16	0.21	2.94	0.03	58.52	0.59	0.44	0.00	5.13	0.05
SB 0716	Coffee beans, raw (i.e. green coffee)	RAC	0.01	0.83	0.01	0.69	0.01	1.09	0.01	2.91	0.03	0.82	0.01
OR 0691	Cotton seed oil, edible	PP	0.001	1.28	0.00	0.10	0.00	0.45	0.00	0.42	0.00	0.15	0.00
MO 0105	Edible offal (mammalian), raw	RAC	0.03	4.64	0.14	1.97	0.06	10.01	0.30	3.27	0.10	3.98	0.12
VO 0440	Egg plants, raw (= aubergines)	RAC	0.03	1.31	0.04	8.26	0.25	3.95	0.12	0.10	0.00	NC	-
VB 0042	Flowerhead brassicas, raw	RAC	0.215	0.10	0.02	0.10	0.02	4.86	1.04	0.10	0.02	NC	-
VC 0045	Fruiting vegetables, cucurbits, raw	RAC	0.01	5.96	0.06	9.74	0.10	51.82	0.52	13.61	0.14	0.10	0.00
JF 0269	Grape juice	PP	0.01	0.10	0.00	0.10	0.00	0.41	0.00	0.10	0.00	NC	-
-	Grape wine (incl vermouths)	PP	0.01	0.31	0.00	0.23	0.00	60.43	0.60	0.52	0.01	31.91	0.32
DF 0269	Grape, dried (= currants, raisins and sultanas)	PP	0.06	0.10	0.01	0.13	0.01	1.06	0.06	0.10	0.01	0.10	0.01
FB 0269	Grape, raw (incl must, excl dried, excl juice, excl wine)	RAC	0.02	0.14	0.00	0.36	0.01	15.33	0.31	0.10	0.00	0.28	0.01
VP 0060	Legume vegetables, raw	RAC	0.02	0.58	0.01	3.16	0.06	10.38	0.21	0.10	0.00	NC	-
GC 0645	Maize, raw (incl glucose & dextrose & isoglucose, incl flour, incl oil, incl beer, incl germ, incl starch)	RAC	0.01	116.66	1.17	10.52	0.11	38.46	0.38	76.60	0.77	34.44	0.34
MF 0100	Mammalian fats, raw, excl milk fats (incl rendered fats)	RAC	1	1.05	1.05	1.14	1.14	18.69	18.69	0.94	0.94	3.12	3.12
FI 0345	Mango, raw (incl canned mango, incl mango juice)	RAC	0.03	12.25	0.37	6.83	0.20	0.76	0.02	0.10	0.00	20.12	0.60
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) - 20% as fat	RAC	1	5.84	5.84	10.18	10.18	24.29	24.29	4.52	4.52	14.43	14.43
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) -80% as muscle	RAC	0.04	23.34	0.93	40.71	1.63	97.15	3.89	18.06	0.72	57.71	2.31
ML 0106	Milks, raw or skimmed (incl dairy products)	RAC	0.08	108.75	8.70	70.31	5.62	436.11	34.89	61.55	4.92	79.09	6.33
GC 0647	Oats, raw (incl rolled)	RAC	0.01	0.37	0.00	0.10	0.00	2.79	0.03	0.10	0.00	NC	-
SO 0089	Oilseeds, raw	RAC	0.01	10.97	0.11	1.26	0.01	1.75	0.02	16.04	0.16	2.96	0.03
VO 0442	Okra, raw	RAC	0.03	6.23	0.19	0.10	0.00	NC	-	NC	-	NC	-
-	Olive oil (virgin and residue oil)	PP	0.091	0.10	0.01	0.10	0.01	2.14	0.19	0.10	0.01	0.10	0.01
JF 0004	Oranges, juice (single strength, incl. concentrated)	PP	0.0165	0.10	0.00	0.26	0.00	12.61	0.21	0.14	0.00	0.33	0.01
FS 2001	Peaches, nectarines, apricots, raw	RAC	0.1	0.10	0.01	0.10	0.01	9.93	0.99	0.10	0.01	NC	-
VO 0443	Pepino (Melon pear, Tree melon)	RAC	0.03	NC	-	NC	-	NC	-	NC	-	NC	-
-	Peppers, chili, dried	PP	0.35	0.58	0.20	1.27	0.44	1.21	0.42	0.12	0.04	NC	-
VO 0444	Peppers, chili, raw	RAC	0.03	3.47	0.10	3.56	0.11	16.30	0.49	0.10	0.00	NC	-
VO 0445	Peppers, sweet, raw (incl dried)	RAC	0.03	5.49	0.16	10.57	0.32	8.84	0.27	0.91	0.03	NC	-

CYHALOTHRIN (including Lambda-cyhalothrin) (146) International Estimated Daily Intake (IEDI) ADI = 0 - 0.02 mg/kg bw

			STMR	Diets: g/person/day		Intake = daily intake: µg//person							
Codex Code	Commodity description	Expr as	mg/kg	G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
FS 0014	Plums, raw (incl dried plums, incl Chinese jujube)	RAC	0.02	0.10	0.00	0.10	0.00	16.65	0.33	0.10	0.00	NC	-
FP 0009	Pome fruit, raw (incl cider, excl apple juice)	RAC	0.08	68.85	5.51	10.93	0.87	70.82	5.67	189.78	15.18	19.56	1.56
VD 0070	Pulses, raw (incl processed)	RAC	0.01	44.03	0.44	29.00	0.29	112.51	1.13	75.50	0.76	39.69	0.40
CM 1205	Rice polished, dry	PP	0.003	30.20	0.09	218.34	0.66	12.77	0.04	15.24	0.05	51.35	0.15
CM 0649 (GC 0649)	Rice, husked, dry (incl flour, incl oil, incl beverages, incl starch, excl polished)	REP	0.295	13.58	4.01	4.29	1.27	2.17	0.64	0.10	0.03	8.84	2.61
VR 0075	Root and tuber vegetables, raw (incl processed)	RAC	0	282.25	0.00	232.11	0.00	281.91	0.00	620.21	0.00	459.96	0.00
GC 0650	Rye, raw (incl flour)	RAC	0.01	0.10	0.00	0.10	0.00	13.95	0.14	0.10	0.00	0.88	0.01
-	Sµg/ar cane, molasses	PP	0.001	NC	-	NC	-	NC	-	NC	-	NC	-
GS 0659	Sµg/ar cane, raw	RAC	0.02	5.62	0.11	50.91	1.02	NC	-	11.04	0.22	0.10	0.00
-	Sµg/ar cane, sµg/ar (incl non-centrifµg/al sµg/ar, incl refined sµg/ar and maltose)	PP	0.001	28.13	0.03	55.38	0.06	78.09	0.08	18.04	0.02	45.60	0.05
VO 0447	Sweet corn on the cob, raw (incl frozen, incl canned) (i.e. kernels plus cob without husks)	RAC	0.03	3.63	0.11	20.50	0.62	8.78	0.26	0.10	0.00	0.17	0.01
FT 0305	Table olive, raw (incl preserved)	RAC	0.125	0.10	0.01	0.10	0.01	1.75	0.22	0.10	0.01	0.24	0.03
JF 0448	Tomato, juice (single strength, incl concentrated)	PP	0.002	0.10	0.00	0.10	0.00	0.42	0.00	0.10	0.00	0.10	0.00
-	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	0.007	0.58	0.00	0.22	0.00	2.21	0.02	0.24	0.00	3.10	0.02
VO 0448	Tomato, raw (incl canned, excl juice, excl paste)	RAC	0.03	13.10	0.39	4.90	0.15	62.16	1.86	1.04	0.03	0.10	0.00
TN 0085	Tree nuts, raw (incl processed)	RAC	0.01	4.39	0.04	135.53	1.36	6.11	0.06	0.72	0.01	317.74	3.18
GC 0653	Triticale, raw (incl flour)	RAC	0.01	0.10	0.00	NC	-	NC	-	NC	-	NC	-
CF 0654	Wheat, bran	PP	0.045	NC	-	NC	-	NC	-	NC	-	NC	-
GC 0654	Wheat, raw (incl bulgur, incl fermented beverages, incl germ, incl wholemeal bread, incl white flour products, incl white bread)	RAC	0.01	57.20	0.57	110.47	1.10	272.62	2.73	25.82	0.26	132.04	1.32
	Total intake (µg//person)=				31.9		29.6		109.4		29.6		37.9
	Bodyweight per region (kg bw) =				60		60		60		60		60
	ADI (µg//person)=				1200		1200		1200		1200		1200
	%ADI=				2.7%		2.5%		9.1%		2.5%		3.2%
	Rounded %ADI=				3%		2%		9%		2%		3%

LINDANE (48) International Estimated Daily Intake (IEDI) ADI = 0 - 0.0050 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day G01 diet	Intake as µg/person/day G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
GC 0080	Cereal grains, raw, (incl processed)	RAC	0.005	484.29	2.42	464.63	2.32	262.36	1.31	486.81	2.43	469.62	2.35	614.04	3.07
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) -80% as muscle	RAC	0.00007	24.96	0.00	57.95	0.00	16.70	0.00	38.38	0.00	26.46	0.00	29.00	0.00
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) - 20% as fat	RAC	0.0005	6.24	0.00	14.49	0.01	4.18	0.00	9.60	0.00	6.62	0.00	7.25	0.00
MO 0105	Edible offal (mammalian), raw	RAC	0.00002	4.79	0.00	9.68	0.00	2.97	0.00	5.49	0.00	3.84	0.00	5.03	0.00
ML 0106	Milks, raw or skimmed (incl dairy products)	RAC	0.00003	289.65	0.01	485.88	0.01	26.92	0.00	239.03	0.01	199.91	0.01	180.53	0.01
PM 0110	Poultry meat, raw (incl prepared) - 90% as muscle	RAC	0.0006	13.17	0.01	26.78	0.02	7.24	0.00	116.71	0.07	22.54	0.01	32.09	0.02
PM 0110	Poultry meat, raw (incl prepared) - 10% as fat	RAC	0.0008	1.46	0.00	2.98	0.00	0.80	0.00	12.97	0.01	2.50	0.00	3.57	0.00
PE 0112	Eggs, raw, (incl dried)	RAC	0.0007	7.84	0.01	23.08	0.02	2.88	0.00	14.89	0.01	9.81	0.01	14.83	0.01
	Total intake (µg/person)=				2.4		2.4		1.3		2.5		2.4		3.1
	Bodyweight per region (kg bw) =				60		60		60		60		60		60
	ADI (µg/person)=				300		300		300		300		300		300
	%ADI=				0.8%		0.8%		0.4%		0.8%		0.8%		1.0%
	Rounded %ADI=				1%		1%		0%		1%		1%		1%

LINDANE (048) International Estimated Daily Intake (IEDI) ADI = 0 - 0.0050 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day G07 diet	Intake as µg/person/day G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
GC 0080	Cereal grains, raw, (incl processed)	RAC	0.005	345.63	1.73	386.16	1.93	514.33	2.57	402.72	2.01	295.30	1.48	359.97	1.80
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) -80% as muscle	RAC	0.00007	112.02	0.01	120.71	0.01	63.46	0.00	88.99	0.01	96.24	0.01	41.02	0.00
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) - 20% as fat	RAC	0.0005	28.01	0.01	30.18	0.02	15.86	0.01	22.25	0.01	24.06	0.01	10.25	0.01
MO 0105	Edible offal (mammalian), raw	RAC	0.00002	15.17	0.00	5.19	0.00	6.30	0.00	6.78	0.00	3.32	0.00	3.17	0.00
ML 0106	Milks, raw or skimmed (incl dairy products)	RAC	0.00003	388.92	0.01	335.88	0.01	49.15	0.00	331.25	0.01	468.56	0.01	245.45	0.01
PM 0110	Poultry meat, raw (incl prepared) - 90% as muscle	RAC	0.0006	66.38	0.04	48.47	0.03	21.58	0.01	78.41	0.05	48.04	0.03	76.01	0.05
PM 0110	Poultry meat, raw (incl prepared) - 10% as fat	RAC	0.0008	7.38	0.01	5.39	0.00	2.40	0.00	8.71	0.01	5.34	0.00	8.45	0.01
PE 0112	Eggs, raw, (incl dried)	RAC	0.0007	25.84	0.02	29.53	0.02	28.05	0.02	33.19	0.02	36.44	0.03	8.89	0.01
	Total intake (µg/person)=				1.8		2.0		2.6		2.1		1.6		1.9
	Bodyweight per region (kg bw) =				60		60		55		60		60		60

LINDANE (048) International Estimated Daily Intake (IEDI) ADI = 0 - 0.0050 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day G07 diet	G07 intake	G08 diet	Intake as µg/person/day G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
	ADI (µg/person)=				300		300		275		300		300		300
	%ADI=				0.6%		0.7%		1.0%		0.7%		0.5%		0.6%
	Rounded %ADI=				1%		1%		1%		1%		1%		1%

LINDANE (048) International Estimated Daily Intake (IEDI) ADI = 0 - 0.0050 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day G13 diet	G13 intake	G14 diet	Intake = daily intake: µg/person G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
GC 0080	Cereal grains, raw, (incl processed)	RAC	0.005	407.04	2.04	417.04	2.09	402.79	2.01	195.30	0.98	263.26	1.32
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) -80% as muscle	RAC	0.00007	23.34	0.00	40.71	0.00	97.15	0.01	18.06	0.00	57.71	0.00
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) - 20% as fat	RAC	0.0005	5.84	0.00	10.18	0.01	24.29	0.01	4.52	0.00	14.43	0.01
MO 0105	Edible offal (mammalian), raw	RAC	0.00002	4.64	0.00	1.97	0.00	10.01	0.00	3.27	0.00	3.98	0.00
ML 0106	Milks, raw or skimmed (incl dairy products)	RAC	0.00003	108.75	0.00	70.31	0.00	436.11	0.01	61.55	0.00	79.09	0.00
PM 0110	Poultry meat, raw (incl prepared) - 90% as muscle	RAC	0.0006	3.53	0.00	10.83	0.01	51.36	0.03	4.53	0.00	50.00	0.03
PM 0110	Poultry meat, raw (incl prepared) - 10% as fat	RAC	0.0008	0.39	0.00	1.20	0.00	5.71	0.00	0.50	0.00	5.56	0.00
PE 0112	Eggs, raw, (incl dried)	RAC	0.0007	3.84	0.00	4.41	0.00	27.25	0.02	1.13	0.00	7.39	0.01
	Total intake (µg/person)=				2.0		2.1		2.1		1.0		1.4
	Bodyweight per region (kg bw) =				60		60		60		60		60
	ADI (µg/person)=				300		300		300		300		300
	%ADI=				0.7%		0.7%		0.7%		0.3%		0.5%
	Rounded %ADI=				1%		1%		1%		0%		0%

LUFENURON (286) International Estimated Daily Intake (IEDI) ADI = 0 - 000 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day G01 diet	Intake as µg//person/day G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
VC 0046	Melons, raw (excl watermelons)	RAC	0.02	8.90	0.18	8.64	0.17	0.80	0.02	17.90	0.36	2.80	0.06	29.17	0.58
VC 0424	Cucumber, raw	RAC	0.02	8.01	0.16	30.66	0.61	1.45	0.03	19.84	0.40	0.27	0.01	34.92	0.70
VO 0445	Peppers, sweet, raw (incl dried)	RAC	0.15	4.49	0.67	6.44	0.97	7.21	1.08	5.68	0.85	9.52	1.43	8.92	1.34
VO 0448	Tomato, raw	RAC	0.08	41.73	3.34	75.65	6.05	10.66	0.85	82.87	6.63	24.75	1.98	200.93	16.07
-	Tomato, canned (& peeled)	PP	0.014	0.20	0.00	0.31	0.00	0.10	0.00	1.11	0.02	0.11	0.00	1.50	0.02
-	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	0.078	2.34	0.18	1.33	0.10	1.57	0.12	4.24	0.33	0.34	0.03	2.83	0.22
JF 0448	Tomato, juice (single strength, incl concentrated)	PP	0.014	0.29	0.00	0.29	0.00	0.10	0.00	0.38	0.01	0.10	0.00	0.14	0.00
VD 0541	Soya bean, dry, raw (incl paste, incl curd, incl oil, incl sauce)	RAC	0	72.79	0.00	59.05	0.00	20.55	0.00	74.20	0.00	61.12	0.00	73.24	0.00
VR 0589	Potato, raw (incl flour, incl frozen, incl starch, incl tapioca)	RAC	0.01	59.74	0.60	316.14	3.16	9.78	0.10	60.26	0.60	54.12	0.54	119.82	1.20
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) -80% as muscle	RAC	0.012	24.96	0.30	57.95	0.70	16.70	0.20	38.38	0.46	26.46	0.32	29.00	0.35
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) - 20% as fat	RAC	0.3	6.24	1.87	14.49	4.35	4.18	1.25	9.60	2.88	6.62	1.98	7.25	2.18
MF 0100	Mammalian fats, raw, excl milk fats (incl rendered fats)	RAC	0.3	3.29	0.99	6.14	1.84	0.82	0.25	1.57	0.47	2.23	0.67	1.07	0.32
MO 0105	Edible offal (mammalian), raw	RAC	0.025	4.79	0.12	9.68	0.24	2.97	0.07	5.49	0.14	3.84	0.10	5.03	0.13
ML 0106	Milks, raw or skimmed (incl dairy products)	RAC	0.066	289.65	19.12	485.88	32.07	26.92	1.78	239.03	15.78	199.91	13.19	180.53	11.91
PM 0110	Poultry meat, raw (incl prepared)	RAC	0.0006	14.63	0.01	29.76	0.02	8.04	0.00	129.68	0.08	25.04	0.02	35.66	0.02
PF 0111	Poultry fat, raw (incl rendered)	RAC	0.027	0.10	0.00	0.10	0.00	NC	-	0.10	0.00	0.10	0.00	0.10	0.00
PO 0111	Poultry edible offal, raw (incl prepared)	RAC	0.004	0.12	0.00	0.12	0.00	0.11	0.00	5.37	0.02	0.24	0.00	0.10	0.00
PE 0112	Eggs, raw, (incl dried)	RAC	0.01	7.84	0.08	23.08	0.23	2.88	0.03	14.89	0.15	9.81	0.10	14.83	0.15
	Total intake (µg//person)=				27.6		50.5		5.8		29.2		20.4		35.2
	Bodyweight per region (kg bw) =				60		60		60		60		60		60
	ADI (µg//person)=				1200		1200		1200		1200		1200		1200
	%ADI=				2.3%		4.2%		0.5%		2.4%		1.7%		2.9%
	Rounded %ADI=				2%		4%		0%		2%		2%		3%

LUFENURON (286) International Estimated Daily Intake (IEDI) ADI = 0 - 000 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day G07 diet	Intake as µg//person/day G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
VC 0046	Melons, raw (excl watermelons)	RAC	0.02	9.20	0.18	11.95	0.24	14.63	0.29	8.99	0.18	7.86	0.16	2.46	0.05
VC 0424	Cucumber, raw	RAC	0.02	6.72	0.13	11.03	0.22	32.10	0.64	15.10	0.30	4.05	0.08	9.57	0.19
VO 0445	Peppers, sweet, raw (incl dried)	RAC	0.15	0.82	0.12	1.53	0.23	10.85	1.63	4.59	0.69	1.84	0.28	2.00	0.30
VO 0448	Tomato, raw	RAC	0.08	32.13	2.57	51.27	4.10	34.92	2.79	73.37	5.87	15.15	1.21	8.88	0.71
-	Tomato, canned (& peeled)	PP	0.014	7.57	0.11	2.66	0.04	0.30	0.00	0.97	0.01	7.31	0.10	0.41	0.01
-	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	0.078	4.96	0.39	3.20	0.25	0.15	0.01	1.61	0.13	6.88	0.54	0.52	0.04
JF 0448	Tomato, juice (single strength, incl concentrated)	PP	0.014	0.80	0.01	0.10	0.00	0.10	0.00	0.61	0.01	0.40	0.01	0.10	0.00
VD 0541	Soya bean, dry, raw (incl paste, incl curd, incl oil, incl sauce)	RAC	0	106.33	0.00	117.78	0.00	42.12	0.00	195.70	0.00	222.52	0.00	80.47	0.00
VR 0589	Potato, raw (incl flour, incl frozen, incl starch, incl tapioca)	RAC	0.01	225.03	2.25	234.24	2.34	71.48	0.71	177.55	1.78	234.55	2.35	37.71	0.38
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) -80% as muscle	RAC	0.012	112.02	1.34	120.71	1.45	63.46	0.76	88.99	1.07	96.24	1.15	41.02	0.49
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) - 20% as fat	RAC	0.3	28.01	8.40	30.18	9.05	15.86	4.76	22.25	6.67	24.06	7.22	10.25	3.08
MF 0100	Mammalian fats, raw, excl milk fats (incl rendered fats)	RAC	0.3	6.44	1.93	15.51	4.65	3.79	1.14	8.29	2.49	18.44	5.53	8.00	2.40
MO 0105	Edible offal (mammalian), raw	RAC	0.025	15.17	0.38	5.19	0.13	6.30	0.16	6.78	0.17	3.32	0.08	3.17	0.08
ML 0106	Milks, raw or skimmed (incl dairy products)	RAC	0.066	388.92	25.67	335.88	22.17	49.15	3.24	331.25	21.86	468.56	30.92	245.45	16.20
PM 0110	Poultry meat, raw (incl prepared)	RAC	0.0006	73.76	0.04	53.86	0.03	23.98	0.01	87.12	0.05	53.38	0.03	84.45	0.05
PF 0111	Poultry fat, raw (incl rendered)	RAC	0.027	0.10	0.00	0.10	0.00	NC	-	0.10	0.00	0.71	0.02	NC	-
PO 0111	Poultry edible offal, raw (incl prepared)	RAC	0.004	0.33	0.00	0.72	0.00	0.27	0.00	0.35	0.00	0.80	0.00	NC	-
PE 0112	Eggs, raw, (incl dried)	RAC	0.01	25.84	0.26	29.53	0.30	28.05	0.28	33.19	0.33	36.44	0.36	8.89	0.09
	Total intake (µg//person)=				43.8		45.2		16.4		41.6		50.0		24.1
	Bodyweight per region (kg bw) =				60		60		55		60		60		60
	ADI (µg//person)=				1200		1200		1100		1200		1200		1200
	%ADI=				3.6%		3.8%		1.5%		3.5%		4.2%		2.0%
	Rounded %ADI=				4%		4%		1%		3%		4%		2%

Annex 3

LUFENURON (286) International Estimated Daily Intake (IEDI) ADI = 0 - 000 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day G13 diet	G13 intake	G14 diet	Intake = daily intake: µg//person G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
VC 0046	Melons, raw (excl watermelons)	RAC	0.02	0.19	0.00	0.10	0.00	4.98	0.10	0.10	0.00	NC	-
VC 0424	Cucumber, raw	RAC	0.02	0.68	0.01	1.81	0.04	10.40	0.21	0.10	0.00	0.10	0.00
VO 0445	Peppers, sweet, raw (incl dried)	RAC	0.15	5.49	0.82	10.57	1.59	8.84	1.33	0.91	0.14	NC	-
VO 0448	Tomato, raw	RAC	0.08	12.99	1.04	4.79	0.38	58.40	4.67	0.92	0.07	0.10	0.01
-	Tomato, canned (& peeled)	PP	0.014	0.10	0.00	0.10	0.00	2.42	0.03	0.10	0.00	NC	-
-	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	0.078	0.58	0.05	0.22	0.02	2.21	0.17	0.24	0.02	3.10	0.24
JF 0448	Tomato, juice (single strength, incl concentrated)	PP	0.014	0.10	0.00	0.10	0.00	0.42	0.01	0.10	0.00	0.10	0.00
VD 0541	Soya bean, dry, raw (incl paste, incl curd, incl oil, incl sauce)	RAC	0	15.80	0.00	14.29	0.00	104.36	0.00	17.11	0.00	35.20	0.00
VR 0589	Potato, raw (incl flour, incl frozen, incl starch, incl tapioca)	RAC	0.01	23.96	0.24	13.56	0.14	213.41	2.13	104.35	1.04	8.56	0.09
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) -80% as muscle	RAC	0.012	23.34	0.28	40.71	0.49	97.15	1.17	18.06	0.22	57.71	0.69
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) - 20% as fat	RAC	0.3	5.84	1.75	10.18	3.05	24.29	7.29	4.52	1.35	14.43	4.33
MF 0100	Mammalian fats, raw, excl milk fats (incl rendered fats)	RAC	0.3	1.05	0.32	1.14	0.34	18.69	5.61	0.94	0.28	3.12	0.94
MO 0105	Edible offal (mammalian), raw	RAC	0.025	4.64	0.12	1.97	0.05	10.01	0.25	3.27	0.08	3.98	0.10
ML 0106	Milks, raw or skimmed (incl dairy products)	RAC	0.066	108.75	7.18	70.31	4.64	436.11	28.78	61.55	4.06	79.09	5.22
PM 0110	Poultry meat, raw (incl prepared)	RAC	0.0006	3.92	0.00	12.03	0.01	57.07	0.03	5.03	0.00	55.56	0.03
PF 0111	Poultry fat, raw (incl rendered)	RAC	0.027	NC	-	NC	-	0.32	0.01	NC	-	NC	-
PO 0111	Poultry edible offal, raw (incl prepared)	RAC	0.004	0.10	0.00	0.70	0.00	0.97	0.00	0.10	0.00	NC	-
PE 0112	Eggs, raw, (incl dried)	RAC	0.01	3.84	0.04	4.41	0.04	27.25	0.27	1.13	0.01	7.39	0.07
	Total intake (µg//person)=				11.8		10.8		52.1		7.3		11.7
	Bodyweight per region (kg bw) =				60		60		60		60		60
	ADI (µg//person)=				1200		1200		1200		1200		1200
	%ADI=				1.0%		0.9%		4.3%		0.6%		1.0%
	Rounded %ADI=				1%		1%		4%		1%		1%

PYRIMETHANIL (226) International Estimated Daily Intake (IEDI) ADI = 0 - 0.2 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
				Diets as g/person/day			Intake as µg//person/day								
FB 0264	Blackberries, raw	RAC	3.02	0.35	1.06	0.11	0.33	0.10	0.30	0.10	0.30	0.10	0.30	1.23	3.71
FB 0272	Raspberries, red, black, raw	RAC	3.02	0.10	0.30	0.93	2.81	0.10	0.30	0.10	0.30	0.10	0.30	0.10	0.30
FB 0020	Blueberries, raw	RAC	2.06	0.10	0.21	0.10	0.21	0.10	0.21	0.10	0.21	0.10	0.21	0.10	0.21
VC 0424	Cucumber, raw	RAC	0.24	8.01	1.92	30.66	7.36	1.45	0.35	19.84	4.76	0.27	0.06	34.92	8.38
	Total intake (µg//person)=				3.5		10.7		1.2		5.6		0.9		12.6
	Bodyweight per region (kg bw) =				60		60		60		60		60		60
	ADI (µg//person)=				12000		12000		12000		12000		12000		12000
	%ADI=				0.0%		0.1%		0.0%		0.0%		0.0%		0.1%
	Rounded %ADI=				0%		0%		0%		0%		0%		0%

PYRIMETHANIL (226) International Estimated Daily Intake (IEDI) ADI = 0 - 0.2 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
				Diets as g/person/day			Intake as µg//person/day								
FB 0264	Blackberries, raw	RAC	3.02	0.10	0.30	0.52	1.57	0.14	0.42	0.24	0.72	NC	-	0.10	0.30
FB 0272	Raspberries, red, black, raw	RAC	3.02	0.47	1.42	0.91	2.75	0.10	0.30	0.99	2.99	1.14	3.44	NC	-
FB 0020	Blueberries, raw	RAC	2.06	0.10	0.21	0.23	0.47	0.10	0.21	0.83	1.71	0.33	0.68	NC	-
VC 0424	Cucumber, raw	RAC	0.24	6.72	1.61	11.03	2.65	32.10	7.70	15.10	3.62	4.05	0.97	9.57	2.30
	Total intake (µg//person)=				3.5		7.4		8.6		9.0		5.1		2.6
	Bodyweight per region (kg bw) =				60		60		55		60		60		60
	ADI (µg//person)=				12000		12000		11000		12000		12000		12000
	%ADI=				0.0%		0.1%		0.1%		0.1%		0.0%		0.0%
	Rounded %ADI=				0%		0%		0%		0%		0%		0%

Annex 3

PYRIMETHANIL (226) International Estimated Daily Intake (IEDI) ADI = 0 - 0.2 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day			Intake = daily intake: µg//person						
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
FB 0264	Blackberries, raw	RAC	3.02	0.10	0.30	7.29	22.02	0.25	0.76	0.10	0.30	NC	-
FB 0272	Raspberries, red, black, raw	RAC	3.02	0.10	0.30	0.10	0.30	2.04	6.16	0.10	0.30	NC	-
FB 0020	Blueberries, raw	RAC	2.06	NC	-	NC	-	0.20	0.41	NC	-	NC	-
VC 0424	Cucumber, raw	RAC	0.24	0.68	0.16	1.81	0.43	10.40	2.50	0.10	0.02	0.10	0.02
	Total intake (µg//person)=				0.8		22.8		9.8		0.6		0.0
	Bodyweight per region (kg bw) =				60		60		60		60		60
	ADI (µg//person)=				12000		12000		12000		12000		12000
	%ADI=				0.0%		0.2%		0.1%		0.0%		0.0%
	Rounded %ADI=				0%		0%		0%		0%		0%

QUINCLORAC (287) International Estimated Daily Intake (IEDI) ADI = 0 - 0.4 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day	Intake as µg//person/day										
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
FB 0265	Cranberries, raw	RAC	0.35	0.10	0.04	0.10	0.04	NC	-	0.10	0.04	0.10	0.04	0.10	0.04
VS 0627	Rhubarb	RAC	0.36	0.73	0.26	1.30	0.47	0.80	0.29	1.95	0.70	NC	-	0.94	0.34
	Total intake (µg//person)=				0.3		0.5		0.3		0.7		0.0		0.4
	Bodyweight per region (kg bw) =				60		60		60		60		60		60
	ADI (µg//person)=				24000		24000		24000		24000		24000		24000
	%ADI=				0.0%		0.0%		0.0%		0.0%		0.0%		0.0%
	Rounded %ADI=				0%		0%		0%		0%		0%		0%

QUINCLORAC (287) International Estimated Daily Intake (IEDI) ADI = 0 - 0.4 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day	Intake as µg//person/day										
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
FB 0265	Cranberries, raw	RAC	0.35	0.10	0.04	0.10	0.04	0.10	0.04	1.22	0.43	0.11	0.04	NC	-
VS 0627	Rhubarb	RAC	0.36	1.61	0.58	2.23	0.80	NC	-	0.52	0.19	7.63	2.75	1.39	0.50
	Total intake (µg//person)=				0.6		0.8		0.0		0.6		2.8		0.5
	Bodyweight per region (kg bw) =				60		60		55		60		60		60
	ADI (µg//person)=				24000		24000		22000		24000		24000		24000
	%ADI=				0.0%		0.0%		0.0%		0.0%		0.0%		0.0%
	Rounded %ADI=				0%		0%		0%		0%		0%		0%

QUINCLORAC (287) International Estimated Daily Intake (IEDI) ADI = 0 - 0.4 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day	Intake = daily intake: µg//person								
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
FB 0265	Cranberries, raw	RAC	0.35	NC	-	NC	-	0.10	0.04	NC	-	NC	-
VS 0627	Rhubarb	RAC	0.36	1.26	0.45	0.91	0.33	0.96	0.35	0.85	0.31	1.70	0.61
	Total intake (µg/person)=				0.5		0.3		0.4		0.3		0.6
	Bodyweight per region (kg bw) =				60		60		60		60		60
	ADI (µg//person)=				24000		24000		24000		24000		24000
	%ADI=				0.0%		0.0%		0.0%		0.0%		0.0%
	Rounded %ADI=				0%		0%		0%		0%		0%

TEBUCONAZOLE (189) International Estimated Daily Intake (IEDI) ADI = 0 - 0.03 mg/kg bw

			STMR	Diets as g/person/day			Intake as µg/person/day								
Codex Code	Commodity description	Expr as	mg/kg	G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
FP 0226	Apple, raw (incl cider, excl juice)	RAC	0.275	13.49	3.71	26.63	7.32	15.05	4.14	16.28	4.48	6.47	1.78	47.88	13.17
JF 0226	Apple juice, single strength (incl. concentrated)	PP	0.063	0.32	0.02	3.07	0.19	0.10	0.01	5.00	0.32	0.29	0.02	5.57	0.35
FP 0230	Pear, raw	RAC	0.275	2.16	0.59	6.24	1.72	0.10	0.03	4.07	1.12	1.16	0.32	5.34	1.47
FS 0013	Cherries, raw	RAC	0.86	0.92	0.79	9.15	7.87	0.10	0.09	0.61	0.52	0.10	0.09	6.64	5.71
FS 0014	Plums, raw (excl jujube)	RAC	0.08	2.40	0.19	8.60	0.69	0.10	0.01	2.52	0.20	0.58	0.05	4.16	0.33
DF 0014	Plum, dried (prunes)	PP	0.232	0.10	0.02	0.10	0.02	0.10	0.02	0.18	0.04	0.10	0.02	0.10	0.02
FS 2001	Peaches, nectarines, apricots, raw (incl dried apricots)	RAC	0.46	8.01	3.68	5.87	2.70	0.18	0.08	8.19	3.77	1.64	0.75	22.46	10.33
FB 0267	Elderberries, raw (incl processed)	RAC	0.345	0.44	0.15	0.27	0.09	0.34	0.12	1.41	0.49	NC	-	0.87	0.30
FB 0269	Grape, raw (incl must, incl juice, excl dried, excl wine)	RAC	0.72	13.19	9.50	9.61	6.92	0.10	0.07	17.28	12.44	4.00	2.88	54.50	39.24
DF 0269	Grape, dried (= currants, raisins and sultanas)	PP	0.86	0.51	0.44	0.51	0.44	0.10	0.09	1.27	1.09	0.12	0.10	2.07	1.78
-	Grape wine (incl vermouths)	PP	0.2	0.67	0.13	12.53	2.51	2.01	0.40	1.21	0.24	3.53	0.71	4.01	0.80
FT 0305	Table olive, raw (incl preserved)	RAC	0	0.70	0.00	0.32	0.00	0.10	0.00	1.53	0.00	0.17	0.00	1.85	0.00
FI 0327	Banana, raw (incl plantains) (incl dried)	RAC	0.07	5.06	0.35	6.91	0.48	37.17	2.60	31.16	2.18	40.21	2.81	18.96	1.33
FI 0345	Mango, raw	RAC	0.05	10.38	0.52	0.10	0.01	7.24	0.36	6.85	0.34	19.53	0.98	4.52	0.23
FI 0350	Papaya, raw	RAC	0.18	0.35	0.06	0.10	0.02	3.05	0.55	0.80	0.14	7.28	1.31	1.00	0.18
FI 0351	Passion fruit, raw	RAC	0.1	0.58	0.0580	0.10	0.0100	0.59	0.0590	0.60	0.0600	0.18	0.0180	0.10	0.0100
VA 0381	Garlic, raw	RAC	0.02	2.29	0.05	5.78	0.12	0.11	0.00	3.69	0.07	1.65	0.03	3.91	0.08
VA 0384	Leek, raw	RAC	0.195	0.18	0.04	1.59	0.31	0.10	0.02	0.28	0.05	0.10	0.02	3.21	0.63
-	Onions, mature bulbs, dry	RAC	0.055	29.36	1.61	37.50	2.06	3.56	0.20	34.78	1.91	18.81	1.03	43.38	2.39
-	Onions, green, raw	RAC	0.1	2.45	0.25	1.49	0.15	1.02	0.10	2.60	0.26	0.60	0.06	2.03	0.20
VB 0041	Cabbages, head, raw	RAC	0.005	2.73	0.01	27.92	0.14	0.55	0.00	4.47	0.02	4.27	0.02	10.25	0.05
VB 0400	Broccoli, raw	RAC	0.015	0.88	0.01	0.17	0.00	0.10	0.00	1.25	0.02	3.00	0.05	1.09	0.02
VB 0402	Brussels sprouts, raw	RAC	0.095	0.63	0.06	6.41	0.61	0.13	0.01	1.03	0.10	NC	-	2.35	0.22
VB 0404	Cauliflower, raw	RAC	0.05	1.65	0.08	0.32	0.02	0.10	0.01	2.33	0.12	4.79	0.24	2.03	0.10
VC 0046	Melons, raw (excl watermelons)	RAC	0.02	8.90	0.18	8.64	0.17	0.80	0.02	17.90	0.36	2.80	0.06	29.17	0.58
VC 0424	Cucumber, raw	RAC	0.05	8.01	0.40	30.66	1.53	1.45	0.07	19.84	0.99	0.27	0.01	34.92	1.75
VC 0431	Squash, summer, raw (= courgette, zuchini)	RAC	0.05	0.78	0.04	2.06	0.10	0.30	0.02	1.61	0.08	2.25	0.11	2.36	0.12
VO 0440	Egg plants, raw (= aubergines)	RAC	0.04	5.58	0.22	4.31	0.17	0.89	0.04	9.31	0.37	13.64	0.55	20.12	0.80
-	Peppers, chili, dried	PP	1.85	0.42	0.78	0.53	0.98	0.84	1.55	0.50	0.93	0.95	1.76	0.37	0.68
VO 0445	Peppers, sweet, raw	RAC	0.185	1.43	0.26	2.61	0.48	1.05	0.19	2.01	0.37	2.59	0.48	6.24	1.15
VO 0447	Sweet corn on the cob, raw (incl frozen, incl canned) (i.e. kernels plus cob without husks)	RAC	0.06	0.14	0.01	0.94	0.06	5.70	0.34	2.61	0.16	1.94	0.12	0.22	0.01
VO 0448	Tomato, raw	RAC	0.15	41.73	6.26	75.65	11.35	10.66	1.60	82.87	12.43	24.75	3.71	200.93	30.14

TEBUCONAZOLE (189) International Estimated Daily Intake (IEDI) ADI = 0 - 0.03 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day G01 diet	Intake as µg/person/day G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
-	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	0.19	2.34	0.44	1.33	0.25	1.57	0.30	4.24	0.81	0.34	0.06	2.83	0.54
JF 0448	Tomato, juice (single strength, incl concentrated)	PP	0.033	0.29	0.01	0.29	0.01	0.10	0.00	0.38	0.01	0.10	0.00	0.14	0.00
VD 0071	Beans, dry, raw (Phaseolus spp)	RAC	0.05	2.39	0.12	1.61	0.08	10.47	0.52	1.84	0.09	12.90	0.65	7.44	0.37
VD 0541	Soya bean, dry, raw (incl flour, incl paste, incl curd, incl sauce, excl oil)	RAC	0.02	0.63	0.01	1.09	0.02	0.40	0.01	1.40	0.03	1.68	0.03	0.48	0.01
OR 0541	Soya oil, refined	PP	0.001	12.99	0.01	10.43	0.01	3.63	0.00	13.10	0.01	10.70	0.01	13.10	0.01
VR 0577	Carrots, raw	RAC	0.11	9.51	1.05	30.78	3.39	0.37	0.04	8.75	0.96	2.80	0.31	6.10	0.67
VS 0620	Artichoke globe	RAC	0.145	0.69	0.10	0.10	0.01	0.10	0.01	0.32	0.05	0.26	0.04	1.21	0.18
VS 0621	Asparagus	RAC	0.02	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.21	0.00
GC 0640	Barley, raw (incl malt extract, incl pot&pearled, incl flour & grits, incl malt, excl beer)	RAC	0.85	18.98	16.13	13.35	11.35	0.42	0.36	0.67	0.57	2.30	1.96	0.86	0.73
-	Barley beer	PP	0.013	4.87	0.06	93.78	1.22	24.28	0.32	12.76	0.17	39.28	0.51	18.15	0.24
GC 0647	Oats, raw	RAC	0.085	0.10	0.01	NC	-	0.10	0.01	0.45	0.04	0.10	0.01	0.10	0.01
CM 0649 (GC 0649)	Rice, husked, dry (incl polished, incl flour, incl starch, incl oil, incl beverages)	REP	0.275	45.40	12.49	14.99	4.12	84.88	23.34	111.73	30.73	194.75	53.56	93.12	25.61
GC 0650	Rye, raw	RAC	0.05	NC	-	NC	-	0.10	0.01	0.10	0.01	0.10	0.01	0.10	0.01
GC 0653	Triticale, raw	RAC	0.05	NC	-	NC	-	NC	-	0.10	0.01	NC	-	NC	-
GC 0654	Wheat, raw (incl bulgur, incl fermented beverages, incl germ, incl wholemeal bread, incl white flour products, incl white bread)	RAC	0.05	381.15	19.06	341.55	17.08	38.35	1.92	281.89	14.09	172.83	8.64	434.07	21.70
TN 0085	Tree nuts, raw (incl processed)	RAC	0	4.06	0.00	3.27	0.00	7.01	0.00	13.93	0.00	14.01	0.00	9.36	0.00
SO 0495	Rape seed, raw (incl oil)	RAC	0.1	0.93	0.09	1.16	0.12	0.49	0.05	2.53	0.25	9.32	0.93	2.02	0.20
OR 0691	Cotton seed oil, edible	PP	0	3.22	0.00	1.54	0.00	1.01	0.00	0.74	0.00	1.12	0.00	2.93	0.00
SO 0697	Peanuts, nutmeat, raw (incl roasted, incl oil, incl butter)	RAC	0.035	1.30	0.05	1.23	0.04	12.62	0.44	2.87	0.10	6.59	0.23	2.67	0.09
SO 0702	Sunflower seed, raw	RAC	0.04	0.10	0.00	0.33	0.01	0.10	0.00	0.24	0.01	0.10	0.00	0.10	0.00
SM 0716	Coffee beans, roasted	PP	0.08	0.19	0.02	0.91	0.07	0.16	0.01	2.50	0.20	0.39	0.03	0.40	0.03
DH 1100	Hops, dry	RAC	9.65	0.10	0.97	0.10	0.97	0.10	0.97	0.10	0.97	NC	-	0.10	0.97
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat)	RAC	0	31.20	0.00	72.44	0.00	20.88	0.00	47.98	0.00	33.08	0.00	36.25	0.00
MO 0105	Edible offal (mammalian), raw	RAC	0.06	4.79	0.29	9.68	0.58	2.97	0.18	5.49	0.33	3.84	0.23	5.03	0.30
ML 0106	Milks, raw or skimmed (incl dairy products)	RAC	0	289.65	0.00	485.88	0.00	26.92	0.00	239.03	0.00	199.91	0.00	180.53	0.00
PM 0110	Poultry meat, raw (incl prepared)	RAC	0	14.63	0.00	29.76	0.00	8.04	0.00	129.68	0.00	25.04	0.00	35.66	0.00
PO 0111	Poultry edible offal, raw (incl prepared)	RAC	0.05	0.12	0.01	0.12	0.01	0.11	0.01	5.37	0.27	0.24	0.01	0.10	0.01
PE 0112	Eggs, raw, (incl dried)	RAC	0	7.84	0.00	23.08	0.00	2.88	0.00	14.89	0.00	9.81	0.00	14.83	0.00
	Total intake (µg/person)=				81.4		88.6		41.3		95.4		87.3		165.9

Annex 3

TEBUCONAZOLE (189) International Estimated Daily Intake (IEDI) ADI = 0 - 0.03 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day G01 diet	G01 intake	G02 diet	Intake as µg/person/day G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
	Bodyweight per region (kg bw) =				60		60		60		60		60		60
	ADI (µg/person)=				1800		1800		1800		1800		1800		1800
	%ADI=				4.5%		4.9%		2.3%		5.3%		4.9%		9.2%
	Rounded %ADI=				5%		5%		2%		5%		5%		9%

