



## Which foods are most likely to be contaminated by glyphosate?

ANH-Intl examines glyphosate maximum residue levels (MRLs) and urges action to help initiate a moratorium on the controversial herbicide



1 July 2015

Glyphosate is the controversial active ingredient in the world's most widely used herbicide, Roundup. The [International Agency for Research on Cancer \(IARC\)](http://www.iarc.fr/) (<http://www.iarc.fr/>) that informs the World Health Organization (WHO) and many other health authorities on cancer risk factors, classified glyphosate as a 'probable carcinogen' (<http://www.thelancet.com/journals/lanonc/article/PIIS1470-2045%2815%2970134-8/abstract>) last March (<http://www.nature.com/news/widely-used-herbicide-linked-to-cancer-1.17181>).

In this article, we take a look at the maximum residue levels (MRLs) permitted in the USA and in the EU. We think its one of the best ways of finding out where the highest residue levels are present. Armed with this knowledge, you can then choose to avoid consuming these crops directly or, in the case of animal feed, indirectly.

Any moratorium on the herbicide would also affect the most common type of genetically modified (GM) crops, Roundup Ready crops, that are engineered specifically to withstand Roundup. Not only does the US government not want you to know which foods contain GMOs, it doesn't publish details on actual glyphosate residues in foods, as it would rather have us to believe the products are safe.

If, like us, you disagree, you can vote with your wallets, and avoid those crops with the highest allowed

residue levels. You can also use our suggested template letters and let your stores and political representatives know of your concerns [[see Call to Action below](#)].

## TOP FACTS

- The US Department of Agriculture does not test food for glyphosate residues because the herbicide is considered 'safe'
- The UK government includes glyphosate testing of selected foods in their reports, and levels are shown to be within the permitted ranges
- Maximum glyphosate residue levels are set to accommodate actual levels, and are generally much higher in the USA than in Europe
- Foods with the highest permitted levels include GMO crops, animal foods, cereal grains, oil seeds and dried pulses
- Non-GMO grain crops receive doses of glyphosate immediately prior to harvesting in order to desiccate the crop

## Testing for glyphosate levels in food

Since 1991, the US Department of Agriculture (USDA) has been annually testing thousands of food commodities for pesticide residues, through their [Pesticide Data Program \(PDP\)](http://www.ams.usda.gov/AMSV1.0/getfile?dDocName=STELDEV3003252) (<http://www.ams.usda.gov/AMSV1.0/getfile?dDocName=STELDEV3003252>). According to [Reuters](http://www.reuters.com/article/2015/04/17/us-food-agriculture-glyphosate-idUSKBN0N82K020150417) (<http://www.reuters.com/article/2015/04/17/us-food-agriculture-glyphosate-idUSKBN0N82K020150417>), they – astonishingly – do not consider it necessary to include glyphosate in the testing (with the exception of soybean testing in 2011), “*in part because it has been considered safe*”. However, Reuters also report that they received a response from the Environmental Protection Agency (EPA) in April 2015, saying “*Given increased public interest in glyphosate, EPA may recommend sampling for glyphosate in the future*”.

Unlike in the USA, UK HSE quarterly reports (<http://www.pesticides.gov.uk/guidance/industries/pesticides/advisory-groups/PRIf>) produced by the Department for the Environment, Food & Rural Affairs (DEFRA's) Expert Committee on Pesticide Residues in Food (PRIf) do check glyphosate residue levels in selected home produced and imported foods. Detected glyphosate residues are reported as [within the permitted ranges](http://www.pesticides.gov.uk/Resources/CRD/PRIf/Documents/Results%20and%20Reports/2013/E) (<http://www.pesticides.gov.uk/Resources/CRD/PRIf/Documents/Results%20and%20Reports/2013/E>) with [the odd exception](http://www.pesticides.gov.uk/Resources/CRD/PRIf/Documents/Results%20and%20Reports/2014/C) (<http://www.pesticides.gov.uk/Resources/CRD/PRIf/Documents/Results%20and%20Reports/2014/C>) eg. a sample of mung beans from China contained a residue of glyphosate at 2.3 mg/kg (MRL is 2 mg/kg). But what are the permitted ranges?

