



National reporting 2014

“Pesticide residues in food” Federal Republic of Germany

Summary

The report presents the results of the analysis of food for pesticide residues. In accordance with Regulation (EC) No 396/2005, the compliance with current legislation was checked and analyses to assess consumer exposure were carried out.

In 29 official laboratories of 16 federal states, 19,553 food samples were analysed for the presence of pesticide residues. 5,222 of these samples were taken at random in the framework of the monitoring programme, in order to be able to make representative statements about consumer exposure. However, with regard to the selection of the other samples, foodstuffs known for presenting higher risks were preferred. For this reason the results do not allow to draw conclusions on the contamination level of the entirety of all foodstuffs available on the market.

In 2014 2,328 samples were analysed in the framework of the coordinated multiannual Community control programme. These samples were part of the 19,553 samples analysed in total.

Information about maximum residue levels

“Maximum Residue Level” (MRL) means the upper legal level of a concentration for a pesticide residue in or on food. For setting MRLs, data on the toxicology of the substance and on the intake quantity of the respective foodstuff as well as data from field studies carried out in accordance with good agricultural practice are taken into consideration.

The report distinguishes between the exceedance of an MRL and the objection of samples. Not all samples with MRL exceedances are objected by the respective responsible authority, as for an objection further arguments like the analytical measurement uncertainty have to be taken into account.

When it is established that a consumer risk through pesticide residues in a foodstuff cannot be excluded, the European Rapid Alert System for Food and Feed (RASFF) is notified, so that all responsible authorities in the EU are informed accordingly.

In 2014 Germany issued 22 notifications due to pesticide residues, half of which (11) were alerts.

Food-related view on the results

In total 190 different foodstuffs were analysed. As every year, the majority were fruit and vegetables.