TEBUCONAZOLE (189) International Estimated Daily Intake (IEDI) ADI = 0 - 0.03 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day G07 diet	G07 intake	G08 diet	Intake as µg/person/day G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
FP 0226	Apple, raw (incl cider, excl juice)	RAC	0.275	41.14	11.31	56.49	15.53	26.64	7.33	31.58	8.68	51.94	14.28	3.05	0.84
JF 0226	Apple juice, single strength (incl. concentrated)	PP	0.063	14.88	0.94	11.98	0.75	0.15	0.01	9.98	0.63	30.32	1.91	3.47	0.22
FP 0230	Pear, raw	RAC	0.275	8.79	2.42	8.44	2.32	12.37	3.40	9.60	2.64	10.27	2.82	0.23	0.06
FS 0013	Cherries, raw	RAC	0.86	1.40	1.20	4.21	3.62	0.10	0.09	2.93	2.52	1.50	1.29	NC	-
FS 0014	Plums, raw (excl jujube)	RAC	0.08	3.75	0.30	3.33	0.27	5.94	0.48	2.64	0.21	2.50	0.20	0.10	0.01
DF 0014	Plum, dried (prunes)	PP	0.232	0.61	0.14	0.35	0.08	0.10	0.02	0.35	0.08	0.49	0.11	0.13	0.03
FS 2001	Peaches, nectarines, apricots, raw (incl dried apricots)	RAC	0.46	13.03	5.99	16.29	7.49	8.29	3.81	12.95	5.96	5.35	2.46	0.10	0.05
FB 0267	Elderberries, raw (incl processed)	RAC	0.345	8.20	2.83	0.14	0.05	NC	-	NC	-	NC	-	1.87	0.65
FB 0269	Grape, raw (incl must, incl juice, excl dried, excl wine)	RAC	0.72	7.18	5.17	13.73	9.89	5.24	3.77	12.27	8.83	7.46	5.37	1.21	0.87
DF 0269	Grape, dried (= currants, raisins and sultanas)	PP	0.86	3.09	2.66	1.51	1.30	0.10	0.09	1.38	1.19	4.26	3.66	0.42	0.36
-	Grape wine (incl vermouths)	PP	0.2	88.93	17.79	62.41	12.48	1.84	0.37	25.07	5.01	61.17	12.23	5.84	1.17
FT 0305	Table olive, raw (incl preserved)	RAC	0	2.00	0.00	2.48	0.00	0.10	0.00	1.21	0.00	1.64	0.00	0.27	0.00
FI 0327	Banana, raw (incl plantains) (incl dried)	RAC	0.07	25.14	1.76	23.37	1.64	23.06	1.61	23.40	1.64	18.44	1.29	39.29	2.75
FI 0345	Mango, raw	RAC	0.05	1.80	0.09	0.63	0.03	9.73	0.49	1.07	0.05	3.52	0.18	16.44	0.82
FI 0350	Papaya, raw	RAC	0.18	0.31	0.06	0.18	0.03	1.50	0.27	0.51	0.09	0.54	0.10	1.08	0.19
FI 0351	Passion fruit, raw	RAC	0.1	0.10	0.0100	0.10	0.0100	NC	-	NC	-	0.10	0.0100	NC	-
VA 0381	Garlic, raw	RAC	0.02	0.98	0.02	1.49	0.03	12.88	0.26	3.74	0.07	2.05	0.04	1.14	0.02
VA 0384	Leek, raw	RAC	0.195	4.01	0.78	4.41	0.86	0.72	0.14	0.54	0.11	16.41	3.20	0.10	0.02
-	Onions, mature bulbs, dry	RAC	0.055	19.69	1.08	29.83	1.64	24.64	1.36	31.35	1.72	9.72	0.53	12.59	0.69
-	Onions, green, raw	RAC	0.1	1.55	0.16	0.74	0.07	1.05	0.11	3.74	0.37	0.94	0.09	6.45	0.65
VB 0041	Cabbages, head, raw	RAC	0.005	8.97	0.04	27.12	0.14	1.44	0.01	24.96	0.12	4.55	0.02	11.23	0.06
VB 0400	Broccoli, raw	RAC	0.015	4.24	0.06	1.76	0.03	NC	-	0.51	0.01	3.79	0.06	0.26	0.00

TEBUCONAZOLE (189) International Estimated Daily Intake (IEDI) ADI = 0 - 0.03 mg/kg bw

			STMR	Diets as g/person/day		Intake as µg/person/day									
Codex Code	Commodity description	Expr as	mg/kg	G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
VB 0402	Brussels sprouts, raw	RAC	0.095	2.24	0.21	2.67	0.25	6.23	0.59	0.32	0.03	4.19	0.40	2.58	0.25
VB 0404	Cauliflower, raw	RAC	0.05	5.27	0.26	5.01	0.25	NC	-	2.70	0.14	5.57	0.28	0.49	0.02
VC 0046	Melons, raw (excl watermelons)	RAC	0.02	9.20	0.18	11.95	0.24	14.63	0.29	8.99	0.18	7.86	0.16	2.46	0.05
VC 0424	Cucumber, raw	RAC	0.05	6.72	0.34	11.03	0.55	32.10	1.61	15.10	0.76	4.05	0.20	9.57	0.48
VC 0431	Squash, summer, raw (= courgette, zuchini)	RAC	0.05	NC	-	NC	-	5.48	0.27	NC	-	NC	-	1.03	0.05
VO 0440	Egg plants, raw (= aubergines)	RAC	0.04	1.01	0.04	1.69	0.07	21.37	0.85	3.00	0.12	1.40	0.06	NC	-
-	Peppers, chili, dried	PP	1.85	0.11	0.20	0.21	0.39	0.36	0.67	0.21	0.39	0.25	0.46	0.15	0.28
VO 0445	Peppers, sweet, raw	RAC	0.185	NC	-	NC	-	8.25	1.53	3.03	0.56	NC	-	0.91	0.17
VO 0447	Sweet corn on the cob, raw (incl frozen, incl canned) (i.e. kernels plus cob without husks)	RAC	0.06	11.43	0.69	3.71	0.22	0.74	0.04	13.63	0.82	3.07	0.18	1.50	0.09
VO 0448	Tomato, raw	RAC	0.15	32.13	4.82	51.27	7.69	34.92	5.24	73.37	11.01	15.15	2.27	8.88	1.33
-	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	0.19	4.96	0.94	3.20	0.61	0.15	0.03	1.61	0.31	6.88	1.31	0.52	0.10
JF 0448	Tomato, juice (single strength, incl concentrated)	PP	0.033	0.80	0.03	0.10	0.00	0.10	0.00	0.61	0.02	0.40	0.01	0.10	0.00
VD 0071	Beans, dry, raw (Phaseolus spp)	RAC	0.05	1.51	0.08	1.50	0.08	1.90	0.10	5.11	0.26	1.36	0.07	23.43	1.17
VD 0541	Soya bean, dry, raw (incl flour, incl paste, incl curd, incl sauce, excl oil)	RAC	0.02	0.47	0.01	0.77	0.02	9.12	0.18	8.05	0.16	0.10	0.00	6.06	0.12
OR 0541	Soya oil, refined	PP	0.001	19.06	0.02	21.06	0.02	5.94	0.01	33.78	0.03	40.05	0.04	13.39	0.01
VR 0577	Carrots, raw	RAC	0.11	26.26	2.89	27.13	2.98	10.07	1.11	16.49	1.81	44.69	4.92	8.75	0.96
VS 0620	Artichoke globe	RAC	0.145	0.98	0.14	3.65	0.53	0.10	0.01	1.67	0.24	0.26	0.04	NC	-
VS 0621	Asparagus	RAC	0.02	0.84	0.02	2.08	0.04	7.11	0.14	1.01	0.02	1.69	0.03	0.10	0.00
GC 0640	Barley, raw (incl malt extract, incl pot&pearled, incl flour & grits, incl malt, excl beer)	RAC	0.85	1.94	1.65	4.15	3.53	0.66	0.56	2.50	2.13	2.14	1.82	3.52	2.99
-	Barley beer	PP	0.013	180.21	2.34	259.46	3.37	45.91	0.60	172.36	2.24	234.42	3.05	65.30	0.85
GC 0647	Oats, raw	RAC	0.085	NC	-	NC	-	0.10	0.01	0.10	0.01	NC	-	0.23	0.02
CM 0649 (GC 0649)	Rice, husked, dry (incl polished, incl flour, incl starch, incl oil, incl beverages)	REP	0.275	20.96	5.76	16.04	4.41	339.67	93.41	75.51	20.77	16.86	4.64	86.13	23.69
GC 0650	Rye, raw	RAC	0.05	0.10	0.01	NC	-	0.10	0.01	0.10	0.01	NC	-	NC	-
GC 0653	Triticale, raw	RAC	0.05	NC	-	NC	-	0.10	0.01	0.10	0.01	NC	-	NC	-
GC 0654	Wheat, raw (incl bulgur, incl fermented beverages, incl germ, incl wholemeal bread, incl white flour products, incl white bread)	RAC	0.05	253.07	12.65	244.73	12.24	134.44	6.72	235.10	11.76	216.39	10.82	167.40	8.37
TN 0085	Tree nuts, raw (incl processed)	RAC	0	8.52	0.00	8.94	0.00	15.09	0.00	9.60	0.00	14.57	0.00	26.26	0.00
SO 0495	Rape seed, raw (incl oil)	RAC	0.1	32.68	3.27	19.91	1.99	7.83	0.78	15.69	1.57	NC	-	NC	-
OR 0691	Cotton seed oil, edible	PP	0	1.68	0.00	0.66	0.00	1.13	0.00	1.18	0.00	0.89	0.00	0.37	0.00
SO 0697	Peanuts, nutmeat, raw (incl roasted, incl oil, incl butter)	RAC	0.035	5.63	0.20	2.75	0.10	9.58	0.34	5.82	0.20	13.71	0.48	1.84	0.06

Annex 3

TEBUCONAZOLE (189) International Estimated Daily Intake (IEDI) ADI = 0 - 0.03 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day G07 diet	Intake as µg/person/day G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
SO 0702	Sunflower seed, raw	RAC	0.04	0.10	0.00	1.32	0.05	0.10	0.00	1.17	0.05	NC	-	0.10	0.00
SM 0716	Coffee beans, roasted	PP	0.08	7.02	0.56	9.75	0.78	0.10	0.01	5.09	0.41	13.38	1.07	0.77	0.06
DH 1100	Hops, dry	RAC	9.65	NC	-	NC	-	0.10	0.97	0.10	0.97	NC	-	NC	-
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat)	RAC	0	140.03	0.00	150.89	0.00	79.32	0.00	111.24	0.00	120.30	0.00	51.27	0.00
MO 0105	Edible offal (mammalian), raw	RAC	0.06	15.17	0.91	5.19	0.31	6.30	0.38	6.78	0.41	3.32	0.20	3.17	0.19
ML 0106	Milks, raw or skimmed (incl dairy products)	RAC	0	388.92	0.00	335.88	0.00	49.15	0.00	331.25	0.00	468.56	0.00	245.45	0.00
PM 0110	Poultry meat, raw (incl prepared)	RAC	0	73.76	0.00	53.86	0.00	23.98	0.00	87.12	0.00	53.38	0.00	84.45	0.00
PO 0111	Poultry edible offal, raw (incl prepared)	RAC	0.05	0.33	0.02	0.72	0.04	0.27	0.01	0.35	0.02	0.80	0.04	NC	-
PE 0112	Eggs, raw, (incl dried)	RAC	0	25.84	0.00	29.53	0.00	28.05	0.00	33.19	0.00	36.44	0.00	8.89	0.00
	Total intake (µg/person)=				93.1		99.0		140.1		97.3		82.4		50.8
	Bodyweight per region (kg bw) =				60		60		55		60		60		60
	ADI (µg/person)=				1800		1800		1650		1800		1800		1800
	%ADI=				5.2%		5.5%		8.5%		5.4%		4.6%		2.8%
	Rounded %ADI=				5%		6%		8%		5%		5%		3%

TEBUCONAZOLE (189) International Estimated Daily Intake (IEDI) ADI = 0 - 0.03 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day G13 diet	Intake = daily intake: µg/person G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
FP 0226	Apple, raw (incl cider, excl juice)	RAC	0.275	66.67	18.33	2.06	0.57	55.83	15.35	188.29	51.78	1.38	0.38
JF 0226	Apple juice, single strength (incl. concentrated)	PP	0.063	0.10	0.01	0.10	0.01	7.19	0.45	0.10	0.01	NC	-
FP 0230	Pear, raw	RAC	0.275	0.10	0.03	0.14	0.04	9.45	2.60	0.10	0.03	0.14	0.04
FS 0013	Cherries, raw	RAC	0.86	0.10	0.09	0.10	0.09	5.96	5.13	0.10	0.09	NC	-
FS 0014	Plums, raw (excl jujube)	RAC	0.08	0.10	0.01	0.10	0.01	15.56	1.24	0.10	0.01	NC	-
DF 0014	Plum, dried (prunes)	PP	0.232	0.10	0.02	0.10	0.02	0.37	0.09	0.10	0.02	NC	-
FS 2001	Peaches, nectarines, apricots, raw (incl dried apricots)	RAC	0.46	0.10	0.05	0.10	0.05	10.76	4.95	0.10	0.05	NC	-
FB 0267	Elderberries, raw (incl processed)	RAC	0.345	0.71	0.24	3.52	1.21	NC	-	0.38	0.13	2.32	0.80
FB 0269	Grape, raw (incl must, incl juice, excl dried, excl wine)	RAC	0.72	0.15	0.11	0.38	0.27	15.84	11.40	0.10	0.07	0.28	0.20
DF 0269	Grape, dried (= currants, raisins and sultanas)	PP	0.86	0.10	0.09	0.13	0.11	1.06	0.91	0.10	0.09	0.10	0.09
-	Grape wine (incl vermouths)	PP	0.2	0.31	0.06	0.23	0.05	60.43	12.09	0.52	0.10	31.91	6.38
FT 0305	Table olive, raw (incl preserved)	RAC	0	0.10	0.00	0.10	0.00	1.75	0.00	0.10	0.00	0.24	0.00

TEBUCONAZOLE (189) International Estimated Daily Intake (IEDI) ADI = 0 - 0.03 mg/kg bw

			STMR	Diets: g/person/day		Intake = daily intake: µg/person							
Codex Code	Commodity description	Expr as	mg/kg	G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
FI 0327	Banana, raw (incl plantains) (incl dried)	RAC	0.07	20.88	1.46	81.15	5.68	24.58	1.72	37.92	2.65	310.23	21.72
FI 0345	Mango, raw	RAC	0.05	12.25	0.61	6.74	0.34	0.76	0.04	0.10	0.01	20.12	1.01
FI 0350	Papaya, raw	RAC	0.18	6.47	1.16	0.25	0.05	0.19	0.03	0.10	0.02	26.42	4.76
FI 0351	Passion fruit, raw	RAC	0.1	0.12	0.0120	0.10	0.0100	0.10	0.0100	0.18	0.0180	3.81	0.3810
VA 0381	Garlic, raw	RAC	0.02	0.82	0.02	2.06	0.04	3.79	0.08	0.10	0.00	0.29	0.01
VA 0384	Leek, raw	RAC	0.195	0.10	0.02	1.44	0.28	1.22	0.24	0.10	0.02	NC	-
-	Onions, mature bulbs, dry	RAC	0.055	9.01	0.50	20.24	1.11	30.90	1.70	9.61	0.53	2.11	0.12
-	Onions, green, raw	RAC	0.1	1.43	0.14	0.10	0.01	0.20	0.02	NC	-	6.30	0.63
VB 0041	Cabbages, head, raw	RAC	0.005	3.82	0.02	2.99	0.01	49.16	0.25	0.10	0.00	NC	-
VB 0400	Broccoli, raw	RAC	0.015	0.10	0.00	0.10	0.00	2.13	0.03	0.10	0.00	NC	-
VB 0402	Brussels sprouts, raw	RAC	0.095	0.88	0.08	0.69	0.07	2.89	0.27	0.10	0.01	NC	-
VB 0404	Cauliflower, raw	RAC	0.05	0.10	0.01	0.10	0.01	2.73	0.14	0.10	0.01	NC	-
VC 0046	Melons, raw (excl watermelons)	RAC	0.02	0.19	0.00	0.10	0.00	4.98	0.10	0.10	0.00	NC	-
VC 0424	Cucumber, raw	RAC	0.05	0.68	0.03	1.81	0.09	10.40	0.52	0.10	0.01	0.10	0.01
VC 0431	Squash, summer, raw (= courgette, zuchini)	RAC	0.05	0.10	0.01	1.01	0.05	NC	-	1.91	0.10	NC	-
VO 0440	Egg plants, raw (= aubergines)	RAC	0.04	1.31	0.05	8.26	0.33	3.95	0.16	0.10	0.00	NC	-
-	Peppers, chili, dried	PP	1.85	0.58	1.07	1.27	2.35	1.21	2.24	0.12	0.22	NC	-
VO 0445	Peppers, sweet, raw	RAC	0.185	1.24	0.23	1.27	0.23	NC	-	0.10	0.02	NC	-
VO 0447	Sweet corn on the cob, raw (incl frozen, incl canned) (i.e. kernels plus cob without husks)	RAC	0.06	3.63	0.22	20.50	1.23	8.78	0.53	0.10	0.01	0.17	0.01
VO 0448	Tomato, raw	RAC	0.15	12.99	1.95	4.79	0.72	58.40	8.76	0.92	0.14	0.10	0.02
-	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	0.19	0.58	0.11	0.22	0.04	2.21	0.42	0.24	0.05	3.10	0.59
JF 0448	Tomato, juice (single strength, incl concentrated)	PP	0.033	0.10	0.00	0.10	0.00	0.42	0.01	0.10	0.00	0.10	0.00
VD 0071	Beans, dry, raw (Phaseolus spp)	RAC	0.05	7.11	0.36	2.33	0.12	3.76	0.19	44.70	2.24	3.27	0.16
VD 0541	Soya bean, dry, raw (incl flour, incl paste, incl curd, incl sauce, excl oil)	RAC	0.02	2.89	0.06	0.21	0.00	0.48	0.01	3.16	0.06	0.26	0.01
OR 0541	Soya oil, refined	PP	0.001	2.32	0.00	2.54	0.00	18.70	0.02	2.51	0.00	6.29	0.01
VR 0577	Carrots, raw	RAC	0.11	2.07	0.23	3.00	0.33	25.29	2.78	0.10	0.01	NC	-
VS 0620	Artichoke globe	RAC	0.145	0.10	0.01	NC	-	0.10	0.01	0.10	0.01	NC	-
VS 0621	Asparagus	RAC	0.02	0.10	0.00	0.10	0.00	0.17	0.00	0.10	0.00	NC	-
GC 0640	Barley, raw (incl malt extract, incl pot&pearled, incl flour & grits, incl malt, excl beer)	RAC	0.85	8.50	7.23	0.17	0.14	3.92	3.33	0.10	0.09	6.34	5.39
-	Barley beer	PP	0.013	16.25	0.21	11.36	0.15	225.21	2.93	19.49	0.25	52.17	0.68
GC 0647	Oats, raw	RAC	0.085	0.10	0.01	0.10	0.01	NC	-	0.10	0.01	NC	-
CM 0649 (GC 0649)	Rice, husked, dry (incl polished, incl flour, incl starch, incl oil, incl beverages)	REP	0.275	52.55	14.45	286.02	78.66	18.64	5.13	19.67	5.41	75.09	20.65

TEBUCONAZOLE (189) International Estimated Daily Intake (IEDI) ADI = 0 - 0.03 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
				Diets: g/person/day			Intake = daily intake: µg/person						
GC 0650	Rye, raw	RAC	0.05	0.10	0.01	NC	-	NC	-	0.10	0.01	NC	-
GC 0653	Triticale, raw	RAC	0.05	0.10	0.01	NC	-	NC	-	NC	-	NC	-
GC 0654	Wheat, raw (incl bulgur, incl fermented beverages, incl germ, incl wholemeal bread, incl white flour products, incl white bread)	RAC	0.05	57.20	2.86	110.47	5.52	272.62	13.63	25.82	1.29	132.04	6.60
TN 0085	Tree nuts, raw (incl processed)	RAC	0	4.39	0.00	135.53	0.00	6.11	0.00	0.72	0.00	317.74	0.00
SO 0495	Rape seed, raw (incl oil)	RAC	0.1	0.19	0.02	0.10	0.01	12.07	1.21	0.10	0.01	NC	-
OR 0691	Cotton seed oil, edible	PP	0	1.28	0.00	0.10	0.00	0.45	0.00	0.42	0.00	0.15	0.00
SO 0697	Peanuts, nutmeat, raw (incl roasted, incl oil, incl butter)	RAC	0.035	18.82	0.66	0.57	0.02	2.28	0.08	6.90	0.24	0.53	0.02
SO 0702	Sunflower seed, raw	RAC	0.04	0.10	0.00	0.10	0.00	0.10	0.00	2.23	0.09	NC	-
SM 0716	Coffee beans, roasted	PP	0.08	0.10	0.01	0.41	0.03	7.50	0.60	0.10	0.01	0.10	0.01
DH 1100	Hops, dry	RAC	9.65	NC	-	NC	-	0.10	0.97	NC	-	NC	-
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat)	RAC	0	29.18	0.00	50.89	0.00	121.44	0.00	22.58	0.00	72.14	0.00
MO 0105	Edible offal (mammalian), raw	RAC	0.06	4.64	0.28	1.97	0.12	10.01	0.60	3.27	0.20	3.98	0.24
ML 0106	Milks, raw or skimmed (incl dairy products)	RAC	0	108.75	0.00	70.31	0.00	436.11	0.00	61.55	0.00	79.09	0.00
PM 0110	Poultry meat, raw (incl prepared)	RAC	0	3.92	0.00	12.03	0.00	57.07	0.00	5.03	0.00	55.56	0.00
PO 0111	Poultry edible offal, raw (incl prepared)	RAC	0.05	0.10	0.01	0.70	0.04	0.97	0.05	0.10	0.01	NC	-
PE 0112	Eggs, raw, (incl dried)	RAC	0	3.84	0.00	4.41	0.00	27.25	0.00	1.13	0.00	7.39	0.00
	Total intake (µg/person)=				53.1		100.2		103.0		66.1		70.9
	Bodyweight per region (kg bw) =				60		60		60		60		60
	ADI (µg/person)=				1800		1800		1800		1800		1800
	%ADI=				3.0%		5.6%		5.7%		3.7%		3.9%
	Rounded %ADI=				3%		6%		6%		4%		4%

TRIFLOXYSTROBIN (213) International Estimated Daily Intake (IEDI) ADI = 0 - 0.0400 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day			Intake as µg/person/day								
				G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
FC 0001	Citrus fruit, raw	RAC	0.095	32.25	3.06	11.67	1.11	16.70	1.59	76.01	7.22	33.90	3.22	92.97	8.83
-	Lemon, juice (single strength, incl. concentrated)	PP	0.018	0.10	0.00	0.10	0.00	0.11	0.00	0.10	0.00	0.18	0.00	0.17	0.00
-	Mandarins, juice	PP	0.018	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
JF 0004	Oranges, juice (single strength, incl. concentrated)	PP	0.018	1.27	0.02	2.20	0.04	0.10	0.00	11.81	0.21	0.46	0.01	1.69	0.03
JF 0203	Grapefruits, juice (single strength, incl. concentrated)	PP	0.018	0.10	0.00	0.16	0.00	0.10	0.00	1.97	0.04	0.12	0.00	0.77	0.01
FP 0009	Pome fruit, raw (incl cider, excl apple juice)	RAC	0.11	19.35	2.13	34.06	3.75	17.87	1.97	25.74	2.83	7.69	0.85	56.85	6.25
JF 0226	Apple juice, single strength (incl. concentrated)	PP	0.018	0.32	0.01	3.07	0.06	0.10	0.00	5.00	0.09	0.29	0.01	5.57	0.10
FS 0012	Stone fruits, raw (incl dried apricots, excl dried plums)	RAC	0.38	11.33	4.31	23.62	8.98	0.24	0.09	11.32	4.30	2.28	0.87	33.26	12.64
DF 0014	Plum, dried (prunes)	PP	0.57	0.10	0.06	0.10	0.06	0.10	0.06	0.18	0.10	0.10	0.06	0.10	0.06
FB 0269	Grape, raw	RAC	0.15	12.68	1.90	9.12	1.37	0.10	0.02	16.88	2.53	3.70	0.56	54.42	8.16
DF 0269	Grape, dried (= currants, raisins and sultanas)	PP	0.345	0.51	0.18	0.51	0.18	0.10	0.03	1.27	0.44	0.12	0.04	2.07	0.71
JF 0269	Grape juice	PP	0.036	0.14	0.01	0.29	0.01	0.10	0.00	0.30	0.01	0.24	0.01	0.10	0.00
-	Grape wine (incl vermouths)	PP	0.023	0.67	0.02	12.53	0.29	2.01	0.05	1.21	0.03	3.53	0.08	4.01	0.09
FB 0275	Strawberry, raw	RAC	0.335	0.70	0.23	2.01	0.67	0.10	0.03	1.36	0.46	0.37	0.12	2.53	0.85
FT 0305	Table olive, raw	RAC	0.085	0.10	0.01	0.16	0.01	NC	-	0.24	0.02	0.10	0.01	0.65	0.06
DM 0305	Table olive, preserved	PP	0.353	0.58	0.20	0.15	0.05	0.10	0.04	1.22	0.43	0.15	0.05	1.13	0.40
FI 0327	Banana, raw (incl plantains)	RAC	0.02	4.90	0.10	6.94	0.14	99.37	1.99	32.44	0.65	48.24	0.96	24.67	0.49
FI 0350	Papaya, raw	RAC	0.2	0.35	0.07	0.10	0.02	3.05	0.61	0.80	0.16	7.28	1.46	1.00	0.20
VA 0384	Leek, raw	RAC	0.31	0.18	0.06	1.59	0.49	0.10	0.03	0.28	0.09	0.10	0.03	3.21	1.00
VB 0041	Cabbages, head, raw	RAC	0.17	2.73	0.46	27.92	4.75	0.55	0.09	4.47	0.76	4.27	0.73	10.25	1.74
VB 0042	Flowerhead brassicas, raw	RAC	0.17	2.96	0.50	0.57	0.10	0.10	0.02	4.17	0.71	7.79	1.32	3.64	0.62
VB 0402	Brussels sprouts, raw	RAC	0.17	0.63	0.11	6.41	1.09	0.13	0.02	1.03	0.18	NC	-	2.35	0.40
VC 0045	Fruiting vegetables, cucurbits, raw	RAC	0.095	53.14	5.05	86.21	8.19	6.28	0.60	92.76	8.81	15.64	1.49	155.30	14.75
VO 0440	Egg plants, raw (= aubergines)	RAC	0.08	5.58	0.45	4.31	0.34	0.89	0.07	9.31	0.74	13.64	1.09	20.12	1.61
VO 0445	Peppers, sweet, raw	RAC	0.1	1.43	0.14	2.61	0.26	1.05	0.11	2.01	0.20	2.59	0.26	6.24	0.62
VO 0448	Tomato, raw (incl juice, incl canned, excl paste)	RAC	0.08	42.41	3.39	76.50	6.12	10.69	0.86	85.07	6.81	24.98	2.00	203.44	16.28
-	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	0.13	2.34	0.30	1.33	0.17	1.57	0.20	4.24	0.55	0.34	0.04	2.83	0.37
VL 0482	Lettuce, head, raw	RAC	5.55	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
VD 0071	Beans, dry, raw (Phaseolus spp)	RAC	0.02	2.39	0.05	1.61	0.03	10.47	0.21	1.84	0.04	12.90	0.26	7.44	0.15
VD 0071	Peas, dry, raw (Pisum spp, Vigna spp): garden peas & field peas & cow peas	RAC	0.02	1.67	0.03	3.22	0.06	2.66	0.05	1.51	0.03	2.91	0.06	0.24	0.00
VD 0524	Chick-pea, dry, raw (Cicer arietinum)	RAC	0.02	5.34	0.11	0.13	0.00	0.10	0.00	4.69	0.09	7.24	0.14	5.52	0.11
VD 0533	Lentil, dry, raw (Ervum lens)	RAC	0.02	2.12	0.04	0.10	0.00	0.10	0.00	3.21	0.06	1.60	0.03	4.90	0.10

Annex 3

	TRIFLOXYSTROBIN (213)			International Estimated Daily Intake (IEDI)					ADI = 0 - 0.0400 mg/kg bw						
			STMR	Diets as g/person/day			Intake as µg/person/day								
Codex Code	Commodity description	Expr as	mg/kg	G01 diet	G01 intake	G02 diet	G02 intake	G03 diet	G03 intake	G04 diet	G04 intake	G05 diet	G05 intake	G06 diet	G06 intake
VD 0541	Soya bean, dry, raw (Glycine soja)	RAC	0.02	0.58	0.01	0.10	0.00	0.37	0.01	0.10	0.00	1.65	0.03	0.30	0.01
OR 0541	Soya oil, refined	PP	0.00065	12.99	0.01	10.43	0.01	3.63	0.00	13.10	0.01	10.70	0.01	13.10	0.01
-	Soya flour	PP	0.00008	0.10	0.00	0.86	0.00	0.10	0.00	1.02	0.00	0.10	0.00	0.15	0.00
VR 0577	Carrots, raw	RAC	0.035	9.51	0.33	30.78	1.08	0.37	0.01	8.75	0.31	2.80	0.10	6.10	0.21
VR 0589	Potato, raw (incl flour, incl frozen, incl starch, incl tapioca)	RAC	0.02	59.74	1.19	316.14	6.32	9.78	0.20	60.26	1.21	54.12	1.08	119.82	2.40
VR 0590	Black radish, raw	RAC	0.065	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
VR 0591	Japanese radish, raw (i.e. daikon)	RAC	0.065	1.90	0.12	3.36	0.22	2.08	0.14	5.06	0.33	NC	-	2.44	0.16
VR 0596	Sugar beet, raw	RAC	0.02	NC	-	NC	-	NC	-	NC	-	0.10	0.00	NC	-
VS 0624	Celery	RAC	0.18	2.14	0.39	3.79	0.68	2.35	0.42	5.69	1.02	0.10	0.02	2.75	0.50
GC 0640	Barley, raw (incl malt extract, incl pot&pearled, incl flour & grits, incl beer, excl malt)	RAC	0.04	19.78	0.79	29.75	1.19	4.79	0.19	2.66	0.11	9.71	0.39	4.17	0.17
GC 0645	Maize, raw (incl glucose & dextrose & isoglucose, incl flour, incl oil, incl beer, incl germ, incl starch)	RAC	0.02	29.81	0.60	44.77	0.90	108.95	2.18	52.37	1.05	60.28	1.21	75.69	1.51
CM 0649 (GC 0649)	Rice, husked, dry (incl beverages, excl polished, excl flour, excl oil, excl starch)	REP	0.16	1.17	0.19	1.30	0.21	31.05	4.97	4.79	0.77	0.25	0.04	2.16	0.35
GC 0650	Rye, raw (incl flour)	RAC	0.029	0.13	0.00	19.38	0.56	0.10	0.00	0.12	0.00	0.10	0.00	2.15	0.06
GC 0654	Wheat, raw (incl meslin)	RAC	0.02	0.10	0.00	1.12	0.02	NC	-	0.10	0.00	0.56	0.01	NC	-
CF 1210	Wheat, germ	PP	0.013	NC	-	NC	-	0.10	0.00	0.10	0.00	0.14	0.00	0.10	0.00
CF 0654	Wheat, bran	PP	0.062	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
CF 1212	Wheat, wholemeal flour	PP	0.01	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
CF 1211	Wheat, white flour (incl white flour products: starch, gluten, macaroni, pastry)	PP	0.008	301.49	2.41	269.27	2.15	30.33	0.24	222.94	1.78	136.12	1.09	343.34	2.75
DH 1100	Hops, dry	RAC	9.95	0.10	1.00	0.10	1.00	0.10	1.00	0.10	1.00	NC	-	0.10	1.00
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) -80% as muscle	RAC	0	24.96	0.00	57.95	0.00	16.70	0.00	38.38	0.00	26.46	0.00	29.00	0.00
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) - 20% as fat	RAC	0.006	6.24	0.04	14.49	0.09	4.18	0.03	9.60	0.06	6.62	0.04	7.25	0.04
MO 0105	Edible offal (mammalian), raw	RAC	0.008	4.79	0.04	9.68	0.08	2.97	0.02	5.49	0.04	3.84	0.03	5.03	0.04
	Total intake (µg/person)=				30.1		52.8		18.1		46.3		19.8		85.8
	Bodyweight per region (kg bw) =				60		60		60		60		60		60
	ADI (µg/person)=				2400		2400		2400		2400		2400		2400
	%ADI=				1.3%		2.2%		0.8%		1.9%		0.8%		3.6%
	Rounded %ADI=				1%		2%		1%		2%		1%		4%

TRIFLOXYSTROBIN (213) International Estimated Daily Intake (IEDI) ADI = 0 - 0.0400 mg/kg bw

			STMR	Diets as g/person/day	Intake as µg/person/day										
Codex Code	Commodity description	Expr as	mg/kg	G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
FC 0001	Citrus fruit, raw	RAC	0.095	38.66	3.67	54.93	5.22	26.36	2.50	51.46	4.89	51.06	4.85	466.36	44.30
-	Lemon, juice (single strength, incl. concentrated)	PP	0.018	0.60	0.01	0.36	0.01	0.10	0.00	1.49	0.03	0.43	0.01	0.24	0.00
-	Mandarins, juice	PP	0.018	0.10	0.00	NC	-	0.10	0.00	0.10	0.00	NC	-	NC	-
JF 0004	Oranges, juice (single strength, incl. concentrated)	PP	0.018	33.31	0.60	1.78	0.03	0.28	0.01	18.97	0.34	14.01	0.25	13.36	0.24
JF 0203	Grapefruits, juice (single strength, incl. concentrated)	PP	0.018	2.89	0.05	1.61	0.03	0.10	0.00	1.15	0.02	7.39	0.13	33.07	0.60
FP 0009	Pome fruit, raw (incl cider, excl apple juice)	RAC	0.11	51.09	5.62	65.40	7.19	42.71	4.70	45.29	4.98	62.51	6.88	7.74	0.85
JF 0226	Apple juice, single strength (incl. concentrated)	PP	0.018	14.88	0.27	11.98	0.22	0.15	0.00	9.98	0.18	30.32	0.55	3.47	0.06
FS 0012	Stone fruits, raw (incl dried apricots, excl dried plums)	RAC	0.38	18.18	6.91	23.83	9.06	14.27	5.42	18.52	7.04	9.35	3.55	0.11	0.04
DF 0014	Plum, dried (prunes)	PP	0.57	0.61	0.35	0.35	0.20	0.10	0.06	0.35	0.20	0.49	0.28	0.13	0.07
FB 0269	Grape, raw	RAC	0.15	6.33	0.95	11.22	1.68	5.21	0.78	9.38	1.41	4.55	0.68	0.78	0.12
DF 0269	Grape, dried (= currants, raisins and sultanas)	PP	0.345	3.09	1.07	1.51	0.52	0.10	0.03	1.38	0.48	4.26	1.47	0.42	0.14
JF 0269	Grape juice	PP	0.036	0.56	0.02	1.96	0.07	0.10	0.00	2.24	0.08	2.27	0.08	0.34	0.01
-	Grape wine (incl vermouths)	PP	0.023	88.93	2.05	62.41	1.44	1.84	0.04	25.07	0.58	61.17	1.41	5.84	0.13
FB 0275	Strawberry, raw	RAC	0.335	4.49	1.50	5.66	1.90	0.10	0.03	6.63	2.22	5.75	1.93	0.10	0.03
FT 0305	Table olive, raw	RAC	0.085	0.10	0.01	0.10	0.01	0.10	0.01	0.10	0.01	0.10	0.01	NC	-
DM 0305	Table olive, preserved	PP	0.353	1.85	0.65	2.34	0.83	0.10	0.04	1.11	0.39	1.54	0.54	0.26	0.09
FI 0327	Banana, raw (incl plantains)	RAC	0.02	25.61	0.51	23.59	0.47	23.58	0.47	24.26	0.49	18.88	0.38	101.55	2.03
FI 0350	Papaya, raw	RAC	0.2	0.31	0.06	0.18	0.04	1.50	0.30	0.51	0.10	0.54	0.11	1.08	0.22
VA 0384	Leek, raw	RAC	0.31	4.01	1.24	4.41	1.37	0.72	0.22	0.54	0.17	16.41	5.09	0.10	0.03
VB 0041	Cabbages, head, raw	RAC	0.17	8.97	1.52	27.12	4.61	1.44	0.24	24.96	4.24	4.55	0.77	11.23	1.91
VB 0042	Flowerhead brassicas, raw	RAC	0.17	9.50	1.62	6.77	1.15	9.03	1.54	3.21	0.55	9.36	1.59	0.87	0.15
VB 0402	Brussels sprouts, raw	RAC	0.17	2.24	0.38	2.67	0.45	6.23	1.06	0.32	0.05	4.19	0.71	2.58	0.44
VC 0045	Fruiting vegetables, cucurbits, raw	RAC	0.095	27.81	2.64	41.93	3.98	123.30	11.71	49.47	4.70	15.95	1.52	35.99	3.42
VO 0440	Egg plants, raw (= aubergines)	RAC	0.08	1.01	0.08	1.69	0.14	21.37	1.71	3.00	0.24	1.40	0.11	NC	-
VO 0445	Peppers, sweet, raw	RAC	0.1	NC	-	NC	-	8.25	0.83	3.03	0.30	NC	-	0.91	0.09
VO 0448	Tomato, raw (incl juice, incl canned, excl paste)	RAC	0.08	44.88	3.59	55.49	4.44	35.44	2.84	75.65	6.05	27.00	2.16	9.61	0.77
-	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	0.13	4.96	0.64	3.20	0.42	0.15	0.02	1.61	0.21	6.88	0.89	0.52	0.07
VL 0482	Lettuce, head, raw	RAC	5.55	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
VD 0071	Beans, dry, raw (Phaseolus spp)	RAC	0.02	1.51	0.03	1.50	0.03	1.90	0.04	5.11	0.10	1.36	0.03	23.43	0.47
VD 0071	Peas, dry, raw (Pisum spp, Vigna spp): garden peas & field peas & cow peas	RAC	0.02	3.80	0.08	1.25	0.03	1.06	0.02	2.33	0.05	2.70	0.05	3.83	0.08
VD 0524	Chick-pea, dry, raw (Cicer arietinum)	RAC	0.02	0.27	0.01	1.33	0.03	0.32	0.01	0.15	0.00	0.10	0.00	0.10	0.00
VD 0533	Lentil, dry, raw (Ervum lens)	RAC	0.02	0.95	0.02	1.18	0.02	0.40	0.01	0.96	0.02	0.71	0.01	1.28	0.03

Annex 3

TRIFLOXYSTROBIN (213) International Estimated Daily Intake (IEDI) ADI = 0 - 0.0400 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets as g/person/day	Intake as µg/person/day										
				G07 diet	G07 intake	G08 diet	G08 intake	G09 diet	G09 intake	G10 diet	G10 intake	G11 diet	G11 intake	G12 diet	G12 intake
VD 0541	Soya bean, dry, raw (Glycine soja)	RAC	0.02	0.10	0.00	0.33	0.01	6.64	0.13	3.94	0.08	NC	-	5.78	0.12
OR 0541	Soya oil, refined	PP	0.00065	19.06	0.01	21.06	0.01	5.94	0.00	33.78	0.02	40.05	0.03	13.39	0.01
-	Soya flour	PP	0.00008	0.22	0.00	0.27	0.00	0.29	0.00	0.17	0.00	NC	-	NC	-
VR 0577	Carrots, raw	RAC	0.035	26.26	0.92	27.13	0.95	10.07	0.35	16.49	0.58	44.69	1.56	8.75	0.31
VR 0589	Potato, raw (incl flour, incl frozen, incl starch, incl tapioca)	RAC	0.02	225.03	4.50	234.24	4.68	71.48	1.43	177.55	3.55	234.55	4.69	37.71	0.75
VR 0590	Black radish, raw	RAC	0.065	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
VR 0591	Japanese radish, raw (i.e. daikon)	RAC	0.065	NC	-	NC	-	26.64	1.73	18.92	1.23	NC	-	3.59	0.23
VR 0596	Sugar beet, raw	RAC	0.02	0.10	0.00	NC	-	0.10	0.00	0.10	0.00	NC	-	NC	-
VS 0624	Celery	RAC	0.18	7.68	1.38	2.85	0.51	NC	-	3.34	0.60	16.83	3.03	4.04	0.73
GC 0640	Barley, raw (incl malt extract, incl pot&pearled, incl flour & grits, incl beer, excl malt)	RAC	0.04	35.93	1.44	53.45	2.14	9.33	0.37	35.14	1.41	46.68	1.87	13.03	0.52
GC 0645	Maize, raw (incl glucose & dextrose & isoglucose, incl flour, incl oil, incl beer, incl germ, incl starch)	RAC	0.02	18.51	0.37	26.18	0.52	26.04	0.52	39.99	0.80	7.36	0.15	64.58	1.29
CM 0649 (GC 0649)	Rice, husked, dry (incl beverages, excl polished, excl flour, excl oil, excl starch)	REP	0.16	2.43	0.39	1.62	0.26	0.42	0.07	1.59	0.25	NC	-	5.02	0.80
GC 0650	Rye, raw (incl flour)	RAC	0.029	3.21	0.09	35.38	1.03	0.21	0.01	6.50	0.19	1.49	0.04	NC	-
GC 0654	Wheat, raw (incl meslin)	RAC	0.02	NC	-	NC	-	NC	-	0.10	0.00	NC	-	NC	-
CF 1210	Wheat, germ	PP	0.013	0.97	0.01	0.10	0.00	0.10	0.00	0.10	0.00	NC	-	0.10	0.00
CF 0654	Wheat, bran	PP	0.062	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
CF 1212	Wheat, wholemeal flour	PP	0.01	NC	-	NC	-	NC	-	NC	-	NC	-	NC	-
CF 1211	Wheat, white flour (incl white flour products: starch, gluten, macaroni, pastry)	PP	0.008	199.38	1.60	193.50	1.55	106.30	0.85	185.31	1.48	171.11	1.37	132.37	1.06
DH 1100	Hops, dry	RAC	9.95	NC	-	NC	-	0.10	1.00	0.10	1.00	NC	-	NC	-
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) -80% as muscle	RAC	0	112.02	0.00	120.71	0.00	63.46	0.00	88.99	0.00	96.24	0.00	41.02	0.00
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) - 20% as fat	RAC	0.006	28.01	0.17	30.18	0.18	15.86	0.10	22.25	0.13	24.06	0.14	10.25	0.06
MO 0105	Edible offal (mammalian), raw	RAC	0.008	15.17	0.12	5.19	0.04	6.30	0.05	6.78	0.05	3.32	0.03	3.17	0.03
	Total intake (µg/person)=				47.2		57.4		41.3		51.5		49.0		62.3
	Bodyweight per region (kg bw) =				60		60		55		60		60		60
	ADI (µg/person)=				2400		2400		2200		2400		2400		2400
	%ADI=				2.0%		2.4%		1.9%		2.1%		2.0%		2.6%
	Rounded %ADI=				2%		2%		2%		2%		2%		3%