## Glyphosate maximum residue levels

Glyphosate Maximum Residue Levels (MRLs) or tolerances can be checked through registering and checking the [US EPA and USDA databases](http://www.epa.gov/opp00001/food/viewtols.htm) (<http://www.epa.gov/opp00001/food/viewtols.htm>). We

found the following information about MRLs on the [US Government Publishing Office website](http://www.ecfr.gov/cgi-bin/text-idx?SID=49d130f0573ba893306ab8a0ecc65df0&mc=true&node=se40.24.180_1364&rgn=div8) ([http://www.ecfr.gov/cgi-bin/text-idx?SID=49d130f0573ba893306ab8a0ecc65df0&mc=true&node=se40.24.180\\_1364&rgn=div8](http://www.ecfr.gov/cgi-bin/text-idx?SID=49d130f0573ba893306ab8a0ecc65df0&mc=true&node=se40.24.180_1364&rgn=div8)).

With different MPLs set for individual groups of foods, it appears to be much less about safety, and much more about the levels being set to accommodate and reflect what actually is. There has been much criticism of this (<http://www.theguardian.com/environment/2014/jul/17/pesticide-residue-breads-uk-crops>). When a breach of the MRLs is threatened, the remedy appears to be to simply increase the allowed MRLs. [GMO soy in the USA](http://www.gmwatch.org/news/archive/2013/14769-u-s-plans-to-hike-allowed-glyphosate-levels-in-food-supply) (<http://www.gmwatch.org/news/archive/2013/14769-u-s-plans-to-hike-allowed-glyphosate-levels-in-food-supply>) is a case in point. As weed resistance to Roundup increased, heavier doses of the herbicide have been applied, leading to higher residues being detected in crops, soil and groundwater. Following US EPA simply announced in 2013 that they would increase the permitted amounts of glyphosate residue in certain crops.

## Food in which higher glyphosate levels are permitted in the US

It is perhaps telling that among the highest MRLs permitted in the USA are [the following foods](http://www.ecfr.gov/cgi-bin/text-idx?SID=49d130f0573ba893306ab8a0ecc65df0&mc=true&node=se40.24.180_1364&rgn=div8) ([http://www.ecfr.gov/cgi-bin/text-idx?SID=49d130f0573ba893306ab8a0ecc65df0&mc=true&node=se40.24.180\\_1364&rgn=div8](http://www.ecfr.gov/cgi-bin/text-idx?SID=49d130f0573ba893306ab8a0ecc65df0&mc=true&node=se40.24.180_1364&rgn=div8)) (measured as mg/kg or parts per million):-

- 400 ppm: for animal feed, nongrass, [group 18](http://ir4.rutgers.edu/Other/FederalCropGroups.htm) (<http://ir4.rutgers.edu/Other/FederalCropGroups.htm>)
- 310 ppm: for grain aspirated fractions
- 300 ppm: for grass, forage, fodder and hay, [group 17](http://ir4.rutgers.edu/Other/FederalCropGroups.htm) (<http://ir4.rutgers.edu/Other/FederalCropGroups.htm>)
- 210 ppm: for cotton gin byproducts
- 200 ppm: for peppermint and spearmint tops, soybean hay, leucaena and kenaf forage
- 120 ppm: for soybean hulls
- 100 ppm: for soybean forage, corn, field, stover, grain, cereal forage, fodder and straw, [group 16](http://ir4.rutgers.edu/Other/FederalCropGroups.htm) (<http://ir4.rutgers.edu/Other/FederalCropGroups.htm>), except field corn, forage and field corn, stover, teff hay and forage
- 40 ppm: for oilseeds, [group 20](http://ir4.rutgers.edu/Other/FederalCropGroups.htm) (<http://ir4.rutgers.edu/Other/FederalCropGroups.htm>) (includes sunflower and cottonseed), except canola
- 30 ppm: for barley bran, grain, cereal, [group 15](http://ir4.rutgers.edu/Other/FederalCropGroups.htm) (<http://ir4.rutgers.edu/Other/FederalCropGroups.htm>)(includes rice, sorghum, wheat, barley, buckwheat, millet, oats, rye) except field corn, popcorn, rice, sweet corn, and wild rice, sugarcane molasses
- 25: for almond hulls, beet, sugar, dried pulp
- 20 ppm: for canola seed, soybean seed
- 13 ppm: for corn, field, forage
- 10 ppm: for beet, sugar, roots and tops
- 8 ppm: for dried peas
- 7 ppm: for hop, dried cones, certain spices, instant tea
- 5 ppm: for carrot, quinoa grain, teff grain, legumes except soybean and dry pea, cattle, hog, sheep,

and goat meat byproducts, corn, field, grain,  
 3.5 ppm: for corn, sweet, kernel plus cob with husk removed  
 3 ppm: for shellfish, sweet potato  
 2 ppm: for Mexican oregano leaves, sugarcane