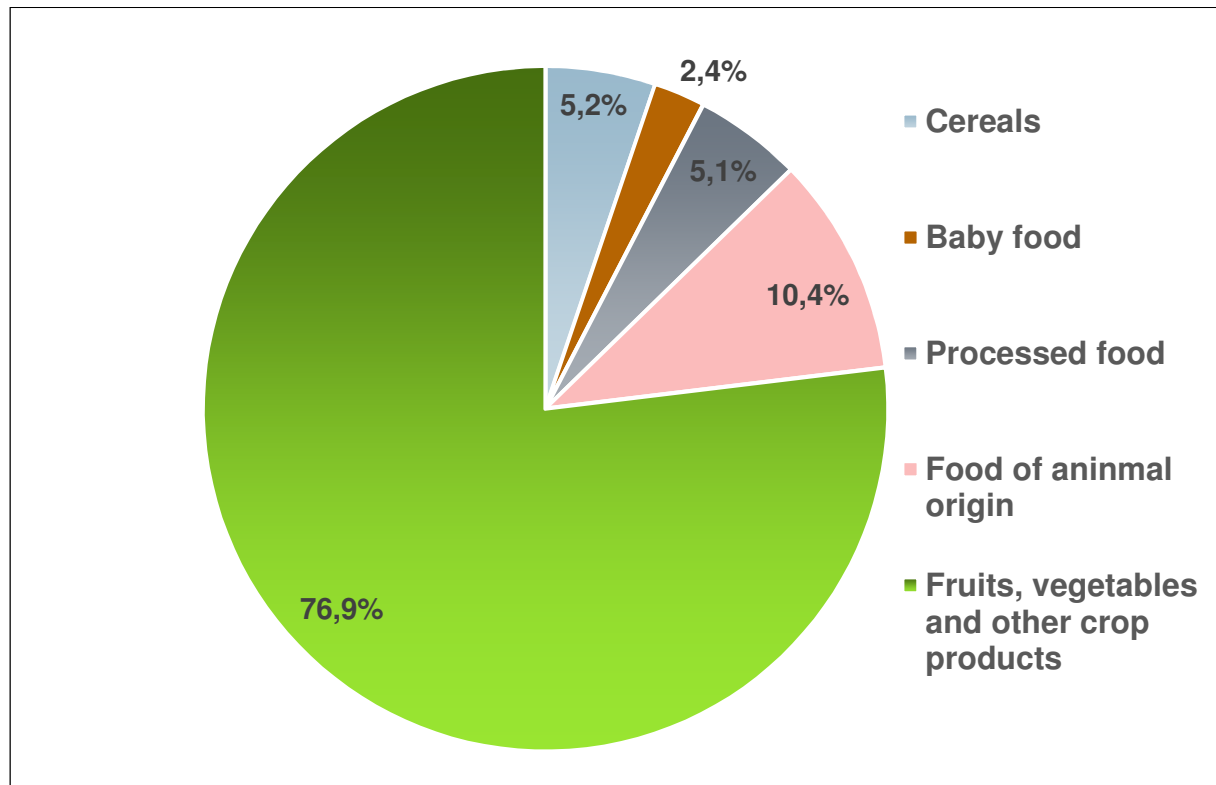


Figure 1: Distribution of sample numbers between food groups

Strawberries (969 samples), potatoes (736 samples), apples (672 samples), milk and dairy products (538 samples), tomatoes (531 samples), table grapes (530 samples), carrots (505 samples), pears (504 samples) and rice (500 samples) were analysed the most frequently.

Table 1: Residues in food groups

Food group	Total number of samples	Non-quantifiable residues	Residues below MRL	> MRL not objected	> MRL objected
Fruit, vegetables and other products of plant origin	14,511	32%	65%	1.3%	1.3%
Food for infants and young children	458	74%	21%	0.0%	4.6%
Cereals	979	51%	47%	0.7%	1.0%
Food of animal origin	1,953	47%	50%	1.1%	1.6%
Processed food	961	37%	62%	0.5%	0.6%

In the category **food for infants and young children**, 4.6 % of the samples contained residues above the MRL. All of them were objected. In 4.4 % of the samples (processed fruit for infants and young children), phosphorous acid above the MRL was detected. Phosphorous acid can be present as a degradation product of the fungicide fosetyl, or originate from other sources.

For **fruit and vegetables** the range of pesticide contaminations was particularly large, spanning from foodstuffs in which no residues were quantified, to products with objection rates of up to 32 % (e.g. asparagus and corn with 0.0 %, pitahaya with 32 %). However, the foodstuffs with objection rates of more than 10% were mainly exotic fruits and vegetables like pitahaya, rambutan or okra.

Fortunately, many foodstuffs with particularly high intake like tomatoes, potatoes and apples only had few MRL exceedances and objections.

Table 2 summarises the fruit and vegetable products without any objections in at least 100 analysed samples.

Table 2: Fruit and vegetables with the lowest number of objections in 2014

Food	Number of analysed samples	Objections	Food	Number of analysed samples	Objections
Tomatoes	512	0.0 %	Garlic	234	0.0
Pears	498	0.0 %	Zucchini	170	0.0
Lettuce	417	0.0 %	Scarole	165	0.0
Cucumber	407	0.0 %	Blueberries	144	0.0
Asparagus	258	0.0 %	Head cabbage	134	0.0
Lentils (dried)	246	0.0 %	Tumeric	102	0.0

The ten foodstuffs with the highest objection rates are presented in Table 3.

Table 3: Fruit and vegetables with the highest number of objections in 2014

Food	Number of analysed samples	Objections	Food	Number of analysed samples	Objections
Mango	180	5.6 %	Pumpkin	233	3.0 %
Raspberries	153	3.9 %	Cultivated mushrooms	212	2.8 %
Blackberries	194	3.6 %	Beans (with pods)	388	2.6 %
Fresh herbs	313	3.2 %	Peach	196	2.6 %
Sweet pepper	472	3.0 %	Tea	172	2.3 %

Also in 2014, **organic** products were controlled for residues. The contamination of these samples was much lower than that of conventionally produced samples. Only 26.5 % of the products stemming from organic farming contained residues which could be quantified analytically - compared to 65 % of other products.

View with regard to origin

More than 19,000 samples were controlled, 43 % thereof from Germany, 27 % from other EU Member States and 17 % from Third Countries. 13 % of the samples were of unknown origin.

Nearly two thirds of the samples were purchased from retail food traders and about one fifth from wholesalers. The rest was bought from growers, manufacturers and packers as well as from service providers, e.g. restaurants or delivery services.

Big differences can be observed in the contamination level of foods with pesticide residues depending on their origin. In 2014 maximum values were exceeded in 1.9 % of the analysed products from Germany and in 1.3 % of the analysed products from other EU Member States. With regard to products from Third Countries, this was the case in 5.8 % of the samples. Nevertheless, the percentage of samples without any quantifiable pesticide residues is still the highest in German foodstuffs.

Substance-related view on the results

The range of pesticide substances tested for in 2014 comprised 823 different substances. Obviously, no sample was analysed for all substances. On average, each food sample was analysed for 301 different substances.