TRIFLOXYSTROBIN (213) International Estimated Daily Intake (IEDI) ADI = 0 - 0.0400 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day G13 diet	G13 intake	G14 diet	G14 intake	Intake = daily intake: µg/person G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
FC 0001	Citrus fruit, raw	RAC	0.095	20.93	1.99	2.35	0.22	30.71	2.92	0.15	0.01	4.45	0.42
-	Lemon, juice (single strength, incl. concentrated)	PP	0.018	0.10	0.00	0.10	0.00	0.16	0.00	0.10	0.00	NC	-
-	Mandarins, juice	PP	0.018	0.10	0.00	NC	-	NC	-	NC	-	NC	-
JF 0004	Oranges, juice (single strength, incl. concentrated)	PP	0.018	0.10	0.00	0.26	0.00	12.61	0.23	0.14	0.00	0.33	0.01
JF 0203	Grapefruits, juice (single strength, incl. concentrated)	PP	0.018	0.10	0.00	0.10	0.00	0.78	0.01	0.10	0.00	NC	-
FP 0009	Pome fruit, raw (incl cider, excl apple juice)	RAC	0.11	68.85	7.57	10.93	1.20	70.82	7.79	189.78	20.88	19.56	2.15
JF 0226	Apple juice, single strength (incl. concentrated)	PP	0.018	0.10	0.00	0.10	0.00	7.19	0.13	0.10	0.00	NC	-
FS 0012	Stone fruits, raw (incl dried apricots, excl dried plums)	RAC	0.38	0.10	0.04	0.10	0.04	32.27	12.26	0.10	0.04	NC	-
DF 0014	Plum, dried (prunes)	PP	0.57	0.10	0.06	0.10	0.06	0.37	0.21	0.10	0.06	NC	-
FB 0269	Grape, raw	RAC	0.15	0.14	0.02	0.36	0.05	15.22	2.28	0.10	0.02	0.10	0.02
DF 0269	Grape, dried (= currants, raisins and sultanas)	PP	0.345	0.10	0.03	0.13	0.04	1.06	0.37	0.10	0.03	0.10	0.03
JF 0269	Grape juice	PP	0.036	0.10	0.00	0.10	0.00	0.41	0.01	0.10	0.00	NC	-
-	Grape wine (incl vermouths)	PP	0.023	0.31	0.01	0.23	0.01	60.43	1.39	0.52	0.01	31.91	0.73
FB 0275	Strawberry, raw	RAC	0.335	0.10	0.03	0.10	0.03	3.35	1.12	0.10	0.03	0.10	0.03
FT 0305	Table olive, raw	RAC	0.085	NC	-	NC	-	0.10	0.01	NC	-	NC	-
DM 0305	Table olive, preserved	PP	0.353	0.10	0.04	0.10	0.04	1.65	0.58	0.10	0.04	0.23	0.08
FI 0327	Banana, raw (incl plantains)	RAC	0.02	44.76	0.90	118.16	2.36	25.19	0.50	454.49	9.09	310.23	6.20
FI 0350	Papaya, raw	RAC	0.2	6.47	1.29	0.25	0.05	0.19	0.04	0.10	0.02	26.42	5.28
VA 0384	Leek, raw	RAC	0.31	0.10	0.03	1.44	0.45	1.22	0.38	0.10	0.03	NC	-
VB 0041	Cabbages, head, raw	RAC	0.17	3.82	0.65	2.99	0.51	49.16	8.36	0.10	0.02	NC	-
VB 0042	Flowerhead brassicas, raw	RAC	0.17	0.10	0.02	0.10	0.02	4.86	0.83	0.10	0.02	NC	-
VB 0402	Brussels sprouts, raw	RAC	0.17	0.88	0.15	0.69	0.12	2.89	0.49	0.10	0.02	NC	-
VC 0045	Fruiting vegetables, cucurbits, raw	RAC	0.095	5.96	0.57	9.74	0.93	51.82	4.92	13.61	1.29	0.10	0.01
VO 0440	Egg plants, raw (= aubergines)	RAC	0.08	1.31	0.10	8.26	0.66	3.95	0.32	0.10	0.01	NC	-
VO 0445	Peppers, sweet, raw	RAC	0.1	1.24	0.12	1.27	0.13	NC	-	0.10	0.01	NC	-
VO 0448	Tomato, raw (incl juice, incl canned, excl paste)	RAC	0.08	13.17	1.05	4.92	0.39	62.69	5.02	1.04	0.08	0.11	0.01
-	Tomato, paste (i.e. concentrated tomato sauce/puree)	PP	0.13	0.58	0.08	0.22	0.03	2.21	0.29	0.24	0.03	3.10	0.40
VL 0482	Lettuce, head, raw	RAC	5.55	NC	-	NC	-	NC	-	NC	-	NC	-
VD 0071	Beans, dry, raw (Phaseolus spp)	RAC	0.02	7.11	0.14	2.33	0.05	3.76	0.08	44.70	0.89	3.27	0.07
VD 0071	Peas, dry, raw (Pisum spp, Vigna spp): garden peas & field peas & cow peas	RAC	0.02	14.30	0.29	3.51	0.07	3.52	0.07	7.89	0.16	0.74	0.01
VD 0524	Chick-pea, dry, raw (Cicer arietinum)	RAC	0.02	1.09	0.02	1.56	0.03	0.33	0.01	0.18	0.00	0.47	0.01

Annex 3

TRIFLOXYSTROBIN (213) International Estimated Daily Intake (IEDI) ADI = 0 - 0.0400 mg/kg bw

Codex Code	Commodity description	Expr as	STMR mg/kg	Diets: g/person/day		Intake = daily intake: µg/person							
				G13 diet	G13 intake	G14 diet	G14 intake	G15 diet	G15 intake	G16 diet	G16 intake	G17 diet	G17 intake
VD 0533	Lentil, dry, raw (Ervum lens)	RAC	0.02	0.67	0.01	7.26	0.15	0.37	0.01	0.10	0.00	NC	-
VD 0541	Soya bean, dry, raw (Glycine soja)	RAC	0.02	2.76	0.06	0.10	0.00	0.33	0.01	3.16	0.06	NC	-
OR 0541	Soya oil, refined	PP	0.00065	2.32	0.00	2.54	0.00	18.70	0.01	2.51	0.00	6.29	0.00
-	Soya flour	PP	0.00008	0.11	0.00	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00
VR 0577	Carrots, raw	RAC	0.035	2.07	0.07	3.00	0.11	25.29	0.89	0.10	0.00	NC	-
VR 0589	Potato, raw (incl flour, incl frozen, incl starch, incl tapioca)	RAC	0.02	23.96	0.48	13.56	0.27	213.41	4.27	104.35	2.09	8.56	0.17
VR 0590	Black radish, raw	RAC	0.065	NC	-	NC	-	NC	-	NC	-	NC	-
VR 0591	Japanese radish, raw (i.e. daikon)	RAC	0.065	3.25	0.21	2.35	0.15	NC	-	2.20	0.14	4.39	0.29
VR 0596	Sugar beet, raw	RAC	0.02	0.10	0.00	NC	-	NC	-	NC	-	NC	-
VS 0624	Celery	RAC	0.18	3.66	0.66	2.65	0.48	4.84	0.87	2.47	0.44	4.94	0.89
GC 0640	Barley, raw (incl malt extract, incl pot&pearled, incl flour & grits, incl beer, excl malt)	RAC	0.04	11.57	0.46	2.18	0.09	45.80	1.83	3.72	0.15	10.02	0.40
GC 0645	Maize, raw (incl glucose & dextrose & isoglucose, incl flour, incl oil, incl beer, incl germ, incl starch)	RAC	0.02	116.66	2.33	10.52	0.21	38.46	0.77	76.60	1.53	34.44	0.69
CM 0649 (GC 0649)	Rice, husked, dry (incl beverages, excl polished, excl flour, excl oil, excl starch)	REP	0.16	13.53	2.16	3.48	0.56	1.96	0.31	0.10	0.02	8.84	1.41
GC 0650	Rye, raw (incl flour)	RAC	0.029	0.10	0.00	0.10	0.00	13.95	0.40	0.10	0.00	0.88	0.03
GC 0654	Wheat, raw (incl meslin)	RAC	0.02	NC	-	NC	-	NC	-	NC	-	0.97	0.02
CF 1210	Wheat, germ	PP	0.013	0.10	0.00	0.10	0.00	0.10	0.00	0.10	0.00	NC	-
CF 0654	Wheat, bran	PP	0.062	NC	-	NC	-	NC	-	NC	-	NC	-
CF 1212	Wheat, wholemeal flour	PP	0.01	NC	-	NC	-	NC	-	NC	-	NC	-
CF 1211	Wheat, white flour (incl white flour products: starch, gluten, macaroni, pastry)	PP	0.008	45.21	0.36	87.37	0.70	215.61	1.72	20.42	0.16	103.67	0.83
DH 1100	Hops, dry	RAC	9.95	NC	-	NC	-	0.10	1.00	NC	-	NC	-
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) -80% as muscle	RAC	0	23.34	0.00	40.71	0.00	97.15	0.00	18.06	0.00	57.71	0.00
MM 0095	MEAT FROM MAMMALS other than marine mammals, raw (incl prepared meat) - 20% as fat	RAC	0.006	5.84	0.04	10.18	0.06	24.29	0.15	4.52	0.03	14.43	0.09
MO 0105	Edible offal (mammalian), raw	RAC	0.008	4.64	0.04	1.97	0.02	10.01	0.08	3.27	0.03	3.98	0.03
	Total intake (µg/person)=				22.1		10.3		62.9		37.5		20.3
	Bodyweight per region (kg bw) =				60		60		60		60		60
	ADI (µg/person)=				2400		2400		2400		2400		2400
	%ADI=				0.9%		0.4%		2.6%		1.6%		0.8%
	Rounded %ADI=				1%		0%		3%		2%		1%

ANNEX 4: INTERNATIONAL ESTIMATES OF SHORT-TERM DIETARY INTAKES OF PESTICIDE RESIDUES

ABAMECTIN (177)

Acute RfD= 0.003 mg/kg bw (3 µg/kg bw)

IESTI Maximum %ARfD: 80% all

Codex Code	Commodity	Processing	wc	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Country	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Varia-bility factor	Case	IESTI µg/kg bw/day	140% all	60% gen pop	140% child
FC 0303	Kumquats (all commodities)	highest utilisation: Total			0.015	1.000	JP	Gen pop, > 1 yrs	135	120.00	<25	NR	1	0 - 0.04	0% - 1%	0% - 1%	0% - 1%
FC 0204	Lemon (all commodities)	highest utilisation: Total	wc		0.015	1.000	FR	child, 3-6 yrs	0	58.15	64.0	3	2b	0 - 0.14	0% - 5%	0% - 5%	0% - 5%
FC 0303	Kumquats (all commodities)	highest utilisation: Total		0	0.015	1.000	JP	Gen pop, > 1 yrs	135	120.00	<25	NR	1	0 - 0.04	0% - 1%	0% - 1%	1% - 1%
FC 0204	Lemon (all commodities)	highest utilisation: Total	wc	0	0.015	1.000	FR	child, 3-6 yrs	0	58.15	64.0	3	2b	0 - 0.14	0% - 5%	0% - 3%	0% - 5%
FC 0205	Lime (all commodities)	highest utilisation: Total	wc	0	0.015	1.000	AU	Gen pop, > 2 yrs	579	259.21	49.0	3	2a	0.04 - 0.08	1% - 3%	1% - 3%	2% - 2%
FC 0003	Mandarins (incl mandarin-like hybrids) (all commodities)	highest utilisation: raw, without peel	wc	0	0.015	1.000	CN	Child, 1-6 yrs	151	586.75	124.3	3	2a	0.32 - 0.78	10% - 30%	6% - 10%	10% - 30%
FC 0004	Oranges, sweet, sour (incl orange-like hybrids) (all commodities)	highest utilisation: Total	wc	0	0.015	1.000	AU	Child, 2-6 yrs	1735	800.83	155.8	3	2a	0.01 - 0.88	0% - 30%	0% - 20%	0% - 30%
FC 0005	Pummelo and Grapefruits (incl Shaddock-like hybrids, among others Grapefruit) (all commodities)	highest utilisation: raw, without peel	wc	0	0.015	1.000	DE	Child, 2-4 yrs	12	358.60	178.5	3	2a	0.31 - 0.66	10% - 20%	10% - 10%	10% - 20%
FP 0226	Apple (all commodities)	highest utilisation: Total	wc	0	0.01	1.000	US	Child, 1-6 yrs	-	624.45	127.0	3	2a	0.06 - 0.59	2% - 20%	1% - 8%	2% - 20%
FP 0227	Crab-apple (all commodities)	highest utilisation: raw with peel	wc	0	0.01	1.000	CN	Gen pop, > 1 yrs	204	488.33	-	-	-	0 - 0	0% - 0%	0% - 0%	0% - 0%
FP 0228	Loquat (Japanese medlar) (all commodities)	highest utilisation: raw without peel	wc	0	0.01	1.000	JP	Gen pop, > 1 yrs	113	326.40	49.0	3	2a	0.02 - 0.08	1% - 3%	1% - 3%	0% - 0%
FP 0229	Medlar	Total	wc		0.01	1.000	-	-	-	-	-	-	-	-	-	-	-
FP 0230	Pear (all commodities)	highest utilisation: raw with peel (incl consumption without peel)	wc	0	0.01	1.000	CN	Child, 1-6 yrs	413	418.33	255.0	3	2a	0.04 - 0.58	1% - 20%	1% - 7%	1% - 20%
FT 0307	Persimmon, Japanese (all commodities)	highest utilisation: raw with peel (incl consumption without peel)	wc	0	0.01	1.000	TH	Child, 3-6 yrs	20	264.88	227.5	3	2a	0.15 - 0.42	5% - 10%	5% - 7%	10% - 10%

ABAMECTIN (177)

Acute RfD= 0.003 mg/kg bw (3 µg/kg bw)

IESTI Maximum %ARfD: 80% all

Codex Code	Commodity	Processing	wc	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Country	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Varia-bility factor	Case	IESTI µg/kg bw/day	140% all	60% gen pop	140% child
FP 0231	Quince (all commodities)	highest utilisation: Total	wc	0	0.01	1.000	DE	child, 2-4 yrs	16	26.30	301.2	3	2b	0.05 - 0.05	2% - 2%	0% - 0%	2% - 2%
FS 0013	Cherries (all commodities)	highest utilisation: raw	wc	0	0.058	1.000	DE	Child, 2-4 yrs	24	187.50	7.2	NR	1	0.07 - 0.67	2% - 20%	2% - 20%	6% - 20%
FS 0302	Jujube, Chinese	Total	wc		0.006	1.000	CN	Gen pop, > 1 yrs	1328	286.17	-	-	-	-	-	-	-
FS 0014	Plums (all commodities)	highest utilisation: raw with peel (incl consumption without peel)	wc	0	0.006	1.000	TH	Child, 3-6 yrs	11	376.88	93.0	3	2a	0.02 - 0.2	1% - 7%	0% - 3%	1% - 7%
FS 0240	Apricot (all commodities)	highest utilisation: raw with peel (incl consumption without peel)	wc	0	0.006	1.000	AU	Gen pop, > 2 yrs	77	1056.90	54.5	3	2a	0.04 - 0.1	1% - 3%	1% - 3%	1% - 4%
FS 2237	Japanese apricot (ume)	Total	wc		0.006	1.000	JP	Child, 1-6 yrs	25	25.50	<25	NR	1	0.01	0%	0%	0%
FS 0245	Nectarine (all commodities)	highest utilisation: raw with peel (incl consumption without peel)	wc	0	0.006	1.000	NL	toddler, 8-20 m	6	183.60	131.0	3	2a	0.01 - 0.26	0% - 9%	0% - 3%	3% - 9%
FS 0247	Peach (all commodities)	highest utilisation: raw with peel (incl consumption without peel)	wc	0	0.024	1.000	JP	Child, 1-6 yrs	76	306.00	255.0	3	2a	0.13 - 1.26	4% - 40%	2% - 20%	4% - 40%
FB 0264	Blackberries (all commodities)	highest utilisation: raw with skin	wc	0	0.003 - 0.03	1.000	DE	Gen pop, 14-80 yrs	35	460.00	2.4	NR	1	0 - 0.18	0% - 6%	1% - 6%	0% - 6%
FB 0272	Raspberries, red, black (all commodities)	highest utilisation: Total	wc	0	0.03	1.000	FR	Child, 3-6 yrs	0	157.50	4.3	NR	1	0.01 - 0.25	0% - 8%	1% - 5%	0% - 8%
FB 0269	Grape (all commodities)	highest utilisation: raw with skin	wc	0.0028	0.01 - 0.028	1.000	CN	Child, 1-6 yrs	232	366.72	636.6	3	2b	0.03 - 0.68	1% - 20%	0% - 10%	1% - 20%
FB 0275	Strawberry (all commodities)	highest utilisation: Total	wc	0	0.073	1.000	FR	Child, 3-6 yrs	0	339.40	13.4	NR	1	0.08 - 1.31	3% - 40%	3% - 20%	1% - 40%
FI 0326	Avocado (all commodities)	highest utilisation: Total	wc	0	0.009	1.000	AU	Child, 2-6 yrs	182	229.90	171.4	3	2a	0.14 - 0.27	5% - 9%	4% - 5%	4% - 9%
FI 0345	Mango (all commodities)	highest utilisation: raw without peel	wc	0	0.004	1.000	NL	toddler, 8-20 m	11	160.43	288.8	3	2b	0.07 - 0.19	2% - 6%	2% - 2%	2% - 6%
FI 0350	Papaya (all commodities)	highest utilisation: raw without peel	wc	0	0	1.000	CN	Gen pop, > 1 yrs	350	733.90	526.4	3	2a	0 - 0	0% - 0%	0% - 0%	0% - 0%
VA 0381	Garlic (all commodities)	highest utilisation: raw without skin	wc	0	0.003	1.000	CN	Child, 1-6 yrs	290	174.44	59.8	3	2a	0 - 0.05	0% - 2%	0% - 1%	0% - 2%

Annex 4

ABAMECTIN (177)

Acute RfD= 0.003 mg/kg bw (3 µg/kg bw)

IESTI Maximum %ARfD: 80% all

Codex Code	Commodity	Processing	wc	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Country	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Varia-bility factor	Case	IESTI µg/kg bw/day	140% all	60% gen pop	140% child
VA 0384	Leek (all commodities)	highest utilisation: raw	wc	0	0.003	1.000	CN	Child, 1-6 yrs	401	149.40	175.5	3	2b	0.04 - 0.08	1% - 3%	0% - 1%	1% - 3%
VA 0385	Onion, bulb (all commodities)	highest utilisation: raw without skin	wc	0	0.003	1.000	JP	Child, 1-6 yrs	748	102.00	244.4	3	2b	0 - 0.06	0% - 2%	0% - 1%	0% - 2%
VA 0388	Shallot (i.e. dry harvested small onion) (all commodities)	highest utilisation: raw without skin	wc	0	0.003	1.000	CN	Child, 1-6 yrs	480	115.81	51.4	3	2a	0.01 - 0.04	0% - 1%	0% - 1%	0% - 1%
VC 0046	Melons, except watermelon (all commodities)	highest utilisation: Total	wc	0	0.002	1.000	FR	Child, 3-6 yrs	0	358.11	420.0	3	2b	0.11 - 0.11	4% - 4%	2% - 3%	4% - 4%
VC 0424	Cucumber (all commodities)	highest utilisation: raw with skin	wc	0	0.029	1.000	CN	Child, 1-6 yrs	340	212.11	458.1	3	2b	0.26 - 1.14	9% - 40%	9% - 20%	7% - 40%
VC 0425	Gherkin (all commodities)	highest utilisation: raw with skin	wc	0	0.029	1.000	JP	Child, 1-6 yrs	484	91.80	54.5	3	2a	0.26 - 0.35	9% - 10%	1% - 9%	9% - 10%
VO 0440	Egg plant (aubergine) (all commodities)	highest utilisation: raw with skin	wc	0	0.027	1.000	CN	Child, 1-6 yrs	969	253.44	443.9	3	2b	0.39 - 1.27	10% - 40%	10% - 20%	10% - 40%
VO 0444	Peppers, chili	raw with skin	wc		0.005	1.000	CN	Gen pop, > 1 yrs	1743	295.71	43.2	3	2a	0.04	1%	1%	NC
VO 0445	Peppers, sweet (incl. pim(i)ento) (bell pepper, paprika) (all commodities)	highest utilisation: raw with skin	wc	0	0.051	1.000	CN	Child, 1-6 yrs	1002	169.85	170.0	3	2b	0.3 - 1.61	10% - 50%	3% - 20%	10% - 50%
VO 0448	Tomato (all commodities)	highest utilisation: dried	wc	0	0.027	5.000	AU	Gen pop, > 2 yrs	61	861.10	8.0	NR	1	0.58 - 1.74	20% - 60%	5% - 60%	2% - 30%
VL 0482	Lettuce, head (all commodities)	highest utilisation: raw	wc	0	0.097	1.000	NL	Child, 2-6 yrs	91	140.10	338.9	3	2b	0.91 - 2.22	30% - 70%	20% - 30%	30% - 70%
VL 0502	Spinach	Total	wc		0.091	1.000	ZA	Child, 1-5 yrs	-	237.48	197.8	3	2a	4.06	140%	40%	140%
VL 0502	Spinach	raw			0.091	1.000	JP	Child, 1-6 yrs	229	86.70	90.0	3	2b	1.41	50%	20%	50%
VL 0502	Spinach	cooked/boiled			0.091	1.000	NL	Gen pop, > 1 yrs	97	292.68	1.0	NR	1	0.40	10%	10%	10%
VP 0061	Beans, green, with pods, raw: beans except broad bean & soya bean (i.e. immature seeds + pods) (Phaseolus spp) (all commodities)	highest utilisation: canned/preserved	wc	0	0.049	1.000	NL	toddler, 8-20 m	E	127.90	2.3	NR	1	0.19 - 0.61	6% - 20%	6% - 10%	20% - 20%
VD 0071	Beans (dry) (Phaseolus spp) (all commodities)	highest utilisation: cooked/boiled	wc	0.002	0	0.400	CN	Gen pop, > 1 yrs	722	1313.18	0.5	NR	3	0 - 0.02	0% - 1%	0% - 1%	0% - 1%
VR 0508	Sweet potato (all commodities)	highest utilisation: Total	wc	0	0	1.000	CN	Child, 1-6 yrs	587	376.96	546.0	3	2b	0 - 0	0% - 0%	0% - 0%	0% - 0%
VR 0589	Potato (all commodities)	highest utilisation: Total	wc	0	0	1.000	ZA	Child, 1-5 yrs	-	299.62	216.0	3	2a	0 - 0	0% - 0%	0% - 0%	0% - 0%

ABAMECTIN (177)

Acute RfD= 0.003 mg/kg bw (3 µg/kg bw)

IESTI Maximum %ARfD: 80% all

Codex Code	Commodity	Processing	wc	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Country	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Varia-bility factor	Case	IESTI µg/kg bw/day	140% all	60% gen pop	140% child
VR 0600	Yams (all commodities)	highest utilisation: Total	wc	0	0	1.000	CN	Gen pop, > 1 yrs	681	441.46	810.0	3	2b	0 - 0	0% - 0%	0% - 0%	0% - 0%
VS 0624	Celery (all commodities)	highest utilisation: raw	wc	0	0.016	1.000	CN	Child, 1-6 yrs	454	180.29	861.1	3	2b	0.32 - 0.54	10% - 20%	6% - 10%	10% - 20%
GC 0649	Rice (all commodities)	highest utilisation: Total		0.001	0	1.000	US	Child, 1-6 yrs	-	99.75	<25	NR	3	0 - 0.01	0% - 0%	0% - 0%	0% - 0%
GC 0650	Rice	Rice milk		0.001		0.040	AU	Child, 2-6 yrs	25	772.50	NR	NR	3	0.00	0%	-	0%
GC 0649	Rice (all commodities)	highest utilisation: polished rice (cooked)	wc	0.001	0	0.400	CN	Child, 1-6 yrs	8752	1004.28	<25	NR	3	0 - 0.02	0% - 1%	0% - 1%	0% - 1%
TN 0295	Cashew nut (all commodities)	highest utilisation: raw incl roasted	wc	0	0	1.000	TH	child, 3-6 yrs	374	98.84	2.5	NR	1	0 - 0	0% - 0%	0% - 0%	0% - 0%
TN 0660	Almonds (all commodities)	highest utilisation: raw incl roasted	wc	0	0	1.000	DE	Women, 14-50 yrs	24	100.00	1.2	NR	1	0 - 0	0% - 0%	0% - 0%	0% - 0%
TN 0662	Brazil nut (all commodities)	highest utilisation: Total	wc	0	0	1.000	FR	Gen pop, > 3 yrs	0	57.57	4.0	NR	1	0 - 0	0% - 0%	0% - 0%	0% - 0%
TN 0664	Chestnuts (all commodities)	highest utilisation: Total	wc	0	0	1.000	FR	child, 3-6 yrs	0	170.41	17.4	NR	1	0 - 0	0% - 0%	0% - 0%	0% - 0%
TN 0665	Coconut (all commodities)	highest utilisation: raw (i.e. nutmeat)	wc	0	0	1.000	TH	child, 3-6 yrs	826	423.40	383.0	3	2a	0 - 0	0% - 0%	0% - 0%	0% - 0%
TN 0666	Hazelnut (all commodities)	highest utilisation: Total	wc	0	0	1.000	FR	Child, 3-6 yrs	0	27.24	1.2	NR	1	0 - 0	0% - 0%	0% - 0%	0% - 0%
TN 0669	Macadamia nut (all commodities)	highest utilisation: Total	wc	0	0	1.000	US	Gen pop, all ages	-	106.60	3.2	NR	1	0 - 0	0% - 0%	0% - 0%	0% - 0%
TN 0672	Pecan (all commodities)	highest utilisation: Total	wc	0	0	1.000	AU	Child, 2-16 yrs	52	80.87	5.0	NR	1	0 - 0	0% - 0%	0% - 0%	0% - 0%
TN 0673	Pine nut (all commodities)	highest utilisation: Total	wc	0	0	1.000	BR	Gen pop, > 10 yrs	47	200.00	0.2	NR	1	0 - 0	0% - 0%	0% - 0%	0% - 0%
TN 0675	Pistachio nut (all commodities)	highest utilisation: Total	wc	0	0	1.000	FR	child, 3-6 yrs	0	44.89	0.9	NR	1	0 - 0	0% - 0%	0% - 0%	0% - 0%
TN 0678	Walnut (all commodities)	highest utilisation: raw incl roasted	wc	0	0	1.000	DE	Child, 2-4 yrs	75	49.40	7.0	NR	1	0 - 0	0% - 0%	0% - 0%	0% - 0%
SO 0691	Cotton seed (all commodities)	highest utilisation: Total		0 - 0.002	0	1.000	US	Gen pop, all ages	-	3.25	<25	NR	3	0 - 0	0% - 0%	0% - 0%	0% - 0%
SO 0697	Peanut, shelled (groundnut) (all commodities)	highest utilisation: raw incl roasted	wc	0	0	1.000	CN	Child, 1-6 yrs	290	163.07	<25	NR	3	0 - 0	0% - 0%	0% - 0%	0% - 0%
DH 1100	Hops, dry (all commodities)	highest utilisation: Total		0.038	0	1.000	DE	Gen pop, 14-80 yrs	5866	8.50	<25	NR	3	0 - 0	0% - 0%	0% - 0%	0% - 0%

ACETAMIPRID (246)
Acute RfD= 0.1 mg/kg bw (100 µg/kg bw)

IESTI
Maximum %ARfD: 490% all; 200% gen pop; 490% child

Codex Code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Coun try	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Varia-bility factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
VC 0046	Melons, except watermelon (all commodities)	highest utilisation: Total	0.05	0.11	1.000	FR	Child, 3-6 yrs	0	358.11	420.0	3	2b	0 - 6.25	0% - 6%	0% - 5%	0% - 6%
VC 0421	Balsam pear (Bitter cucumber, Bitter gourd, Bitter melon) (all commodities)	highest utilisation: raw without peel	0	0.11	1.000	CN	Gen pop, > 1 yrs	1387	400.21	607.5	3	2b	0.8 - 2.48	1% - 2%	1% - 2%	1% - 2%
VC 0422	Bottle gourd (Cucuzzi) (all commodities)	highest utilisation: raw with skin	0	0.11	1.000	CN	Gen pop, > 1 yrs	519	453.00	325.0	3	2a	2.28 - 2.28	2% - 2%	2% - 2%	0% - 0%
VC 0423	Chayote (Christophine) (all commodities)	highest utilisation: raw with skin	0	0.11	1.000	CN	Child, 1-6 yrs	124	284.75	197.4	3	2a	1.22 - 4.63	1% - 5%	1% - 2%	1% - 5%
VC 0424	Cucumber (all commodities)	highest utilisation: raw with skin	0.057	0.17	1.000	CN	Child, 1-6 yrs	340	212.11	458.1	3	2b	0.02 - 6.7	0% - 7%	0% - 4%	0% - 7%
VC 0425	Gherkin (all commodities)	highest utilisation: raw with skin	0.05	0.11	1.000	JP	Child, 1-6 yrs	484	91.80	54.5	3	2a	0.04 - 1.31	0% - 1%	0% - 1%	0% - 1%
VC 0427	Loofah, Angled (Sinkwa, Sinkwa towel gourd) (all commodities)	highest utilisation: raw without peel	0	0.11	1.000	TH	Child, 3-6 yrs	759	129.62	133.0	3	2b	2.5 - 2.5	3% - 3%	1% - 1%	3% - 3%
VC 0428	Loofah, Smooth (all commodities)	highest utilisation: raw without peel	0	0.11	1.000	CN	Child, 1-6 yrs	196	296.64	133.0	3	2a	3.84 - 3.84	4% - 4%	2% - 2%	4% - 4%
VC 0429	Pumpkins (all commodities)	highest utilisation: raw without peel	0.05	0.11	1.000	CN	Child, 1-6 yrs	561	322.71	1851.8	3	2b	0.08 - 6.6	0% - 7%	0% - 4%	0% - 7%
VC 0430	Snake gourd (all commodities)	highest utilisation: raw without peel	0	0.11	1.000	TH	Child, 3-6 yrs	759	129.62	133.0	3	2b	2.5 - 2.5	3% - 3%	1% - 1%	3% - 3%
VC 0431	Squash, summer (courgette, marrow, zucchetti, zucchini) (all commodities)	highest utilisation: Total	0.05	0.11	1.000	FR	Child, 3-6 yrs	0	148.84	270.0	3	2b	0.03 - 2.6	0% - 3%	0% - 2%	0% - 3%
VC 0432	Watermelon (all commodities)	highest utilisation: Total	0.05	0.11	1.000	AU	Gen pop, > 2 yrs	267	2542.18	2095.6	3	2a	9.49 - 11.05	9% - 10%	9% - 10%	9% - 9%
VO 0447	Sweet corn (corn-on-the-cob) (all commodities)	highest utilisation: cooked/boiled	0.01	0.01	1.000	TH	Child, 3-6 yrs	1383	196.99	191.1	3	2a	0.01 - 0.34	0% - 0%	0% - 0%	0% - 0%
VL 0485	Mustard greens (all other commodities)	highest utilisation: Total	2	10	1.000	US	child, 1-6 yrs	-	36.92	244.8	3	2b	8.65 - 73.85	9 - 70%	9 - 70%	70%
VL 0485	Mustard greens	raw		10	1.000	CN	Child, 1-6	635	299.31	244.8	3	2a	488.87	490%	200%	490%

ACETAMIPRID (246)
Acute RfD= 0.1 mg/kg bw (100 µg/kg bw)

IESTI
Maximum %ARfD: 490% all, 200% gen pop, 490% child

Codex Code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Coun try	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Varia-bility factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
							yrs									
VL 0485	Mustard greens	cooked/boiled		10	1.000	BR	Gen pop, > 10 yrs	47	288.80	244.8	3	2a	120.56	120%	120%	-
VS 0621	Asparagus (all commodities)	highest utilisation: Total	0.26	0.43	1.000	US	Child, 1-6 yrs	-	142.56	42.4	3	2a	4.2 - 6.52	4% - 7%	2% - 3%	4% - 7%
HS 0775	Cardamom seed (all commodities)	highest utilisation: Total	0.1		1.000	DE	Child, 2-4 yrs	42	0.20	0.1	NR	3	0 - 0	0% - 0%	0% - 0%	0% - 0%
HS 0790	Pepper (black, white) (all commodities)	highest utilisation: Total	0.1		1.000	AU	Gen pop, > 2 yrs	260	6.88	0.0	NR	3	0 - 0.01	0% - 0%	0% - 0%	0% - 0%
MM 0095	Meat from mammals other than marine mammals	Total	NA	NA	1.000	CN	Child, 1-6 yrs	302	264.84	NR	NR	1	NA	4%	3%	4%
MM 0095	Meat from mammals other than marine mammals: 20% as fat	Total		0.16	1.000	CN	Child, 1-6 yrs	302	52.97	NR	NR	1	0.53	1%	0%	1%
MM 0095	Meat from mammals other than marine mammals: 80% as muscle	Total		0.3	1.000	CN	Child, 1-6 yrs	302	211.87	NR	NR	1	3.94	4%	2%	4%
MF 0100	Mammalian fats (except milk fats)	Total		0.16	1.000	FR	Child, 3-6 yrs	0	64.80	NR	NR	1	0.55	1%	0%	1%
MO 0105	Edible offal (mammalian)	Total		0.89	1.000	US	Child, 1-6 yrs	-	186.60	NR	NR	1	11.07	10%	10%	10%
ML 0106	Milks	Total	0.019		1.000	NL	toddler, 8-20 m	1882	1060.67	NR	NR	3	1.98	2%	1%	2%

Annex 4

ACETOCHLOR (280) IESTI

Acute RfD= 1 mg/kg bw (1000 µg/kg bw) Maximum %ARfD: 0% all 0% gen pop 0% child

Codex Code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Coun try	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Varia-bility factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
VO 0447	Sweet corn (corn-on-the-cob) (all commodities)	highest utilisation: cooked/boiled	0.04	0.04	1.000	TH	Child, 3-6 yrs	1383	196.99	191.1	3	2a	0.03 - 1.35	0% - 0%	0% - 0%	0% - 0%
VD 0071	Beans (dry) (Phaseolus spp) (all commodities)	highest utilisation: cooked/boiled	0.02	0	0.400	CN	Gen pop, > 1 yrs	722	1313.18	0.5	NR	3	0.04 - 0.2	0% - 0%	0% - 0%	0% - 0%
VD 0072	Peas (dry) (Pisum spp, Vigna spp) (all commodities)	highest utilisation: cooked/boiled	0.02	0	0.400	CN	Gen pop, > 1 yrs	268	1673.82	<25	NR	3	0.02 - 0.25	0% - 0%	0% - 0%	0% - 0%
VD 0523	Broad bean (dry) (Vicia spp) (all commodities)	highest utilisation: cooked/boiled	0.02	0	0.400	CN	Gen pop, > 1 yrs	737	1190.24	<25	NR	3	0.01 - 0.18	0% - 0%	0% - 0%	0% - 0%
VD 0524	Chick-pea (dry) (Cicer spp) (all commodities)	highest utilisation: canned/preserved	0.02	0	0.400	NL	Child, 2-6 yrs	6	144.66	<25	NR	3	0.02 - 0.06	0% - 0%	0% - 0%	0% - 0%
VD 0531	Hyacinth bean (dry) (Lablab spp) (all commodities)	highest utilisation: cooked/boiled	0.02	0	0.400	CN	Gen pop, > 1 yrs	1219	972.42	<25	NR	3	0.15 - 0.15	0% - 0%	0% - 0%	0% - 0%
VD 0533	Lentil (dry) (Lens spp) (all commodities)	highest utilisation: Total	0.02	0	1.000	FR	Child, 3-6 yrs	0	290.77	0.1	NR	3	0.04 - 0.31	0% - 0%	0% - 0%	0% - 0%
VD 0537	Pigeon pea (dry) (Cajanus spp)	Total	0.02		1.000	AU	Gen pop, > 2 yrs	129	95.83	<25	NR	3	0.03	0%	0%	-
VR 0589	Potato (all commodities)	highest utilisation: Total	0.04	0.04	1.000	ZA	Child, 1-5 yrs	-	299.62	216.0	3	2a	0.03 - 2.06	0% - 0%	0% - 0%	0% - 0%
VR 0596	Sugar beet (all commodities)	highest utilisation: Total	0.0068 - 0.018	0.086	1.000	DE	gen pop, 14-80 yrs	26295	161.79	160.0	3	2a	0.1 - 0.54	0% - 0%	0% - 0%	0% - 0%
GC 0640	Barley (all commodities)	highest utilisation: beer	0.035	0	0.190	BR	Gen pop, > 10 yrs	1636	3600.00	NR	NR	3	0 - 0.37	0% - 0%	0% - 0%	0% - 0%
GC 0641	Buckwheat (all commodities)	highest utilisation: cooked/boiled	0.035	0	0.400	CN	Gen pop, > 1 yrs	198	831.68	<25	NR	3	0 - 0.22	0% - 0%	0% - 0%	0% - 0%
GC 0645	Maize (corn) (all commodities)	highest utilisation: Total	0.002	0	1.000	CN	Child, 1-6 yrs	166	524.69	<25	NR	3	0 - 0.07	0% - 0%	0% - 0%	0% - 0%
GC 0656	Popcorn (i.e. maize destined for popcorn preparation) (all commodities)	highest utilisation: Total	0.002	0	1.000	AU	Child, 2-6 yrs	120	73.67	<25	NR	3	0.01 - 0.01	0% - 0%	0% - 0%	0% - 0%
GC 0646	Millet	highest utilisation:	0.035	0	1.000	CN	Child, 1-6	826	219.53	<25	NR	3	0.03 - 0.48	0% - 0%	0% - 0%	0% - 0%

ACETOCHLOR (280) IESTI

Acute RfD= 1 mg/kg bw (1000 µg/kg bw) Maximum %ARfD: 0% all, 0% gen pop, 0% child

Codex Code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Coun try	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Varia-bility factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
	(all commodities)	Total					yrs									
GC 0647	Oats (all commodities)	highest utilisation: Total	0.035	0	1.000	CN	Gen pop, > 1 yrs	1740	330.61	<25	NR	3	0.02 - 0.22	0% - 0%	0% - 0%	0% - 0%
GC 0650	Rye (all commodities)	highest utilisation: Wholemeal	0.035	0	1.000	DE	Child, 2-4 yrs	242	95.20	NR	NR	3	0 - 0.21	0% - 0%	0% - 0%	0% - 0%
GC 0653	Triticale	Total	0.035		1.000	DE	Gen pop, 14-80 yrs	27100	394.70	<25	NR	3	0.18	0%	0%	0%
GC 0654	Wheat (all commodities)	highest utilisation: flour (cereals)	0.02	0	1.000	CN	Child, 1-6 yrs	3556	415.87	NR	NR	3	0 - 0.52	0% - 0%	0% - 0%	0% - 0%
GC 0655	Wild rice (all commodities)	highest utilisation: cooked/boiled	0.035	0	0.400	CN	Child, 1-6 yrs	129	552.59	<25	NR	3	0.04 - 0.48	0% - 0%	0% - 0%	0% - 0%
SO 0702	Sunflower seed (all commodities)	highest utilisation: Total	0.0088 - 0.04	0	1.000	CN	Gen pop, > 1 yrs	781	235.52	<25	NR	3	0.01 - 0.18	0% - 0%	0% - 0%	0% - 0%
MM 0095	Meat from mammals other than marine mammals	Total	NA	NA	1.000	CN	Child, 1-6 yrs	302	264.84	NR	NR	1	NA	0%	0%	0%
MM 0095	Meat from mammals other than marine mammals: 20% as fat	Total		0.003	1.000	CN	Child, 1-6 yrs	302	52.97	NR	NR	1	0.01	0%	0%	0%
MM 0095	Meat from mammals other than marine mammals: 80% as muscle	Total		0.003	1.000	CN	Child, 1-6 yrs	302	211.87	NR	NR	1	0.04	0%	0%	0%
031	MAMMALIAN FATS	-		0.003	-	-	-	-	-	-	-	-	-	-	-	-
MO 0105	Edible offal (mammalian)	Total		0.0056	1.000	US	Child, 1-6 yrs	-	186.60	NR	NR	1	0.07	0%	0%	0%
ML 0106	Milks	Total	0.008		1.000	NL	toddler, 8-20 m	1882	1060.67	NR	NR	3	0.83	0%	0%	0%
PM 0110	Poultry meat	Total	NA	NA	1.000	CN	Child, 1-6 yrs	175	347.00	NR	NR	1	NA	0%	0%	0%
PM 0110	Poultry meat: 10% as fat	Total		0	1.000	CN	Child, 1-6 yrs	175	34.70	NR	NR	1	0.00	0%	0%	0%
PM 0110	Poultry meat: 90% as muscle	Total		0	1.000	CN	Child, 1-6 yrs	175	312.30	NR	NR	1	0.00	0%	0%	0%
PF 0111	Poultry, fats (all commodities)	highest utilisation: Total	0	0	1.000	US	gen pop, all ages	-	42.90	NR	NR	1	0 - 0	0% - 0%	0% - 0%	0% - 0%
PE 0112	Eggs	Total		0	1.000	CN	Child, 1-6 yrs	136	195.82	NR	NR	1	0.00	0%	0%	0%

Annex 4

BIFENTHRIN (178)

Acute RfD= 0.01 mg/kg bw (10 µg/kg bw)

IESTI Maximum %ARfD: 600% all; 360% gen pop; 600% child

Codex Code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Country	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Variability factor	Case	IESTI µg/kg bw/day	% acute RfD rounded (600% all)	% acute RfD rounded (360% gen pop)	% acute RfD rounded (600% child)
FB 0020	Blueberries (all commodities)	highest utilisation: raw with skin	0.67	1.6	1.000	DE	Gen pop, 14-80 yrs	70	388.00	1.8	NR	1	0.1 - 8.13	1% - 80%	0% - 80%	1% - 60%
FB 0269	Grape (all other commodities)	highest utilisation: Total	0.06	0.14	1.000	FR	child, 3-6 yrs	1	370.13	117.5	3	2a	0.33 - 4.48	3 - 40%	2 - 30%	0 - 40%
FB 0269	Grapes	raw with skin		0.14	1.000	CN	Child, 1-6 yrs	232	366.72	636.6	3	2b	9.55	100%	50%	100%
VL 0482	Lettuce, head	Total		1.9	1.000	AU	Child, 2-6 yrs	335	59.55	586.4	3	2b	17.86	180%	180%	180%
VL 0482	Lettuce, head	raw		1.9	1.000	NL	Child, 2-6 yrs	91	140.10	338.9	3	2b	43.40	430%	140%	430%
VL 0482	Lettuce, head	cooked/boiled		1.9	1.000	NL	Gen pop, > 1 yrs	2	220.89	227.0	3	2b	19.13	190%	190%	NC
VL 0482	Lettuce, head	juice (pasteurised)	0.51		1.000	NL	Gen pop, > 1 yrs	0	NC	NR	NR	3	NC	NC	NC	NC
VL 0482	Lettuce, head	sec processing / composite foods	0.51		1.000	NL	Gen pop, > 1 yrs	247	38.69	NR	NR	3	0.30	3%	3%	2%
VP 0063	Peas green, with pods, raw (i.e. immature seeds + pods) (Pisum spp) (all commodities)	highest utilisation: cooked/boiled	0.23	0.5	1.000	CN	Child, 1-6 yrs	1056	290.21	6.2	NR	1	3.5 - 8.99	30% - 90%	20% - 50%	30% - 90%
VP 0064	Peas, green, without pods, raw (i.e. immature seeds only) (Pisum spp) (all commodities)	highest utilisation: Total	0	0	1.000	UK	Child, 1.5-4.5 yrs	57	174.00	<25	NR	1	0 - 0	0% - 0%	0% - 0%	0% - 0%
VS 0624	Celery	Total		1.8	1.000	FR	child, 3-6 yrs	0	124.43	861.1	3	2b	35.55	360%	190%	360%
VS 0624	Celery	raw		1.8	1.000	CN	Child, 1-6 yrs	454	180.29	861.1	3	2b	60.34	600%	310%	600%
VS 0624	Celery	cooked/boiled		1.8	1.000	NL	Child, 2-6 yrs	E	126.21	607.0	3	2b	37.04	370%	360%	370%

BIFENTHRIN (178)

Acute RfD= 0.01 mg/kg bw (10 µg/kg bw)

IESTI Maximum %ARfD: 600% all, 360% gen pop, 600% child

Codex Code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Country	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Varia-bility factor	Case	IESTI µg/kg bw/day	% acute RfD rounded (all)	% acute RfD rounded (gen pop)	% acute RfD rounded (child)
VS 0624	Celery (all other commodities)	highest utilisation: juice (pasteurised)	0.7		1.000	AU	Gen pop, > 2 yrs	39	854.08	NR	NR	3	0.04 - 8.92	0 - 90%	0 - 90%	2 - 50%

CHLOROTHALONIL (081)

Acute RfD= 0.6 mg/kg bw (600 µg/kg bw)

IESTI Maximum %ARfD: 30% all, 30% gen pop, 20% child

Codex Code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Country	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Varia-bility factor	Case	IESTI µg/kg bw/day	% acute RfD rounded (all)	% acute RfD rounded (gen pop)	% acute RfD rounded (child)
FS 0013	Cherries (all commodities)	highest utilisation: raw	0.39	1.8	1.000	DE	Child, 2-4 yrs	24	187.50	7.2	NR	1	0.16 - 20.9	0% - 3%	0% - 3%	0% - 3%
FS 0247	Peach (all commodities)	highest utilisation: raw with peel (incl consumption without peel)	0.12	1.1	1.000	JP	Child, 1-6 yrs	76	306.00	255.0	3	2a	0.05 - 57.91	0% - 10%	0% - 4%	0% - 10%
VA 0385	Onion, bulb (all commodities)	highest utilisation: raw without skin	0.4	0.69	1.000	JP	Child, 1-6 yrs	748	102.00	244.4	3	2b	0.15 - 12.87	0% - 2%	0% - 1%	0% - 2%
VA 0388	Shallot (i.e. dry harvested small onion) (all commodities)	highest utilisation: raw without skin	0.4	0.69	1.000	CN	Child, 1-6 yrs	480	115.81	51.4	3	2a	0.32 - 9.35	0% - 2%	0% - 1%	0% - 2%
VO 0444	Peppers, chili (all commodities)	highest utilisation: dried (incl powder)	1.5	4.4 - 44	7.000	CN	Gen Pop. > 1 yrs	1583	32.22	0.0	NR	1	0.03 - 186.44	0% - 30%	0% - 30%	0% - 7%
VO 0445	Peppers, sweet (incl. pim(i)ento) (bell pepper, paprika) (all commodities)	highest utilisation: raw with skin	1.5	4.4	1.000	CN	Child, 1-6 yrs	1002	169.85	170.0	3	2b	0.27 - 138.95	0% - 20%	0% - 9%	0% - 20%
VO 0448	Tomato (all commodities)	highest utilisation: dried	0.011 - 0.11	2.8	5.000	AU	Gen pop. > 2 yrs	61	861.10	8.0	NR	1	0.06 - 179.93	0% - 30%	0% - 30%	0% - 20%
VR 0463	Cassava (Manioc, Tapioca)	highest utilisation: cooked/boiled (without	0.3	0.3	1.000	NL	Gen pop. > 1 yrs	E	249.97	356.0	3	2b	0.26 - 3.42	0% - 1%	0% - 1%	0% - 0%