## Maximum Residue Levels in the EU

MRLs in the EU are determined by [European Commission regulation \(EC\) No 149/2008](#) ([http://www.pesticides.gov.uk/Resources/CRD/Migrated-Resources/Documents/C/Commission\\_Regulation-1492008%281%29.pdf](http://www.pesticides.gov.uk/Resources/CRD/Migrated-Resources/Documents/C/Commission_Regulation-1492008%281%29.pdf)), and these vary among certain foods. MRLs are also set for Trimethyl-sulfonium cation, a residue that results from glyphosate use. In the UK, EU glyphosate MRLs can be checked easily using the [Health and Safety Executive \(HSE\) Search form](#) (<https://secure.pesticides.gov.uk/MRLs/search.asp>). Some Member States, such as the UK, use specific MRLs for certain processed foods, since the raw MRLs do not take processing factors into account ([http://www.pesticides.gov.uk/guidance/industries/pesticides/advisory-groups/PRiF/prif-information/application\\_of\\_mrls\\_to\\_bread](http://www.pesticides.gov.uk/guidance/industries/pesticides/advisory-groups/PRiF/prif-information/application_of_mrls_to_bread)), such as removal, dilution or concentration of pesticide residues. In the case of bread ([http://www.pesticides.gov.uk/Resources/CRD/PRiF/Documents/Other/2013/Annex\\_A\\_bread\\_proc](http://www.pesticides.gov.uk/Resources/CRD/PRiF/Documents/Other/2013/Annex_A_bread_proc): white bread has an MRL of 1.05 and for wholemeal bread, it is 3.6.

## Food in which higher glyphosate levels are permitted within the EU

Among the highest MRLs permitted in the European Union are the following foods (measured as mg/kg or parts per million. MRLs for animal foods are not provided):-

- 20 ppm: for soya beans (most of the soya eaten in Europe is genetically modified), sunflower seed, barley, oats and sorghum
- 15 ppm: for sugar beet roots
- 10 ppm: for wheat, rye, linseed, dried lentils, dried peas, rapeseed, mustard seed, dried lupin beans and cotton seed
- 3.6 ppm: for wholemeal bread
- 2 ppm: for dried beans, tea leaves and dried herbal infusions, bovine kidney
- 1.05 ppm: for white bread
- 1 ppm: for olive oil, maize
- 0.5 ppm: for potatoes, oranges and mandarins, and pig kidney.

## GMO crops, animal foods, cereal grains, oil seeds and dried pulses top the bill

To summarise: although glyphosate is used in the production of a very wide range of crops including non-organic fruit and vegetables, the foods in which the most glyphosate residue is permitted include GMO crops, animal foods, cereal grain, oil seeds and dried pulses. Roundup Ready GMO crops currently include (<http://web.mit.edu/demoscience/Monsanto/about.html>) soy, corn, canola, alfalfa, cotton, and sorghum, with wheat 'under development'. Perhaps the main reason that grains, seeds

and pulses are at the top of the list is because these are the types of crops that receive a dose of Roundup immediately prior to harvest – a process known as desiccation ([https://en.wikipedia.org/wiki/Crop\\_desiccation](https://en.wikipedia.org/wiki/Crop_desiccation)). The justification for this is that the destruction of the plant around the seeds makes harvesting the crop easier for farmers, and water loss enables farmers to gain a better price for the crop.