471 of the 823 substances were not found in quantifiable quantities in any sample. On the other hand, for 138 substances residues above the valid maximum residue levels were detected.

The most noticeable substances among the 625 stated MRL exceedances were fosetyl, copper, mercury und nicotine.

Since the fungicide **fosetyl** is analysed together with its degradation product phosphorous acid, it cannot be decided whether the positive findings are due to a treatment with the fungicide or stem from other sources.

Like phosphorous acid, **copper and mercury** are substances which also occur naturally. Therefore their presence in food is not necessarily due to a treatment with the respective pesticides. Copper was particularly found in bovine liver, where it accumulates.

Nicotine was mainly detected in wild mushrooms. Already in 2009 the substance was noticed in dried wild mushrooms. Nevertheless, the origin of the nicotine findings is still unclear.

Findings of multiple residues

In 41 % of all samples, more than one substance was detected in quantifiable quantities. The percentage distribution of the number of quantified residues is presented in the following:

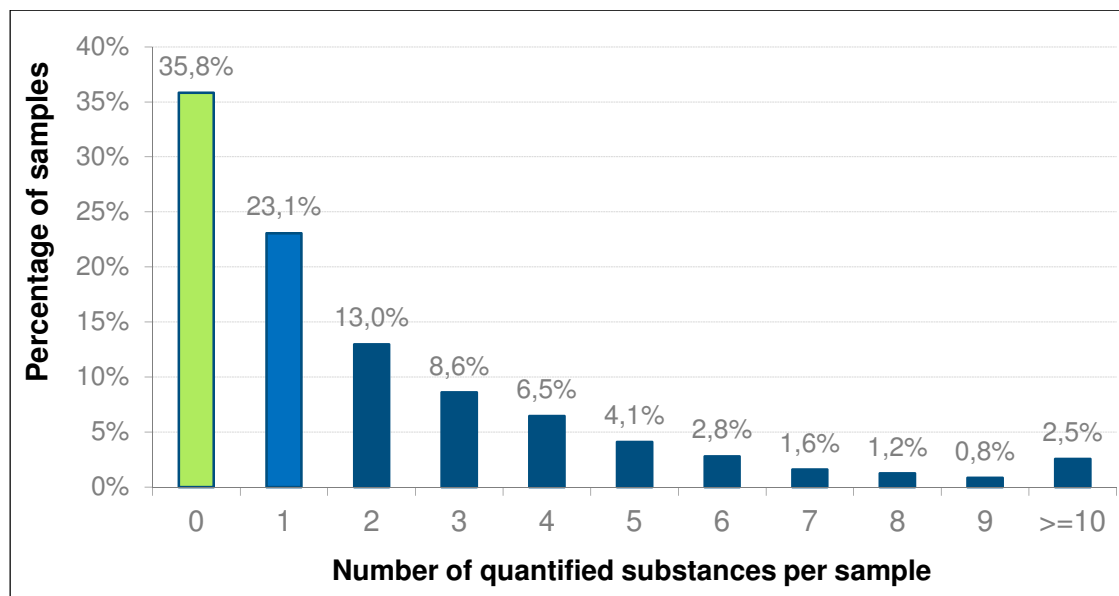


Figure 2: Percentage of samples without any residues or with residues of 1 to >10 substances.

In 2014 multiple residues were found particularly in grapefruit, currants, table grapes, raisins and mandarins.

Substances which are proven to (mainly) not stem from pesticide use

Some substances are legally regulated as pesticides, but their residues mainly originate from other sources than pesticide treatments. In order not to distort the overall picture of pesticide contamination, the **quaternary ammonia compounds** didecyldimethylammonium chloride (**DDAC**) and benzalkonium chloride (**BAC**) as well as **chlorate** are treated separately in the report.

In 2014 **chlorate** was quantified in 11.8 % of the samples. In 7.4 % of the samples, residues above the maximum residue level were found. This applied in particular to processed foodstuffs, suggesting that the residues only enter the food during processing, e.g. through washing and disinfection steps.

Also in the category 'food for infants and young children', many samples (7.2 %) were objected for containing too much chlorate.

Quaternary ammonia compounds are used for example to disinfect milking plants. For this reason, they are often detected in dairy products. In 2014, residues of DDAC or BAC above the maximum level were analysed in 1.0 % of foodstuffs of animal origin.

In products from organic farming, the residue situation with regard to chlorate as well as DDAC and BAC is better than in conventional products.