CHLOROTHALONIL (081) IESTI

Acute RfD= 0.6 mg/kg bw (600 µg/kg bw) Maximum %ARfD: 30% all 30% gen pop 20% child

Codex Code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Coun try	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Varia-bility factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
	(all commodities)	peel)														
VR 0469	Chicory, roots (all commodities)	highest utilisation: Total	0.3	0.3	1.000	AU	Gen pop. > 2 yrs	175	26.16	48.0	3	2b	0.22 - 0.35	0% - 0%	0% - 0%	0% - 0%
VR 0494	Radish (all commodities)	highest utilisation: raw with skin	0.3	0.3	1.000	NL	Child, 2-6 yrs	E	64.40	172.0	3	2b	0.03 - 3.15	0% - 1%	0% - 0%	0% - 1%
VR 0497	Swede (rutabaga) (all commodities)	highest utilisation: Total	0.3	0.3	1.000	UK	Child, 1.5-4.5 yrs	147	124.70	500.0	3	2b	0.02 - 7.74	0% - 1%	0% - 1%	0% - 1%
VR 0498	Salsify (Oyster plant) (all commodities)	highest utilisation: cooked/boiled (without peel)	0.3	0.3	1.000	NL	Child, 2-6 yrs	E	133.31	57.0	3	2a	0.01 - 4.03	0% - 1%	0% - 0%	0% - 1%
VR 0505	Taro (dasheen, eddoe) (all commodities)	highest utilisation: cooked/boiled (without peel)	0	0.3	1.000	CN	Child, 1-6 yrs	199	384.18	667.8	3	2b	21.43 - 21.43	4% - 4%	2% - 2%	4% - 4%
VR 0506	Turnip, garden (all commodities)	highest utilisation: cooked/boiled (without peel)	0.3	0.3	1.000	NL	Child, 2-6 yrs	E	133.31	176.0	3	2b	2.2 - 6.52	0% - 1%	0% - 0%	0% - 1%
VR 0508	Sweet potato (all commodities)	highest utilisation: Total	0.3	0.3	1.000	CN	Child, 1-6 yrs	587	376.96	546.0	3	2b	2.11 - 21.03	0% - 4%	0% - 2%	1% - 4%
VR 0573	Arrowroot (all commodities)	highest utilisation: starch	0.3	0.3	1.000	NL	Child, 2-6 yrs	E	12.40	NR	NR	3	0.2 - 0.2	0% - 0%	0% - 0%	0% - 0%
VR 0574	Beetroot (all commodities)	highest utilisation: Total	0.3	0.3	1.000	AU	Child, 2-6 yrs	53	314.08	135.5	3	2a	0.18 - 9.24	0% - 2%	0% - 1%	0% - 2%
VR 0575	Burdock, greater or edible	Total		0.3	1.000	JP	Child, 1-6 yrs	122	35.70	-	-	-	-	-	-	-
VR 0577	Carrot (all commodities)	highest utilisation: raw with skin	0.3	0.3	1.000	CN	Child, 1-6 yrs	400	234.68	300.0	3	2b	0.04 - 13.09	0% - 2%	0% - 1%	0% - 2%
VR 0578	Celeriac (all commodities)	highest utilisation: cooked/boiled (without skin)	0.3	0.3	1.000	NL	Gen pop. > 1 yrs	23	239.12	437.0	3	2b	0.06 - 3.27	0% - 1%	0% - 1%	0% - 0%
VR 0583	Horseradish (all commodities)	highest utilisation: Total	0	0.48	1.000	DE	Gen pop. 14-80 yrs	47	79.50	154.0	3	2b	0.02 - 1.5	0% - 0%	0% - 0%	0% - 0%
VR 0585	Jerusalem artichoke (all commodities)	highest utilisation: cooked/boiled (without peel)	0	0.3	1.000	NL	Child, 2-6 yrs	E	133.33	56.0	3	2a	0.13 - 4	0% - 1%	0% - 0%	1% - 1%
VR 0587	parsley, turnip-rooted (all commodities)	highest utilisation: dried (slab)	0.3	0.3	5.000	CN	Child, 1-6 yrs	427	22.79	NR	NR	3	2.12 - 2.12	0% - 0%	0% - 0%	0% - 0%
VR 0588	Parsnip	highest utilisation:	0.3	0.3	1.000	UK	Child, 1.5-	87	227.07	90.0	3	2a	0.68 -	0% -	0% -	1% -

CHLOROTHALONIL (081) IESTI

Acute RfD= 0.6 mg/kg bw (600 µg/kg bw) Maximum %ARfD: 30% all 30% gen pop 20% child

Codex Code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Country	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Variability factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
	(all commodities)	Total					4.5 yrs						8.42	1%	0%	1%
VR 0589	Potato (all commodities)	highest utilisation: Total	0.3	0.3	1.000	ZA	Child, 1-5 yrs	-	299.62	216.0	3	2a	0.2 - 15.46	0% - 3%	0% - 1%	0% - 3%
VR 0590	Radish, black (all commodities)	highest utilisation: raw without skin	0.3	0.3	1.000	NL	Child, 2-6 yrs	E	64.40	180.3	3	2b	0.03 - 3.15	0% - 1%	0% - 0%	0% - 1%
VR 0591	Radish, Japanese (Chinese radish, Daikon) (all commodities)	highest utilisation: raw without skin	0.3	0.3	1.000	CN	Child, 1-6 yrs	1187	293.37	1000.0	3	2b	0.03 - 16.36	0% - 3%	0% - 1%	0% - 3%
VR 0596	Sugar beet (all commodities)	highest utilisation: sugar	0.3	0.3	1.000	FR	Child, 3-6 yrs	1	274.67	NR	NR	3	1.89 - 4.36	0% - 1%	0% - 0%	0% - 1%
VR 0600	Yams (all commodities)	highest utilisation: Total	0	0.3	1.000	CN	Gen pop. > 1 yrs	681	441.46	810.0	3	2b	2.17 - 7.46	0% - 1%	0% - 1%	0% - 1%
-	Lotus root (all commodities)	highest utilisation: cooked/boiled without peel	0	0.3	1.000	TH	Child, 3-6 yrs	169	134.24	<25	NR	1	0.57 - 2.36	0% - 0%	0% - 0%	0% - 0%
VS 0621	Asparagus (all commodities)	highest utilisation: Total	0	0	1.000	US	Child, 1-6 yrs	-	142.56	42.4	3	2a	0 - 0	0% - 0%	0% - 0%	0% - 0%
VS 0627	Rhubarb (all commodities)	highest utilisation: Total	0.55	3.9	1.000	AU	gen pop. > 2 yrs	58	539.42	56.7	3	2a	4.48 - 38	1% - 6%	1% - 6%	1% - 7%
TN 0675	Pistachio nut (all commodities)	highest utilisation: Total	0.082	0.14	1.000	FR	child, 3-6 yrs	0	44.89	0.9	NR	1	0 - 0.33	0% - 0%	0% - 0%	0% - 0%

SDS-3701

Acute RfD= 0.03 mg/kg bw (30 µg/kg bw)

IESTI

Maximum %ARfD: 10% all; 10% gen pop; 9% child

Codex Code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Country	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Variability factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
FS 0013	Cherries (all commodities)	highest utilisation: raw	0.01	0.035	1.000	DE	Child, 2-4 yrs	24	187.50	7.2	NR	1	0 - 0.41	0% - 1%	0% - 1%	0% - 1%
FS 0247	Peach (all commodities)	highest utilisation: raw with peel (incl consumption without peel)	0.01	0.011	1.000	JP	Child, 1-6 yrs	76	306.00	255.0	3	2a	0 - 0.58	0% - 2%	0% - 1%	0% - 2%
VA 0385	Onion, bulb (all commodities)	highest utilisation: raw without skin	0.02	0.068	1.000	JP	Child, 1-6 yrs	748	102.00	244.4	3	2b	0.01 – 1.27	0% - 4%	0% - 2%	0% - 4%
VA 0388	Shallot (i.e. dry harvested small onion) (all commodities)	highest utilisation: raw without skin	0.02	0.068	1.000	CN	Child, 1-6 yrs	480	115.81	51.4	3	2a	0.02 - 0.92	0% - 3%	0% - 1%	0% - 3%
VO 0444	Peppers, chili (all commodities)	highest utilisation: dried (incl powder)	0.045	0.09 - 0.9	7.000	CN	Gen Pop, > 1 yrs	1583	32.22	0.0	NR	1	0 – 3.81	0% - 10%	0% - 10%	0% - 3%
VO 0445	Peppers, sweet (incl. pim(i)ento) (bell pepper, paprika) (all commodities)	highest utilisation: raw with skin	0.045	0.09	1.000	CN	Child, 1-6 yrs	1002	169.85	170.0	3	2b	0.01 – 2.84	0% - 9%	0% - 3%	0% - 9%
VO 0448	Tomato (all commodities)	highest utilisation: dried	0.0135	0.035	5.000	AU	Gen pop, > 2 yrs	61	861.10	8.0	NR	1	0.07 – 2.25	0% - 7%	0% - 7%	0% - 5%
VR 0583	Horseradish (all commodities)	highest utilisation: Total	0.16	0.31	1.000	DE	Gen pop, 14-80 yrs	47	79.50	154.0	3	2b	0.01 - 0.97	0% - 3%	0% - 3%	0% - 0%
VS 0621	Asparagus (all commodities)	highest utilisation: Total	0	0	1.000	US	Child, 1-6 yrs	-	142.56	42.4	3	2a	0 - 0	0% - 0%	0% - 0%	0% - 0%
VS 0627	Rhubarb (all commodities)	highest utilisation: Total	0.02	0.02	1.000	AU	gen pop, > 2 yrs	58	539.42	56.7	3	2a	0.16 - 0.19	1% - 1%	0% - 1%	1% - 1%
TN 0675	Pistachio nut (all commodities)	highest utilisation: Total	0.01	0.01	1.000	FR	child, 3-6 yrs	0	44.89	0.9	NR	1	0 - 0.02	0% - 0%	0% - 0%	0% - 0%

CYAZOFAMID (CCIM Metabolite Only) (281) IESTI

Acute RfD= 0.2 mg/kg bw (200 µg/kg bw) Maximum %ARfD: 90% all | 30% gen pop | 90% child

Codex Code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Country	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Variability factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
FB 0269	Grape (all commodities)	highest utilisation: juice (pasteurised)	0.011 - 0.037	0.01 - 0.03	1.000	NL	Child, 2-6 yrs	8	803.18	NR	NR	3	0.03 - 1.62	0% - 1%	0% - 0%	0% - 1%
VB 0041	Cabbage, head (all commodities)	highest utilisation: cooked/boiled	0.22	0.025 - 0.64	1.000	NL	toddler, 8-20 m	37	129.64	833.0	3	2b	0.13 - 24.4	0% - 10%	0% - 5%	0% - 10%
VB 0400	Broccoli (all commodities)	highest utilisation: cooked/boiled	0.22	0.025 - 0.64	1.000	NL	toddler, 8-20 m	125	160.73	286.0	3	2b	0.08 - 30.26	0% - 20%	0% - 5%	0% - 20%
VB 0401	Broccoli, Chinese (Kailan) (all commodities)	highest utilisation: raw	0	0.025	1.000	CN	Child, 1-6 yrs	334	222.48	311.0	3	2b	0.34 - 1.03	0% - 1%	0% - 0%	1% - 1%
VB 0402	Brussels sprouts (all commodities)	highest utilisation: cooked/boiled	0.22	0.025 - 0.64	1.000	NL	toddler, 8-20 m	11	103.77	8.0	NR	1	0.01 - 6.51	0% - 3%	0% - 2%	0% - 3%
VB 0404	Cauliflower (all commodities)	highest utilisation: cooked/boiled	0.22	0.025 - 0.64	1.000	NL	toddler, 8-20 m	110	141.99	749.0	3	2b	0.03 - 26.73	0% - 10%	0% - 8%	0% - 10%
VB 0405	Kohlrabi (all commodities)	highest utilisation: cooked/boiled	0	0.025 - 0.64	1.000	NL	Gen pop, > 1 yrs	E	200.03	210.0	3	2b	0.08 - 5.84	0% - 3%	0% - 3%	0% - 2%
VC 0046	Melons, except watermelon (all commodities)	highest utilisation: Total	0.027	0.01	1.000	FR	Child, 3-6 yrs	0	358.11	420.0	3	2b	0 - 0.57	0% - 0%	0% - 0%	0% - 0%
VC 0421	Balsam pear (Bitter cucumber, Bitter gourd, Bitter melon) (all commodities)	highest utilisation: cooked/boiled without peel	0	0.01 - 0.057	1.000	JP	Gen pop, > 1 yrs	833	147.90	130.0	3	2a	0.23 - 0.41	0% - 0%	0% - 0%	0% - 0%
VC 0422	Bottle gourd (Cucuzzi) (all commodities)	highest utilisation: raw with skin	0	0.01	1.000	CN	Gen pop, > 1 yrs	519	453.00	325.0	3	2a	0.21 - 0.21	0% - 0%	0% - 0%	0% - 0%
VC 0423	Chayote (Christophine) (all commodities)	highest utilisation: raw with skin	0	0.01	1.000	CN	Child, 1-6 yrs	124	284.75	197.4	3	2a	0.11 - 0.42	0% - 0%	0% - 0%	0% - 0%
VC 0424	Cucumber (all commodities)	highest utilisation: cooked/boiled (without skin)	0.027	0.01 - 0.057	1.000	NL	Gen pop, > 1 yrs	E	200.03	333.0	3	2b	0.01 - 0.52	0% - 0%	0% - 0%	0% - 0%
VC 0425	Gherkin (all commodities)	highest utilisation: pickled&preserved	0.027	0.01 - 0.057	1.000	BR	Gen pop, > 10 yrs	70	500.00	54.5	3	2a	0.02 - 0.54	0% - 0%	0% - 0%	0% - 0%
VC 0427	Loofah, Angled (Sinkwa, Sinkwa towel gourd) (all commodities)	highest utilisation: raw without peel	0	0.01	1.000	TH	Child, 3-6 yrs	759	129.62	133.0	3	2b	0.23 - 0.23	0% - 0%	0% - 0%	0% - 0%
VC 0428	Loofah, Smooth (all commodities)	highest utilisation: raw without peel	0	0.01	1.000	CN	Child, 1-6 yrs	196	296.64	133.0	3	2a	0.35 - 0.35	0% - 0%	0% - 0%	0% - 0%
VC 0429	Pumpkins	highest utilisation:	0.027	0.01 -	1.000	NL	Child, 2-6	E	326.40	689.0	3	2b	0.04 -	0% - 2%	0% - 1%	0% - 2%

CYAZOFAMID (CCIM Metabolite Only) (281) IESTI

Acute RfD= 0.2 mg/kg bw (200 µg/kg bw) Maximum %ARfD: 90% all | 30% gen pop | 90% child

Codex Code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Country	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Variability factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
	(all commodities)	cooked/boiled without peel		0.057			yrs						3.03			
VC 0430	Snake gourd (all commodities)	highest utilisation: raw without peel	0	0.01	1.000	TH	Child, 3-6 yrs	759	129.62	133.0	3	2b	0.23 - 0.23	0% - 0%	0% - 0%	0% - 0%
VC 0431	Squash, summer (courgette, marrow, zucchetti, zucchini) (all commodities)	highest utilisation: cooked/boiled with skin (incl consump tion without skin)	0.027	0.01 - 0.057	1.000	NL	toddler, 8-20 m	11	72.31	289.0	3	2b	0.01 - 1.21	0% - 1%	0% - 0%	0% - 1%
VC 0432	Watermelon (all commodities)	highest utilisation: Total	0.027	0.01	1.000	AU	Gen pop, > 2 yrs	267	2542.18	2095.6	3	2a	0.86 - 1	0% - 1%	0% - 1%	0% - 0%
VO 0440	Egg plant (aubergine) (all commodities)	highest utilisation: cooked/boiled (with skin)	0.044	0.02 - 0.13	1.000	NL	Gen pop, > 1 yrs	30	424.02	258.0	3	2a	0.02 - 1.86	0% - 1%	0% - 1%	0% - 1%
VO 0444	Peppers, chili (all commodities)	highest utilisation: paste (= crushed)	0.18	0.014 - 0.23	1.000	CN	Gen pop, > 1 yrs	309	142.57	43.2	3	2a	0 - 0.99	0% - 0%	0% - 0%	0% - 0%
VO 0445	Peppers, sweet (incl. pim(i)ento) (bell pepper, paprika) (all commodities)	highest utilisation: canned/preserved	0.054	0.014 - 0.2	1.000	NL	Child, 2-6 yrs	E	38.31	84.0	3	2b	0.01 - 1.25	0% - 1%	0% - 0%	0% - 1%
VO 0448	Tomato (all commodities)	highest utilisation: cooked/boiled (with peel)	0.012 - 0.044	0.02 - 0.13	1.000	NL	toddler, 8-20 m	31	81.77	86.0	3	2b	0.11 - 3.13	0% - 2%	0% - 1%	0% - 2%
VL 0269	Grape leaves (all commodities)	highest utilisation: canned/preserved	0	0.15 - 4.5	1.000	NL	Gen pop, > 1 yrs	1	54.81	1.4	NR	1	0.12 - 3.75	0% - 2%	0% - 2%	0% - 0%
VL 0460	Amaranth (Bledo) (all commodities)	highest utilisation: raw	0	0.15	1.000	CN	Gen pop, > 1 yrs	714	581.72	85.8	3	2a	1.24 - 2.12	1% - 1%	1% - 1%	0% - 0%
VL 0464	Chard (silver beet) (all commodities)	highest utilisation: cooked/boiled	0	0.15 - 4.5	1.000	NL	Child, 2-6 yrs	2	81.77	105.0	3	2b	0.53 - 59.99	0% - 30%	0% - 10%	1% - 30%
VL 0465	Chervil (all commodities)	highest utilisation: dried	2.2	0.15	1.000	NL	Child, 2-6 yrs	E	0.40	NR	NR	3	0.03 - 0.05	0% - 0%	0% - 0%	0% - 0%
VL 0466	Chinese cabbage, type pak-choi (all commodities)	highest utilisation: cooked/boiled	2.4	0.19 - 4.8	1.000	NL	Gen pop, > 1 yrs	49	272.35	298.0	3	2b	0.69 - 59.6	0% - 30%	0% - 30%	1% - 20%
VL 0467	Chinese cabbage, type pe-tsai (all commodities)	highest utilisation: cooked/boiled	2.4	0.19 - 4.8	1.000	NL	Gen pop, > 1 yrs	49	272.35	513.0	3	2b	0.69 - 59.6	0% - 30%	0% - 30%	1% - 20%
VL 0469	Chicory leaves (sugar loaf) (all commodities)	highest utilisation: raw	0	0.15	1.000	DE	Child, 2-4 yrs	16	82.40	280.5	3	2b	0.5 - 2.3	0% - 1%	0% - 0%	0% - 1%
VL 0470	Corn salad (lambs lettuce)	highest utilisation: cooked/boiled	0	0.15 - 4.5	1.000	NL	Gen pop, > 1 yrs	2	55.67	5.0	NR	1	0.24 - 3.81	0% - 2%	0% - 2%	0% - 0%

CYAZOFAMID (CCIM Metabolite Only) (281) IESTI

Acute RfD= 0.2 mg/kg bw (200 µg/kg bw) Maximum %ARfD: 90% all 30% gen pop 90% child

Codex Code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Country	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Variability factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
	(all commodities)															
VL 0472	Cress, garden (all commodities)	highest utilisation: raw	0	0.15	1.000	CN	Gen pop, > 1 yrs	1443	352.50	15.0	NR	1	0.05 - 0.99	0% - 0%	0% - 0%	0% - 0%
VL 0473	Watercress (all commodities)	highest utilisation: raw	0	0.15	1.000	BR	gen pop, > 10 yrs	97	90.92	254.6	3	2b	0.53 - 0.63	0% - 0%	0% - 0%	0% - 0%
VL 0474	Dandelion leaves (all commodities)	highest utilisation: raw	0	0.15	1.000	NL	gen pop, > 1 yrs	E	49.88	35.0	3	2a	0.27 - 0.27	0% - 0%	0% - 0%	0% - 0%
VL 0476	Endive (all commodities)	highest utilisation: cooked/boiled	2.2	0.15 - 4.5	1.000	NL	toddler, 8-20 m	22	135.23	251.0	3	2b	2.42 - 178.98	1% - 90%	1% - 30%	2% - 90%
VL 0478	Indian mustard (Amsoi) (all commodities)	highest utilisation: raw	0	0.19	1.000	NL	Gen pop, > 1 yrs	E	49.88	250.0	3	2b	0.43 - 0.43	0% - 0%	0% - 0%	0% - 0%
VL 0479	Japanese greens: Chrysanthemum leaves (Chrysanthemum spp) (all commodities)	highest utilisation: raw	0	0.15	1.000	CN	Gen pop, > 1 yrs	993	332.67	<25	NR	1	0.37 - 0.94	0% - 0%	0% - 0%	0% - 0%
VL 0480	Kale (borecole, collards) (all commodities)	highest utilisation: cooked/boiled	2.4	0.19 - 4.8	1.000	NL	Child, 2-6 yrs	41	101.53	538.0	3	2b	0.91 - 79.46	0% - 40%	0% - 30%	2% - 40%
VL 0481	Komatsuna	Total		0.15	1.000	JP	Child, 1-6 yrs	73	71.40	<25	NR	1	0.64	0%	0%	0%
VL 0482	Lettuce, head (all commodities)	highest utilisation: cooked/boiled	0.43	0.029 - 1.4	1.000	NL	Gen pop, > 1 yrs	2	220.89	227.0	3	2b	0.25 - 14.1	0% - 7%	0% - 7%	0% - 0%
VL 0483	Lettuce, leaf (all commodities)	highest utilisation: cooked/boiled	1.2	0.05 - 3.1	1.000	NL	Gen pop, > 1 yrs	2	220.89	79.0	3	2a	0.71 - 17.85	0% - 9%	0% - 9%	0% - 2%
VL 0485	Mustard greens (all commodities)	highest utilisation: cooked/boiled	2.4	0.19 - 4.8	1.000	BR	Gen pop, > 10 yrs	47	288.80	244.8	3	2a	1.4 - 57.87	1% - 30%	1% - 30%	1% - 5%
VL 0492	Purslane (all commodities)	highest utilisation: cooked/boiled	0	0.15 - 4.5	1.000	NL	Gen pop, > 1 yrs	5	271.23	<25	NR	1	0.16 - 18.55	0% - 9%	0% - 9%	0% - 0%
VL 0494	Radish leaves	Total		0.15	1.000	-	-	-	-	-	-	-	-	-	-	-
VL 0495	Rape greens (all commodities)	highest utilisation: cooked/boiled	0	0.19 - 4.8	1.000	JP	Gen pop, > 1 yrs	533	147.90	34.0	3	2a	18.61 - 18.61	9% - 9%	9% - 9%	10% - 10%
VL 0496	Rucola (arrugula, rocket salad, roquette) (all commodities)	highest utilisation: Total	0	0.15	1.000	AU	Gen pop, > 2 yrs	10	157.33	212.8	3	2b	0.18 - 1.06	0% - 1%	0% - 1%	0% - 0%
VL 0501	Sowthistle (all commodities)	highest utilisation: raw	0	0.15	1.000	CN	Gen pop, > 1 yrs	1187	592.49	-	-	-	0 - 0	0% - 0%	0% - 0%	0% - 0%
VL 0502	Spinach (all commodities)	highest utilisation: frozen	2.2	0.15 - 4.5	1.000	NL	toddler, 8-20 m	67	151.91	NR	NR	3	0.22 - 32.76	0% - 20%	0% - 10%	0% - 20%
VL 0505	Taro leaves	highest utilisation:	0	0.15	1.000	NL	Gen pop, >	E	77.78	85.8	3	2b	0.53 -	0% - 0%	0% - 0%	0% - 0%

CYAZOFAMID (CCIM Metabolite Only) (281) IESTI

Acute RfD= 0.2 mg/kg bw (200 µg/kg bw) Maximum %ARfD: 90% all 30% gen pop 90% child

Codex Code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Coun try	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Varia-bility factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
	(all commodities)	raw					1 yrs						0.53			
VL 0506	Turnip greens (Namenia, Tendergreen) (all commodities)	highest utilisation: cooked/boiled	0	0.19 - 4.8	1.000	NL	toddler, 8-20 m	64	90.73	<25	NR	1	0.31 - 42.7	0% - 20%	0% - 10%	0% - 20%
VL 0507	Kangkung (water spinach) (all commodities)	highest utilisation: raw	0	0.15	1.000	CN	Child, 1-6 yrs	183	270.70	85.8	3	2a	0.54 - 4.11	0% - 2%	1% - 1%	0% - 2%
VL 0510	Cos lettuce (all commodities)	highest utilisation: cooked/boiled	2.2	0.15 - 4.5	1.000	NL	Gen pop, > 1 yrs	2	220.89	194.0	3	2a	1.29 - 41.64	1% - 20%	1% - 20%	0% - 2%
-	Perilla leaves (i.e. sesame leaves) (all commodities)	highest utilisation: pickled/salted	2.4	0.15 - 0.19	1.000	CN	Gen pop, > 1 yrs	183	175.21	NR	NR	3	7.9 - 7.9	4% - 4%	4% - 4%	0% - 0%
VP 0061	Beans, green, with pods, raw: beans except broad bean & soya bean (i.e. immature seeds + pods) (Phaseolus spp) (all commodities)	highest utilisation: canned/preserved	0.017	0.01 - 0.042	1.000	NL	toddler, 8-20 m	E	127.90	2.3	NR	1	0.03 - 0.53	0% - 0%	0% - 0%	0% - 0%
VP 0062	Beans, green, without pods, raw: beans except broad bean & soya bean (i.e. immature seeds only) (Phaseolus spp.) (all commodities)	highest utilisation: frozen	0.084	0.01 - 0.16	1.000	NL	Child, 2-6 yrs	E	100.00	5.8	NR	1	0 - 0.87	0% - 0%	0% - 0%	0% - 0%
VR 0589	Potato (all commodities)	highest utilisation: Total	0.017	0.017	1.000	ZA	Child, 1-5 yrs	-	299.62	216.0	3	2a	0.01 - 0.88	0% - 0%	0% - 0%	0% - 0%
DH 1100	Hops, dry (all commodities)	highest utilisation: Total	0.0033 - 2.3	0	1.000	DE	Gen pop, 14-80 yrs	5866	8.50	<25	NR	3	0.12 - 0.26	0% - 0%	0% - 0%	0% - 0%

DIFENOCONAZOLE (227)

Acute RfD= 0.3 mg/kg bw (300 µg/kg bw)

IESTI

Maximum %ARfD: 3% all | 1% gen pop | 3% child

Codex Code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Coun try	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Varia-bility factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
FI 0326	Avocado (all commodities)	highest utilisation: Total	0	0,26	1,000	AU	Child, 2-6 yrs	182	229,90	171,4	3	2a	4 - 7,84	1% - 3%	1% - 1%	1% - 3%
VP 0061	Beans, green, with pods, raw: beans except broad bean & soya bean (i.e. immature seeds + pods) (Phaseolus spp) (all commodities)	highest utilisation: canned babyfood	0,1		1,000	NL	toddler, 8-20 m	49	92,63	NR	NR	3	0,15 - 0,91	0% - 0%	0% - 0%	0% - 0%
VD 0541	Soya bean (dry) (Glycine spp) (all commodities)	highest utilisation: Oil (refined)	0,01 - 0,08		1,000	US	Child, 1-6 yrs	-	35,40	NR	NR	3	0 - 0,19	0% - 0%	0% - 0%	0% - 0%
SO 0495	Rape seed (all commodities)	highest utilisation: sec processing / composite foods	0,001 - 0,03		1,000	NL	toddler, 8-20 m	1882	8,93	NR	NR	3	0 - 0,03	0% - 0%	0% - 0%	0% - 0%
SO 0697	Peanut, shelled (groundnut) (all commodities)	highest utilisation: raw incl roasted	0		1,000	CN	Child, 1-6 yrs	290	163,07	<25	NR	3	0 - 0	0% - 0%	0% - 0%	0% - 0%

ETHEPHON (106)
Acute RfD= 0.05 mg/kg bw (50 µg/kg bw)

IESTI
Maximum %ARfD: 100% all; 100% gen pop; 70% child

Codex Code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Country	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Varia-bility factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
FP 0226	Apple (all commodities)	highest utilisation: Total	0.075 - 0.15	0.49	1.000	US	Child, 1-6 yrs	-	624.45	127.0	3	2a	0.45 - 28.69	1% - 60%	0% - 20%	1% - 60%
FS 0013	Cherries (all commodities)	highest utilisation: raw	0.65	2.7	1.000	DE	Child, 2-4 yrs	24	187.50	7.2	NR	1	0.27 - 31.35	1% - 60%	1% - 60%	0% - 60%
FB 0269	Grape (all commodities)	highest utilisation: raw with skin	0.14 - 0.25	0.52	1.000	CN	Child, 1-6 yrs	232	366.72	636.6	3	2b	1.05 - 35.45	2% - 70%	1% - 30%	0% - 70%
FT 0305	Table olives (all commodities)	highest utilisation: Total	1.9	4.3	1.000	AU	Child, 2-6 yrs	77	66.45	4.4	NR	1	0.58 - 15.04	1% - 30%	1% - 20%	3% - 30%
FT 0297	Fig (all commodities)	highest utilisation: Total	0.73	0.75	1.000	FR	Child, 3-6 yrs	0	164.28	81.0	3	2a	2.21 - 12.95	4% - 30%	2% - 20%	4% - 30%
FI 0353	Pineapple (all commodities)	highest utilisation: raw without peel	0.12	0.21	1.000	JP	Child, 1-6 yrs	67	499.80	1116.0	3	2b	0.02 - 18.52	0% - 40%	0% - 20%	0% - 40%
VO 0448	Tomato (all other commodities)	highest utilisation: raw with peel	0.18 - 0.52	0.79	1.000	CN	Child, 1-6 yrs	1117	263.76	180.0	3	2a	2.36 - 30.54	5 - 60%	3 - 20%	5 - 60%
VO 0448	Tomato	dried		0.79	5.000	AU	Gen pop, > 2 yrs	61	861.10	8.0	NR	1	50.77	100%	100%	3%
GC 0640	Barley (all commodities)	highest utilisation: beer	0.12 - 0.13		0.190	BR	Gen pop, > 10 yrs	1636	3600.00	NR	NR	3	0.01 - 1.38	0% - 3%	0% - 3%	0% - 1%
GC 0650	Rye (all commodities)	highest utilisation: Wholemeal	0.095		1.000	DE	Child, 2-4 yrs	242	95.20	NR	NR	3	0.01 - 0.56	0% - 1%	0% - 1%	0% - 1%
GC 0653	Triticale	Total	0.095		1.000	DE	Gen pop, 14-80 yrs	27100	394.70	<25	NR	3	0.49	1%	1%	0%
GC 0654	Wheat (all commodities)	highest utilisation: White bread	0.014 - 0.29		1.000	CN	Child, 1-6 yrs	1756	322.71	NR	NR	3	0.01 - 1.9	0% - 4%	0% - 2%	0% - 4%
SO 0305	Olives for oil extraction (all commodities)	highest utilisation: sec processing /	0.038 - 1.9	4.3	1.000	NL	toddler, 8-20 m	881	1.28	NR	NR	3	0.05 - 0.24	0% - 0%	0% - 0%	0% - 0%

ETHEPHON (106) IESTI

Acute RfD= 0.05 mg/kg bw (50 µg/kg bw) Maximum %ARfD: 100% all 100% gen pop 70% child

Codex Code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Country	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Varia-bility factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
		composite foods of olive oil														
SO 0691	Cotton seed (all commodities)	highest utilisation: Total	0.011 - 0.55		1.000	US	Gen pop, all ages	-	3.25	<25	NR	3	0 - 0.03	0% - 0%	0% - 0%	0% - 0%
MM 0095	Meat from mammals other than marine mammals	Total	NA	NA	1.000	CN	Child, 1-6 yrs	302	264.84	NR	NR	1	NA	0%	0%	0%
MM 0095	Meat from mammals other than marine mammals: 20% as fat	Total		0.004	1.000	CN	Child, 1-6 yrs	302	52.97	NR	NR	1	0.01	0%	0%	0%
MM 0095	Meat from mammals other than marine mammals: 80% as muscle	Total		0.007	1.000	CN	Child, 1-6 yrs	302	211.87	NR	NR	1	0.09	0%	0%	0%
MF 0100	Mammalian fats (except milk fats)	Total		0.007	1.000	FR	Child, 3-6 yrs	0	64.80	NR	NR	1	0.02	0%	0%	0%
MO 0105	Edible offal (mammalian)	Total		0.29	1.000	US	Child, 1-6 yrs	-	186.60	NR	NR	1	3.61	7%	7%	7%
ML 0106	Milks	Total	0.0004		1.000	NL	toddler, 8-20 m	1882	1060.67	NR	NR	3	0.04	0%	0%	0%
PM 0110	Poultry meat	Total	NA	NA	1.000	CN	Child, 1-6 yrs	175	347.00	NR	NR	1	NA	1%	0%	1%
PM 0110	Poultry meat: 10% as fat	Total		0.034	1.000	CN	Child, 1-6 yrs	175	34.70	NR	NR	1	0.07	0%	0%	0%
PM 0110	Poultry meat: 90% as muscle	Total		0.016	1.000	CN	Child, 1-6 yrs	175	312.30	NR	NR	1	0.31	1%	0%	1%
PF 0111	Poultry, fats (all commodities)	highest utilisation: Total		0.034 - 0.072	1.000	CN	Gen pop, > 1 yrs	421	345.63	NR	NR	1	0.02 - 0.47	0% - 1%	0% - 1%	0% - 1%
PE 0112	Eggs	Total		0.00005	1.000	CN	Child, 1-6 yrs	136	195.82	NR	NR	1	0.00	0%	0%	0%

FLUMIOXAZIN (284)
Acute RfD= 0.03 mg/kg bw (30 µg/kg bw)

IESTI
Maximum %ARfD: 7% women

Codex Code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Coun try	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Varia-bility factor	Case	IESTI µg/kg bw/day	% acute RfD rounded
VC 0046	Melons, except watermelon (all commodities)	highest utilisation: Total	0.02	0.02	1.000	FR	gen pop, > 3 yrs	0	626.40	420.0	3	2a	0 - 0.56	0% - 2%
VC 0421	Balsam pear (Bitter cucumber, Bitter gourd, Bitter melon) (all commodities)	highest utilisation: raw without peel	0	0.02	1.000	CN	gen pop, > 1 yrs	1387	400.21	607.5	3	2b	0.15 - 0.45	0% - 2%
VC 0422	Bottle gourd (Cucuzzi) (all commodities)	highest utilisation: raw with skin	0	0.02	1.000	CN	gen pop, > 1 yrs	519	453.00	325.0	3	2a	0.41 - 0.41	1% - 1%
VC 0423	Chayote (Christophine) (all commodities)	highest utilisation: raw with skin	0	0.02	1.000	CN	gen pop, > 1 yrs	1437	574.81	197.4	3	2a	0.15 - 0.36	0% - 1%
VC 0424	Cucumber (all commodities)	highest utilisation: Total	0.02	0.02	1.000	FR	gen pop, > 3 yrs	0	313.20	360.0	3	2b	0 - 0.36	0% - 1%
VC 0425	Gherkin (all commodities)	highest utilisation: pickled&preserved	0.02	0.02	1.000	BR	Gen pop, > 10 yrs	70	500.00	54.5	3	2a	0.01 - 0.19	0% - 1%
VC 0427	Loofah, Angled (Sinkwa, Sinkwa towel gourd) (all commodities)	highest utilisation: raw without peel	0	0.02	1.000	TH	gen pop, > 3 yrs	8306	215.23	133.0	3	2a	0.18 - 0.18	1% - 1%
VC 0428	Loofah, Smooth (all commodities)	highest utilisation: raw without peel	0	0.02	1.000	CN	gen pop, > 1 yrs	3930	521.84	133.0	3	2a	0.3 - 0.3	1% - 1%
VC 0429	Pumpkins (all commodities)	highest utilisation: raw without peel	0.02	0.02	1.000	CN	Gen pop, > 1 yrs	10137	701.51	1851.8	3	2b	0.01 - 0.79	0% - 3%
VC 0430	Snake gourd (all commodities)	highest utilisation: raw without peel	0	0.02	1.000	TH	gen pop, > 3 yrs	8306	215.23	133.0	3	2a	0.18 - 0.18	1% - 1%
VC 0431	Squash, summer (courgette, marrow, zucchetti, zucchini) (all commodities)	highest utilisation: cooked/boiled with skin (incl consumption without skin)	0.02	0.02	1.000	NL	gen pop, > 1 yrs	100	348.81	289.0	3	2a	0.01 - 0.28	0% - 1%
VC 0432	Watermelon (all commodities)	highest utilisation: Total	0.02	0.02	1.000	AU	gen pop, > 2 yrs	267	2542.18	2095.6	3	2a	0.35 - 2.01	1% - 7%
VO 0440	Egg plant (aubergine) (all commodities)	highest utilisation: raw with skin	0.02	0.02	1.000	CN	gen pop, > 1 yrs	19286	483.89	443.9	3	2a	0.01 - 0.52	0% - 2%
VO 0442	Okra (Lady's finger) (all commodities)	highest utilisation: cooked/boiled (with skin)	0	0.02	1.000	BR	Gen pop, > 10 yrs	505	320.00	16.5	NR	1	0.07 - 0.1	0% - 0%
VO 0443	Pepino (Melon pear, Tree melon)	Total		0.02	1.000	AU	gen pop, > 2 yrs	3	73.89	122.9	3	2b	0.07	0%
VO 0444	Peppers, chili (all commodities)	highest utilisation: raw with skin	0.02	0.02	1.000	CN	gen pop, > 1 yrs	1743	295.71	43.2	3	2a	0 - 0.14	0% - 0%
VO 0445	Peppers, sweet (incl. pim(i)ento) (bell pepper, paprika) (all commodities)	highest utilisation: raw with skin	0.02	0.02	1.000	DE	Women, 14-50 yrs	518	191.73	119.3	3	2a	0 - 0.13	0% - 0%
VO 0448	Tomato	highest utilisation:	0.02	0.02	5.000	AU	Gen pop, > 2 yrs	61	861.10	8.0	NR	1	0.05 - 1.29	0% - 4%

FLUMIOXAZIN (284) IESTI

Acute RfD= 0.03 mg/kg bw (30 µg/kg bw) Maximum %ARfD: 7% women

Codex Code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Coun try	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Varia-bility factor	Case	IESTI µg/kg bw/day	% acute RfD rounded
	(all commodities)	dried												
-	Gilo (scarlet egg plant) (all commodities)	highest utilisation: cooked/boiled (with skin)	0.02	0.02	1.000	BR	Gen pop, > 10 yrs	280	360.50	28.5	3	2a	0.03 - 0.13	0% - 0%
VD 0071	Beans (dry) (Phaseolus spp) (all commodities)	highest utilisation: cooked/boiled	0.02	0	0.400	CN	Gen pop, > 1 yrs	722	1313.18	0.5	NR	3	0.01 - 0.2	0% - 1%
VD 0072	Peas (dry) (Pisum spp, Vigna spp) (all commodities)	highest utilisation: cooked/boiled	0.02	0	0.400	CN	Gen pop, > 1 yrs	268	1673.82	<25	NR	3	0.01 - 0.25	0% - 1%
VD 0524	Chick-pea (dry) (Cicer spp) (all commodities)	highest utilisation: canned/preserved	0.02	0	0.400	NL	gen pop, > 1 yrs	43	435.93	<25	NR	3	0.04 - 0.05	0% - 0%
VD 0533	Lentil (dry) (Lens spp) (all commodities)	highest utilisation: Total	0.02	0	1.000	DE	Women, 14-50 yrs	79	138.50	0.1	NR	3	0.02 - 0.04	0% - 0%
VS 0620	Artichoke globe (all commodities)	highest utilisation: Total	0	0.02	1.000	DE	Women, 14-50 yrs	16	110.40	140.0	3	2b	0.08 - 0.1	0% - 0%
GC 0654	Wheat (all commodities)	highest utilisation: White bread	0.014 - 0.103	0	1.000	CN	gen pop, > 1 yrs	40690	605.78	NR	NR	3	0 - 1.14	0% - 4%
SO 0691	Cotton seed (all commodities)	highest utilisation: Oil (refined)	0.01	0	1.000	US	gen pop, all ages	-	9.10	NR	NR	3	0 - 0	0% - 0%
SO 0702	Sunflower seed (all commodities)	highest utilisation: Total	0.001 - 0.11	0	1.000	DE	Women, 14-50 yrs	2095	68.60	<25	NR	3	0 - 0.11	0% - 0%
HH 0738	Mints (all commodities)	highest utilisation: Total	0.01	0.01	1.000	AU	Gen pop, > 2 yrs	423	8.27	<25	NR	1	0 - 0	0% - 0%
PM 0110	Poultry meat	Total	NA	NA	1.000	FR	gen pop, > 3 yrs	1	576.95	NR	NR	1	NA	0%
PM 0110	Poultry meat: 10% as fat	Total		0.007	1.000	FR	gen pop, > 3 yrs	1	57.69	NR	NR	1	0.01	0%
PM 0110	Poultry meat: 90% as muscle	Total		0.001	1.000	FR	gen pop, > 3 yrs	1	519.25	NR	NR	1	0.01	0%
PF 0111	Poultry, fats (all commodities)	highest utilisation: Total	0	0.005 - 0.007	1.000	CN	gen pop, > 1 yrs	421	345.63	NR	NR	1	0 - 0.03	0% - 0%
PO 0111	Poultry, edible offal (includes kidney, liver and skin)	Total		0.005	1.000	CN	gen pop, > 1 yrs	421	345.63	NR	NR	1	0.03	0%
PE 0112	Eggs	Total		0.001	1.000	FR	gen pop, > 3 yrs	1	382.80	NR	NR	1	0.01	0%

Annex 4

FLUOPYRAM (243)
Acute RfD= 0.5 mg/kg bw (500 µg/kg bw)

IESTI
Maximum %ARfD: 100% all | 30% gen pop | 100% child

Codex Code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Coun try	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Varia-bility factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
FP 0226	Apple (all commodities)	highest utilisation: Total	0.01 - 0.135	0.28	1.000	US	Child, 1-6 yrs	-	624.45	127.0	3	2a	0.41 - 16.4	0% - 3%	0% - 1%	0% - 3%
FP 0230	Pear (all commodities)	highest utilisation: raw with peel (incl consumption without peel)	0.135	0.28	1.000	CN	Child, 1-6 yrs	413	418.33	255.0	3	2a	0.03 - 16.11	0% - 3%	0% - 1%	0% - 3%
FS 0013	Cherries (all commodities)	highest utilisation: raw	0.205	0.47	1.000	DE	Child, 2-4 yrs	24	187.50	7.2	NR	1	0.08 - 5.46	0% - 1%	0% - 1%	0% - 1%
FS 0014	Plums (all commodities)	highest utilisation: raw with peel (incl consumption without peel)	0.13 - 0.14	0.22 - 0.24	1.000	TH	Child, 3-6 yrs	11	376.88	93.0	3	2a	0.06 - 7.24	0% - 1%	0% - 1%	0% - 1%
FS 0240	Apricot (all commodities)	highest utilisation: raw with peel (incl consumption without peel)	0.22	0.69	1.000	AU	Gen pop, > 2 yrs	77	1056.90	54.5	3	2a	0.09 - 12.01	0% - 2%	0% - 2%	0% - 2%
FS 0245	Nectarine (all commodities)	highest utilisation: raw with peel (incl consumption without peel)	0.22	0.69	1.000	NL	toddler, 8-20 m	6	183.60	131.0	3	2a	0.09 - 30.14	0% - 6%	0% - 2%	0% - 6%
FS 0247	Peach (all commodities)	highest utilisation: raw with peel (incl consumption without peel)	0.22	0.69	1.000	JP	Child, 1-6 yrs	76	306.00	255.0	3	2a	0.09 - 36.33	0% - 7%	0% - 3%	0% - 7%
FB 0264	Blackberries (all commodities)	highest utilisation: raw with skin	0.7	1.2	1.000	DE	Gen pop, 14-80 yrs	35	460.00	2.4	NR	1	0.12 - 7.23	0% - 1%	0% - 1%	0% - 1%
FB 0272	Raspberries, red, black (all commodities)	highest utilisation: Total	0.7	1.2	1.000	FR	Child, 3-6 yrs	0	157.50	4.3	NR	1	0.31 - 10	0% - 2%	0% - 1%	0% - 2%
FB 0269	Grape (all commodities)	highest utilisation: raw with skin	0.012 - 2.9	1 - 1.68	1.000	CN	Child, 1-6 yrs	232	366.72	636.6	3	2b	0.52 - 68.18	0% - 10%	0% - 6%	0% - 10%
FB 0275	Strawberry (all commodities)	highest utilisation: Total	0.008 - 0.025	0.23	1.000	FR	Child, 3-6 yrs	0	339.40	13.4	NR	1	0.01 - 4.13	0% - 1%	0% - 0%	0% - 1%
FI 0327	Banana (incl dwarf banana & plantain) (all commodities)	highest utilisation: raw without peel	0.175	0.51	1.000	CN	Child, 1-6 yrs	286	455.81	767.3	3	2b	0.08 - 43.22	0% - 9%	0% - 5%	0% - 9%
VA 0381	Garlic (all commodities)	highest utilisation: raw without skin	0.01	0.04	1.000	CN	Child, 1-6 yrs	290	174.44	59.8	3	2a	0 - 0.73	0% - 0%	0% - 0%	0% - 0%
VA 0384	Leek	highest utilisation:	0.01	0.07	1.000	CN	Child, 1-6	401	149.40	175.5	3	2b	0 - 1.94	0% -	0% -	0% -