## Time to end the madness

Roundup use is burgeoning (<https://www.testbiotech.org/en/node/1193>) in the USA, and has been found in drinking water, urine and even human breast milk ([http://www.momsacrossamerica.com/glyphosate\\_testing\\_results](http://www.momsacrossamerica.com/glyphosate_testing_results)). Concerned organisations ([https://www.foeeurope.org/sites/default/files/press\\_releases/foee\\_6\\_problems\\_with\\_glyphosate\\_ove](https://www.foeeurope.org/sites/default/files/press_releases/foee_6_problems_with_glyphosate_ove)) are calling for long-term independent testing and research ([http://www.momsacrossamerica.com/glyphosate\\_testing\\_results](http://www.momsacrossamerica.com/glyphosate_testing_results)) on glyphosate herbicide formulations, “*including their health effects, how they get into the human body, and current levels of accumulation in people, animals and the environment*”. We agree with Friends of the Earth (Europe) ([https://www.foeeurope.org/sites/default/files/press\\_releases/foee\\_6\\_problems\\_with\\_glyphosate\\_ove](https://www.foeeurope.org/sites/default/files/press_releases/foee_6_problems_with_glyphosate_ove)) 2013 recommendations calling for comprehensive and transparent national glyphosate monitoring and reduction programs, banning of the practice of desiccation, re-evaluation of MRLs, and the halting of EU authorisations of glyphosate resistant GMOs.

## Call to Action

- Where possible, avoid GMOs and all the non-organic foods we have highlighted and which have higher MRLs – including cereal grains, oil seeds and dried pulses. If in doubt, buy organically certified foods or ones in which farmers can guarantee no glyphosate has been used
- EU residents should let your retailers and government representatives know you have serious concerns about glyphosate. These draft letters for different audiences can be modified as you feel appropriate. Download letter templates from the following list:

[Garden centre glyphosate letter \(/wp-content/uploads/old/sites/default/files/150701\\_Garden\\_Centre\\_glyphosate\\_letter.docx\)](#)

[Supermarket glyphosate letter \(/wp-content/uploads/old/sites/default/files/150701\\_Supermarket\\_glyphosate\\_letter\\_food\\_and\\_feed.docx\)](#)

[EU MEP glyphosate letter \(/wp-content/uploads/old/sites/default/files/150701\\_MEP\\_letter\\_glyphosate\\_in\\_the\\_EU.docx\)](#)

[Elected national representative glyphosate letter \(/wp-content/uploads/old/sites/default/files/150701\\_Political\\_representative\\_letter\\_glyphosate\\_use\\_and\\_m](#)

- US citizens can support GMO labeling initiatives, including ANH-USA's recent Action Alert (<http://www.anh-usa.org/action-alert-gmo-labeling-bills/>), urging senators and representatives NOT to support the House and Senate bills that would leave it up to food companies to decide whether to label GMOs.

## Comments

1.  **George** says:

[20 January 2016 at 11:30 am \(http://anhinternational.org/2015/07/01/crops-most-likely-contaminated-by-glyphosate/#comment-4516\)](http://anhinternational.org/2015/07/01/crops-most-likely-contaminated-by-glyphosate/#comment-4516)

Firstly, I don't think I should be required to ingest ANY agricultural chemicals at all. We have so called "safe levels" of these poisons, but there is a scarcity of research out there on long term chronic effects of Glyphosphates on humans and the entire biosphere.

I need a smoking gun. I need a study that takes food off my supermarket shelf, and tests not only for levels of Glyphosphate and neonic insecticides, but also for the adjuvants that chemical companies use to make the products more effective.

Until we do that, we can't begin to study the long term chronic effects on humans, or determine "safe" levels in our food and environment.

[Reply \(http://anhinternational.org/2015/07/01/crops-most-likely-contaminated-by-glyphosate/?replytocom=4516#respond\)](http://anhinternational.org/2015/07/01/crops-most-likely-contaminated-by-glyphosate/?replytocom=4516#respond)

2.  **Katrina** says:

[23 January 2016 at 3:01 pm \(http://anhinternational.org/2015/07/01/crops-most-likely-contaminated-by-glyphosate/#comment-4524\)](http://anhinternational.org/2015/07/01/crops-most-likely-contaminated-by-glyphosate/#comment-4524)

This is why everyone is dying of cancer people ! These rich bastards are killing us!!! I only buy organic!! GMO-free products! Trust me they taste a lot better! Do not buy your baby soy baby formula either it's the worst. At least buy them organic baby formula

[Reply \(http://anhinternational.org/2015/07/01/crops-most-likely-contaminated-by-glyphosate/?replytocom=4524#respond\)](http://anhinternational.org/2015/07/01/crops-most-likely-contaminated-by-glyphosate/?replytocom=4524#respond)

*Copyright © 2016 Alliance for Natural Health International. You may copy, reproduce, reprint or forward any content or part of this website on the condition that attribution is made clearly to Alliance for Natural Health International including date and link to original content.*