Federal Office of
Consumer Protection
and Food Safety

“Pesticide residues in food”

National reporting 2016 Federal Republic of Germany – condensed version

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 27 official laboratories of 16 federal states, 19,899 food samples were analysed for the presence of pesticide residues. 5,923 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 2016 2,184 samples were analysed in the framework of the coordinated multiannual Community control programme. These samples were part of the 19,899 samples analysed in total.

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1 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 a 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 2016 Germany issued 9 notifications due to pesticide residues, none of these were alerts.

2 Food-related view on the results

In total 197 different foodstuffs were analysed. As every year, the majority were fruit and vegetables.

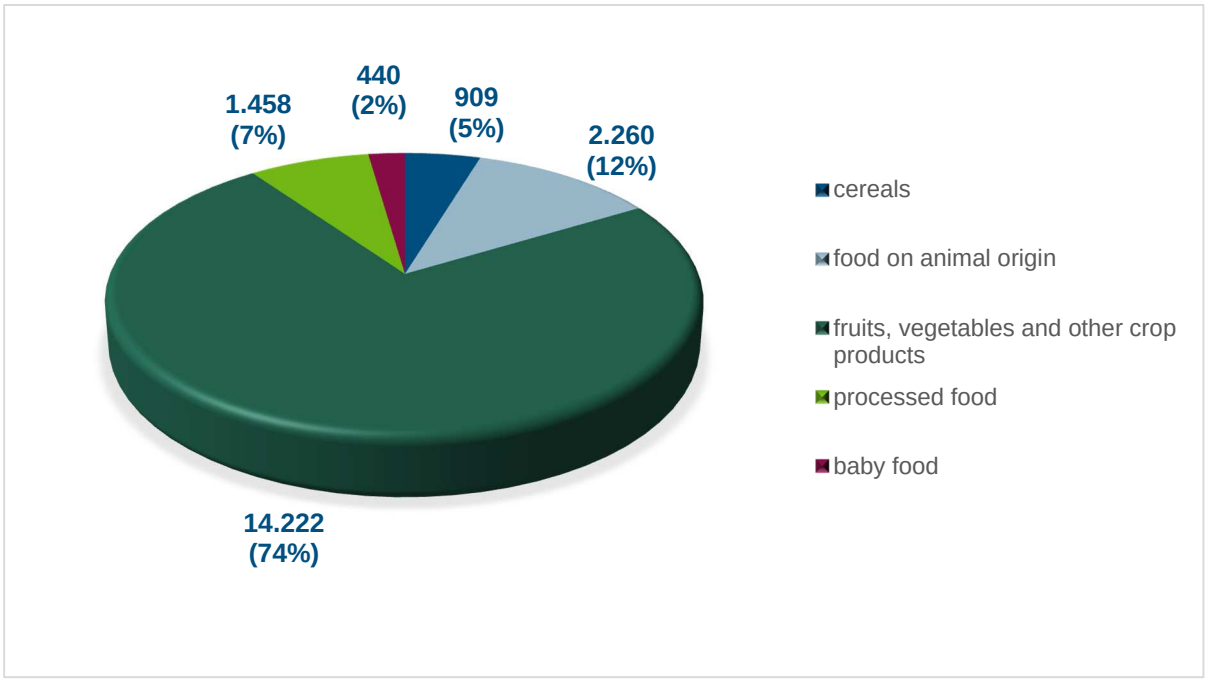

Figure 1: Distribution of sample numbers between food groups

Strawberries (920 samples), wine (710 samples), apples (695 samples), potatoes (638 samples), tomatoes (576 samples), milk and dairy products (506 samples) and asparagus (505 samples) were analysed the most frequently.

Table 1: Residues in food groups

Food group	Number of samples				
	total	with residues < LOQ (limit of quantification)	with residues < MRL	> MRL not objected	> MRL objected
Cereals	909	476 (52.4 %)	433 (47.6 %)	14 (1.5 %)	5 (0.6 %)
Food of animal origin	2,260	1,297 (57.4 %)	963 (42.6 %)	95 (4.2 %)	46 (2.0 %)
Fruit, vegetables and other products of plant origin	14,222	4.709 (33.1 %)	9.513 (66.9 %)	354 (2.5 %)	193 (1.4 %)
Processed food	1,458	667 (45.7 %)	791 (54.3 %)	21 (1.4 %)	9 (0.6 %)
Food for infants and young children	440	313 (71.1 %)	127 (28.9 %)	19 (4.3 %)	19 (4.3 %)
Total	**19,289**	**7,462 (38.7 %)**	**11.827 (61.3 %)**	**503 (2.6 %)**	**272 (1.4 %)**

In the category food for infants and young children, 4.3 % of the samples contained residues above the MRL. 19 of 19 samples were objected. In 19 samples (nearly exclusive processed fruit and fruit juice 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 47,8 % (sessile joyweed/dwarf copperleaf/water spinach). However, the foodstuffs with objection rates of more than 10 % were mainly exotic fruits and vegetables like sessile joyweed/dwarf copperleaf/water spinach, okra, granate apples, guava or passionfruits.

Fortunately, many foodstuffs with particularly high intake like potatoes, carrots or 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 2016 (>100 samples)

Food	Number of analysed samples	Objections
Bananas	129	0.0
Carrots	362	0.0
Kohlrabi	263	0.0
Mandarins	203	0.0
Leek	232	0.0
Rhubarb	212	0.0

The ten foodstuffs with the highest objection rates are presented in Table 3 (at least 100 samples).