FLUOPYRAM (243)
Acute RfD= 0.5 mg/kg bw (500 µg/kg bw)

IESTI
Maximum %ARfD: 100% all | 30% gen pop | 100% child

Codex Code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Country	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Variability factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
	(all commodities)	raw					yrs							0%	0%	0%
VA 0385	Onion, bulb (all commodities)	highest utilisation: raw without skin	0.01	0.04	1.000	JP	Child, 1-6 yrs	748	102.00	244.4	3	2b	0 - 0.75	0% - 0%	0% - 0%	0% - 0%
VB 0041	Cabbage, head (all commodities)	highest utilisation: raw	0.01	0.08	1.000	CN	Child, 1-6 yrs	287	255.54	1402.5	3	2b	0.01 - 3.8	0% - 1%	0% - 0%	0% - 1%
VB 0400	Broccoli (all commodities)	highest utilisation: cooked/boiled	0.05	0.14	1.000	NL	toddler, 8-20 m	125	160.73	286.0	3	2b	0.09 - 6.62	0% - 1%	0% - 0%	0% - 1%
VB 0402	Brussels sprouts (all commodities)	highest utilisation: cooked/boiled	0.06	0.15	1.000	NL	toddler, 8-20 m	11	103.77	8.0	NR	1	0 - 1.53	0% - 0%	0% - 0%	0% - 0%
VB 0404	Cauliflower (all commodities)	highest utilisation: cooked/boiled	0.01	0.05	1.000	NL	toddler, 8-20 m	110	141.99	749.0	3	2b	0 - 2.09	0% - 0%	0% - 0%	0% - 0%
VC 0424	Cucumber (all commodities)	highest utilisation: raw with skin	0.11	0.19	1.000	CN	Child, 1-6 yrs	340	212.11	458.1	3	2b	0.04 - 7.49	0% - 1%	0% - 1%	0% - 1%
VO 0444	Peppers, chili (all commodities)	highest utilisation: raw with skin	0.085 - 0.85	0.24 - 2.4	1.000	CN	Gen pop, > 1 yrs	1743	295.71	43.2	3	2a	0 - 1.72	0% - 0%	0% - 0%	0% - 0%
VO 0445	Peppers, sweet (incl. pim(i)ento) (bell pepper, paprika) (all commodities)	highest utilisation: raw with skin	0.085	0.24	1.000	CN	Child, 1-6 yrs	1002	169.85	170.0	3	2b	0.02 - 7.58	0% - 2%	0% - 1%	0% - 2%
VO 0448	Tomato (all commodities)	highest utilisation: dried	0.03 - 0.09	0.23	5.000	AU	Gen pop, > 2 yrs	61	861.10	8.0	NR	1	0.39 - 14.78	0% - 3%	0% - 3%	0% - 2%
VL 0482	Lettuce, head (all commodities)	highest utilisation: raw	2.2	8.4	1.000	NL	Child, 2-6 yrs	91	140.10	338.9	3	2b	1.29 - 191.87	0% - 40%	0% - 20%	0% - 40%
VL 0483	Lettuce, leaf	Total		8.4	1.000	CN	Child, 1-6 yrs	243	387.25	305.4	3	2a	519.53	100%	30%	100%
VL 0483	Lettuce, leaf (all other commodities)	highest utilisation: raw	2.2	8.4	1.000	NL	Child, 2-6 yrs	91	140.10	117.8	3	2a	1.29 - 171.48	0 - 30%	0 - 10%	0 - 30%
VP 0061	Beans, green, with pods, raw: beans except broad bean & soya bean (i.e. immature seeds + pods) (Phaseolus spp) (all commodities)	highest utilisation: canned babyfood	2	0.69	1.000	NL	toddler, 8-20 m	49	92.63	NR	NR	3	2.62 - 18.16	1% - 4%	0% - 1%	1% - 4%
VP 0062	Beans, green, without pods, raw: beans except broad bean & soya bean (i.e.	highest utilisation: Total	0.03	0.12	1.000	FR	Child, 3-6 yrs	1	219.56	5.8	NR	1	0 - 1.39	0% - 0%	0% - 0%	0% - 0%

FLUOPYRAM (243)
Acute RfD= 0.5 mg/kg bw (500 µg/kg bw)

IESTI
Maximum %ARfD: 100% all; 30% gen pop; 100% child

Codex Code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Country	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Variability factor	Case	IESTI µg/kg bw/day	% acute RfD rounded (100% all)	% acute RfD rounded (30% gen pop)	% acute RfD rounded (100% child)
	immature seeds only) (Phaseolus spp.) (all commodities)															
VP 0064	Peas, green, without pods, raw (i.e. immature seeds only) (Pisum spp) (all commodities)	highest utilisation: Total	0.03	0.12	1.000	UK	Child, 1.5-4.5 yrs	57	174.00	<25	NR	1	0.03 - 1.44	0% - 0%	0% - 0%	0% - 0%
VD 0071	Beans (dry) (Phaseolus spp) (all commodities)	highest utilisation: cooked/boiled	0.01	0	0.400	CN	Gen pop, > 1 yrs	722	1313.18	0.5	NR	3	0.02 - 0.1	0% - 0%	0% - 0%	0% - 0%
VD 0524	Chick-pea (dry) (Cicer spp) (all commodities)	highest utilisation: canned/preserved	0.01	0	0.400	NL	Child, 2-6 yrs	6	144.66	<25	NR	3	0.01 - 0.03	0% - 0%	0% - 0%	0% - 0%
VD 0533	Lentil (dry) (Lens spp) (all commodities)	highest utilisation: Total	0.01	0	1.000	FR	Child, 3-6 yrs	0	290.77	0.1	NR	3	0.02 - 0.15	0% - 0%	0% - 0%	0% - 0%
VD 0541	Soya bean (dry) (Glycine spp) (all commodities)	highest utilisation: Total	0.01	0	1.000	CN	Child, 1-6 yrs	179	239.05	<25	NR	3	0 - 0.15	0% - 0%	0% - 0%	0% - 0%
VR 0577	Carrot (all commodities)	highest utilisation: raw with skin	0.09	0.19	1.000	CN	Child, 1-6 yrs	400	234.68	300.0	3	2b	0.01 - 8.29	0% - 2%	0% - 1%	0% - 2%
VR 0589	Potato (all commodities)	highest utilisation: Total	0.006 - 0.01	0.013 - 0.02	1.000	ZA	Child, 1-5 yrs	-	299.62	216.0	3	2a	0.01 - 1.03	0% - 0%	0% - 0%	0% - 0%
VR 0596	Sugar beet (all commodities)	highest utilisation: sugar	0.01	0.02	1.000	FR	Child, 3-6 yrs	1	274.67	NR	NR	3	0.09 - 0.15	0% - 0%	0% - 0%	0% - 0%
TN 0295	Cashew nut (all commodities)	highest utilisation: raw incl roasted	0.01	0.03	1.000	TH	child, 3-6 yrs	374	98.84	2.5	NR	1	0.06 - 0.17	0% - 0%	0% - 0%	0% - 0%
TN 0660	Almonds (all commodities)	highest utilisation: raw incl roasted	0.01	0.03	1.000	DE	Women, 14-50 yrs	24	100.00	1.2	NR	1	0 - 0.04	0% - 0%	0% - 0%	0% - 0%
TN 0662	Brazil nut (all commodities)	highest utilisation: Total	0	0.03	1.000	FR	Gen pop, > 3 yrs	0	57.57	4.0	NR	1	0.02 - 0.03	0% - 0%	0% - 0%	0% - 0%
TN 0664	Chestnuts (all commodities)	highest utilisation: Total	0	0.03	1.000	FR	child, 3-6 yrs	0	170.41	17.4	NR	1	0.07 - 0.27	0% - 0%	0% - 0%	0% - 0%
TN 0665	Coconut (all commodities)	highest utilisation: raw (i.e. nutmeat)	0.01	0.03	1.000	TH	child, 3-6 yrs	826	423.40	383.0	3	2a	0.01 - 2.09	0% - 0%	0% - 0%	0% - 0%
TN 0666	Hazelnut (all commodities)	highest utilisation: Total	0.01	0.03	1.000	FR	Child, 3-6 yrs	0	27.24	1.2	NR	1	0.01 - 0.04	0% - 0%	0% - 0%	0% - 0%
TN 0669	Macadamia nut (all commodities)	highest utilisation: Total	0.01	0.03	1.000	US	Gen pop, all ages	-	106.60	3.2	NR	1	0 - 0.05	0% - 0%	0% - 0%	0% - 0%

FLUOPYRAM (243)
Acute RfD= 0.5 mg/kg bw (500 µg/kg bw)

IESTI
Maximum %ARfD: 100% all | 30% gen pop | 100% child

Codex Code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Country	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Varia-bility factor	Case	IESTI µg/kg bw/day	% acute RfD rounded (100% all)	% acute RfD rounded (30% gen pop)	% acute RfD rounded (100% child)
TN 0672	Pecan (all commodities)	highest utilisation: Total	0.01	0.03	1.000	AU	Child, 2-16 yrs	52	80.87	5.0	NR	1	0.02 - 0.06	0% - 0%	0% - 0%	0% - 0%
TN 0673	Pine nut (all commodities)	highest utilisation: Total	0	0.03	1.000	BR	Gen pop, > 10 yrs	47	200.00	0.2	NR	1	0.02 - 0.09	0% - 0%	0% - 0%	0% - 0%
TN 0675	Pistachio nut (all commodities)	highest utilisation: Total	0.01	0.03	1.000	FR	child, 3-6 yrs	0	44.89	0.9	NR	1	0 - 0.07	0% - 0%	0% - 0%	0% - 0%
TN 0678	Walnut (all commodities)	highest utilisation: raw incl roasted	0.01	0.03	1.000	DE	Child, 2-4 yrs	75	49.40	7.0	NR	1	0 - 0.09	0% - 0%	0% - 0%	0% - 0%
SO 0495	Rape seed (all commodities)	highest utilisation: sec processing / composite foods	0.23 - 0.33	0	1.000	NL	toddler, 8-20 m	1882	8.93	NR	NR	3	0.09 - 0.29	0% - 0%	0% - 0%	0% - 0%
SO 0691	Cotton seed (all commodities)	highest utilisation: Oil (refined)	0.01	0	1.000	US	gen pop, all ages	-	9.10	NR	NR	3	0 - 0	0% - 0%	0% - 0%	0% - 0%
SO 0697	Peanut, shelled (groundnut) (all commodities)	highest utilisation: raw incl roasted	0.0001 - 0.01	0	1.000	CN	Child, 1-6 yrs	290	163.07	<25	NR	3	0 - 0.1	0% - 0%	0% - 0%	0% - 0%
MM 0095	Meat from mammals other than marine mammals	Total	NA	NA	1.000	CN	Child, 1-6 yrs	302	264.84	NR	NR	1	NA	2%	2%	2%
MM 0095	Meat from mammals other than marine mammals: 20% as fat	Total		0.86	1.000	CN	Child, 1-6 yrs	302	52.97	NR	NR	1	2.82	1%	0%	1%
MM 0095	Meat from mammals other than marine mammals: 80% as muscle	Total		0.7	1.000	CN	Child, 1-6 yrs	302	211.87	NR	NR	1	9.19	2%	1%	2%
MF 0100	Mammalian fats (except milk fats)	Total		0.86	1.000	FR	Child, 3-6 yrs	0	64.80	NR	NR	1	2.95	1%	0%	1%
MO 0105	Edible offal (mammalian)	Total		4.8	1.000	US	Child, 1-6 yrs	-	186.60	NR	NR	1	59.71	10%	10%	10%
ML 0106	Milks	Total	0.12		1.000	NL	toddler, 8-20 m	1882	1060.67	NR	NR	3	12.48	2%	1%	2%
PM 0110	Poultry meat	Total	NA	NA	1.000	CN	Child, 1-6 yrs	175	347.00	NR	NR	1	NA	2%	1%	2%
PM 0110	Poultry meat: 10% as fat	Total		0.85	1.000	CN	Child, 1-6 yrs	175	34.70	NR	NR	1	1.83	0%	0%	0%
PM 0110	Poultry meat: 90% as muscle	Total		0.46	1.000	CN	Child, 1-6 yrs	175	312.30	NR	NR	1	8.90	2%	1%	2%
PF 0111	Poultry, fats	highest utilisation:	0	0.85 -	1.000	CN	Gen pop,	421	345.63	NR	NR	1	0.56 -	0% -	0% -	0% -

Annex 4

FLUOPYRAM (243)
Acute RfD= 0.5 mg/kg bw (500 µg/kg bw)

IESTI
Maximum %ARfD: 100% all; 30% gen pop; 100% child

Codex Code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Country	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Variability factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
	(all commodities)	Total		1.9			> 1 yrs						12.34	2%	2%	2%
PE 0112	Eggs	Total	0.13		1.000	CN	Child, 1-6 yrs	136	195.82	NR	NR	1	ND	-	-	-

FLUTRIAFOL (248)
Acute RfD= 0.05 mg/kg bw (50 µg/kg bw)

IESTI
Maximum %ARfD: 490% all; 150% gen pop; 490% child

Codex Code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Country	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Variability factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
FP 0226	Apple (all commodities)	highest utilisation: Total	0.038 - 0.08	0.26	1.000	US	Child, 1-6 yrs	-	624.45	127.0	3	2a	0.24 - 15.23	0% - 30%	0% - 10%	0% - 30%
FP 0227	Crab-apple (all commodities)	highest utilisation: raw with peel	0	0.26	1.000	CN	Gen pop, > 1 yrs	204	488.33	-	-	-	0 - 0	0% - 0%	0% - 0%	0% - 0%
FP 0228	Loquat (Japanese medlar) (all commodities)	highest utilisation: raw without peel	0	0.26	1.000	JP	Gen pop, > 1 yrs	113	326.40	49.0	3	2a	0.46 - 2.04	1% - 4%	1% - 4%	0% - 0%
FP 0229	Medlar	Total		0.26	1.000	-	-	-	-	-	-	-	-	-	-	-
FP 0230	Pear (all commodities)	highest utilisation: raw with peel (incl consumption without peel)	0.038 - 0.08	0.26	1.000	CN	Child, 1-6 yrs	413	418.33	255.0	3	2a	0.02 - 14.96	0% - 30%	0% - 10%	0% - 30%
FT 0307	Persimmon, Japanese (all commodities)	highest utilisation: raw with peel (incl consumption without peel)	0	0.26	1.000	TH	Child, 3-6 yrs	20	264.88	227.5	3	2a	3.83 - 10.95	8% - 20%	8% - 10%	20% - 20%
FP 0231	Quince (all commodities)	highest utilisation: Total	0.08	0.26	1.000	DE	child, 2-4 yrs	16	26.30	301.2	3	2b	0 - 1.27	0% - 3%	0% - 0%	0% - 3%
FS 0013	Cherries (all commodities)	highest utilisation: raw	0.335	0.66	1.000	DE	Child, 2-4 yrs	24	187.50	7.2	NR	1	0.14 - 7.66	0% - 20%	0% - 10%	0% - 20%
FS 0014	Plums (all commodities)	highest utilisation: raw with peel (incl	0.075	0.25 - 0.484	1.000	TH	Child, 3-6 yrs	11	376.88	93.0	3	2a	0.03 - 8.23	0% - 20%	0% - 7%	0% - 20%

FLUTRIAFOL (248) IESTI

Acute RfD= 0.05 mg/kg bw (50 µg/kg bw) Maximum %ARfD: 490% all 150% gen pop 490% child

Codex Code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Country	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Variability factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
		consumption without peel)														
003C	**Peaches**	-	**0.17**	**0.42**	-	-	-	-	-	-	-	-	-	-	-	-
FS 0240	Apricot (all commodities)	highest utilisation: raw with peel (incl consumption without peel)	0.17	0.42	1.000	AU	Gen pop, > 2 yrs	77	1056.90	54.5	3	2a	0.07 - 7.31	0% - 10%	0% - 10%	0% - 20%
FS 2237	Japanese apricot (ume)	Total		0.42	1.000	JP	Child, 1-6 yrs	25	25.50	<25	NR	1	0.59	1%	0%	1%
FS 0245	Nectarine (all commodities)	highest utilisation: raw with peel (incl consumption without peel)	0.17	0.42	1.000	NL	toddler, 8-20 m	6	183.60	131.0	3	2a	0.07 - 18.34	0% - 40%	0% - 10%	0% - 40%
FS 0247	Peach (all commodities)	highest utilisation: raw with peel (incl consumption without peel)	0.1445 - 0.2125	0.42	1.000	JP	Child, 1-6 yrs	76	306.00	255.0	3	2a	0.07 - 22.11	0% - 40%	0% - 20%	0% - 40%
FB 0275	Strawberry (all commodities)	highest utilisation: Total	0.3685 - 0.42	0.78	1.000	FR	Child, 3-6 yrs	0	339.40	13.4	NR	1	0.24 - 14.01	0% - 30%	0% - 20%	0% - 30%
VB 0041	Cabbage, head (all commodities)	highest utilisation: raw	0.14	0.8	1.000	CN	Child, 1-6 yrs	287	255.54	1402.5	3	2b	0.1 - 38.01	0% - 80%	0% - 40%	0% - 80%
VB 0400	Broccoli (all commodities)	highest utilisation: cooked/boiled	0.14	0.8	1.000	NL	toddler, 8-20 m	125	160.73	286.0	3	2b	0.25 - 37.82	1% - 80%	0% - 30%	1% - 80%
VB 0401	Broccoli, Chinese (Kailan) (all commodities)	highest utilisation: raw	0	0.8	1.000	CN	Child, 1-6 yrs	334	222.48	311.0	3	2b	10.85 - 33.09	20% - 70%	20% - 30%	70% - 70%
VB 0402	Brussels sprouts (all commodities)	highest utilisation: cooked/boiled	0.14	0.8	1.000	NL	toddler, 8-20 m	11	103.77	8.0	NR	1	0.01 - 8.14	0% - 20%	0% - 10%	0% - 20%
VB 0404	Cauliflower (all commodities)	highest utilisation: cooked/boiled	0.14	0.8	1.000	NL	toddler, 8-20 m	110	141.99	749.0	3	2b	0.02 - 33.41	0% - 70%	0% - 40%	0% - 70%
VB 0405	Kohlrabi (all commodities)	highest utilisation: Total	0	0.8	1.000	DE	Child, 2-4 yrs	34	161.80	175.2	3	2b	2.47 - 24.04	5% - 50%	5% - 10%	9% - 50%
VC 0046	Melons, except watermelon (all commodities)	highest utilisation: Total	0.09	0.13	1.000	FR	Child, 3-6 yrs	0	358.11	420.0	3	2b	0 - 7.39	0% - 10%	0% - 10%	0% - 10%
VC 0421	Balsam pear (Bitter cucumber, Bitter gourd, Bitter melon)	highest utilisation: raw without peel	0	0.13	1.000	CN	Gen pop, > 1 yrs	1387	400.21	607.5	3	2b	0.94 - 2.93	2% - 6%	2% - 6%	2% - 4%

Annex 4

FLUTRIAFOL (248)
Acute RfD= 0.05 mg/kg bw (50 µg/kg bw)

IESTI
Maximum %ARfD: 490% all | 150% gen pop | 490% child

Codex Code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Coun try	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Varia-bility factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
	(all commodities)															
VC 0422	Bottle gourd (Cucuzzi) (all commodities)	highest utilisation: raw with skin	0	0.13	1.000	CN	Gen pop, > 1 yrs	519	453.00	325.0	3	2a	2.69 - 2.69	5% - 5%	5% - 5%	0% - 0%
VC 0423	Chayote (Christophine) (all commodities)	highest utilisation: raw with skin	0	0.13	1.000	CN	Child, 1-6 yrs	124	284.75	197.4	3	2a	1.44 - 5.47	3% - 10%	2% - 5%	3% - 10%
VC 0424	Cucumber (all commodities)	highest utilisation: raw with skin	0.09	0.13	1.000	CN	Child, 1-6 yrs	340	212.11	458.1	3	2b	0.03 - 5.13	0% - 10%	0% - 6%	0% - 10%
VC 0425	Gherkin (all commodities)	highest utilisation: raw with skin	0.09	0.13	1.000	JP	Child, 1-6 yrs	484	91.80	54.5	3	2a	0.07 - 1.55	0% - 3%	0% - 2%	0% - 3%
VC 0427	Loofah, Angled (Sinkwa, Sinkwa towel gourd) (all commodities)	highest utilisation: raw without peel	0	0.13	1.000	TH	Child, 3-6 yrs	759	129.62	133.0	3	2b	2.96 - 2.96	6% - 6%	2% - 2%	6% - 6%
VC 0428	Loofah, Smooth (all commodities)	highest utilisation: raw without peel	0	0.13	1.000	CN	Child, 1-6 yrs	196	296.64	133.0	3	2a	4.53 - 4.53	9% - 9%	4% - 4%	9% - 9%
VC 0429	Pumpkins (all commodities)	highest utilisation: raw without peel	0.09	0.13	1.000	CN	Child, 1-6 yrs	561	322.71	1851.8	3	2b	0.15 - 7.8	0% - 20%	0% - 10%	0% - 20%
VC 0430	Snake gourd (all commodities)	highest utilisation: raw without peel	0	0.13	1.000	TH	Child, 3-6 yrs	759	129.62	133.0	3	2b	2.96 - 2.96	6% - 6%	2% - 2%	6% - 6%
VC 0431	Squash, summer (courgette, marrow, zucchetti, zucchini) (all commodities)	highest utilisation: Total	0.09	0.13	1.000	FR	Child, 3-6 yrs	0	148.84	270.0	3	2b	0.06 - 3.07	0% - 6%	0% - 4%	0% - 6%
VC 0432	Watermelon (all commodities)	highest utilisation: Total	0.09	0.13	1.000	AU	Gen pop, > 2 yrs	267	2542.18	2095.6	3	2a	11.22 - 13.06	20% - 30%	20% - 30%	20% - 20%
VO 0444	Peppers, chili (all commodities)	highest utilisation: raw with skin	0.28	0.41	1.000	CN	Gen pop, > 1 yrs	1743	295.71	43.2	3	2a	0.01 - 2.94	0% - 6%	0% - 6%	0% - 1%
VO 0445	Peppers, sweet (incl. pim(i)ento) (bell pepper, paprika) (all commodities)	highest utilisation: raw with skin	0.28	0.41	1.000	CN	Child, 1-6 yrs	1002	169.85	170.0	3	2b	0.05 - 12.95	0% - 30%	0% - 10%	0% - 30%
VO 0448	Tomato (all commodities)	highest utilisation: dried	0.1 - 0.286	0.63	5.000	AU	Gen pop, > 2 yrs	61	861.10	8.0	NR	1	0.53 - 40.48	1% - 80%	1% - 80%	1% - 50%
VL 0482	Lettuce, head (all commodities)	highest utilisation: raw	0.22	0.67	1.000	NL	Child, 2-6 yrs	91	140.10	338.9	3	2b	0.13 - 15.3	0% - 30%	0% - 10%	0% - 30%
VL 0483	Lettuce, leaf	Total		2.95	1.000	CN	Child, 1-6 yrs	243	387.25	305.4	3	2a	182.46	360%	120%	360%
VL 0483	Lettuce, leaf	raw		2.95	1.000	NL	Child, 2-6 yrs	91	140.10	117.8	3	2a	60.22	120%	40%	120%

FLUTRIAFOL (248) IESTI

Acute RfD= 0.05 mg/kg bw (50 µg/kg bw) Maximum %ARfD: 490% all 150% gen pop 490% child

Codex Code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Coun try	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Varia-bility factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
VL 0483	Lettuce, leaf (all other commodities)	highest utilisation: cooked/boiled	0.34	2.95	1.000	NL	Gen pop, > 1 yrs	2	220.89	79.0	3	2a	0.2 - 16.99	0 - 30%	0 - 30%	0%
VL 0485	Mustard greens (all other commodities)	highest utilisation: cooked/boiled	2.12	3.53	1.000	BR	Gen pop, > 10 yrs	47	288.80	244.8	3	2a	9.17 - 42.56	20 - 90%	20 - 90%	50%
VL 0485	Mustard greens	raw		3.53	1.000	CN	Child, 1-6 yrs	635	299.31	244.8	3	2a	172.57	350%	140%	350%
VL 0502	Spinach	Total		5.5	1.000	ZA	Child, 1-5 yrs	-	237.48	197.8	3	2a	245.17	490%	150%	490%
VL 0502	Spinach	raw		5.5	1.000	JP	Child, 1-6 yrs	229	86.70	90.0	3	2b	85.15	170%	70%	170%
VL 0502	Spinach (all other commodities)	highest utilisation: cooked/boiled	1.665	5.5	1.000	NL	Gen pop, > 1 yrs	97	292.68	1.0	NR	1	0.17 - 24.8	0 - 50%	0 - 50%	0 - 50%
VR 0596	Sugar beet (all commodities)	highest utilisation: sugar	0.01	0.0136	1.000	FR	Child, 3-6 yrs	1	274.67	NR	NR	3	0.09 - 0.15	0% - 0%	0% - 0%	0% - 0%
VS 0624	Celery (all commodities)	highest utilisation: raw	0.78	1.41	1.000	CN	Child, 1-6 yrs	454	180.29	861.1	3	2b	0.05 - 47.26	0% - 90%	0% - 60%	1% - 90%
GC 0645	Maize (corn) (all commodities)	highest utilisation: Total	0	0	1.000	CN	Child, 1-6 yrs	166	524.69	<25	NR	3	0 - 0	0% - 0%	0% - 0%	0% - 0%
GC 0651	Sorghum (Chicken corn, Dari seed, Durra, Feterita) (all commodities)	highest utilisation: cooked/boiled	0.27	0	0.400	CN	Gen pop, > 1 yrs	356	1348.67	<25	NR	3	0.06 - 2.74	0% - 5%	0% - 5%	1% - 1%
SO 0495	Rape seed (all commodities)	highest utilisation: sec processing / composite foods	0.1	0	1.000	NL	toddler, 8-20 m	1882	8.93	NR	NR	3	0.03 - 0.09	0% - 0%	0% - 0%	0% - 0%
SO 0691	Cotton seed (all commodities)	highest utilisation: Total	0.0064 - 0.08	0	1.000	US	Gen pop, all ages	-	3.25	<25	NR	3	0 - 0	0% - 0%	0% - 0%	0% - 0%
MM 0095	Meat from mammals other than marine mammals	Total	NA	NA	1.000	CN	Child, 1-6 yrs	302	264.84	NR	NR	1	NA	0%	0%	0%
MM 0095	Meat from mammals other than marine mammals: 20% as fat	Total		0.013	1.000	CN	Child, 1-6 yrs	302	52.97	NR	NR	1	0.04	0%	0%	0%
MM 0095	Meat from mammals other than marine mammals: 80% as muscle	Total		0.007	1.000	CN	Child, 1-6 yrs	302	211.87	NR	NR	1	0.09	0%	0%	0%
MF 0100	Mammalian fats (except milk fats)	Total		0.013	1.000	FR	Child, 3-6 yrs	0	64.80	NR	NR	1	0.04	0%	0%	0%

FLUTRIAFOL (248)
Acute RfD= 0.05 mg/kg bw (50 µg/kg bw)

IESTI
Maximum %ARfD: 490% all | 150% gen pop | 490% child

Codex Code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Coun try	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Varia-bility factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
MO 0105	Edible offal (mammalian)	Total		0.505	1.000	US	Child, 1-6 yrs	-	186.60	NR	NR	1	6.28	10%	10%	10%
ML 0106	Milks	Total	0.0026		1.000	NL	toddler, 8-20 m	1882	1060.67	NR	NR	3	0.27	1%	0%	1%
PM 0110	Poultry meat	Total	NA	NA	1.000	CN	Child, 1-6 yrs	175	347.00	NR	NR	1	NA	0%	0%	0%
PM 0110	Poultry meat: 10% as fat	Total		0.0189	1.000	CN	Child, 1-6 yrs	175	34.70	NR	NR	1	0.04	0%	0%	0%
PM 0110	Poultry meat: 90% as muscle	Total		0.0027	1.000	CN	Child, 1-6 yrs	175	312.30	NR	NR	1	0.05	0%	0%	0%
PF 0111	Poultry, fats (all commodities)	highest utilisation: Total	0	0.0189 - 0.027	1.000	CN	Gen pop, > 1 yrs	421	345.63	NR	NR	1	0.01 - 0.18	0% - 0%	0% - 0%	0% - 0%
PE 0112	Eggs	Total		0.0081	1.000	CN	Child, 1-6 yrs	136	195.82	NR	NR	1	0.10	0%	0%	0%

FLUXAPYROXAD (256)
Acute RfD= 0.3 mg/kg bw (300 µg/kg bw)

IESTI
Maximum %ARfD: 190% all | 60% gen pop | 190% child

Codex Code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Coun try	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Varia-bility factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
FC 0004	Oranges, sweet, sour (incl orange-like hybrids) (all commodities)	highest utilisation: Total	0.00045 - 0.01	0.01	1.000	AU	Child, 2-6 yrs	1735	800.83	155.8	3	2a	0.01 - 0.59	0% - 0%	0% - 0%	0% - 0%
FS 0013	Cherries	Total	0.755	2.3	1.000	FR	Child, 3-6 yrs	-	177.06	4.5	NR	1	21.5474	7.0%	5.0%	7.0%
FS 0302	Jujube, Chinese	Total		0.95	1.000	CN	Gen pop, > 1 yrs	1328	286.17	-	-	-	-	-	-	-
FS 0014	Plums (all commodities)	highest utilisation: raw with peel (incl consumption without peel)	0.18 - 1.2	0.95 - 2.7	1.000	TH	Child, 3-6 yrs	11	376.88	93.0	3	2a	0.2 - 31.27	0% - 10%	0% - 5%	0% - 10%
FS 0240	Apricot	highest utilisation:	0.465	0.66	1.000	AU	Gen pop, >	77	1056.90	54.5	3	2a	0.2 - 11.49	0% - 4%	0% - 4%	0% - 4%

FLUXAPYROXAD (256) IESTI

Acute RfD= 0.3 mg/kg bw (300 µg/kg bw) Maximum %ARfD: 190% all, 60% gen pop, 190% child

Codex Code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Country	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Variability factor	Case	IESTI µg/kg bw/day	% acute RfD rounded (all)	% acute RfD rounded (gen pop)	% acute RfD rounded (child)
	(all commodities)	raw with peel (incl consumption without peel)					2 yrs									
FS 2237	Japanese apricot (ume)	Total		0.66	1.000	JP	Child, 1-6 yrs	25	25.50	<25	NR	1	0.9298	0.0%	0.0%	0.0%
FS 0245	Nectarine (all commodities)	highest utilisation: raw with peel (incl consumption without peel)	0.465	0.66	1.000	NL	toddler, 8-20 m	6	183.60	131.0	3	2a	0.19 - 28.83	0% - 10%	0% - 3%	0% - 10%
FS 0247	Peach (all commodities)	highest utilisation: raw with peel (incl consumption without peel)	0.465	0.66	1.000	JP	Child, 1-6 yrs	76	306.00	255.0	3	2a	0.19 - 34.75	0% - 10%	0% - 4%	0% - 10%
FB 0264	Blackberries (all commodities)	highest utilisation: raw with skin	1.3	3.9	1.000	DE	Gen pop, 14-80 yrs	35	460.00	2.4	NR	1	0.23 - 23.49	0% - 8%	0% - 8%	0% - 7%
FB 0266	Dewberries, incl boysen- & loganberry	Total		3.9	1.000	AU	Child, 2-6 yrs	328	3.23	<25	NR	1	0.6620	0.0%	-	0.0%
FB 0272	Raspberries, red, black (all commodities)	highest utilisation: Total	1.3	3.9	1.000	FR	Child, 3-6 yrs	-	157.50	4.3	NR	1	0.57 - 32.5	0% - 10%	0% - 6%	0% - 10%
FB 0020	Blueberries (all commodities)	highest utilisation: raw with skin	1.3	3.9	1.000	DE	Gen pop, 14-80 yrs	70	388.00	1.8	NR	1	0.19 - 19.81	0% - 7%	0% - 7%	0% - 5%
FB 0021	Currants, red, black, white (all commodities)	highest utilisation: Total	1.3	3.9	1.000	AU	Gen pop, > 2 yrs	322	797.60	14.9	NR	1	0.84 - 46.43	0% - 20%	0% - 20%	0% - 10%
FB 0268	Gooseberries (all commodities)	highest utilisation: raw with skin	1.3	3.9	1.000	DE	Women, 14-50 yrs	10	338.10	<25	NR	1	0.25 - 19.54	0% - 7%	0% - 6%	0% - 1%
FB 0273	Rose hips (all commodities)	highest utilisation: jam (incl jelly)	1.3	3.9	1.000	NL	Child, 2-6 yrs	E	55.70	NR	NR	3	0.83 - 3.94	0% - 1%	0% - 1%	0% - 1%
FB 0267	Elderberries (all commodities)	highest utilisation: Total	1.3	3.9	1.000	CN	Gen pop, > 1 yrs	136	420.22	29.0	3	2a	0.5 - 35.04	0% - 10%	0% - 10%	0% - 2%
FB 0271	Mulberries	Total		3.9	1.000	AU	Child, 2-16 yrs	1	44.78	5.0	NR	1	4.5955	2.0%	-	-
FB 0269	Grape (all commodities)	highest utilisation: raw with skin	0.094 - 2	1.4 - 6	1.000	CN	Child, 1-6 yrs	232	366.72	636.6	3	2b	1.81 - 95.45	1% - 30%	0% - 20%	0% - 30%
FB 0265	Cranberry (all commodities)	highest utilisation: Total	1.3	3.9	1.000	AU	Child, 2-16 yrs	103	279.66	1.8	NR	1	0.02 - 28.7	0% - 10%	0% - 5%	0% - 9%
FB 0275	Strawberry (all commodities)	highest utilisation: Total	1.3	3.9	1.000	FR	Child, 3-6 yrs	-	339.40	13.4	NR	1	0.74 - 70.03	0% - 20%	0% - 10%	0% - 20%
FI 0327	Banana (incl dwarf banana & plantain)	highest utilisation: raw without peel	0.055	0.1	1.000	CN	Child, 1-6 yrs	286	455.81	767.3	3	2b	0.03 - 8.47	0% - 3%	0% - 1%	0% - 3%

Annex 4

			FLUXAPYROXAD (256)							IESTI						
			Acute RfD= 0.3 mg/kg bw (300 µg/kg bw)							Maximum %ARfD:				190% all	60% gen pop	190% child
Codex Code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Coun try	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Varia-bility factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
	(all commodities)															
VA 0381	Garlic (all commodities)	highest utilisation: raw without skin	0.23	0.27	1.000	CN	Child, 1-6 yrs	290	174.44	59.8	3	2a	0.01 - 4.92	0% - 2%	0% - 1%	0% - 2%
VA 0385	Onion, bulb (all commodities)	highest utilisation: raw without skin	0.23	0.27	1.000	JP	Child, 1-6 yrs	748	102.00	244.4	3	2b	0.08 - 5.04	0% - 2%	0% - 1%	0% - 2%
VA 0388	Shallot (i.e. dry harvested small onion) (all commodities)	highest utilisation: raw without skin	0.23	0.27	1.000	CN	Child, 1-6 yrs	480	115.81	51.4	3	2a	0.18 - 3.66	0% - 1%	0% - 1%	0% - 1%
VB 0041	Cabbage, head (all commodities)	highest utilisation: raw	0.04	0.07	1.000	CN	Child, 1-6 yrs	287	255.54	1402.5	3	2b	0.03 - 3.33	0% - 1%	0% - 1%	0% - 1%
VB 0400	Broccoli (all commodities)	highest utilisation: cooked/boiled	0.22	1.7	1.000	NL	toddler, 8-20 m	125	160.73	286.0	3	2b	0.4 - 80.37	0% - 30%	0% - 9%	0% - 30%
VB 0401	Broccoli, Chinese (Kailan) (all commodities)	highest utilisation: raw	0	1.7	1.000	CN	Child, 1-6 yrs	334	222.48	311.0	3	2b	23.05 - 70.32	8% - 20%	8% - 10%	20% - 20%
VB 0402	Brussels sprouts (all commodities)	highest utilisation: cooked/boiled	0.22	1.7	1.000	NL	toddler, 8-20 m	11	103.77	8.0	NR	1	0.01 - 17.3	0% - 6%	0% - 3%	0% - 6%
VB 0404	Cauliflower (all commodities)	highest utilisation: cooked/boiled	0.22	1.7	1.000	NL	toddler, 8-20 m	110	141.99	749.0	3	2b	0.03 - 71	0% - 20%	0% - 10%	0% - 20%
VB 0405	Kohlrabi (all commodities)	highest utilisation: Total	0	1.7	1.000	DE	Child, 2-4 yrs	34	161.80	175.2	3	2b	5.25 - 51.09	2% - 20%	2% - 5%	3% - 20%
VC 0046	Melons, except watermelon (all commodities)	highest utilisation: Total	0.0525	0.13	1.000	FR	Child, 3-6 yrs	-	358.11	420.0	3	2b	0 - 7.39	0% - 2%	0% - 2%	0% - 2%
VC 0421	Balsam pear (Bitter cucumber, Bitter gourd, Bitter melon) (all commodities)	highest utilisation: raw without peel	0	0.13	1.000	CN	Gen pop, > 1 yrs	1387	400.21	607.5	3	2b	0.94 - 2.93	0% - 1%	0% - 1%	0% - 1%
VC 0422	Bottle gourd (Cucuzzi) (all commodities)	highest utilisation: raw with skin	0	0.13	1.000	CN	Gen pop, > 1 yrs	519	453.00	325.0	3	2a	2.69 - 2.69	1% - 1%	1% - 1%	0% - 0%
VC 0423	Chayote (Christophine) (all commodities)	highest utilisation: raw with skin	0	0.13	1.000	CN	Child, 1-6 yrs	124	284.75	197.4	3	2a	1.44 - 5.47	0% - 2%	0% - 1%	0% - 2%
VC 0424	Cucumber (all commodities)	highest utilisation: raw with skin	0.0525	0.13	1.000	CN	Child, 1-6 yrs	340	212.11	458.1	3	2b	0.02 - 5.13	0% - 2%	0% - 1%	0% - 2%
VC 0425	Gherkin (all commodities)	highest utilisation: raw with skin	0.0525	0.13	1.000	JP	Child, 1-6 yrs	484	91.80	54.5	3	2a	0.04 - 1.55	0% - 1%	0% - 0%	0% - 1%
VC 0427	Loofah, Angled (Sinkwa, Sinkwa towel gourd) (all commodities)	highest utilisation: raw without peel	0	0.13	1.000	TH	Child, 3-6 yrs	759	129.62	133.0	3	2b	2.96 - 2.96	1% - 1%	0% - 0%	1% - 1%

FLUXAPYROXAD (256) IESTI

Acute RfD= 0.3 mg/kg bw (300 µg/kg bw) Maximum %ARfD: 190% all 60% gen pop 190% child

Codex Code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Country	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Variability factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
VC 0428	Loofah, Smooth (all commodities)	highest utilisation: raw without peel	0	0.13	1.000	CN	Child, 1-6 yrs	196	296.64	133.0	3	2a	4.53 - 4.53	2% - 2%	1% - 1%	2% - 2%
VC 0429	Pumpkins (all commodities)	highest utilisation: raw without peel	0.0525	0.13	1.000	CN	Child, 1-6 yrs	561	322.71	1851.8	3	2b	0.09 - 7.8	0% - 3%	0% - 2%	0% - 3%
VC 0430	Snake gourd (all commodities)	highest utilisation: raw without peel	0	0.13	1.000	TH	Child, 3-6 yrs	759	129.62	133.0	3	2b	2.96 - 2.96	1% - 1%	0% - 0%	1% - 1%
VC 0431	Squash, summer (courgette, marrow, zucchetti, zucchini) (all commodities)	highest utilisation: Total	0.0525	0.13	1.000	FR	Child, 3-6 yrs	-	148.84	270.0	3	2b	0.03 - 3.07	0% - 1%	0% - 1%	0% - 1%
VC 0432	Watermelon (all commodities)	highest utilisation: Total	0.0525	0.13	1.000	AU	Gen pop, > 2 yrs	267	2542.18	2095.6	3	2a	11.22 - 13.06	4% - 4%	4% - 4%	4% - 4%
VL 0466	Chinese cabbage, type pak-choi (all commodities)	highest utilisation: raw	1.7	3.1	1.000	CN	Child, 1-6 yrs	1966	327.07	1548.4	3	2b	0.49 - 188.51	0% - 60%	0% - 40%	0% - 60%
VL 0467	Chinese cabbage, type pe-tsai (all commodities)	highest utilisation: Total	1.7	3.1	1.000	CN	Child, 1-6 yrs	2788	336.16	1500.0	3	2b	0.49 - 193.75	0% - 60%	0% - 40%	0% - 60%
VL 0478	Indian mustard (Amsoi) (all commodities)	highest utilisation: raw	0	3.1	1.000	NL	Gen pop, > 1 yrs	E	49.88	250.0	3	2b	7.05 - 7.05	2% - 2%	2% - 2%	0% - 0%
VL 0479	Japanese greens: Mizuna (Brassica rapa nipposinica)	Total		3.1	1.000	JP	Gen pop, > 1 yrs	1787	137.70	<25	NR	1	7.6227	3.0%	3.0%	2.0%
VL 0480	Kale (borecole, collards) (all commodities)	highest utilisation: Total	1.7	3.1	1.000	DE	Gen pop, 14-80 yrs	123	669.80	672.0	3	2b	3.23 - 81.57	1% - 30%	1% - 30%	5% - 30%
VL 0481	Komatsuna	Total		3.1	1.000	JP	Child, 1-6 yrs	73	71.40	<25	NR	1	13.1750	4.0%	3.0%	4.0%
VL 0482	Lettuce, head (all commodities)	highest utilisation: raw	0.51	2	1.000	NL	Child, 2-6 yrs	91	140.10	338.9	3	2b	0.3 - 45.68	0% - 20%	0% - 7%	0% - 20%
VL 0485	Mustard greens (all commodities)	highest utilisation: raw	1.7	3.1	1.000	CN	Child, 1-6 yrs	635	299.31	244.8	3	2a	7.35 - 151.55	2% - 50%	2% - 20%	8% - 50%
VL 0494	Radish leaves	Total		6	1.000	-	-	-	-	-	-	-	-	-	-	-
VL 0495	Rape greens (all commodities)	highest utilisation: cooked/boiled	0	3.1	1.000	JP	Gen pop, > 1 yrs	533	147.90	34.0	3	2a	12.02 - 12.02	4% - 4%	4% - 4%	6% - 6%
VL 0496	Rucola (arrugula, rocket salad, roquette) (all commodities)	highest utilisation: Total	0	3.1	1.000	AU	Gen pop, > 2 yrs	10	157.33	212.8	3	2b	3.66 - 21.84	1% - 7%	1% - 7%	0% - 0%
VL 0502	Spinach	Total		13	1.000	ZA	Child, 1-5 yrs	-	237.48	197.8	3	2a	579.4895	190.0%	60.0%	190.0%

Annex 4

FLUXAPYROXAD (256) IESTI

Acute RfD= 0.3 mg/kg bw (300 µg/kg bw) Maximum %ARfD: 190% all, 60% gen pop, 190% child

Codex Code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Country	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Varia-bility factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
VL 0502	Spinach (all other commodities)	highest utilisation: raw	6.8	13	1.000	JP	Child, 1-6 yrs	229	86.70	90.0	3	2b	0.68 - 201.27	0 - 70%	0 - 30%	0 - 70%
VL 0506	Turnip greens (Namenia, Tendergreen) (all commodities)	highest utilisation: cooked/boiled	0	3.1	1.000	NL	toddler, 8-20 m	64	90.73	<25	NR	1	5.08 - 27.57	2% - 9%	1% - 5%	2% - 9%
-	Chinese cabbage flowering stalk (all commodities)	highest utilisation: pickled/salted	1.7	3.1	1.000	CN	Gen pop, > 1 yrs	183	175.21	NR	NR	3	5.6 - 5.6	2% - 2%	2% - 2%	0% - 0%
VR 0494	Radish (all commodities)	highest utilisation: raw with skin	0.05	0.1	1.000	NL	Child, 2-6 yrs	E	64.40	172.0	3	2b	0 - 1.05	0% - 0%	0% - 0%	0% - 0%
VR 0577	Carrot (all commodities)	highest utilisation: raw with skin	0.06	0.5	1.000	CN	Child, 1-6 yrs	400	234.68	300.0	3	2b	0.01 - 21.82	0% - 7%	0% - 3%	0% - 7%
VR 0588	Parsnip (all commodities)	highest utilisation: Total	0.06	0.5	1.000	UK	Child, 1.5-4.5 yrs	87	227.07	90.0	3	2a	1.14 - 14.04	0% - 5%	0% - 2%	4% - 5%
VS 0624	Celery (all commodities)	highest utilisation: raw	1.6	5.5	1.000	CN	Child, 1-6 yrs	454	180.29	861.1	3	2b	0.1 - 184.36	0% - 60%	0% - 40%	0% - 60%
GC 0649	Rice (all commodities)	highest utilisation: Total	0.94	0	1.000	US	Child, 1-6 yrs	-	99.75	<25	NR	3	0.05 - 6.25	0% - 2%	0% - 1%	2% - 2%
GC 0650	Rice	Rice milk	0.94		0.040	AU	Child, 2-6 yrs	25	772.50	NR	NR	3	1.5287	1.0%	-	1.0%
GC 0649	Rice (all commodities)	highest utilisation: husked rice (cooked)	0.066 - 3.55	0	0.400	JP	Child, 1-6 yrs	991	446.25	<25	NR	3	0.87 - 6.06	0% - 2%	0% - 2%	0% - 2%
GC 0651	Sorghum (Chicken corn, Dari seed, Durra, Feterita) (all commodities)	highest utilisation: cooked/boiled	0.2	0	0.400	CN	Gen pop, > 1 yrs	356	1348.67	<25	NR	3	0.05 - 2.03	0% - 1%	0% - 1%	0% - 0%
GS 0658	Sorgho or sorghum, sweet	Total	0.2		1.000	CN	Child, 1-6 yrs	249	131.48	-	-	-	-	-	-	-
TN 0295	Cashew nut (all commodities)	highest utilisation: raw incl roasted	0.01	0.03	1.000	TH	child, 3-6 yrs	374	98.84	2.5	NR	1	0.06 - 0.17	0% - 0%	0% - 0%	0% - 0%
TN 0660	Almonds (all commodities)	highest utilisation: raw incl roasted	0.01	0.03	1.000	DE	Women, 14-50 yrs	24	100.00	1.2	NR	1	0 - 0.04	0% - 0%	0% - 0%	0% - 0%
TN 0662	Brazil nut (all commodities)	highest utilisation: Total	0	0.03	1.000	FR	Gen pop, > 3 yrs	-	57.57	4.0	NR	1	0.02 - 0.03	0% - 0%	0% - 0%	0% - 0%
TN 0664	Chestnuts (all commodities)	highest utilisation: Total	0	0.03	1.000	FR	child, 3-6 yrs	-	170.41	17.4	NR	1	0.07 - 0.27	0% - 0%	0% - 0%	0% - 0%
TN 0665	Coconut (all commodities)	highest utilisation: raw (i.e. nutmeat)	0.01	0.03	1.000	TH	child, 3-6 yrs	826	423.40	383.0	3	2a	0.01 - 2.09	0% - 1%	0% - 0%	0% - 1%
TN 0666	Hazelnut (all commodities)	highest utilisation: Total	0.01	0.03	1.000	FR	Child, 3-6 yrs	-	27.24	1.2	NR	1	0.01 - 0.04	0% - 0%	0% - 0%	0% - 0%

FLUXAPYROXAD (256)
Acute RfD= 0.3 mg/kg bw (300 µg/kg bw)

IESTI
Maximum %ARfD: 190% all | 60% gen pop | 190% child

Codex Code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Coun try	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Varia-bility factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
TN 0669	Macadamia nut (all commodities)	highest utilisation: Total	0.01	0.03	1.000	US	Gen pop, all ages	-	106.60	3.2	NR	1	0 - 0.05	0% - 0%	0% - 0%	0% - 0%
TN 0672	Pecan (all commodities)	highest utilisation: Total	0.01	0.03	1.000	AU	Child, 2-16 yrs	52	80.87	5.0	NR	1	0.02 - 0.06	0% - 0%	0% - 0%	0% - 0%
TN 0673	Pine nut (all commodities)	highest utilisation: Total	0	0.03	1.000	BR	Gen pop, > 10 yrs	47	200.00	0.2	NR	1	0.02 - 0.09	0% - 0%	0% - 0%	0% - 0%
TN 0675	Pistachio nut (all commodities)	highest utilisation: Total	0.01	0.03	1.000	FR	child, 3-6 yrs	-	44.89	0.9	NR	1	0 - 0.07	0% - 0%	0% - 0%	0% - 0%
TN 0678	Walnut (all commodities)	highest utilisation: raw incl roasted	0.01	0.03	1.000	DE	Child, 2-4 yrs	75	49.40	7.0	NR	1	0 - 0.09	0% - 0%	0% - 0%	0% - 0%
SO 0691	Cotton seed (all commodities)	highest utilisation: Total	0.003 - 0.07	0	1.000	US	Gen pop, all ages	-	3.25	<25	NR	3	0 - 0	0% - 0%	0% - 0%	0% - 0%

IMIDACLOPRID (206)
Acute RfD= 0.4 mg/kg bw (400 µg/kg bw)

IESTI
Maximum %ARfD: 10% all | 10% gen pop | 10% child

Codex Code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Coun try	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Varia-bility factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
FS 0013	Cherries (all commodities)	highest utilisation: raw	0.55	2.5	1.000	DE	Child, 2-4 yrs	24	187.50	7.2	NR	1	0.22 - 29.02	0% - 7%	0% - 7%	0% - 7%
FS 0302	Jujube, Chinese	Total		0.7	1.000	CN	Gen pop, > 1 yrs	1328	286.17	-	-	-	-	-	-	-
FS 0014	Plums (all commodities)	highest utilisation: raw with peel (incl consumption without peel)	0.28	0.7 - 2.2	1.000	TH	Child, 3-6 yrs	11	376.88	93.0	3	2a	0.13 - 23.04	0% - 6%	0% - 3%	0% - 6%
FS 0240	Apricot (all commodities)	highest utilisation: raw with peel (incl consumption without peel)	0.355	0.77	1.000	AU	Gen pop, > 2 yrs	77	1056.90	54.5	3	2a	0.15 - 13.4	0% - 3%	0% - 3%	0% - 3%
FS 2237	Japanese apricot (ume)	Total		0.77	1.000	JP	Child, 1-6 yrs	25	25.50	<25	NR	1	1.08	0%	0%	0%
FS 0245	Nectarine	highest utilisation:	0.355	0.77	1.000	NL	toddler, 8-	6	183.60	131.0	3	2a	0.15 - 33.63	0% - 8%	0% - 3%	0% - 8%

IMIDACLOPRID (206) IESTI

Acute RfD= 0.4 mg/kg bw (400 µg/kg bw) Maximum %ARfD: 10% all, 10% gen pop, 10% child

Codex Code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Coun try	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Varia-bility factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
	(all commodities)	raw with peel (incl consumption without peel)					20 m									
FS 0247	Peach (all commodities)	highest utilisation: raw with peel (incl consumption without peel)	0.355	0.77	1.000	JP	Child, 1-6 yrs	76	306.00	255.0	3	2a	0.15 - 40.54	0% - 10%	0% - 4%	0% - 10%
FT 0305	Table olives (all commodities)	highest utilisation: Total	0.355	1.1	1.000	AU	Child, 2-6 yrs	77	66.45	4.4	NR	1	0.11 - 3.85	0% - 1%	0% - 1%	0% - 1%
VL 0480	Kale (borecole, collards) (all commodities)	highest utilisation: Total	1.3	2	1.000	DE	Gen pop, 14-80 yrs	123	669.80	672.0	3	2b	2.47 - 52.62	1% - 10%	1% - 10%	3% - 10%
VD 0541	Soya bean (dry) (Glycine spp) (all commodities)	highest utilisation: Total	0.09 - 0.38		1.000	CN	Child, 1-6 yrs	179	239.05	<25	NR	3	0.02 - 5.63	0% - 1%	0% - 1%	0% - 1%
SO 0305	Olives for oil extraction (all commodities)	highest utilisation: oil	0.09 - 0.355	0.77	1.000	FR	Child, 3-6 yrs	1	24.99	NR	NR	3	0.04 - 0.12	0% - 0%	0% - 0%	0% - 0%
HH 0722	Basil (all commodities)	highest utilisation: Total	5	7.3	1.000	AU	Child, 2-16 yrs	143	44.19	<25	NR	1	1.39 - 8.49	0% - 2%	0% - 1%	0% - 2%
DT 1114	Tea, green, black (black, fermented and dried) (all commodities)	highest utilisation: raw = dried	0.16 - 6.4		1.000	CN	Gen pop, > 1 yrs	679	75.88	<25	NR	3	6.54 - 9.12	2% - 2%	2% - 2%	1% - 2%

CYHALOTHRIN (including Lambda-cyhalothrin) (146) IESTI

Acute RfD= 0.02 mg/kg bw (20 µg/kg bw) Maximum %ARfD: 2% all, 1% gen pop, 2% child

Codex Code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Coun try	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Varia-bility factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
HH 0722	Basil (all commodities)	highest utilisation: Total		0.4	1.000	AU	Child, 2-16 yrs	143	44.19	<25	NR	1	0.27 - 0.47	1% - 2%	0% - 1%	1% - 2%
SB 0716	Coffee beans	Total	0.01		1.000	FR	Child, 3-6 yrs	0	70.31	0.1	NR	3	0.04	0%	0%	0%

LINDANE (048) IESTI

Acute RfD= 0.06 mg/kg bw (60 µg/kg bw) Maximum %ARfD: 0% all 0% gen pop 0% child

Codex Code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Country	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Variability factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
GC 0640	Barley (all commodities)	highest utilisation: beer	0.005	0.005	0.190	BR	Gen pop, > 10 yrs	1636	3600.00	NR	NR	3	0 - 0.05	0% - 0%	0% - 0%	0% - 0%
GC 0645	Maize (corn) (all commodities)	highest utilisation: Total	0.005	0.005	1.000	CN	Child, 1-6 yrs	166	524.69	<25	NR	3	0 - 0.16	0% - 0%	0% - 0%	0% - 0%
GC 0656	Popcorn (i.e. maize destined for popcorn preparation) (all commodities)	highest utilisation: Total	0.005		1.000	AU	Child, 2-6 yrs	120	73.67	<25	NR	3	0.02 - 0.02	0% - 0%	0% - 0%	0% - 0%
GC 0646	Millet (all commodities)	highest utilisation: Total	0.005	0.005	1.000	CN	Child, 1-6 yrs	826	219.53	<25	NR	3	0 - 0.07	0% - 0%	0% - 0%	0% - 0%
GC 0647	Oats (all commodities)	highest utilisation: Total	0.0005 - 0.005	0.005	1.000	CN	Gen pop, > 1 yrs	1740	330.61	<25	NR	3	0 - 0.03	0% - 0%	0% - 0%	0% - 0%
GC 0649	Rice (all commodities)	highest utilisation: Total	0.005		1.000	US	Child, 1-6 yrs	-	99.75	<25	NR	3	0 - 0.03	0% - 0%	0% - 0%	0% - 0%
GC 0650	Rice	Rice milk	0.005		0.040	AU	Child, 2-6 yrs	25	772.50	NR	NR	3	0.0081	0.0%	-	0.0%
GC 0649	Rice (all commodities)	highest utilisation: polished rice (cooked)	0.005		0.400	CN	Child, 1-6 yrs	8752	1004.28	<25	NR	3	0 - 0.12	0% - 0%	0% - 0%	0% - 0%
GC 0650	Rye (all commodities)	highest utilisation: Wholemeal	0.005		1.000	DE	Child, 2-4 yrs	242	95.20	NR	NR	3	0 - 0.03	0% - 0%	0% - 0%	0% - 0%
GC 0651	Sorghum (Chicken corn, Dari seed, Durra, Feterita) (all commodities)	highest utilisation: cooked/boiled	0.005		0.400	CN	Gen pop, > 1 yrs	356	1348.67	<25	NR	3	0 - 0.05	0% - 0%	0% - 0%	0% - 0%
GC 0653	Triticale	Total	0.005		1.000	DE	Gen pop, 14-80 yrs	####	394.70	<25	NR	3	0.0258	0.0%	0.0%	0.0%
GC 0654	Wheat (all commodities)	highest utilisation: flour (cereals)	0.005		1.000	CN	Child, 1-6 yrs	3556	415.87	NR	NR	3	0 - 0.13	0% - 0%	0% - 0%	0% - 0%
MM 0095	Meat from mammals other than marine mammals	Total	NA	NA	1.000	CN	Child, 1-6 yrs	302	264.84	NR	NR	1	NA	0.0%	0.0%	0.0%
MM 0095	Meat from mammals other than marine mammals: 20% as fat	Total		0.0006	1.000	CN	Child, 1-6 yrs	302	52.97	NR	NR	1	0.0020	0.0%	0.0%	0.0%
MM 0095	Meat from mammals other than marine mammals: 80% as	Total		0.0005	1.000	CN	Child, 1-6 yrs	302	211.87	NR	NR	1	0.0066	0.0%	0.0%	0.0%

Annex 4

LINDANE (048) — IESTI

Acute RfD= 0.06 mg/kg bw (60 µg/kg bw) — Maximum %ARfD: 0% all; 0% gen pop; 0% child

Codex Code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Country	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Varia-bility factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
	muscle															
MF 0100	Mammalian fats (except milk fats)	Total		0.0006	1.000	FR	Child, 3-6 yrs	0	64.80	NR	NR	1	0.0021	0.0%	0.0%	0.0%
MO 0105	Edible offal (mammalian)	Total		0.0002	1.000	US	Child, 1-6 yrs	-	186.60	NR	NR	1	0.0025	0.0%	0.0%	0.0%
ML 0106	Milks	Total	0.00003		1.000	NL	toddler, 8-20 m	1882	1060.67	NR	NR	3	0.0031	0.0%	0.0%	0.0%
PM 0110	Poultry meat	Total	NA	NA	1.000	CN	Child, 1-6 yrs	175	347.00	NR	NR	1	NA	0.0%	0.0%	0.0%
PM 0110	Poultry meat: 10% as fat	Total		0.0008	1.000	CN	Child, 1-6 yrs	175	34.70	NR	NR	1	0.0017	0.0%	0.0%	0.0%
PM 0110	Poultry meat: 90% as muscle	Total		0.0001	1.000	CN	Child, 1-6 yrs	175	312.30	NR	NR	1	0.0019	0.0%	0.0%	0.0%
PO 0111	Poultry, edible offal (includes kidney, liver and skin)	Total		0.0002	1.000	CN	Gen pop, > 1 yrs	421	345.63	NR	NR	1	0.0013	0.0%	0.0%	0.0%
PE 0112	Eggs	Total		0.0002	1.000	CN	Child, 1-6 yrs	136	195.82	NR	NR	1	0.0024	0.0%	0.0%	0.0%

QUINCLORAC (287) — IESTI

Acute RfD= 2 mg/kg bw (2000 µg/kg bw) — Maximum %ARfD: 1% all; 0% gen pop; 0% child

Codex Code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Country	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Varia-bility factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
FB 0265	Cranberry (all commodities)	highest utilisation: Total	0,35	1,36	1,000	AU	Child, 2-16 yrs	103	279,66	1,8	NR	1	0,01 - 10,01	0% - 1%	0% - 0%	0% - 0%
VS 0627	Rhubarb (all commodities)	highest utilisation: Total	0,36	0,46	1,000	AU	gen pop, > 2 yrs	58	539,42	56,7	3	2a	2,93 - 4,48	0% - 0%	0% - 0%	0% - 0%

SPIROTETRAMAT (234)
Acute RfD= 1 mg/kg bw (1000 µg/kg bw)

IESTI
Maximum %ARfD: 1% all, 1% gen pop, 2% child

Codex Code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Country	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Varia-bility factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
FT 0336	Guava	raw with peel	0.85	0.55	1.000	BR	Gen pop, > 10 yrs	398	850.00	170.0	3	2a	10.1379	1.0%	1.0%	2.0%
FI 0326	Avocado (all commodities)	highest utilisation: Total		0.23	1.000	AU	Child, 2-6 yrs	182	229.90	171.4	3	2a	3.54 - 6.93	0% - 1%	0% - 0%	0% - 1%
VO 0447	Sweet corn (corn-on-the-cob)	raw	0.75	0.31	1.000	WW	All populations	0	NC	-	-	-	NC	NC	-	-

TEBUCONAZOLE (189)
Acute RfD= 0.3 mg/kg bw (300 µg/kg bw)

IESTI
Maximum %ARfD: 5% all, 2% gen pop, 5% child

Codex Code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Coun- try	Population group	n	Large portion. g/person	Unit weight. edible portion. g	Varia-bility factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
FI 0327	Banana (incl dwarf banana & plantain) (all commodities)	highest utilisation: raw without peel	0.07	0.16	1	CN	Child. 1-6 yrs	286	455.81	767.3	3	2b	0.03 - 13.56	0% - 5%	0% - 2%	0% - 5%
VA 0385	Onion. bulb (all commodities)	highest utilisation: raw without skin	0.055	0.09	1	JP	Child. 1-6 yrs	748	102.00	244.4	3	2b	0.02 - 1.68	0% - 1%	0% - 0%	0% - 1%
VA 0388	Shallot (i.e. dry harvested small onion) (all commodities)	highest utilisation: raw without skin	0.055	0.09	1	CN	Child. 1-6 yrs	480	115.81	51.4	3	2a	0.04 - 1.22	0% - 0%	0% - 0%	0% - 0%
VA 0389	Spring onion (all commodities)	highest utilisation: cooked/boiled	0	0.8	1	NL	Child. 2-6 yrs	E	20.30	30.0	3	2b	2.04 - 2.65	1% - 1%	0% - 0%	1% - 1%
VC 0424	Cucumber (all commodities)	highest utilisation: raw with skin	0.05	0.11	1	CN	Child. 1-6 yrs	340	212.11	458.1	3	2b	0.02 - 4.34	0% - 1%	0% - 1%	0% - 1%
VS 0621	Asparagus (all commodities)	highest utilisation: Total	0	0.02	1	US	Child. 1-6 yrs	-	142.56	42.4	3	2a	0.2 - 0.3	0% - 0%	0% - 0%	0% - 0%
SO 0702	Sunflower seed (all commodities)	highest utilisation: Total	0.04	0	1	CN	Gen pop. > 1 yrs	781	235.52	<25	NR	3	0.02 - 0.18	0% - 0%	0% - 0%	0% - 0%

Annex 4

SPICES

Cypermethrins (118)
Acute RfD= 0.04 mg/kg bw (40 µg/kg bw)

IESTI
Maximum %ARfD: 0% all, 0% gen pop, 0% child

Codex Code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Country	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Varia-bility factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
HS 0775	Cardamom seed	Total	0.43		1.000	DE	Child, 2-4 yrs	42	0.20	0.1	NR	3	0.0053	0.0%	0.0%	0.0%

Phorate (112)
Acute RfD= 0.0007 mg/kg bw (1 µg/kg bw)

IESTI
Maximum %ARfD: 10% all, 2% gen pop, 10% child

Codex Code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Country	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Varia-bility factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
HS 0731	Fennel, seed (all commodities)	highest utilisation: Total	0.1		1.000	DE	Child, 2-4 yrs	107	11.60	<25	NR	3	0 - 0.07	0% - 10%	0% - 0%	0% - 10%
HS 0779	Coriander, seed	Total	0.1		1.000	AU	Gen pop, > 2 yrs	129	7.76	<25	NR	3	0.0116	2.0%	2.0%	1.0%

Profenofos (171)
Acute RfD= 1 mg/kg bw (1000 µg/kg bw)

IESTI
Maximum %ARfD: 0% all, 0% gen pop, 0% child

Codex Code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Country	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Varia-bility factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
HS 0731	Fennel, seed	Total	0.1		1.000	DE	Child, 2-4 yrs	107	11.60	<25	NR	3	0.0718	0.0%	0.0%	0.0%
HS 0775	Cardamom seed	Total	0.3		1.000	DE	Child, 2-4 yrs	42	0.20	0.1	NR	3	0.0037	0.0%	0.0%	0.0%
HS 0779	Coriander, seed	Total	0.1		1.000	AU	Gen pop, > 2 yrs	129	7.76	<25	NR	3	0.0116	0.0%	0.0%	0.0%
HS 0780	Cumin seed (all commodities)	highest utilisation: Total	0.635		1.000	AU	Child, 2-16 yrs	584	3.99	<25	NR	3	0.02 - 0.07	0% - 0%	0% - 0%	0% - 0%

Triazophos (143)
Acute RfD= 0.001 mg/kg bw (1 µg/kg bw)

IESTI
Maximum %ARfD: 7% all, 1% gen pop, 7% child

Codex Code	Commodity	Processing	STMR or STMR-P mg/kg	HR or HR-P mg/kg	DCF	Country	Population group	n	Large portion, g/person	Unit weight, edible portion, g	Varia-bility factor	Case	IESTI µg/kg bw/day	% acute RfD rounded	% acute RfD rounded	% acute RfD rounded
HS 0731	Fennel, seed	Total	0.1		1.000	DE	Child, 2-4 yrs	107	11.60	<25	NR	3	0.0718	7.0%	0.0%	7.0%
HS 0775	Cardamom seed	Total	0.45		1.000	DE	Child, 2-4 yrs	42	0.20	0.1	NR	3	0.0056	1.0%	0.0%	1.0%
HS 0779	Coriander, seed	Total	0.1		1.000	AU	Gen pop, > 2 yrs	129	7.76	<25	NR	3	0.0116	1.0%	1.0%	1.0%

ANNEX 5: REPORTS AND OTHER DOCUMENTS RESULTING FROM PREVIOUS JOINT MEETINGS OF THE FAO PANEL OF EXPERTS ON PESTICIDE RESIDUES IN FOOD AND THE ENVIRONMENT AND THE WHO CORE ASSESSMENT GROUP ON PESTICIDE RESIDUES

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2. Evaluation of the toxicity of pesticide residues in food. Report of a Joint Meeting of the FAO Committee on Pesticides in Agriculture and the WHO Expert Committee on Pesticide Residues. FAO Meeting Report, No. PL/1963/13; WHO/Food Add./23, 1964.

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ANNEX 6: LIVESTOCK DIETARY BURDEN

ABAMECTIN (177)

BEEF CATTLE													MAX
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Grape pomace, wet	AB	0.0316	STMR	1	3.16			20				0.632	
Bean vines	AL	0.581	HR	35	1.66			60				0.996	
Almond hulls	AM/AV	0.036	STMR	90	0.04			10				0.004	
Bean seed	VD	0.002	STMR	88	0.00		20	10			0.0005	0.0002	
Cotton meal	SM	0.002	STMR	89	0.00	5	5			0.000112	0.0001		
Rice straw	AF/AS	0.001	HR	90	0.00		10		55		0.0001		0.0006
Rice grain	GC	0.001	STMR	88	0.00	20				0.000227			
Total						25	35	100	55	0.00034	0.0007	1.632	0.0006

BEEF CATTLE													MEAN
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Grape pomace, wet	AB	0.0316	STMR/STMR-P	1	3.16			20				0.632	
Bean vines	AL	0.352	STMR/STMR-P	35	1.01			60				0.603	
Almond hulls	AM/AV	0.036	STMR/STMR-P	90	0.04			10				0.004	
Bean seed	VD	0.002	STMR/STMR-P	88	0.00		20	10			0.0005	0.0002	
Cotton meal	SM	0.002	STMR/STMR-P	89	0.00	5	5			0.000112	0.0001		
Rice straw	AF/AS	0.001	STMR/STMR-P	90	0.00		10		55		0.0001		0.0006
Rice grain	GC	0.001	STMR/STMR-P	88	0.00	20				0.000227			
Total						25	35	100	55	0.00034	0.0007	1.24	0.0006

DAIRY CATTLE													MAX
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Grape pomace, wet	AB	0.0316	STMR	1	3.16			20				0.632	
Bean vines	AL	0.581	HR	35	1.66		20	70			0.332	1.162	
Almond hulls	AM/AV	0.036	STMR	90	0.04	10		10		0.004		0.004	
Bean seed	VD	0.002	STMR	88	0.00		20				0.0005		
Cotton meal	SM	0.002	STMR	89	0.00	10	5			0.000225	0.0001		
Rice straw	AF/AS	0.001	HR	90	0.00		5		25		0.00006		0.0003
Rice grain	GC	0.001	STMR	88	0.00	20				0.000227			
Total						40	50	100	25	0.004452	0.333	1.798	0.0003

DAIRY CATTLE													MEAN
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Grape pomace, wet	AB	0.0316	STMR/STMR-P	1	3.16		0	20			0	0.632	
Bean vines	AL	0.352	STMR/STMR-P	35	1.01	0	20	70		0	0.201	0.704	
Almond hulls	AM/AV	0.036	STMR/STMR-P	90	0.04	10		10		0.004		0.004	
Bean seed	VD	0.002	STMR/STMR-P	88	0.00	0	20			0	0.00004		
Cotton meal	SM	0.002	STMR/STMR-P	89	0.00	10	5			0.000225	0.0001		
Rice straw	AF/AS	0.001	STMR/STMR-P	90	0.00	0	5		25	0	0.00006		0.0003
Rice grain	GC	0.001	STMR/STMR-P	88	0.00	20				0.000227			
Total						40	50	100	25	0.004452	0.202	1.34	0.0003

POULTRY BROILER													MAX
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Bean seed	VD	0.002	STMR	88	0.00		20	70			0.0005	0.002	
Cotton meal	SM	0.002	STMR	89	0.00	20	5	10		0.000449	0.0001	0.0002	
Rice grain	GC	0.001	STMR	88	0.00	20		20		0.000227		0.0002	
Total						40	25	100		0.000677	0.0006	0.002	

POULTRY BROILER													MEAN
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Bean seed	VD	0.002	STMR/STMR-P	88	0.00		20	70			0.0005	0.002	
Cotton meal	SM	0.002	STMR/STMR-P	89	0.00	20	5	10		0.000449	0.0001	0.0002	
Rice grain	GC	0.001	STMR/STMR-P	88	0.00	20		20		0.000227		0.0002	
Total						40	25	100		0.000677	0.0006	0.002	

POULTRY LAYER													MAX
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Bean seed	VD	0.002	STMR	88	0.00		20	70			0.0005	0.002	
Cotton meal	SM	0.002	STMR	89	0.00	20	5	10		0.000449	0.0001	0.0002	
Rice grain	GC	0.001	STMR	88	0.00	20		20		0.000227		0.0002	
Total						40	25	100		0.000677	0.0006	0.002	

POULTRY LAYER													MEAN
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Bean seed	VD	0.002	STMR/STMR-P	88	0.00		20	70			0.0005	0.002	
Cotton meal	SM	0.002	STMR/STMR-P	89	0.00	20	5	10		0.000449	0.0001	0.0002	
Rice grain	GC	0.001	STMR/STMR-P	88	0.00	20		20		0.000227		0.0002	
Total						40	25	100		0.000677	0.0006	0.002	

ACETAMIPRID (246)

BEEF CATTLE													MAX
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Corn, sweet stover	AF/AS	20	HR	83	24.10			40				9.639	
Cotton gin byproducts	AM/AV	18	HR	90	20.00	5				1			
Corn, sweet forage	AF/AS	9.1	HR	48	18.96			40				7.583	
Cabbage heads, leaves	AM/AV	0.5	HR	15	3.33		20				0.667		
Almond hulls	AM/AV	1.34	STMR	90	1.49			10				0.149	
Apple pomace, wet	AB	0.32	STMR	40	0.80		20	10			0.16	0.08	
Citrus dried pulp	AB	0.7	STMR	91	0.77	10				0.077			
Cotton hulls	SM	0.07	STMR	90	0.08	10				0.008			
Total						25	40	100		1.085	0.827	17.45	

BEEF CATTLE													MEAN
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Cotton gin byproducts	AM/AV	3.6	STMR/STMR-P	90	4.00	5				0.2			
Corn, sweet stover	AF/AS	2.8	STMR/STMR-P	83	3.37			40				1.3494	
Corn, sweet forage	AF/AS	1.4	STMR/STMR-P	48	2.92			40				1.16667	
Almond hulls	AM/AV	1.34	STMR/STMR-P	90	1.49			10				0.14889	
Apple pomace, wet	AB	0.32	STMR/STMR-P	40	0.80		20	10			0.16	0.08	
Citrus dried pulp	AB	0.7	STMR/STMR-P	91	0.77	10				0.077			
Cabbage heads, leaves	AM/AV	0.09	STMR/STMR-P	15	0.60		20				0.12		
Cotton hulls	SM	0.07	STMR/STMR-P	90	0.08	10				0.008			
Total						25	40	100		0.285	0.28	2.74495	

DAIRY CATTLE													MAX
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Corn, sweet stover	AF/AS	20	HR	83	24.10	15		20		3.614		4.819	
Corn, sweet forage	AF/AS	9.1	HR	48	18.96	30		20		5.688		3.792	
Cabbage heads, leaves	AM/AV	0.5	HR	15	3.33		20				0.667		
Almond hulls	AM/AV	1.34	STMR	90	1.49	10		10		0.149		0.149	
Apple pomace, wet	AB	0.32	STMR	40	0.80	10	10	10		0.08	0.08	0.08	
Citrus dried pulp	AB	0.7	STMR	91	0.77		10	20			0.077	0.154	
Cotton undelinted seed	SO	0.09	STMR	88	0.10	10	10	20		0.01	0.01	0.02	
Cotton meal	SM	0.03	STMR	89	0.03	10	5			0.003	0.002		
Total						85	55	100		9.544	0.836	9.014	

DAIRY CATTLE													MEAN
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Corn, sweet stover	AF/AS	2.8	STMR/STMR-P	83	3.37	15	0	20		0.506	0	0.6747	
Corn, sweet forage	AF/AS	1.4	STMR/STMR-P	48	2.92	30		20		0.875		0.58333	
Almond hulls	AM/AV	1.34	STMR/STMR-P	90	1.49	10		10		0.149		0.14889	

DAIRY CATTLE													MEAN
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Apple pomace, wet	AB	0.32	STMR/STMR-P	40	0.80	10	10	10		0.08	0.08	0.08	
Citrus dried pulp	AB	0.7	STMR/STMR-P	91	0.77	0	10	20		0	0.0769	0.15385	
Cabbage heads, leaves	AM/AV	0.09	STMR/STMR-P	15	0.60	0	20			0	0.12		
Cotton undelinted seed	SO	0.09	STMR/STMR-P	88	0.10	10	10	20		0.01	0.0102	0.02045	
Cotton meal	SM	0.03	STMR/STMR-P	89	0.03	10	5			0.003	0.0017		
Total						85	55	100		1.624	0.2888	1.66122	

POULTRY BROILER													MAX
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Cotton meal	SM	0.03	STMR	89	0.03	20	5	10		0.007	0.002	0.003	
Total						20	5	10		0.007	0.002	0.003	

POULTRY BROILER													MEAN
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Cotton meal	SM	0.03	STMR/STMR-P	89	0.03	20	5	10		0.007	0.0017	0.00337	
Total						20	5	10		0.007	0.0017	0.00337	

POULTRY LAYER													MAX
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Cabbage heads, leaves	AM/AV	0.5	HR	15	3.33		5				0.167		
Cabbage heads, leaves	AM/AV	0.5	HR	15	3.33		5				0.167		
Cotton meal	SM	0.03	STMR	89	0.03	20	5	10		0.007	0.002	0.003	
Total						20	15	10		0.007	0.335	0.003	

POULTRY LAYER													MEAN
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Cabbage heads, leaves	AM/AV	0.09	STMR/STMR-P	15	0.60		5				0.03		
Cabbage heads, leaves	AM/AV	0.09	STMR/STMR-P	15	0.60		5				0.03		
Cotton meal	SM	0.03	STMR/STMR-P	89	0.03	20	5	10		0.007	0.0017	0.00337	
Total						20	15	10		0.007	0.0617	0.00337	

CHLOROTHALONIL (081)

BEEF CATTLE													MAX
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Tomato pomace,wet	AB	0.66	STMR	20	3.30			10				0.33	
Potato culls	VR	0.01	HR	20	0.05	30	30	10		0.02	0.02	0.01	
Total						30	30	20		0.02	0.02	0.34	

BEEF CATTLE													MEAN
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Tomato pomace,wet	AB	0.66	STMR/STMR-P	20	3.30			10				0.33	
Potato culls	VR	0.01	STMR/STMR-P	20	0.05	30	30	10		0.02	0.02	0.01	
Total						30	30	20		0.02	0.02	0.34	

DAIRY CATTLE													MAX
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Tomato pomace,wet	AB	0.66	STMR	20	3.30			10				0.33	
Potato culls	VR	0.01	HR	20	0.05	10	30	10		0.01	0.02	0.01	
Total						10	30	20		0.01	0.02	0.34	

DAIRY CATTLE													MEAN
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Tomato pomace,wet	AB	0.66	STMR/STMR-P	20	3.30		0	10			0.00	0.33	
Potato culls	VR	0.01	STMR/STMR-P	20	0.05	10	30	10		0.01	0.02	0.01	
Total						10	30	20		0.01	0.02	0.34	

POULTRY BROILER													MAX
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Potato culls	VR	0.01	HR	20	0.05		10				0.01		
Total							10				0.01		

POULTRY BROILER													MEAN
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Potato culls	VR	0.01	STMR/STMR-P	20	0.05		10				0.01		
Total							10				0.01		

POULTRY LAYER													MAX
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Potato culls	VR	0.01	HR	20	0.05		10				0.01		
Total							10				0.01		

POULTRY LAYER													MEAN
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Potato culls	VR	0.01	STMR/STMR-P	20	0.05		10				0.01		
Total							10				0.01		

CYANTRANILIPROLE (263)

BEEF CATTLE													MAX
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Pea vines	AL	47.07	HR	100	47.07		20	60			9.414	28.24	
Soybean hay	AL	46.39	HR	100	46.39			40				18.56	
Pea hay	AL	28.54	HR	100	28.54		5				1.427		
Cabbage heads, leaves	AM/AV	1.1	HR	15	7.33		20				1.467		
Cotton gin byproducts	AM/AV	5	HR	90	5.56	5				0.277778			
Corn, field asp gr fn	CM/CF	1.76	STMR	85	2.07	5				0.103529			
Trefoil hay	AL	0.58	HR	85	0.68	15				0.102353			
Cowpea hay	AL	0.58	HR	86	0.67		10				0.067		
Alfalfa hay	AL	0.58	HR	89	0.65				10				0.065
Potato culls	VR	0.1	HR	20	0.50	30	30			0.15	0.15		
Clover forage	AL	0.14	HR	30	0.47		15				0.07		
Potato process waste	AB	0.046	STMR	12	0.38	30				0.115			
Corn, field stover	AF/AS	0.23	HR	83	0.28	15				0.041566			
Grass forage (fresh)	AF/AS	0.053	HR	25	0.21				5				0.011
Grass hay	AF/AS	0.14	HR	88	0.16				35				0.056
Soybean seed	VD	0.033	STMR	89	0.04				15				0.006
Corn, field milled bypdts	CM/CF	0.0033	STMR	85	0.00				5				2E-04
Total						100	100	100	70	0.790226	12.6	46.8	0.137

BEEF CATTLE													MEAN
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Soybean forage	AL	15.59	STMR/STMR-P	100	15.59			100				15.59	
Pea hay	AL	9.69	STMR/STMR-P	100	9.69		25				2.423		
Cabbage heads, leaves	AM/AV	0.56	STMR/STMR-P	15	3.73		20				0.747		
Cotton gin byproducts	AM/AV	3.1	STMR/STMR-P	90	3.44	5				0.172222			
Corn, field asp gr fn	CM/CF	1.76	STMR/STMR-P	85	2.07	5				0.103529			
Apple pomace, wet	AB	0.16	STMR/STMR-P	40	0.40		20				0.08		
Potato process waste	AB	0.046	STMR/STMR-P	12	0.38	30	35			0.115	0.134		
Potato culls	VR	0.046	STMR/STMR-P	20	0.23	30				0.069			
Corn, field stover	AF/AS	0.05	STMR/STMR-P	83	0.06	15				0.009036			
Grass forage (fresh)	AF/AS	0.01	STMR/STMR-P	25	0.04				5				0.002
Soybean seed	VD	0.033	STMR/STMR-P	89	0.04	5			15	0.001854			0.006
Alfalfa hay	AL	0.017	STMR/STMR-P	89	0.02	10			10	0.00191			0.002
Corn, field milled bypdts	CM/CF	0.0033	STMR/STMR-P	85	0.00				5				2E-04
Total						100	100	100	35	0.472552	3.383	15.59	0.01

DAIRY CATTLE													MAX
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Pea vines	AL	47.07	HR	100	47.07	10	20	40		4.707	9.414	18.83	
Soybean hay	AL	46.39	HR	100	46.39	10				4.639			
Pea hay	AL	28.54	HR	100	28.54		10	60			2.854	17.12	
Cabbage heads, leaves	AM/AV	1.1	HR	15	7.33		20				1.467		
Almond hulls	AM/AV	1.9	STMR	90	2.11	10				0.211111			
Trefoil hay	AL	0.58	HR	85	0.68	20	10			0.136471	0.068		
Alfalfa hay	AL	0.58	HR	89	0.65				25				0.163
Potato culls	VR	0.1	HR	20	0.50	10	30			0.05	0.15		
Clover forage	AL	0.14	HR	30	0.47		10				0.047		
Apple pomace, wet	AB	0.16	STMR	40	0.40	10				0.04			
Corn, field stover	AF/AS	0.23	HR	83	0.28	15				0.041566			
Sorghum, grain stover	AF/AS	0.23	HR	88	0.26				5				0.013
Grass forage (fresh)	AF/AS	0.053	HR	25	0.21	15			5	0.0318			0.011
Grass hay	AF/AS	0.14	HR	88	0.16				65				0.103
Total						100	100	100	100	9.856948	14	35.95	0.29

DAIRY CATTLE													MEAN
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Soybean forage	AL	15.59	STMR/STMR-P	100	15.59	20	0	40		3.118	0	6.236	
Pea hay	AL	9.69	STMR/STMR-P	100	9.69	0	30	60		0	2.907	5.814	
Cabbage heads, leaves	AM/AV	0.56	STMR/STMR-P	15	3.73	0	20			0	0.747		
Almond hulls	AM/AV	1.9	STMR/STMR-P	90	2.11	10				0.211111			
Apple pomace, wet	AB	0.16	STMR/STMR-P	40	0.40	10	10			0.04	0.04		
Potato process waste	AB	0.046	STMR/STMR-P	12	0.38	0	20			0	0.077		
Potato culls	VR	0.046	STMR/STMR-P	20	0.23	10	20			0.023	0.046		
Corn, field stover	AF/AS	0.05	STMR/STMR-P	83	0.06	15				0.009036			
Sorghum, grain stover	AF/AS	0.05	STMR/STMR-P	88	0.06	0			5	0			0.003
Lespedeza forage	AL	0.01	STMR/STMR-P	22	0.05	35				0.015909			
Grass forage (fresh)	AF/AS	0.01	STMR/STMR-P	25	0.04	0			5	0			0.002
Soybean seed	VD	0.033	STMR/STMR-P	89	0.04	0			10	0			0.004
Sorghum, grain forage	AF/AS	0.01	STMR/STMR-P	35	0.03	0			30	0			0.009
Corn, field forage/silage	AF/AS	0.01	STMR/STMR-P	40	0.03	0			10	0			0.003
Alfalfa hay	AL	0.017	STMR/STMR-P	89	0.02	0			25	0			0.005
Total						100	100	100	85	3.417056	3.816	12.05	0.024

POULTRY BROILER													MAX
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Potato culls	VR	0.1	HR	20	0.50		10				0.05		
Total							10				0.05		

POULTRY BROILER													MEAN
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Potato culls	VR	0.046	STMR/STMR-P	20	0.23		10				0.023		
Total							10				0.023		

POULTRY LAYER													MAX
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Pea vines	AL	47.07	HR	100	47.07		10				4.707		
Corn, field milled bypdts	CM/CF	0.0033	STMR	85	0.00	50	35			0.001941	0.001		
Total						50	45			0.001941	4.708		

POULTRY LAYER													MEAN
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Soybean forage	AL	15.59	STMR/STMR-P	100	15.59		10				1.559		
Total							10				1.559		

CYPRODINIL (207)

BEEF CATTLE													MAX
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Kale leaves	AM/AV	8	HR	15	53.33		20				10.67		
Barley straw	AF/AS	5.8	HR	100	5.80	10	30	100		0.58	1.74	5.8	
Apple pomace, wet	AB	1.8	STMR	40	4.50		20				0.9		
Carrot culls	VR	0.4	HR	12	3.33		15				0.5		
Barley grain	GC	0.58	STMR	88	0.66	50	15		70	0.329545	0.099		0.461
Total						60	100	100	70	0.909545	13.91	5.8	0.461

BEEF CATTLE													MEAN
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Apple pomace, wet	AB	1.8	STMR/STMR-P	40	4.50		20	20			0.9	0.9	
Kale leaves	AM/AV	0.37	STMR/STMR-P	15	2.47		20				0.493		
Carrot culls	VR	0.09	STMR/STMR-P	12	0.75		15	5			0.113	0.038	
Barley grain	GC	0.58	STMR/STMR-P	88	0.66	50	45	75	70	0.329545	0.297	0.494	0.4614
Barley straw	AF/AS	0.395	STMR/STMR-P	100	0.40	10				0.0395			
Total						60	100	100	70	0.369045	1.802	1.432	0.4614

DAIRY CATTLE													MAX
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Kale leaves	AM/AV	8	HR	15	53.33		20	40			10.67	21.33	
Barley straw	AF/AS	5.8	HR	100	5.80	10	30	20		0.58	1.74	1.16	
Apple pomace, wet	AB	1.8	STMR	40	4.50	10	10	10		0.45	0.45	0.45	
Carrot culls	VR	0.4	HR	12	3.33	10	15	5		0.333333	0.5	0.167	
Barley grain	GC	0.58	STMR	88	0.66	45	25	25	40	0.296591	0.165	0.165	0.264
Almond hulls	AM/AV	0.05	STMR	90	0.06	10				0.005556			
Total						85	100	100	40	1.66548	13.52	23.27	0.264

DAIRY CATTLE													MEAN
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Apple pomace, wet	AB	1.8	STMR/STMR-P	40	4.50	10	10	10		0.45	0.45	0.45	
Kale leaves	AM/AV	0.37	STMR/STMR-P	15	2.47	0	20	40		0	0.493	0.987	
Carrot culls	VR	0.09	STMR/STMR-P	12	0.75	10	15	5		0.075	0.113	0.038	
Barley grain	GC	0.58	STMR/STMR-P	88	0.66	45	40	40	40	0.296591	0.264	0.264	0.2636
Barley straw	AF/AS	0.395	STMR/STMR-P	100	0.40	10	15	5		0.0395	0.059	0.02	
Almond hulls	AM/AV	0.05	STMR/STMR-P	90	0.06	10				0.005556			
Total						85	100	100	40	0.866646	1.379	1.758	0.2636

POULTRY BROILER													MAX
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Carrot culls	VR	0.4	HR	12	3.33		10				0.333		
Barley grain	GC	0.58	STMR	88	0.66	75	70	15	10	0.494318	0.461	0.099	0.066
Bean seed	VD	0.03	STMR	88	0.03		20	70			0.007	0.024	