Table 3: Fruit and vegetables with the highest number of objections in 2016 (>100 samples)

Food	Number of analysed samples	Objections
Currants (black, red, white)	232	6,0
Wild mushrooms	145	5,5
Fresh herbs	301	3,7
Mangos	146	3,4
Grapefruit, pomelo	292	2,7
Sweet pepper	403	2,7
Tea	144	2,1
Pineapples	230	1,3
Beans (with pods)	319	1,3
Pears	347	1,2

Also in 2016, organic products were controlled for residues. The contamination of these samples was much lower than that of conventionally produced samples. Only 29,1 % of the products stemming from organic farming contained residues which could be quantified analytically – compared to 61,3 % of other products.

3 View with regard to origin

19,762 samples (surveillance sampling"- und „follow-up enforcement sampling) were controlled, 47 % thereof from Germany, 25 % from other EU Member States and 16 % from Third Countries. 12 % of the samples were of unknown origin.

Nearly three fifths of the samples were purchased from retail food traders and about one fifths 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 2016 maximum values were exceeded in 1.7 % of the analysed products from Germany and in 1.6 % of the analysed products from other EU Member States. With regard to products from Third Countries, this was the case in 6.3 % of the samples. Nevertheless, the percentage of samples without any quantifiable pesticide residues is still the highest in German foodstuffs.

4 Substance-related view on the results

The range of pesticide substances tested for in 2016 comprised 830 different substances. Obviously, no sample was analysed for all substances. On average, each food sample was analysed for 294 different substances.

488 of the 830 substances were not found in quantifiable quantities in any sample. On the other hand, for 136 substances residues above the valid maximum residue levels were detected.

The most noticeable substances among the 668 stated MRL exceedances were copper, fosetyl, mercury and acetamipride (sum, only for foodstuffs of animal origin).

Copper is an authorised feed additive, which accumulate in the liver. Therefore it was found in beef liver and sheep liver.

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, mercury is a substance which also occur naturally. Therefore its presence in food is not necessarily due to a treatment with the respective pesticides.

5 Acetamipride is an authorised insecticidal active ingredient. Acetamipride (sum) was mainly detected in honey.Findings of multiple residues

In 37.5 % 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:

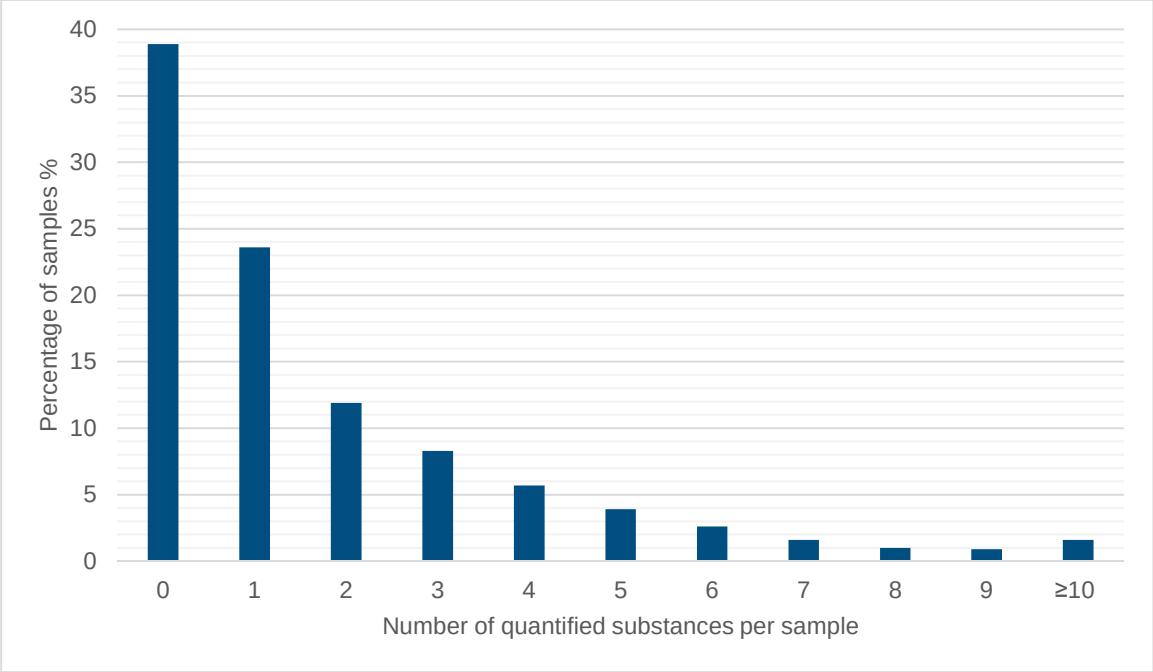

Figure 2: Percentage of samples without any residues or with residues of 1 to ≥10 substances.

In 2016 multiple residues above 80 % were found particularly in raspberries, currants and grapefruits/pomelo.

6 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.

Residues of chlorate can enter the food during processing, e.g. through washing and disinfection steps.

In 2016 chlorate was quantified in 10.7 % of the samples. In 5.3 % of the samples, residues above the maximum residue level were found. Chlorate was mainly objected in fruit and vegetables (3.0 %).

Also in the category ‘processed food’ and ‘food for infants and young children’ many samples (1.3 % resp. 0.9 %) were objected for containing too much chlorate.

In products from organic farming, the residue situation with regard to chlorate is better than in conventional products. In 3.5 % of the samples from organic origin residues above the maximum residue level were found.

Quaternary ammonia compounds are used for example to disinfect milking plants. For this reason, they are often detected in dairy products. In 2016, residues of DDAC or BAC above the maximum level were analysed in 4.9 % of foodstuffs of animal origin.

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

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