POULTRY BROILER													MAX
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Total						75	100	85	10	0.494318	0.802	0.123	0.066

POULTRY BROILER													MEAN
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Carrot culls	VR	0.09	STMR/STMR-P	12	0.75		10				0.075		
Barley grain	GC	0.58	STMR/STMR-P	88	0.66	75	70	15	10	0.494318	0.461	0.099	0.0659
Bean seed	VD	0.03	STMR/STMR-P	88	0.03		20	70			0.007	0.024	
Total						75	100	85	10	0.494318	0.543	0.123	0.0659

POULTRY LAYER													MAX
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Kale leaves	AM/AV	8	HR	15	53.33		5				2.667		
Barley straw	AF/AS	5.8	HR	100	5.80		5				0.29		
Wheat straw	AF/AS	5.8	HR	100	5.80		5				0.29		
Carrot culls	VR	0.4	HR	12	3.33		10				0.333		
Barley grain	GC	0.58	STMR	88	0.66	75	75	15		0.494318	0.494	0.099	
Bean seed	VD	0.03	STMR	88	0.03			70				0.024	
Total						75	100	85		0.494318	4.074	0.123	

POULTRY LAYER													MEAN
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Kale leaves	AM/AV	0.37	STMR/STMR-P	15	2.47		5				0.123		
Carrot culls	VR	0.09	STMR/STMR-P	12	0.75		10				0.075		
Barley grain	GC	0.58	STMR/STMR-P	88	0.66	75	85	15		0.494318	0.56	0.099	
Bean seed	VD	0.03	STMR/STMR-P	88	0.03			70				0.024	
Total						75	100	85		0.494318	0.759	0.123	

ETHEPHON (106)

BEEF CATTLE													MAX
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Cotton gin byproducts	AM/AV	66.8	HR	90	74.22	5				3.711			
Wheat forage	AF/AS	18	HR	25	72.00		20				14.4		
Barley forage	AF/AS	13	HR	30	43.33		10				4.333		
Barley straw	AF/AS	3.6	HR	89	4.04	10		100		0.404		4.045	
Barley bran fractions	CM/CF	0.21	STMR	90	0.23				10				0.023
Apple pomace, wet	AB	0.075	STMR	40	0.19		20				0.038		
Barley grain	GC	0.13	STMR	88	0.15	50	50		70	0.074	0.074		0.103
Cotton meal	SM	0.016	STMR	89	0.02	5				0.001			
Total						70	100	100	80	4.190	18.84	4.045	0.127

BEEF CATTLE													MEAN
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Rye forage	AF/AS	9.1	STMR/STMR-P	30	30.33		20				6.067		
Cotton gin byproducts	AM/AV	27	STMR/STMR-P	90	30.00	5				1.500			
Barley forage	AF/AS	8.9	STMR/STMR-P	30	29.67		10				2.967		
Tomato pomace,wet	AB	0.27	STMR/STMR-P	20	1.35			10				0.135	
Grape pomace, wet	AB	0.14	STMR/STMR-P	15	0.93			10				0.093	
Rye straw	AF/AS	0.64	STMR/STMR-P	88	0.73	10		20		0.073		0.145	
Wheat straw	AF/AS	0.64	STMR/STMR-P	88	0.73			60				0.436	
Barley bran fractions	CM/CF	0.21	STMR/STMR-P	90	0.23				10				0.023
Apple pomace, wet	AB	0.075	STMR/STMR-P	40	0.19		20				0.038		
Barley grain	GC	0.13	STMR/STMR-P	88	0.15	50	50		70	0.074	0.074		0.103
Cotton meal	SM	0.016	STMR/STMR-P	89	0.02	5				0.001			
Total						70	100	100	80	1.647	9.145	0.81	0.127

DAIRY CATTLE													MAX
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Wheat forage	AF/AS	18	HR	25	72.00	20	20			14.400	14.4		
Barley forage	AF/AS	13	HR	30	43.33		10				4.333		
Triticale straw	AF/AS	1.7	HR	90	1.89			70				1.322	
Tomato pomace,wet	AB	0.27	STMR	20	1.35			10				0.135	
Grape pomace, wet	AB	0.14	STMR	15	0.93			10				0.093	
Cotton undelinted seed	SO	0.55	STMR	88	0.63	10	10	10		0.063	0.063	0.063	
Apple pomace, wet	AB	0.075	STMR	40	0.19	10	10			0.019	0.019		
Barley grain	GC	0.13	STMR	88	0.15	45	40		40	0.066	0.059		0.059
Cotton meal	SM	0.016	STMR	89	0.02	10	5			0.002	9E-04		
Total						95	95	100	40	14.54953	18.87	1.613	0.059

DAIRY CATTLE													MEAN
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Rye forage	AF/AS	9.1	STMR/STMR-P	30	30.33	20	20	0		6.067	6.067	0	
Barley forage	AF/AS	8.9	STMR/STMR-P	30	29.67	0	10			0.000	2.967		
Tomato pomace,wet	AB	0.27	STMR/STMR-P	20	1.35	0		10		0.000		0.135	
Grape pomace, wet	AB	0.14	STMR/STMR-P	15	0.93	0		10		0.000		0.093	
Triticale straw	AF/AS	0.64	STMR/STMR-P	90	0.71	0		70		0.000		0.498	
Cotton undelinted seed	SO	0.55	STMR/STMR-P	88	0.63	10	10	10		0.063	0.063	0.063	
Apple pomace, wet	AB	0.075	STMR/STMR-P	40	0.19	10	10			0.019	0.019		
Barley grain	GC	0.13	STMR/STMR-P	88	0.15	45	40		40	0.066	0.059		0.059
Cotton meal	SM	0.016	STMR/STMR-P	89	0.02	10	5			0.002	9E-04		
Total						95	95	100	40	6.216	9.175	0.789	0.059

POULTRY BROILER													MAX
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Barley grain	GC	0.13	STMR	88	0.15	75	70	15	10	0.111	0.103	0.022	0.015
Cotton meal	SM	0.016	STMR	89	0.02	20	5	10		0.004	9E-04	0.002	
Total						95	75	25	10	0.114	0.104	0.024	0.015

POULTRY BROILER													MEAN
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Barley grain	GC	0.13	STMR/STMR-P	88	0.15	75	70	15	10	0.111	0.103	0.022	0.015
Cotton meal	SM	0.016	STMR/STMR-P	89	0.02	20	5	10		0.004	9E-04	0.002	
Total						95	75	25	10	0.114	0.104	0.024	0.015

POULTRY LAYER													MAX
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Wheat forage	AF/AS	18	HR	25	72.00		10				7.2		
Barley bran fractions	CM/CF	0.21	STMR	90	0.23				5				0.012
Barley grain	GC	0.13	STMR	88	0.15	75	90	15		0.111	0.133	0.022	
Cotton meal	SM	0.016	STMR	89	0.02	20		10		0.004		0.002	
Total						95	100	25	5	0.114	7.333	0.024	0.012

POULTRY LAYER													MEAN
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Rye forage	AF/AS	9.1	STMR/STMR-P	30	30.33		10				3.033		
Barley bran fractions	CM/CF	0.21	STMR/STMR-P	90	0.23				5				0.012
Barley grain	GC	0.13	STMR/STMR-P	88	0.15	75	90	15		0.111	0.133	0.022	
Cotton meal	SM	0.016	STMR/STMR-P	89	0.02	20		10		0.004		0.002	
Total						95	100	25	5	0.114	3.166	0.024	0.012

FLONICAMID (282)

BEEF CATTLE													MAX
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Cabbage heads, leaves	AM/AV	1.262	HR	15	8.41		20				1.683		
Cotton gin byproducts	AM/AV	3.72	HR	90	4.13	5				0.206667			
Wheat forage	AF/AS	0.99	HR	25	3.96		20	100			0.792	3.96	
Apple pomace, wet	AB	0.37	STMR	40	0.93		20				0.185		
Rye straw	AF/AS	0.23	HR	88	0.26	10				0.026136			
Cotton meal	SM	0.14	STMR	89	0.16	5	5			0.007865	0.008		
Cotton hulls	SM	0.13	STMR	90	0.14	5				0.007222			
Potato culls	VR	0.015	HR	20	0.08	30	30			0.0225	0.023		
Rye grain	GC	0.01	STMR	88	0.01	20	5		35	0.002273	0.0006		0.004
Rape meal	SM	0.004	STMR	88	0.00				15				7E-04
Total						75	100	100	50	0.272663	2.691	3.96	0.005

BEEF CATTLE													MEAN
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Wheat forage	AF/AS	0.86	STMR/STMR-P	25	3.44		20	100			0.688	3.44	
Cotton gin byproducts	AM/AV	1.7	STMR/STMR-P	90	1.89	5				0.094444			
Apple pomace, wet	AB	0.37	STMR/STMR-P	40	0.93		20				0.185		
Cabbage heads, leaves	AM/AV	0.134	STMR/STMR-P	15	0.89		20				0.179		
Cotton meal	SM	0.14	STMR/STMR-P	89	0.16	5	5			0.007865	0.008		
Cotton hulls	SM	0.13	STMR/STMR-P	90	0.14	5				0.007222			
Rye straw	AF/AS	0.045	STMR/STMR-P	88	0.05	10				0.005114			
Potato culls	VR	0.01	STMR/STMR-P	20	0.05	30	30			0.015	0.015		
Rye grain	GC	0.01	STMR/STMR-P	88	0.01	20	5		35	0.002273	0.0006		0.004
Rape meal	SM	0.004	STMR/STMR-P	88	0.00				15				7E-04
Total						75	100	100	50	0.131918	1.075	3.44	0.005

DAIRY CATTLE													MAX
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Cabbage heads, leaves	AM/AV	1.262	HR	15	8.41		20				1.683		
Cotton meal	SM	0.14	STMR	89	0.16	10	5	10		0.01573	0.008	0.016	
Potato culls	VR	0.015	HR	20	0.08	10	30			0.0075	0.023		
Cotton undelinted seed	SO	0.065	STMR	88	0.07	10	10			0.007386	0.007		
Rye grain	GC	0.01	STMR	88	0.01	20	5		15	0.002273	0.0006		0.002
Rape meal	SM	0.004	STMR	88	0.00				25				0.001
Total						50	70	10	40	0.032889	1.721	0.016	0.003

DAIRY CATTLE													MEAN
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Wheat forage	AF/AS	0.86	STMR/STMR-P	25	3.44	20	20	60		0.688	0.688	2.064	
Cotton undelinted seed	SO	0.065	STMR/STMR-P	88	0.07	10	10	5		0.007386	0.007	0.004	
Potato culls	VR	0.01	STMR/STMR-P	20	0.05	10	30			0.005	0.015		

DAIRY CATTLE													MEAN
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Rye grain	GC	0.01	STMR/STMR-P	88	0.01	20	5		15	0.002273	0.0006		0.002
Rape meal	SM	0.004	STMR/STMR-P	88	0.00	0			25	0			0.001
Total						60	65	65	40	0.702659	0.711	2.068	0.003

POULTRY BROILER													MAX
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Cotton meal	SM	0.14	STMR	89	0.16	20	5	10		0.031461	0.008	0.016	
Total						20	5	10		0.031461	0.008	0.016	

POULTRY BROILER													MEAN
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Cotton meal	SM	0.14	STMR/STMR-P	89	0.16	20	5	10		0.031461	0.008	0.016	
Total						20	5	10		0.031461	0.008	0.016	

POULTRY LAYER													MAX
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Cabbage heads, leaves	AM/AV	1.262	HR	15	8.41		5				0.421		
Total							5				0.421		

POULTRY LAYER													MEAN
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Wheat forage	AF/AS	0.86	STMR/STMR-P	25	3.44		10				0.344		
Total							10				0.344		

FLUMIOXAZIN (284)

BEEF CATTLE													MAX
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Wheat asp gr fn	CM/CF	30.8	STMR	85.0	36.2	5.0				1.8			
Wheat straw	AF/AS	3.7	HR	88.0	4.2	10.0	20.0	80.0		0.4	0.8	3.4	
Alfalfa forage	AL	0.8	HR	35.0	2.3		70.0	20.0			1.6	0.5	
Alfalfa hay	AL	1.5	HR	89.0	1.7	15.0			10.0	0.3			0.2
Wheat milled bypdts	CM/CF	0.3	STMR	88.0	0.4	35.0	10.0		55.0	0.1	0.0		0.2
Cotton gin byproducts	AM/AV	0.3	HR	90.0	0.3	5.0				0.0			
Wheat grain	GC	0.1	STMR	89.0	0.1	20.0			25.0	0.0			0.0
Sunflower meal	SM	0.0	STMR	92.0	0.0	5.0				0.0			
Total						95.0	100.0	100.0	90.0	2.6	2.5	3.8	0.4

BEEF CATTLE													MEAN
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Wheat asp gr fn	CM/CF	30.8	STMR/-P	85.0	36.2	5.0				1.8			
Wheat straw	AF/AS	1.7	STMR/-P	88.0	1.9	10.0	20.0	80.0		0.2	0.4	1.5	
Alfalfa hay	AL	0.4	STMR/-P	89.0	0.4	15.0		20.0	10.0	0.1		0.1	0.0
Alfalfa forage	AL	0.1	STMR/-P	35.0	0.4		70.0				0.3		
Wheat milled bypdts	CM/CF	0.3	STMR/-P	88.0	0.4	35.0	10.0		55.0	0.1	0.0		0.2
Wheat grain	GC	0.1	STMR/-P	89.0	0.1	20.0			25.0	0.0			0.0
Cotton gin byproducts	AM/AV	0.1	STMR/-P	90.0	0.1	5.0				0.0			
Sunflower meal	SM	0.0	STMR/-P	92.0	0.0	5.0				0.0			
Total						95.0	100.0	100.0	90.0	2.2	0.7	1.6	0.3

DAIRY CATTLE													MAX
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Wheat straw	AF/AS	3.7	HR	88.0	4.2	10.0	20.0	20.0		0.4	0.8	0.8	
Alfalfa forage	AL	0.8	HR	35.0	2.3	20.0	40.0	60.0		0.5	0.9	1.4	
Alfalfa hay	AL	1.5	HR	89.0	1.7								
Wheat milled bypdts	CM/CF	0.3	STMR	88.0	0.4	30.0	30.0	20.0	45.0	0.1	0.1	0.1	0.2
Wheat grain	GC	0.1	STMR	89.0	0.1	20.0	10.0		10.0	0.0	0.0		0.0
Almond hulls	AM/AV	0.0	STMR	90.0	0.0	10.0				0.0			
Sunflower meal	SM	0.0	STMR	92.0	0.0	10.0				0.0			
Total						100.0	100.0	100.0	80.0	1.0	1.9	2.3	0.6

DAIRY CATTLE													MEAN
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Wheat straw	AF/AS	1.7	STMR/-P	88.0	1.9	10.0	20.0	20.0		0.2	0.4	0.4	
Alfalfa hay	AL	0.4	STMR/-P	89.0	0.4	20.0	40.0	60.0	25.0	0.1	0.2	0.3	0.1
Wheat milled bypdts	CM/CF	0.3	STMR/-P	88.0	0.4	30.0	30.0	20.0	45.0	0.1	0.1	0.1	0.2
Wheat grain	GC	0.1	STMR/-P	89.0	0.1	20.0	10.0		10.0	0.0	0.0		0.0
Almond hulls	AM/AV	0.0	STMR/-P	90.0	0.0	10.0				0.0			
Sunflower meal	SM	0.0	STMR/-P	92.0	0.0	10.0				0.0			
Total						100.0	100.0	100.0	80.0	0.4	0.7	0.7	0.3

POULTRY BROILER													MAX
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Alfalfa forage	AL	0.8	HR	35.0	2.3								
Wheat milled bypdts	CM/CF	0.3	STMR	88.0	0.4	50.0	20.0	20.0	5.0	0.2	0.1	0.1	0.0
Wheat grain	GC	0.1	STMR	89.0	0.1	50.0	70.0	70.0	10.0	0.1	0.1	0.1	0.0
Bean seed	VD	0.0	STMR	88.0	0.0		10.0	10.0			0.0	0.0	
Total						100.0	100.0	100.0	20.0	0.2	0.2	0.2	0.1

POULTRY BROILER													MEAN
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US- CAN	EU	AU	JP	US-CAN	EU	AU	JP
Alfalfa forage	AL	0.1	STMR/-P	35.0	0.4				5.0				0.0
Wheat milled bypdts	CM/CF	0.3	STMR/-P	88.0	0.4	50.0	20.0	20.0	5.0	0.2	0.1	0.1	0.0
Wheat grain	GC	0.1	STMR/-P	89.0	0.1	50.0	70.0	70.0	10.0	0.1	0.1	0.1	0.0
Bean seed	VD	0.0	STMR/-P	88.0	0.0		10.0	10.0			0.0	0.0	
Total						100.0	100.0	100.0	20.0	0.2	0.2	0.2	0.0

POULTRY LAYER													MAX
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US- CAN	EU	AU	JP	US-CAN	EU	AU	JP
Wheat straw	AF/AS	3.7	HR	88.0	4.2		10.0				0.4		
Wheat milled bypdts	CM/CF	0.3	STMR	88.0	0.4	50.0	20.0	20.0	30.0	0.2	0.1	0.1	0.1
Wheat grain	GC	0.1	STMR	89.0	0.1	50.0	70.0	55.0		0.1	0.1	0.1	
Bean seed	VD	0.0	STMR	88.0	0.0								
Total						100.0	100.0	100.0	30.0	0.2	0.6	0.1	0.1

POULTRY LAYER													MEAN
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US- CAN	EU	AU	JP	US-CAN	EU	AU	JP
Wheat straw	AF/AS	1.7	STMR/-P	88.0	1.9		10.0				0.2		
Wheat milled bypdts	CM/CF	0.3	STMR/-P	88.0	0.4	50.0	20.0	20.0	30.0	0.2	0.1	0.1	0.1
Wheat grain	GC	0.1	STMR/-P	89.0	0.1	50.0	70.0	55.0		0.1	0.1	0.1	
Bean seed	VD	0.0	STMR/-P	88.0	0.0			25.0				0.0	
Total						100.0	100.0	100.0	30.0	0.2	0.3	0.1	0.1

FLUOPYRAM (243)

BEEF CATTLE													MAX
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Pea vines	AL	9.6	HR	25	38.40		20	60			7.68	23.04	
Beet, sugar tops	AM/AV	8.3	HR	23	36.09		20				7.217391		
Pea hay	AL	19	HR	88	21.59		5	40			1.079545	8.636364	
Carrot culls	VR	0.19	HR	12	1.58		15				0.2375		
Apple pomace, wet	AB	0.31	STMR	40	0.78		20				0.155		
Potato process waste	AB	0.04	STMR	12	0.33	30	20			0.1	0.066667		
Canola meal	SM	0.23	STMR	88	0.26	5				0.013068			
Rape meal	SM	0.23	STMR	88	0.26				15				0.039205
Potato culls	VR	0.02	HR	20	0.10	30				0.03			
Beet, sugar molasses	DM	0.01	STMR	75	0.01	10				0.001333			
Total						75	100	100	15	0.144402	16.4361	31.67636	0.039205

BEEF CATTLE													MEAN
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Grape pomace, wet	AB	1.86	STMR/-P	15	12.40			20				2.48	
Pea vines	AL	1.8	STMR/-P	25	7.20		20	60			1.44	4.32	
Almond hulls	AM/AV	3.6	STMR/-P	90	4.00			10				0.4	
Pea hay	AL	3.5	STMR/-P	88	3.98		5	10			0.19886	0.39773	
Beet, sugar tops	AM/AV	0.46	STMR/-P	23	2.00		20				0.4		
Apple pomace, wet	AB	0.31	STMR/-P	40	0.78		20				0.155		
Carrot culls	VR	0.09	STMR/-P	12	0.75		15				0.1125		
Potato process waste	AB	0.04	STMR/-P	12	0.33	30	20			0.1	0.06667		
Canola meal	SM	0.23	STMR/-P	88	0.26	5				0.013068			
Rape meal	SM	0.23	STMR/-P	88	0.26				15				0.0392
Potato culls	VR	0.01	STMR/-P	20	0.05	30				0.015			
Beet, sugar molasses	DM	0.01	STMR/-P	75	0.01	10				0.001333			
Total						75	100	100	15	0.129402	2.37303	7.59773	0.0392

DAIRY CATTLE													MAX
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Pea vines	AL	9.6	HR	25	38.40	10	20	40		3.84	7.68	15.36	
Beet, sugar tops	AM/AV	8.3	HR	23	36.09		30				10.82609		
Pea hay	AL	19	HR	88	21.59		10	30			2.159091	6.477273	
Grape pomace,	AB	1.86	STMR	15	12.40			20				2.48	

DAIRY CATTLE													MAX
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
wet													
Almond hulls	AM/AV	3.6	STMR	90	4.00	10		10		0.4		0.4	
Carrot culls	VR	0.19	HR	12	1.58	10	15			0.158333	0.2375		
Apple pomace, wet	AB	0.31	STMR	40	0.78	10	10			0.0775	0.0775		
Potato process waste	AB	0.04	STMR	12	0.33		15				0.05		
Canola meal	SM	0.23	STMR	88	0.26	10				0.026136			
Rape meal	SM	0.23	STMR	88	0.26				25				0.065341
Beet, sugar molasses	DM	0.01	STMR	75	0.01	10				0.001333			
Total						60	100	100	25	4.503303	21.03018	24.71727	0.065341

DAIRY CATTLE													MEAN
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US- CAN	EU	AU	JP	US-CAN	EU	AU	JP
Grape pomace, wet	AB	1.86	STMR/-P	15	12.40		0	20			0	2.48	
Pea vines	AL	1.8	STMR/-P	25	7.20	10	20	40		0.72	1.44	2.88	
Almond hulls	AM/AV	3.6	STMR/-P	90	4.00	10		10		0.4		0.4	
Pea hay	AL	3.5	STMR/-P	88	3.98	0	10	30		0	0.39773	1.19318	
Beet, sugar tops	AM/AV	0.46	STMR/-P	23	2.00	0	30			0	0.6		
Apple pomace, wet	AB	0.31	STMR/-P	40	0.78	10	10			0.0775	0.0775		
Carrot culls	VR	0.09	STMR/-P	12	0.75	10	15			0.075	0.1125		
Potato process waste	AB	0.04	STMR/-P	12	0.33	0	15			0	0.05		
Canola meal	SM	0.23	STMR/-P	88	0.26	10				0.026136			
Rape meal	SM	0.23	STMR/-P	88	0.26	0			25	0			0.06534
Beet, sugar molasses	DM	0.01	STMR/-P	75	0.01	10				0.001333			
Total						60	100	100	25	1.29997	2.67773	6.95318	0.06534

POULTRY BROILER													MAX
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US- CAN	EU	AU	JP	US-CAN	EU	AU	JP
Carrot culls	VR	0.19	HR	12	1.58		10				0.158333		
Canola meal	SM	0.23	STMR	88	0.26	15	18	5		0.039205	0.047045	0.013068	
Bean seed	VD	0.01	STMR	88	0.01		20	70			0.002273	0.007955	
Lupin seed	VD	0.01	STMR	88	0.01	10				0.001136			
Peanut meal	SM	0.002	STMR	85	0.00	10				0.000235			
Total						35	48	75		0.040576	0.207652	0.021023	

POULTRY BROILER													MEAN
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Carrot culls	VR	0.09	STMR/-P	12	0.75		10				0.075		
Canola meal	SM	0.23	STMR/-P	88	0.26	15	18	5		0.03920	0.04705	0.01307	

POULTRY BROILER													MEAN
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
										5			
Bean seed	VD	0.01	STMR/-P	88	0.01		20	70			0.00227	0.00795	
Lupin seed	VD	0.01	STMR/-P	88	0.01	10				0.001136			
Peanut meal	SM	0.002	STMR/-P	85	0.00	10				0.000235			
Total						35	48	75		0.040576	0.12432	0.02102	

POULTRY LAYER													MAX
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US- CAN	EU	AU	JP	US-CAN	EU	AU	JP
Pea vines	AL	9.6	HR	25	38.40		10				3.84		
Beet, sugar tops	AM/AV	8.3	HR	23	36.09		5				1.804348		
Carrot culls	VR	0.19	HR	12	1.58		10				0.158333		
Canola meal	SM	0.23	STMR	88	0.26	15	10	5		0.039205	0.026136	0.013068	
Bean seed	VD	0.01	STMR	88	0.01		20	70			0.002273	0.007955	
Lupin seed	VD	0.01	STMR	88	0.01	10				0.001136			
Peanut meal	SM	0.002	STMR	85	0.00	10				0.000235			
Total						35	55	75		0.040576	5.83109	0.021023	

POULTRY LAYER													MEAN
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Pea vines	AL	1.8	STMR/-P	25	7.20		10				0.72		
Beet, sugar tops	AM/AV	0.46	STMR/-P	23	2.00		5				0.1		
Carrot culls	VR	0.09	STMR/-P	12	0.75		10				0.075		
Canola meal	SM	0.23	STMR/-P	88	0.26	15	10	5		0.039205	0.02614	0.01307	
Bean seed	VD	0.01	STMR/-P	88	0.01		20	70			0.00227	0.00795	
Lupin seed	VD	0.01	STMR/-P	88	0.01	10				0.001136			
Peanut meal	SM	0.002	STMR/-P	85	0.00	10				0.000235			
Total						35	55	75		0.040576	0.92341	0.02102	

FLUTRIAFOL (248)

BEEF CATTLE													MAX
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Peanut hay	AL	8.9	HR	85	10.47			60				6.282	
Corn, field stover	AF/AS	10.45	HR	100	10.45	15	25	40		1.5675	2.613	4.18	
Sorghum, grain asp gr fn	CM/CF	2.16	STMR	85	2.54	5				0.127059			
Beet, sugar tops	AM/AV	1.477	HR	100	1.48		20				0.295		
Apple pomace, wet	AB	0.152	STMR	40	0.38		20				0.076		
Sorghum, grain grain	GC	0.27	STMR	86	0.31	40	35		35	0.125581	0.11		0.11
Soybean asp gr fn	SM	0.094	STMR	85	0.11	5				0.005529			
Soybean meal	SM	0.072	STMR	92	0.08				65				0.051
Soybean seed	VD	0.055	STMR	89	0.06	5				0.00309			
Soybean hulls	SM	0.053	STMR	90	0.06	10				0.005889			
Wheat milled bypdts	CM/CF	0.032	STMR	88	0.04	20				0.007273			
Total						100	100	100	100	1.841921	3.094	10.46	0.161

BEEF CATTLE													MEAN
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Corn, field stover	AF/AS	4.93	STMR/STMR-P	100	4.93	15	25	40		0.7395	1.233	1.972	
Grape pomace, wet	AB	0.7245	STMR/STMR-P	15	4.83			20				0.966	
Peanut hay	AL	2.6	STMR/STMR-P	85	3.06			40				1.224	
Sorghum, grain asp gr fn	CM/CF	2.16	STMR/STMR-P	85	2.54	5				0.127059			
Beet, sugar tops	AM/AV	0.424	STMR/STMR-P	100	0.42		20				0.085		
Apple pomace, wet	AB	0.152	STMR/STMR-P	40	0.38		20				0.076		
Sorghum, grain grain	GC	0.27	STMR/STMR-P	86	0.31	40	35		35	0.125581	0.11		0.11
Soybean asp gr fn	SM	0.094	STMR/STMR-P	85	0.11	5				0.005529			
Soybean meal	SM	0.072	STMR/STMR-P	92	0.08				65				0.051
Soybean seed	VD	0.055	STMR/STMR-P	89	0.06	5				0.00309			
Soybean hulls	SM	0.053	STMR/STMR-P	90	0.06	10				0.005889			
Wheat milled bypdts	CM/CF	0.032	STMR/STMR-P	88	0.04	20				0.01			
Total						100	100	100	100	1.013921	1.503	4.162	0.161

DAIRY CATTLE													MAX
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Peanut hay	AL	8.9	HR	85	10.47	15		60		1.570588		6.282	
Corn, field stover	AF/AS	10.45	HR	100	10.45	15	20	40		1.5675	2.09	4.18	
Wheat hay	AF/AS	4.1	HR	88	4.66	5				0.232955			
Beet, sugar tops	AM/AV	1.477	HR	100	1.48		30				0.443		
Apple pomace, wet	AB	0.152	STMR	40	0.38	10	10			0.038	0.038		
Sorghum, grain grain	GC	0.27	STMR	86	0.31	45	40		30	0.141279	0.126		0.094
Cotton undelinted seed	SO	0.085	STMR	88	0.10	10				0.009659			
Soybean meal	SM	0.072	STMR	92	0.08				60				0.047
Soybean seed	VD	0.055	STMR	89	0.06				10				0.006
Total						100	100	100	100	3.6	2.7	10.5	0.1

DAIRY CATTLE													MEAN
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Corn, field stover	AF/AS	4.93	STMR/STMR-P	100	4.93	15	20	40		0.7395	0.986	1.972	
Grape pomace, wet	AB	0.7245	STMR/STMR-P	15	4.83	0		20		0		0.966	
Peanut hay	AL	2.6	STMR/STMR-P	85	3.06	15		40		0.458824		1.224	
Wheat hay	AF/AS	1.45	STMR/STMR-P	88	1.65	5				0.082386			
Beet, sugar tops	AM/AV	0.424	STMR/STMR-P	100	0.42	0	30			0	0.127		
Apple pomace, wet	AB	0.152	STMR/STMR-P	40	0.38	10	10			0.038	0.038		
Sorghum, grain grain	GC	0.27	STMR/STMR-P	86	0.31	45	40		30	0.141279	0.126		0.094
Cotton undelinted seed	SO	0.085	STMR/STMR-P	88	0.10	10				0.009659			
Soybean meal	SM	0.072	STMR/STMR-P	92	0.08	0			60	0.0			0.0
Soybean seed	VD	0.055	STMR/STMR-P	89	0.06	0			10	0			0.006
Total						100	100	100	100	1.469648	1.277	4.162	0.147

POULTRY BROILER													MAX
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Sorghum, grain grain	GC	0.27	STMR	86	0.31	75	70	70	65	0.235465	0.22	0.22	0.204
Soybean meal	SM	0.072	STMR	92	0.08	25	30	25	35	0.019565	0.023	0.02	0.027
Soybean seed	VD	0.055	STMR	89	0.06			5				0.003	
Total						100	100	100	100	0.25503	0.243	0.242	0.231

POULTRY BROILER													MEAN
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Sorghum, grain grain	GC	0.27	STMR/STMR-P	86	0.31	75	70	70	65	0.235465	0.22	0.22	0.204
Soybean meal	SM	0.072	STMR/STMR-P	92	0.08	25	30	25	35	0.019565	0.023	0.02	0.027
Soybean seed	VD	0.055	STMR/STMR-P	89	0.06			5				0.003	
Total						100	100	100	100	0.25503	0.243	0.242	0.231

POULTRY LAYER													MAX
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Corn, field stover	AF/AS	10.45	HR	100	10.45		10				1.045		
Beet, sugar tops	AM/AV	1.477	HR	100	1.48		5				0.074		
Sorghum, grain grain	GC	0.27	STMR	86	0.31	75	70	70	55	0.235465	0.22	0.22	0.173
Soybean meal	SM	0.072	STMR	92	0.08	25	15	25	30	0.019565	0.012	0.02	0.023
Soybean seed	VD	0.055	STMR	89	0.06			5				0.003	
Wheat milled bypdts	CM/CF	0.032	STMR	88	0.04				15				0.005
Total						100	100	100	100	0.25503	1.35	0.242	0.202

POULTRY LAYER													MEAN
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Corn, field stover	AF/AS	4.93	STMR/STMR-P	100	4.93		10				0.493		
Beet, sugar tops	AM/AV	0.424	STMR/STMR-P	100	0.42		5				0.021		
Sorghum, grain grain	GC	0.27	STMR/STMR-P	86	0.31	75	70	70	55	0.235465	0.22	0.22	0.173
Soybean meal	SM	0.072	STMR/STMR-P	92	0.08	25	15	25	30	0.019565	0.012	0.02	0.023
Soybean seed	VD	0.055	STMR/STMR-P	89	0.06			5				0.003	
Wheat milled bypdts	CM/CF	0.032	STMR/STMR-P	88	0.04				15				0.005
Total						100	100	100	100	0.25503	0.746	0.242	0.202

FLUXAPYROXAD (256)

BEEF CATTLE													MAX
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Rice straw	AF/AS	48	HR	100	48.00		10	60	55		4.8	28.8	26.4
Barley forage	AF/AS	41	HR	100	41.00		20				8.2		
Oat forage	AF/AS	41	HR	100	41.00			40				16.4	
Pea vines	AL	23	HR	100	23.00		20				4.6		
Wheat asp gr fn	CM/CF	18.7	STMR	85	22.00	5				1.1			
Barley hay	AF/AS	18	HR	100	18.00	15				2.7			
Beet, sugar tops	AM/AV	17	HR	100	17.00		20				3.4		
Pea hay	AL	17	HR	100	17.00		5				0.85		
Carrot culls	VR	0.5	HR	12	4.17		15				0.625		
Rice bran/pollard	CM/CF	3.55	STMR	90	3.94	10			20	0.394444			0.789
Corn, field forage/silage	AF/AS	3.6	HR	100	3.60		10				0.36		
Soybean asp gr fn	SM	1.6	STMR	85	1.88	5				0.094118			
Rice grain	GC	0.94	STMR	88	1.07	20				0.213636			
Barley grain	GC	0.535	STMR	88	0.61	30			25	0.182386			0.152
Wheat milled bypdts	CM/CF	0.25	STMR	88	0.28	15				0.042614			
Total						100	100	100	100	4.727198	22.84	45.2	27.34

BEEF CATTLE													MEAN
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Wheat asp gr fn	CM/CF	18.7	STMR/STMR-P	85	22.00	5				1.1			
Grape pomace, wet	AB	16.5	STMR/STMR-P	100	16.50			20				3.3	
Pea vines	AL	12	STMR/STMR-P	100	12.00		20	60			2.4	7.2	
Pea hay	AL	11	STMR/STMR-P	100	11.00		5	20			0.55	2.2	
Beet, sugar tops	AM/AV	9.4	STMR/STMR-P	100	9.40		20				1.88		
Rice straw	AF/AS	4.2	STMR/STMR-P	100	4.20		10		55		0.42		2.31
Barley hay	AF/AS	4.1	STMR/STMR-P	100	4.10	15				0.615			
Barley straw	AF/AS	4.1	STMR/STMR-P	100	4.10		20				0.82		
Rice bran/pollard	CM/CF	3.55	STMR/STMR-P	90	3.94	10			20	0.394444			0.7889
Apple pomace, wet	AB	1.2	STMR/STMR-P	40	3.00		20				0.6		
Corn, field forage/silage	AF/AS	2.8	STMR/STMR-P	100	2.80		5				0.14		
Soybean asp gr fn	SM	1.6	STMR/STMR-P	85	1.88	5				0.094118			
Rice grain	GC	0.94	STMR/STMR-P	88	1.07	20				0.213636			
Barley grain	GC	0.535	STMR/STMR-P	88	0.61	30			25	0.182386			0.152
Wheat milled bypdts	CM/CF	0.25	STMR/STMR-P	88	0.28	15				0.042614			
Total						100	100	100	100	2.642198	6.81	12.7	3.2509

DAIRY CATTLE													MAX
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Rice straw	AF/AS	48	HR	100	48.00		5	20	25		2.4	9.6	12
Barley forage	AF/AS	41	HR	100	41.00		25	30			10.25	12.3	
Oat forage	AF/AS	41	HR	100	41.00	30		40		12.3		16.4	
Soybean forage	AL	26	HR	100	26.00	20		10		5.2		2.6	
Beet, sugar tops	AM/AV	17	HR	100	17.00		30				5.1		
Pea hay	AL	17	HR	100	17.00		30				5.1		
Sorghum, grain forage	AF/AS	7.1	HR	100	7.10	10			15	0.71			1.065
Carrot culls	VR	0.5	HR	12	4.17	10	10			0.416667	0.417		
Rice bran/pollard	CM/CF	3.55	STMR	90	3.94	15			10	0.591667			0.394
Corn, field forage/silage	AF/AS	3.6	HR	100	3.60	5			10	0.18			0.36
Apple pomace, wet	AB	1.2	STMR	40	3.00	10				0.3			
Barley grain	GC	0.535	STMR	88	0.61				40				0.243
Total						100	100	100	100	19.69833	23.27	40.9	14.06

DAIRY CATTLE													MEAN
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Grape pomace, wet	AB	16.5	STMR/STMR-P	100	16.50		0	20			0	3.3	
Pea vines	AL	12	STMR/STMR-P	100	12.00	10	20	40		1.2	2.4	4.8	
Pea hay	AL	11	STMR/STMR-P	100	11.00	0	10	30		0	1.1	3.3	
Beet, sugar tops	AM/AV	9.4	STMR/STMR-P	100	9.40	0	30			0	2.82		
Soybean forage	AL	7.7	STMR/STMR-P	100	7.70	10				0.77			
Rice hulls	CM/CF	4.04	STMR/STMR-P	90	4.49	0		10		0		0.449	
Rice straw	AF/AS	4.2	STMR/STMR-P	100	4.20	0	5		25	0	0.21		1.05
Barley hay	AF/AS	4.1	STMR/STMR-P	100	4.10	20				0.82			
Barley straw	AF/AS	4.1	STMR/STMR-P	100	4.10	0	25			0	1.025		
Rice bran/pollard	CM/CF	3.55	STMR/STMR-P	90	3.94	15	10		10	0.591667	0.394		0.3944
Oat forage	AF/AS	3.8	STMR/STMR-P	100	3.80	10				0.38			
Sorghum, grain forage	AF/AS	3.1	STMR/STMR-P	100	3.10	10			15	0.31			0.465
Apple pomace, wet	AB	1.2	STMR/STMR-P	40	3.00	10				0.3			
Corn, field forage/silage	AF/AS	2.8	STMR/STMR-P	100	2.80	5			10	0.14			0.28
Almond hulls	AM/AV	1.1	STMR/STMR-P	90	1.22	10				0.122222			
Barley grain	GC	0.535	STMR/STMR-P	88	0.61	0			40	0			0.2432
Total						100	100	100	100	4.633889	7.949	11.85	2.4326

POULTRY BROILER													MAX
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Carrot culls	VR	0.5	HR	12	4.17		10				0.417		
Rice bran/pollard	CM/CF	3.55	STMR	90	3.94	10	10	20	5	0.394444	0.394	0.789	0.197
Rice grain	GC	0.94	STMR	88	1.07	20		50		0.213636		0.534	
Barley grain	GC	0.535	STMR	88	0.61	55	70			0.334375	0.426		
Wheat milled bypdts	CM/CF	0.25	STMR	88	0.28	15	10			0.042614	0.028		
Sorghum, grain grain	GC	0.2	STMR	86	0.23			20	65			0.047	0.151
Canola meal	SM	0.041	STMR	88	0.05			5				0.002	
Bean seed	VD	0.04	STMR	88	0.05			5				0.002	
Corn, field grain	GC	0.01	STMR	88	0.01				5				6E-04
Soybean meal	SM	0.005	STMR	92	0.01				25				0.001
Total						100	100	100	100	0.985069	1.265	1.374	0.35

POULTRY BROILER													MEAN
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Rice bran/pollard	CM/CF	3.55	STMR/STMR-P	90	3.94	10	10	20	5	0.394444	0.394	0.789	0.1972
Rice grain	GC	0.94	STMR/STMR-P	88	1.07	20		50		0.213636		0.534	
Barley grain	GC	0.535	STMR/STMR-P	88	0.61	55	70			0.334375	0.426		
Carrot culls	VR	0.06	STMR/STMR-P	12	0.50		10				0.05		
Wheat milled bypdts	CM/CF	0.25	STMR/STMR-P	88	0.28	15	10			0.042614	0.028		
Sorghum, grain grain	GC	0.2	STMR/STMR-P	86	0.23			20	65			0.047	0.1512
Canola meal	SM	0.041	STMR/STMR-P	88	0.05			5				0.002	
Bean seed	VD	0.04	STMR/STMR-P	88	0.05			5				0.002	
Corn, field grain	GC	0.01	STMR/STMR-P	88	0.01				5				0.0006
Soybean meal	SM	0.005	STMR/STMR-P	92	0.01				25				0.0014
Total						100	100	100	100	0.985069	0.898	1.374	0.3503

POULTRY LAYER													MAX
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Oat forage	AF/AS	41	HR	100	41.00		10				4.1		
Soybean forage	AL	26	HR	100	26.00		10				2.6		
Beet, sugar tops	AM/AV	17	HR	100	17.00		5				0.85		
Carrot culls	VR	0.5	HR	12	4.17		10				0.417		
Rice bran/pollard	CM/CF	3.55	STMR	90	3.94	10	5	20	20	0.394444	0.197	0.789	0.789
Rice grain	GC	0.94	STMR	88	1.07	20		50		0.213636		0.534	
Barley grain	GC	0.535	STMR	88	0.61	55	60			0.334375	0.365		
Wheat milled bypdts	CM/CF	0.25	STMR	88	0.28	15			10	0.042614			0.028
Sorghum, grain grain	GC	0.2	STMR	86	0.23			20	55			0.047	0.128
Canola meal	SM	0.041	STMR	88	0.05			5				0.002	
Bean seed	VD	0.04	STMR	88	0.05			5				0.002	
Corn, field grain	GC	0.01	STMR	88	0.01				15				0.002
Total						100	100	100	100	0.985069	8.529	1.374	0.947

POULTRY LAYER													MEAN
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Pea vines	AL	12	STMR/STMR-P	100	12.00		10				1.2		
Beet, sugar tops	AM/AV	9.4	STMR/STMR-P	100	9.40		5				0.47		
Barley straw	AF/AS	4.1	STMR/STMR-P	100	4.10		5				0.205		
Rice bran/pollard	CM/CF	3.55	STMR/STMR-P	90	3.94	10	5	20	20	0.394444	0.197	0.789	0.7889
Oat forage	AF/AS	3.8	STMR/STMR-P	100	3.80		5				0.19		
Rice grain	GC	0.94	STMR/STMR-P	88	1.07	20		50		0.213636		0.534	
Barley grain	GC	0.535	STMR/STMR-P	88	0.61	55	70			0.334375	0.426		
Wheat milled bypdts	CM/CF	0.25	STMR/STMR-P	88	0.28	15			10	0.042614			0.0284
Sorghum, grain grain	GC	0.2	STMR/STMR-P	86	0.23			20	55			0.047	0.1279
Canola meal	SM	0.041	STMR/STMR-P	88	0.05			5				0.002	
Bean seed	VD	0.04	STMR/STMR-P	88	0.05			5				0.002	
Corn, field grain	GC	0.01	STMR/STMR-P	88	0.01				15				0.0017
Total						100	100	100	100	0.985069	2.688	1.374	0.9469

IMAZAPYR (267)

BEEF CATTLE													MAX
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Grass hay	AF/AS	2.5	HR	88	2.84	15	50	100	40	0.426136	1.42	2.841	1.136
Soybean meal	SM	0.9	STMR	92	0.98	5	20		60	0.04875	0.195		0.585
Soybean seed	VD	0.69	STMR	89	0.78	5	10			0.038764	0.078		
Soybean hulls	SM	0.46	STMR	90	0.51	10				0.051333			
Corn, field hominy meal	CM/CF	0.06	STMR	88	0.07	50				0.034091			
Corn, field grain	GC	0.05	STMR	88	0.06	15	20			0.008523	0.011		
Total						100	100	100	100	0.607597	1.704	2.841	1.721

BEEF CATTLE													MEAN
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Grass hay	AF/AS	1.3	STMR/STMR-P	88	1.48	15	50	100	40	0.221591	0.739	1.477	0.591
Soybean meal	SM	0.9	STMR/STMR-P	92	0.98	5	20		60	0.04875	0.195		0.585
Soybean seed	VD	0.69	STMR/STMR-P	89	0.78	5	10			0.038764	0.078		
Soybean hulls	SM	0.46	STMR/STMR-P	90	0.51	10				0.051333			
Corn, field hominy meal	CM/CF	0.06	STMR/STMR-P	88	0.07	50				0.034091			
Corn, field grain	GC	0.05	STMR/STMR-P	88	0.06	15	20			0.008523	0.011		
Total						100	100	100	100	0.403052	1.023	1.477	1.176

DAIRY CATTLE													MAX
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Grass forage (fresh)	AF/AS	9.7	HR	25	38.80	45				17.46			
Grass hay	AF/AS	2.5	HR	88	2.84		60	60	70		1.705	1.705	1.989
Soybean meal	SM	0.9	STMR	92	0.98	10	25	15	30	0.0975	0.244	0.146	0.293
Soybean seed	VD	0.69	STMR	89	0.78	10	10	20		0.077528	0.078	0.155	
Corn, field hominy meal	CM/CF	0.06	STMR	88	0.07	25		5		0.017045		0.003	
Corn, field grain	GC	0.05	STMR	88	0.06	10	5			0.005682	0.003		
Total						100	100	100	100	17.65776	2.029	2.009	2.281

DAIRY CATTLE													MEAN
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Grass forage (fresh)	AF/AS	5.2	STMR/STMR-P	25	20.80	45				9.36			
Grass hay	AF/AS	1.3	STMR/STMR-P	88	1.48		60	60	70		0.886	0.886	1.034
Soybean meal	SM	0.9	STMR/STMR-P	92	0.98	10	25	15	30	0.0975	0.244	0.146	0.293
Soybean seed	VD	0.69	STMR/STMR-P	89	0.78	10	10	20		0.077528	0.078	0.155	
Corn, field hominy meal	CM/CF	0.06	STMR/STMR-P	88	0.07	25		5		0.017045		0.003	

DAIRY CATTLE													MEAN
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Corn, field grain	GC	0.05	STMR/STMR-P	88	0.06	10	5			0.005682	0.003		
Total						100	100	100	100	9.557755	1.21	1.191	1.327

POULTRY BROILER													MAX
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Soybean meal	SM	0.9	STMR	92	0.98	25	40	25	35	0.24375	0.39	0.244	0.341
Soybean seed	VD	0.69	STMR	89	0.78	20	20	15		0.155056	0.155	0.116	
Corn, field hominy meal	CM/CF	0.06	STMR	88	0.07	20		20		0.013636		0.014	
Corn, field grain	GC	0.05	STMR	88	0.06	35	40		65	0.019886	0.023		0.037
Total						100	100	60	100	0.432329	0.568	0.374	0.378

POULTRY BROILER													MEAN
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Soybean meal	SM	0.9	STMR/STMR-P	92	0.98	25	40	25	35	0.24375	0.39	0.244	0.341
Soybean seed	VD	0.69	STMR/STMR-P	89	0.78	20	20	15		0.155056	0.155	0.116	
Corn, field hominy meal	CM/CF	0.06	STMR/STMR-P	88	0.07	20		20		0.013636		0.014	
Corn, field grain	GC	0.05	STMR/STMR-P	88	0.06	35	40		65	0.019886	0.023		0.037
Total						100	100	60	100	0.432329	0.568	0.374	0.378

POULTRY LAYER													MAX
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Grass hay	AF/AS	2.5	HR	88	2.84		10				0.284		
Soybean meal	SM	0.9	STMR	92	0.98	25	25	25	30	0.24375	0.244	0.244	0.293
Soybean seed	VD	0.69	STMR	89	0.78	20	15	15		0.155056	0.116	0.116	
Corn, field hominy meal	CM/CF	0.06	STMR	88	0.07	20	20	20		0.013636	0.014	0.014	
Corn, field grain	GC	0.05	STMR	88	0.06	35	30		70	0.019886	0.017		0.04
Total						100	100	60	100	0.432329	0.675	0.374	0.332

POULTRY LAYER													MEAN
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Grass hay	AF/AS	1.3	STMR/STMR-P	88	1.48		10				0.148		
Soybean meal	SM	0.9	STMR/STMR-P	92	0.98	25	25	25	30	0.24375	0.244	0.244	0.293
Soybean seed	VD	0.69	STMR/STMR-P	89	0.78	20	15	15		0.155056	0.116	0.116	
Corn, field	CM/CF	0.06	STMR/STMR-P	88	0.07	20	20	20		0.013636	0.014	0.014	

POULTRY LAYER													MEAN
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
hominy meal													
Corn, field grain	GC	0.05	STMR/STMR-P	88	0.06	35	30		70	0.019886	0.017		0.04
Total						100	100	60	100	0.432329	0.538	0.374	0.332

LUFENURON (286)

BEEF CATTLE													MAX
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Tomato pomace,wet	AB	0.66	STMR	20	3.30			10				0.33	
Potato culls	VR	0.01	HR	20	0.05	30	30	10		0.02	0.02	0.01	
Total						30	30	20		0.02	0.02	0.34	

BEEF CATTLE													MEAN
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Tomato pomace,wet	AB	0.66	STMR/STMR-P	20	3.30			10				0.33	
Potato culls	VR	0.01	STMR/STMR-P	20	0.05	30	30	10		0.02	0.02	0.01	
Total						30	30	20		0.02	0.02	0.34	

DAIRY CATTLE													MAX
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Tomato pomace,wet	AB	0.66	STMR	20	3.30			10				0.33	
Potato culls	VR	0.01	HR	20	0.05	10	30	10		0.01	0.02	0.01	
Total						10	30	20		0.01	0.02	0.34	

DAIRY CATTLE													MEAN
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Tomato pomace,wet	AB	0.66	STMR/STMR-P	20	3.30		0	10			0.00	0.33	
Potato culls	VR	0.01	STMR/STMR-P	20	0.05	10	30	10		0.01	0.02	0.01	
Total						10	30	20		0.01	0.02	0.34	

POULTRY BROILER													MAX
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Potato culls	VR	0.01	HR	20	0.05		10				0.01		
Total							10				0.01		

POULTRY BROILER													MEAN
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Potato culls	VR	0.01	STMR/STMR-P	20	0.05		10				0.01		
Total							10				0.01		

POULTRY LAYER													MAX
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Potato culls	VR	0.01	HR	20	0.05		10				0.01		
Total							10				0.01		

POULTRY LAYER													MEAN
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Potato culls	VR	0.01	STMR/STMR-P	20	0.05		10				0.01		
Total							10				0.01		

TRIFLOXYSTROBIN (213)

BEEF CATTLE													MAX
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Beet, mangel fodder	AM/AV	10.9	HR	15	72.67		30				21.8		
Corn, field stover	AF/AS	8.55	HR	100	8.55	15	25	40		1.2825	2.138	3.42	
Rice straw	AF/AS	8.1	HR	100	8.10			20	55			1.62	4.455
Pea vines	AL	2	HR	25	8.00		20	40			1.6	3.2	
Pea hay	AL	7	HR	88	7.95		5				0.398		
Barley straw	AF/AS	4.9	HR	89	5.51		5				0.275		
Potato process waste	AB	0.307	STMR	12	2.56	30	15			0.7675	0.384		
Sorghum, grain asp gr fn	CM/CF	0.7	STMR	85	0.82	5				0.041			
Rice bran/pollard	CM/CF	0.25	STMR	90	0.28	10			20	0.0278			0.056
Rice grain	GC	0.16	STMR	88	0.18	20				0.0363			
Wheat milled bypdts	CM/CF	0.062	STMR	88	0.07	20			25	0.0140			0.018
Total						100	100	100	100	2.17	26.59	8.24	4.528

BEEF CATTLE													MEAN
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Beet, mangel fodder	AM/AV	2.3	STMR/STMR-P	15	15.33		30				4.6		
Pea hay	AL	4.4	STMR/STMR-P	88	5.00		25	100			1.25	5	
Apple pomace, wet	AB	2.6	STMR/STMR-P	100	2.60		20				0.52		
Potato process waste	AB	0.307	STMR/STMR-P	12	2.56	30	20			0.7675	0.512		
Corn, field stover	AF/AS	1.75	STMR/STMR-P	100	1.75	15	5			0.2625	0.088		
Rice straw	AF/AS	1.4	STMR/STMR-P	100	1.40				55				0.77
Sorghum, grain asp gr fn	CM/CF	0.7	STMR/STMR-P	85	0.82	5				0.041176			
Rice bran/pollard	CM/CF	0.25	STMR/STMR-P	90	0.28	10			20	0.027778			0.056
Rice grain	GC	0.16	STMR/STMR-P	88	0.18	20				0.036364			
Beet, sugar dried pulp	AB	0.077	STMR/STMR-P	88	0.09				5				0.004
Wheat milled bypdts	CM/CF	0.062	STMR/STMR-P	88	0.07	20			20	0.014091			0.014
Total						100	100	100	100	1.15	6.97	5.00	0.84

DAIRY CATTLE													MAX
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Beet, mangel fodder	AM/AV	10.9	HR	15	72.67		25				18.17		
Corn, field stover	AF/AS	8.55	HR	100	8.55	15	20	40		1.2825	1.71	3.42	
Rice straw	AF/AS	8.1	HR	100	8.10				25				2.025
Pea vines	AL	2	HR	25	8.00	10	20	40		0.8	1.6	3.2	
Pea hay	AL	7	HR	88	7.95		10	20			0.795	1.591	
Barley straw	AF/AS	4.9	HR	89	5.51		10				0.551		
Peanut hay	AL	4.94	HR	100	4.94	5				0.247			
Potato process waste	AB	0.307	STMR	12	2.56	10	15			0.255833	0.384		
Almond hulls	AM/AV	1.08	STMR	90	1.20	10				0.12			
Rice bran/pollard	CM/CF	0.25	STMR	90	0.28	15			10	0.041667			0.028
Rice grain	GC	0.16	STMR	88	0.18	20				0.036364			
Beet, sugar dried pulp	AB	0.077	STMR	88	0.09	5			40	0.004375			0.035
Wheat milled bypdts	CM/CF	0.062	STMR	88	0.07	10			25	0.0			0.02
Total						100	100	100	100	2.79	23.2	8.21	2.11

DAIRY CATTLE													MEAN
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Beet, mangel fodder	AM/AV	2.3	STMR/STMR-P	15	15.33		25	0			3.833	0	
Pea hay	AL	4.4	STMR/STMR-P	88	5.00	10	30	70		0.5	1.5	3.5	
Apple pomace, wet	AB	2.6	STMR/STMR-P	100	2.60	10	10	10		0.26	0.26	0.26	
Potato process waste	AB	0.307	STMR/STMR-P	12	2.56	0	20			0	0.512		
Corn, field stover	AF/AS	1.75	STMR/STMR-P	100	1.75	15	15	20		0.2625	0.263	0.35	
Rice straw	AF/AS	1.4	STMR/STMR-P	100	1.40	0			25	0			0.35
Almond hulls	AM/AV	1.08	STMR/STMR-P	90	1.20	10				0.12			
Peanut hay	AL	0.85	STMR/STMR-P	100	0.85	5				0.0425			
Rice bran/pollard	CM/CF	0.25	STMR/STMR-P	90	0.28	15			10	0.041667			0.028
Rice grain	GC	0.16	STMR/STMR-P	88	0.18	20				0.036364			
Beet, sugar dried pulp	AB	0.077	STMR/STMR-P	88	0.09	5			40	0.004375			0.035
Wheat milled bypdts	CM/CF	0.062	STMR/STMR-P	88	0.07	10			25	0.007045			0.018
Total						100	100	100	100	1.27	6.37	4.11	0.43

POULTRY BROILER													MAX
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Rice bran/pollard	CM/CF	0.25	STMR	90	0.28	10	10	20	5	0.027778	0.028	0.056	0.014
Rice grain	GC	0.16	STMR	88	0.18	20		50		0.036364		0.091	
Wheat milled bypdts	CM/CF	0.062	STMR	88	0.07	40	10			0.028182	0.007		
Barley grain	GC	0.04	STMR	88	0.05	30	70			0.013636	0.032		
Soybean seed	VD	0.023	STMR	89	0.03		10	15			0.003	0.004	
Bean seed	VD	0.021	STMR	88	0.02			15				0.004	
Corn, field grain	GC	0.02	STMR	88	0.02				70				0.016
Soybean meal	SM	0.0008	STMR	92	0.00				25				2E-04
Total						100	100	100	100	0.11	0.069	0.154	0.03

POULTRY BROILER													MEAN
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Rice bran/pollard	CM/CF	0.25	STMR/STMR-P	90	0.28	10	10	20	5	0.027778	0.028	0.056	0.014
Rice grain	GC	0.16	STMR/STMR-P	88	0.18	20		50		0.036364		0.091	
Wheat milled bypdts	CM/CF	0.062	STMR/STMR-P	88	0.07	40	10			0.028182	0.007		
Barley grain	GC	0.04	STMR/STMR-P	88	0.05	30	70			0.013636	0.032		
Soybean seed	VD	0.023	STMR/STMR-P	89	0.03		10	15			0.003	0.004	
Bean seed	VD	0.021	STMR/STMR-P	88	0.02			15				0.004	
Corn, field grain	GC	0.02	STMR/STMR-P	88	0.02				70				0.016
Soybean meal	SM	0.0008	STMR/STMR-P	92	0.00				25				2E-04
Total						100	100	100	100	0.11	0.069	0.154	0.03

POULTRY LAYER													MAX
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Corn, field stover	AF/AS	8.55	HR	100	8.55		10				0.855		
Pea vines	AL	2	HR	25	8.00		10				0.8		
Cabbage heads, leaves	AM/AV	0.39	HR	15	2.60		5				0.13		
Rice bran/pollard	CM/CF	0.25	STMR	90	0.28	10	5	20	20	0.027778	0.014	0.056	0.056
Rice grain	GC	0.16	STMR	88	0.18	20		50		0.036364		0.091	
Wheat milled bypdts	CM/CF	0.062	STMR	88	0.07	40	15		10	0.028182	0.011		0.007
Barley grain	GC	0.04	STMR	88	0.05	30	55			0.013636	0.025		
Soybean seed	VD	0.023	STMR	89	0.03			15				0.004	

POULTRY LAYER													MAX
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Bean seed	VD	0.021	STMR	88	0.02			15				0.004	
Corn, field grain	GC	0.02	STMR	88	0.02				70				0.016
Total						100	100	100	100	0.11	1.83	0.15	0.079

POULTRY LAYER													MEAN
Commodity	CC	Residue (mg/kg)	Basis	DM (%)	Residue dw (mg/kg)	Diet content (%)				Residue Contribution (ppm)			
						US-CAN	EU	AU	JP	US-CAN	EU	AU	JP
Pea hay	AL	4.4	STMR/STMR-P	88	5.00		10				0.5		
Corn, field stover	AF/AS	1.75	STMR/STMR-P	100	1.75		10				0.175		
Cabbage heads, leaves	AM/AV	0.17	STMR/STMR-P	15	1.13		5				0.057		
Rice bran/pollard	CM/CF	0.25	STMR/STMR-P	90	0.28	10	5	20	20	0.027778	0.014	0.056	0.056
Rice grain	GC	0.16	STMR/STMR-P	88	0.18	20		50		0.036364		0.091	
Wheat milled bypdts	CM/CF	0.062	STMR/STMR-P	88	0.07	40	15		10	0.028182	0.011		0.007
Barley grain	GC	0.04	STMR/STMR-P	88	0.05	30	55			0.013636	0.025		
Soybean seed	VD	0.023	STMR/STMR-P	89	0.03			15				0.004	
Bean seed	VD	0.021	STMR/STMR-P	88	0.02			15				0.004	
Corn, field grain	GC	0.02	STMR/STMR-P	88	0.02				70				0.016
Total						100	100	100	100	0.11	0.78	0.15	0.079

ANNEX 7: REPORT OF THE SECRETARIAT ON THE WORKOF THE WHO EXPERT TASK FORCE ON CARCINOGENICITY OF DIAZINON, GLYPHOSATE AND MALATHION FOR CONSIDERATION BY JMPR

NOTE: Extensive tables summarizing the references compiled from the relevant JMPR and IARC monographs as well as the studies submitted to EFSA for each of the three compounds were also provided to JMPR and are not included in this annex. These can be made available on request (contact: jmpr@who.int).

1 Diazinon

The full IARC monograph on diazinon was not published by September 2015 and therefore was not available to the task force. IARC has published a summary of the findings on diazinon,[1] and the full monograph will be published later as part of IARC Monograph Volume 112.[2] The IARC summary included a classification of Group 2A, probably carcinogenic to humans, for diazinon. This classification was based on:

- *limited evidence of carcinogenicity in humans* – Epidemiological studies indicated no overall increased risk of non-Hodgkin lymphoma. An increased risk of both leukaemia and lung cancer was noted in the Agricultural Health Study (a collaborative effort in the USA), but these findings were not replicated in other studies.
- *limited evidence of carcinogenicity in experimental animals* – The incidence of hepatocellular carcinoma was increased in male mice, and the combined occurrence of leukaemia and lymphoma was increased in rats, but only at the low dose (100 ppm in mice, equivalent to 15 mg/kg bw per day; 400 ppm in rats, equivalent to 20 mg/kg bw per day).
- *mechanistic evidence of genotoxicity and oxidative stress* – DNA or chromosomal damage in rodents and in human and mammalian cells in vitro.

JMPR evaluated diazinon in 1993, 2001 and 2006. The main assessment for carcinogenicity and genotoxicity was undertaken as part of the evaluation in 1993, when it was concluded that diazinon is not carcinogenic or genotoxic on the basis of no evidence of carcinogenicity in long-term studies in mice and rats and no indications of genotoxicity in an adequate series of genotoxicity assays other than the induction of chromosomal aberrations in cultured mammalian cells. JMPR has not previously evaluated any epidemiological data or considered mechanistic data on diazinon.

Subsequent to these previous JMPR evaluations, new information has become available. Therefore, it is appropriate that JMPR revisit the carcinogenicity and genotoxicity of diazinon, including an assessment of epidemiological studies and relevant mechanistic studies, as appropriate. The assessment of the relevance of the mechanistic studies should be guided by the outcome of the evaluation of the rodent bioassay data and genotoxicity assays.

Recommendation

In light of the studies that have not been previously considered by JMPR, including studies considered by IARC and national pesticide regulatory agencies, it is recommended that JMPR discuss and consider the re-evaluation of the active substance diazinon.

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[1] Guyton KZ et al., on behalf of the International Agency for Research on Cancer Monograph Working Group, IARC, Lyon, France (2015). Carcinogenicity of tetrachlorvinphos, parathion, malathion, diazinon, and glyphosate. Lancet Oncol. 16(5):490–1.

[2] IARC (2015). Some organophosphate insecticides and herbicides: diazinon, glyphosate, malathion, parathion, and tetrachlorvinphos. Lyon: International Agency for Research on Cancer (IARC Monographs on the Evaluation of Carcinogenic Risks to Humans, Volume 112).

2. Glyphosate

IARC published a summary of the findings on glyphosate in *The Lancet Oncology*,[1] and the glyphosate monograph was published on 29 July 2015[2] and provided to the task force on that date. The summary and monograph included a classification of Group 2A, probably carcinogenic to humans, for glyphosate. This classification was based on:

- *limited evidence of carcinogenicity in humans* – A positive association was observed for non-Hodgkin lymphoma.
- *sufficient evidence of carcinogenicity in experimental animals*, supported by mechanistic evidence of genotoxicity and oxidative stress.

JMPR most recently evaluated glyphosate in 2004 and 2011. The 2004 evaluation found no evidence of carcinogenicity in long-term studies in mice and rats, and negative results were obtained in an adequate range of genotoxicity studies performed in compliance with current test guidelines. The 2011 evaluation covered only the metabolites *N*-acetyl-glyphosate and *N*-acetyl-aminomethylphosphonic acid in genetically modified plants and is therefore not relevant to this exercise on the carcinogenicity of the parent compound, glyphosate.

The primary purpose of this task was to compare publications cited by IARC (2015) with those cited by JMPR (2004) and to identify those epidemiological, rodent bioassay, genotoxicity and other mechanistic studies that were not considered by JMPR in its assessment of the carcinogenic risk posed by exposure to glyphosate. In addition, the task force considered references cited in a report by EFSA (2014),[3] which was released in April 2014 for public consultation and will be finalized and published before the end of 2015. No comparison of references cited by the proposed re-evaluation decision PRVD2015-01 on glyphosate from the Pest Management Regulatory Agency (PMRA) of Health Canada (April 2015)[4] was included in this assessment, because the IARC monograph was made available only on 29 July 2015 and there was no time within the mandate of the task force to make this comparison. Any relevant study (e.g. those cited by PMRA) not identified in the current analysis because of the limited time frame should be considered in the proposed re-evaluation by JMPR.

The original reference list that IARC submitted to the task force in May 2015 included 403 studies. In the published IARC monograph (July 2015), only 263 studies were reported. The original list shared with JMPR consisted of all references "included" in the HAWC Literature Search tool (a collaborative workspace for conducting risk assessments for human health; https://hawcproject.org/) plus all references cited in the preliminary drafts. Therefore, IARC characterized the list as the literature "considered" by the IARC Working Group. The difference between the number of references included in the original list and the number of references included in the final monograph can be mainly attributed to the fact that not all identified literature must be cited in Sections 1 (epidemiology) and 4 (mechanistic and other studies).

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[1] Guyton KZ et al., on behalf of the International Agency for Research on Cancer Monograph Working Group, IARC, Lyon, France (2015). Carcinogenicity of tetrachlorvinphos, parathion, malathion, diazinon, and glyphosate. Lancet Oncol. 16(5):490–1.

[2] IARC (2015). Glyphosate. In: Some organophosphate insecticides and herbicides: diazinon, glyphosate, malathion, parathion, and tetrachlorvinphos. Lyon: International Agency for Research on Cancer (IARC Monographs on the Evaluation of Carcinogenic Risks to Humans, Volume 112; http://monographs.iarc.fr/ENG/Monographs/vol112/mono112-02.pdf, accessed 28 September 2015).

[3] The studies cited in this report, which have not yet been published, should be submitted by the European Glyphosate Task Force (a consortium of companies joining resources and efforts in order to renew the European glyphosate registration with a joint submission) for the proposed re-evaluation of glyphosate by JMPR.

[4] Summary available at http://www.hc-sc.gc.ca/cps-spc/pest/part/consultations/_prvd2015-01/prvd2015-01-eng.php.

Glyphosate References on Epidemiological Studies

Forty references for epidemiological studies were cross-checked between the relevant JMPR, IARC and EFSA publications:

- There were three studies cited by IARC (2015) and three studies cited by EFSA (2014) that were also available to and evaluated by JMPR (2004).
- There were 28 studies cited by IARC (2015) that were not available to or evaluated by JMPR (2004).
- There were 30 studies cited by EFSA (2014) that were not available to or evaluated by JMPR (2004). These studies have not yet been published by the study owner, but should be submitted by the Glyphosate Task Force for consideration by JMPR.

Glyphosate References on Rodent Cancer Bioassays

Fifteen references for carcinogenicity studies in rodents were cross-checked between the relevant JMPR, IARC and EFSA publications:

- There were two reports cited by IARC (2015) that were also available to and evaluated by JMPR (2004).
- There were five reports cited by IARC (2015) that were not available to or evaluated by JMPR (2004).
- There were six reports cited in the EFSA (2014) assessment that were not available to or evaluated by JMPR (2004) or IARC (2015), but were reviewed in the publication of Greim et al. (2015).[1] These studies have not yet been published by the study owner, but should be submitted by the Glyphosate Task Force for consideration by JMPR.

Glyphosate References on Genotoxicity Studies

Active Substance Glyphosate

There were 99 references on the genotoxicity of glyphosate, but these could not be fully cross-checked between the relevant JMPR, IARC and EFSA publications. The task force also conducted a literature search for genotoxicity references published after the IARC (2015) review:

- There were three studies cited by IARC (2015) that were also available to and evaluated by JMPR (2004). One of the three references is a review article.
- There were 49 studies cited by IARC (2015) that were not available to or evaluated by JMPR (2004).
- There were four recently published studies identified by the task force that were not evaluated by JMPR (2004).
- There were 30 studies cited by EFSA (2014) that were not available to or evaluated by IARC (2015) or JMPR (2004). These studies have not yet been published by the study owner, but should be submitted by the Glyphosate Task Force for consideration by JMPR.

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[1] Greim H, Saltmiras D, Mostert V, Strupp C (2015). Evaluation of carcinogenic potential of the herbicide glyphosate, drawing on tumor incidence data from fourteen chronic/carcinogenicity rodent studies. Crit Rev Toxicol. 45(3):185–208.

Glyphosate-containing Formulations and AMPA

There were many references relating to genotoxicity studies on glyphosate-containing formulations or aminomethylphosphonic acid (AMPA), but these could not be cross-checked between the relevant JMPR, IARC and EFSA publications within the available time frame.

Glyphosate References on Oxidative Stress and Other Mechanistic Studies

The IARC monograph includes mechanistic studies and other relevant data that might be of importance for a re-evaluation of toxicity end-points other than carcinogenicity.

Recommendations

In light of the studies identified in the publications by IARC (2015) and EFSA (2014) that were not considered by JMPR (2004), as well as the additional genotoxicity studies identified by the task force, it is recommended that JMPR discuss and consider the re-evaluation of the active substance glyphosate. In particular:

- It is recommended that Section 4.2.1 of the IARC monograph on genetic and related effects be carefully considered within the re-evaluation by JMPR, if the studies are performed with the active substance glyphosate, glyphosate-containing formulations and/or AMPA.
- It is recommended that the studies evaluated by IARC in Chapter 4 of the monograph, especially those on toxicokinetic data, receptor-mediated mechanisms, inflammation and immunomodulation, and cell proliferation and death, be considered in a full JMPR re-evaluation.

3. Malathion

The full monograph on malathion was not published by September 2015 and therefore was not available to the task force. IARC has published a summary of the findings on malathion,[1] and the full monograph will be published later as part of IARC Monograph Volume 112.[2] The IARC summary included a classification of Group 2A, probably carcinogenic to humans, for malathion based on:

- *limited evidence in humans – for non-Hodgkin lymphoma and prostate tumours.*
- *sufficient evidence in experimental animals, supported by mechanistic evidence of genotoxicity, oxidative stress, inflammation, receptor-mediated effects and cell proliferation or death.*

JMPR reviewed malathion in 1997 and summarized the animal bioassay and genotoxicity data. The 1997 Meeting concluded that malathion was not genotoxic, but did not make a concluding statement on carcinogenicity. JMPR cited the conclusion of IARC from 1983 that the available data did not provide evidence that malathion was carcinogenic in humans. New bioassays available at that time were summarized, including a mouse study that reported an increased incidence of hepatocellular adenomas at the two highest doses. JMPR also reviewed malathion in 2003, but carcinogenicity was not assessed. That Meeting focused on whether an acute reference dose was needed.

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[1] Guyton KZ et al., on behalf of the International Agency for Research on Cancer Monograph Working Group, IARC, Lyon, France (2015). Carcinogenicity of tetrachlorvinphos, parathion, malathion, diazinon, and glyphosate. Lancet Oncol. 16(5):490–1.

[2] IARC (2015). Some organophosphate insecticides and herbicides: diazinon, glyphosate, malathion, parathion, and tetrachlorvinphos. Lyon: International Agency for Research on Cancer (IARC Monographs on the Evaluation of Carcinogenic Risks to Humans, Volume 112).

Malathion References on Epidemiological Studies

None of the 47 epidemiological studies cited by IARC (2015) was available to or evaluated by JMPR (1997, 2003).

Malathion References on Rodent Cancer Bioassays

Ten references for carcinogenicity studies in rodents were cross-checked between the relevant JMPR, IARC and EFSA publications:

- Three reports cited by IARC (2015) were also available to and evaluated by JMPR (1997).
- One report cited by IARC (2015) was not available to or evaluated by JMPR (1997).
- There were four unpublished reports cited by JMPR (1997) that were not evaluated by IARC (2015) and two reports on the metabolite malaoxon (one published and one not) that were cited by JMPR (1997) but not by IARC (2015). IARC (2015) cited the USEPA, EU and PMRA evaluations of malathion, which include the majority of these reports.
- Recently, the data sponsor provided a list of references that included 16 unpublished reports not previously reviewed by JMPR (1997). It should be noted that they were all supplementary information for long-term studies that were cited by JMPR (1997). This supplementary information included statistical analysis of survivorship and pathology peer review. The USEPA review of three of these reports was cited by IARC (2015).

Malathion References on Genotoxicity Studies

There were 100 references on the genotoxicity of malathion, including two identified by the task force from a literature search for genotoxicity references published after the IARC (2015) review:

- There were 22 reports cited by IARC (2015) that were also available to and evaluated by JMPR (1997).
- There were 65 reports cited by IARC (2015) that were not available to or evaluated by JMPR (1997).
- There were six unpublished reports cited by JMPR (1997) and three unpublished reports cited by JMPR (2003) that were not cited by IARC (2015). IARC (2015) cited the USEPA, EU and PMRA evaluations of malathion, which presumably included the majority of the reports cited by JMPR.
- The data sponsor recently provided a list of references that included five unpublished reports not previously reviewed by JMPR (1997, 2003).

Recommendation

In light of the number of epidemiological and genotoxicity studies that have not been reviewed by JMPR, it is recommended that JMPR discuss and consider the re-evaluation of the active substance malathion.

FAO TECHNICAL PAPERS

FAO PLANT PRODUCTION AND PROTECTION PAPERS

1 Horticulture: a select bibliography, 1976 (E)
2 Cotton specialists and research institutions in selected countries, 1976 (E)
3 Food legumes: distribution, adaptability and biology of yield, 1977 (E F S)
4 Soybean production in the tropics, 1977 (C E F S)
4 Rev.1 Soybean production in the tropics (first revision), 1982 (E)
5 Les systèmes pastoraux sahéliens, 1977 (F)
6 Pest resistance to pesticides and crop loss assessment – Vol. 1, 1977 (E F S)
6/2 Pest resistance to pesticides and crop loss assessment – Vol. 2, 1979 (E F S)
6/3 Pest resistance to pesticides and crop loss assessment – Vol. 3, 1981 (E F S)
7 Rodent pest biology and control – Bibliography 1970-74, 1977 (E)
8 Tropical pasture seed production, 1979 (E F** S**)
9 Food legume crops: improvement and production, 1977 (E)
10 Pesticide residues in food, 1977 – Report, 1978 (E F S)
10 Rev. Pesticide residues in food 1977 – Report, 1978 (E)
10 Sup. Pesticide residues in food 1977 – Evaluations, 1978 (E)
11 Pesticide residues in food 1965-78 – Index and summary, 1978 (E F S)
12 Crop calendars, 1978 (E/F/S)
13 The use of FAO specifications for plant protection products, 1979 (E F S)
14 Guidelines for integrated control of rice insect pests, 1979 (Ar C E F S)
15 Pesticide residues in food 1978 – Report, 1979 (E F S)
15 Sup. Pesticide residues in food 1978 – Evaluations, 1979 (E)
16 Rodenticides: analyses, specifications, formulations, 1979 (E F S)
17 Agrometeorological crop monitoring and forecasting, 1979 (C E F S)
18 Guidelines for integrated control of maize pests, 1979 (C E)
19 Elements of integrated control of sorghum pests, 1979 (E F S)
20 Pesticide residues in food 1979 – Report, 1980 (E F S)
20 Sup. Pesticide residues in food 1979 – Evaluations, 1980 (E)
21 Recommended methods for measurement of pest resistance to pesticides, 1980 (E F)
22 China: multiple cropping and related crop production technology, 1980 (E)
23 China: development of olive production, 1980 (E)
24/1 Improvement and production of maize, sorghum and millet – Vol. 1. General principles, 1980 (E F)
24/2 Improvement and production of maize, sorghum and millet – Vol. 2. Breeding, agronomy and seed production, 1980 (E F)
25 Prosopis tamarugo: fodder tree for arid zones, 1981 (E F S)
26 Pesticide residues in food 1980 – Report, 1981 (E F S)
26 Sup. Pesticide residues in food 1980 – Evaluations, 1981 (E)
27 Small-scale cash crop farming in South Asia, 1981 (E)
28 Second expert consultation on environmental criteria for registration of pesticides, 1981 (E F S)
29 Sesame: status and improvement, 1981 (E)
30 Palm tissue culture, 1981 (C E)
31 An eco-climatic classification of intertropical Africa, 1981 (E)
32 Weeds in tropical crops: selected abstracts, 1981 (E)
32 Sup.1 Weeds in tropical crops: review of abstracts, 1982 (E)
33 Plant collecting and herbarium development, 1981 (E)
34 Improvement of nutritional quality of food crops, 1981 (C E)
35 Date production and protection, 1982 (Ar E)
36 El cultivo y la utilización del tarwi – Lupinus mutabilis Sweet, 1982 (S)
37 Pesticide residues in food 1981 – Report, 1982 (E F S)
38 Winged bean production in the tropics, 1982 (E)
39 Seeds, 1982 (E/F/S)
40 Rodent control in agriculture, 1982 (Ar C E F S)
41 Rice development and rainfed rice production, 1982 (E)
42 Pesticide residues in food 1981 – Evaluations, 1982 (E)
43 Manual on mushroom cultivation, 1983 (E F)

44 Improving weed management, 1984 (E F S)
45 Pocket computers in agrometeorology, 1983 (E)
46 Pesticide residues in food 1982 – Report, 1983 (E F S)
47 The sago palm, 1983 (E F)
48 Guidelines for integrated control of cotton pests, 1983 (Ar E F S)
49 Pesticide residues in food 1982 – Evaluations, 1983 (E)
50 International plant quarantine treatment manual, 1983 (C E)
51 Handbook on jute, 1983 (E)
52 The palmyrah palm: potential and perspectives, 1983 (E)
53/1 Selected medicinal plants, 1983 (E)
54 Manual of fumigation for insect control, 1984 (C E F S)
55 Breeding for durable disease and pest resistance, 1984 (C E)
56 Pesticide residues in food 1983 – Report, 1984 (E F S)
57 Coconut, tree of life, 1984 (E S)
58 Economic guidelines for crop pest control, 1984 (E F S)
59 Micropropagation of selected rootcrops, palms, citrus and ornamental species, 1984 (E)
60 Minimum requirements for receiving and maintaining tissue culture propagating material, 1985 (E F S)
61 Pesticide residues in food 1983 – Evaluations, 1985 (E)
62 Pesticide residues in food 1984 – Report, 1985 (E F S)
63 Manual of pest control for food security reserve grain stocks, 1985 (C E)
64 Contribution à l'écologie des aphides africains, 1985 (F)
65 Amélioration de la culture irriguée du riz des petits fermiers, 1985 (F)
66 Sesame and safflower: status and potentials, 1985 (E)
67 Pesticide residues in food 1984 – Evaluations, 1985 (E)
68 Pesticide residus in food 1985 – Report, 1986 (E F S)
69 Breeding for horizontal resistance to wheat diseases, 1986 (E)
70 Breeding for durable resistance in perennial crops, 1986 (E)
71 Technical guideline on seed potato micropropagation and multiplication, 1986 (E)
72/1 Pesticide residues in food 1985 – Evaluations – Part I: Residues, 1986 (E)
72/2 Pesticide residues in food 1985 – Evaluations – Part II: Toxicology, 1986 (E)
73 Early agrometeorological crop yield assessment, 1986 (E F S)
74 Ecology and control of perennial weeds in Latin America, 1986 (E S)
75 Technical guidelines for field variety trials, 1993 (E F S)
76 Guidelines for seed exchange and plant introduction in tropical crops, 1986 (E)
77 Pesticide residues in food 1986 – Report, 1986 (E F S)
78 Pesticide residues in food 1986 – Evaluations – Part I: Residues, 1986 (E)
78/2 Pesticide residues in food 1986 – Evaluations – Part II: Toxicology, 1987 (E)
79 Tissue culture of selected tropical fruit plants, 1987 (E)
80 Improved weed management in the Near East, 1987 (E)
81 Weed science and weed control in Southeast Asia, 1987 (E)
82 Hybrid seed production of selected cereal, oil and vegetable crops, 1987 (E)
83 Litchi cultivation, 1989 (E S)
84 Pesticide residues in food 1987 – Report, 1987 (E F S)
85 Manual on the development and use of FAO specifications for plant protection products, 1987 (E** F S)
86/1 Pesticide residues in food 1987 – Evaluations – Part I: Residues, 1988 (E)
86/2 Pesticide residues in food 1987 – Evaluations – Part II: Toxicology, 1988 (E)
87 Root and tuber crops, plantains and bananas in developing countries – challenges and opportunities, 1988 (E)
88 Jessenia and Oenocarpus: neotropical oil palms worthy of domestication, 1988 (E S)
89 Vegetable production under arid and semi-arid conditions in tropical Africa, 1988 (E F)
90 Protected cultivation in the Mediterranean climate, 1990 (E F S)
91 Pastures and cattle under coconuts, 1988 (E S)
92 Pesticide residues in food 1988 – Report, 1988 (E F S)
93/1 Pesticide residues in food 1988 – Evaluations –

Part I: Residues, 1988 (E)
93/2 Pesticide residues in food 1988 – Evaluations – Part II: Toxicology, 1989 (E)
94 Utilization of genetic resources: suitable approaches, agronomical evaluation and use, 1989 (E)
95 Rodent pests and their control in the Near East, 1989 (E)
96 Striga – Improved management in Africa, 1989 (E)
97/1 Fodders for the Near East: alfalfa, 1989 (Ar E)
97/2 Fodders for the Near East: annual medic pastures, 1989 (Ar E F)
98 An annotated bibliography on rodent research in Latin America 1960-1985, 1989 (E)
99 Pesticide residues in food 1989 – Report, 1989 (E F S)
100 Pesticide residues in food 1989 – Evaluations – Part I: Residues, 1990 (E)
100/2 Pesticide residues in food 1989 – Evaluations – Part II: Toxicology, 1990 (E)
101 Soilless culture for horticultural crop production, 1990 (E)
102 Pesticide residues in food 1990 – Report, 1990 (E F S)
103/1 Pesticide residues in food 1990 – Evaluations – Part I: Residues, 1990 (E)
104 Major weeds of the Near East, 1991 (E)
105 Fundamentos teórico-prácticos del cultivo de tejidos vegetales, 1990 (S)
106 Technical guidelines for mushroom growing in the tropics, 1990 (E)
107 Gynandropsis gynandra (L.) Briq. – a tropical leafy vegetable – its cultivation and utilization, 1991 (E)
108 Carambola cultivation, 1993 (E S)
109 Soil solarization, 1991 (E)
110 Potato production and consumption in developing countries, 1991 (E)
111 Pesticide residues in food 1991 – Report, 1991 (E)
112 Cocoa pest and disease management in Southeast Asia and Australasia, 1992 (E)
113/1 Pesticide residues in food 1991 – Evaluations – Part I: Residues, 1991 (E)
114 Integrated pest management for protected vegetable cultivation in the Near East, 1992 (E)
115 Olive pests and their control in the Near East, 1992 (E)
116 Pesticide residues in food 1992 – Report, 1993 (E F S)
117 Quality declared seed, 1993 (E F S)
118 Pesticide residues in food 1992 – Evaluations – Part I: Residues, 1993 (E)
119 Quarantine for seed, 1993 (E)
120 Weed management for developing countries, 1993 (E S)
120/1 Weed management for developing countries, Addendum 1, 2004 (E F S)
121 Rambutan cultivation, 1993 (E)
122 Pesticide residues in food 1993 – Report, 1993 (E F S)
123 Rodent pest management in eastern Africa, 1994 (E)
124 Pesticide residues in food 1993 – Evaluations – Part I: Residues, 1994 (E)
125 Plant quarantine: theory and practice, 1994 (Ar)
126 Tropical root and tuber crops – Production, perspectives and future prospects, 1994 (E)
127 Pesticide residues in food 1994 – Report, 1994 (E)
128 Manual on the development and use of FAO specifications for plant protection products – Fourth edition, 1995 (E F S)
129 Mangosteen cultivation, 1995 (E)
130 Post-harvest deterioration of cassava – A biotechnology perspective, 1995 (E)
131/1 Pesticide residues in food 1994 – Evaluations – Part I: Residues, Volume 1, 1995 (E)
131/2 Pesticide residues in food 1994 – Evaluations – Part I: Residues, Volume 2, 1995 (E)
132 Agro-ecology, cultivation and uses of cactus pear, 1995 (E)
133 Pesticide residues in food 1995 – Report, 1996 (E)
134 (Number not assigned)
135 Citrus pest problems and their control in the Near East, 1996 (E)
136 El pepino dulce y su cultivo, 1996 (S)
137 Pesticide residues in food 1995 – Evaluations – Part I: Residues, 1996 (E)
138 Sunn pests and their control in the Near East, 1996 (E)
139 Weed management in rice, 1996 (E)
140 Pesticide residues in food 1996 – Report, 1997 (E)
141 Cotton pests and their control in the Near East, 1997 (E)
142 Pesticide residues in food 1996 – Evaluations – Part I Residues, 1997 (E)
143 Management of the whitefly-virus complex, 1997 (E)
144 Plant nematode problems and their control in the Near East region, 1997 (E)
145 Pesticide residues in food 1997 – Report, 1998 (E)
146 Pesticide residues in food 1997 – Evaluations – Part I: Residues, 1998 (E)

147 Soil solarization and integrated management of soilborne pests, 1998 (E)
148 Pesticide residues in food 1998 – Report, 1999 (E)
149 Manual on the development and use of FAO specifications for plant protection products – Fifth edition, including the new procedure, 1999 (E)
150 Restoring farmers' seed systems in disaster situations, 1999 (E)
151 Seed policy and programmes for sub-Saharan Africa, 1999 (E F)
152/1 Pesticide residues in food 1998 – Evaluations – Part I: Residues, Volume 1, 1999 (E)
152/2 Pesticide residues in food 1998 – Evaluations – Part I: Residues, Volume 2, 1999 (E)
153 Pesticide residues in food 1999 – Report, 1999 (E)
154 Greenhouses and shelter structures for tropical regions, 1999 (E)
155 Vegetable seedling production manual, 1999 (E)
156 Date palm cultivation, 1999 (E)
156 Rev.1 Date palm cultivation, 2002 (E)
157 Pesticide residues in food 1999 – Evaluations – Part I: Residues, 2000 (E)
158 Ornamental plant propagation in the tropics, 2000 (E)
159 Seed policy and programmes in the Near East and North Africa, 2000
160 Seed policy and programmes for Asia and the Pacific, 2000 (E)
161 Silage making in the tropics with particular emphasis on smallholders, 2000 (E S)
162 Grassland resource assessment for pastoral systems, 2001, (E)
163 Pesticide residues in food 2000 – Report, 2001 (E)
164 Seed policy and programmes in Latin America and the Caribbean, 2001 (E S)
165 Pesticide residues in food 2000 – Evaluations – Part I, 2001 (E)
166 Global report on validated alternatives to the use of methyl bromide for soil fumigation, 2001 (E)
167 Pesticide residues in food 2001 – Report, 2001 (E)
168 Seed policy and programmes for the Central and Eastern European countries, Commonwealth of Independent States and other countries in transition, 2001 (E)
169 Cactus (Opuntia spp.) as forage, 2003 (E S)
170 Submission and evaluation of pesticide residues data for the estimation of maximum residue levels in food and feed, 2002 (E)
171 Pesticide residues in food 2001 – Evaluations – Part I, 2002 (E)
172 Pesticide residues in food, 2002 – Report, 2002 (E)
173 Manual on development and use of FAO and WHO specifications for pesticides, 2002 (E S)
174 Genotype x environment interaction – Challenges and opportunities for plant breeding and cultivar recommendations, 2002 (E)
175/1 Pesticide residues in food 2002 – Evaluations – Part 1: Residues – Volume 1 (E)
175/2 Pesticide residues in food 2002 – Evaluations – Part 1: Residues – Volume 2 (E)
176 Pesticide residues in food 2003 – Report, 2004 (E)
177 Pesticide residues in food 2003 – Evaluations – Part 1: Residues, 2004 (E)
178 Pesticide residues in food 2004 – Report, 2004 (E)
179 Triticale improvement and production, 2004 (E)
180 Seed multiplication by resource-limited farmers - Proceedings of the Latin American workshop, 2004 (E)
181 Towards effective and sustainable seed-relief activities, 2004 (E)
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The annual Joint Meeting of the FAO Panel of Experts on Pesticide Residues in Food and the Environment and the WHO Core Assessment Group on Pesticide Residues was held in Geneva, Swizerland, from 15 to 24 September 2015. The FAO Panel of Experts had met in preparatory sessions from 10 to 14 September 2015. The Meeting was held in pursuance of recommendations made by previous Meetings and accepted by the governing bodies of FAO and WHO that studies should be undertaken jointly by experts to evaluate possible hazards to humans arising from the occurrence of pesticide residues in foods. During the meeting the FAO Panel of Experts was responsible for reviewing pesticide use patterns (use of good agricultural practices), data on the chemistry and composition of the pesticides and methods of analysis for pesticide residues and for estimating the maximum residue levels that might occur as a result of the use of the pesticides according to good agricultural use practices. The WHO Core Assessment Group was responsible for reviewing toxicological and related data and for estimating, where possible and appropriate, acceptable daily intakes (ADIs) and acute reference doses (ARfDs) of the pesticides for humans. This report contains information on ADIs, ARfDs, maximum residue levels, and general principles for the evaluation of pesticides. The recommendations of the Joint Meeting, including further research and information, are proposed for use by Member governments of the respective agencies and other interested parties.

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