



Federal Office of  
Consumer Protection  
and Food Safety



# “Pesticide residues in food”

National reporting 2015

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 23 official laboratories of 16 federal states, 18,765 food samples were analysed for the presence of pesticide residues. 5,481 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 2015 2,107 samples were analysed in the framework of the coordinated multiannual Community control programme. These samples were part of the 18,765 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 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 2015 Germany issued 18 notifications due to pesticide residues, less than half of which (8) were alerts.

## 2 Food-related view on the results

In total 189 different foodstuffs were analysed. As every year, the majority were fruit and vegetables.

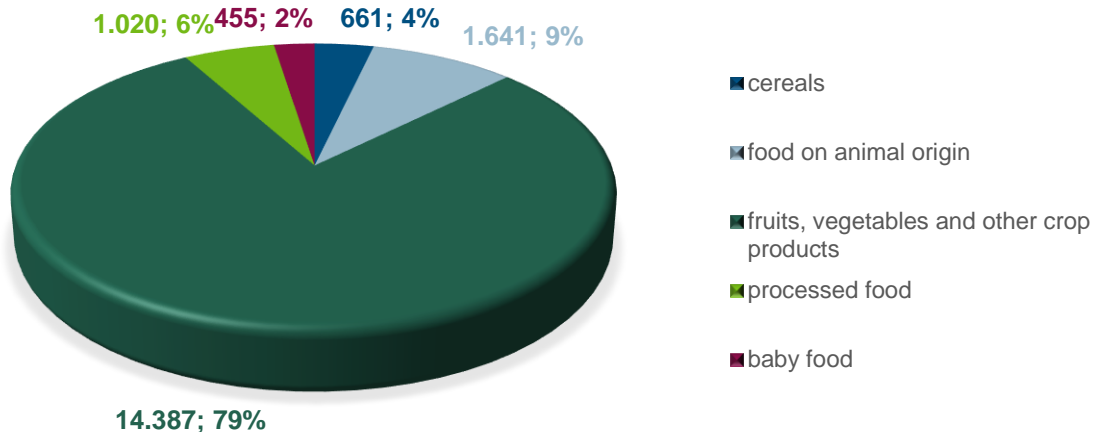


Figure 1: Distribution of sample numbers between food groups

Strawberries (925 samples), fresh herbs (694 samples), potatoes (553 samples), milk and dairy products (551 samples), table grapes (537 samples), tomatoes (522 samples) and apples (517 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	661	387 (58.5 %)	274 (41.5 %)	7 (1.1 %)	5 (0.8 %)
Food of animal origin	1,641	907 (55.3 %)	734 (44.7 %)	6 (0.4 %)	1 (0.1 %)
Fruit, vegetables and other products of plant origin	14,387	4,554 (31.7 %)	9,833 (68.3 %)	306 (2.1 %)	176 (1.2 %)
Processed food	1,020	501 (49.1 %)	519 (50.9 %)	11 (1.1 %)	3 (0.3 %)
Food for infants and young children	455	303 (66.6 %)	152 (33.4 %)	47 (10.3 %)	45 (9.9 %)
<b>Total</b>	<b>18,164</b>	<b>6,652 (36.6 %)</b>	<b>11,512 (63.4 %)</b>	<b>377 (2.1 %)</b>	<b>230 (1.3 %)</b>

In the category food for infants and young children, 10.3 % of the samples contained residues above the MRL. 45 of 47 samples were objected. In 41 samples (nearly exclusive 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 20 % (e.g. bananas and pineapples with 0 %, guava with 20 %). However, the foodstuffs with objection rates of more than 10 % were mainly exotic fruits and vegetables like guava, okra, passionfruits, figs, granate apples or ginger.

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 2015 (>100 samples)**

Food	Number of analysed samples	Objections
potatoes	551	0.0
asparagus	350	0.0
peaches	293	0.0
bananas	291	0.0
plums	257	0.0
cherries	242	0.0
carrots	232	0.0
melons	214	0.0
peas (without pods)	176	0.0
sunflower seeds	170	0.0

Food	Number of analysed samples	Objections
raspberries	157	0.0
head cabbages	142	0.0
citrons	130	0.0
leek	106	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 2015 (>100 samples)**

Food	Number of analysed samples	Objections
beans (with pods)	170	4.7
teas	334	3.9
fresh herbs	684	3.5
aubergines	233	3.0
sweet peppers	470	2.3
lamb's lettuces	123	1.6
currants (black, red and white)	127	1.6
celeriacs	200	1.5
spinaches	203	1.5
mandarins	359	1.4

Also in 2015, organic products were controlled for residues. The contamination of these samples was much lower than that of conventionally produced samples. Only 35.0 % of the products stemming from organic farming contained residues which could be quantified analytically – compared to 63.4 % of other products.

### 3 View with regard to origin

18,537 samples (surveillance sampling“- und „follow-up enforcement sampling) were controlled, 43 % thereof from Germany, 29 % from other EU Member States and 16 % from Third Countries. 12 % 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 2015 maximum values were exceeded in 1.1 % of the analysed products from Germany and in 1.1 % of the analysed products from other EU Member States. With regard to products from Third Countries, this was the case in 5.5 % 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 2015 comprised 834 different substances. Obviously, no sample was analysed for all substances. On average, each food sample was analysed for 317 different substances.

495 of the 834 substances were not found in quantifiable quantities in any sample. On the other hand, for 135 substances residues above the valid maximum residue levels were detected.

The most noticeable substances among the 515 stated MRL exceedances were fosetyl, mercury and nicotine.

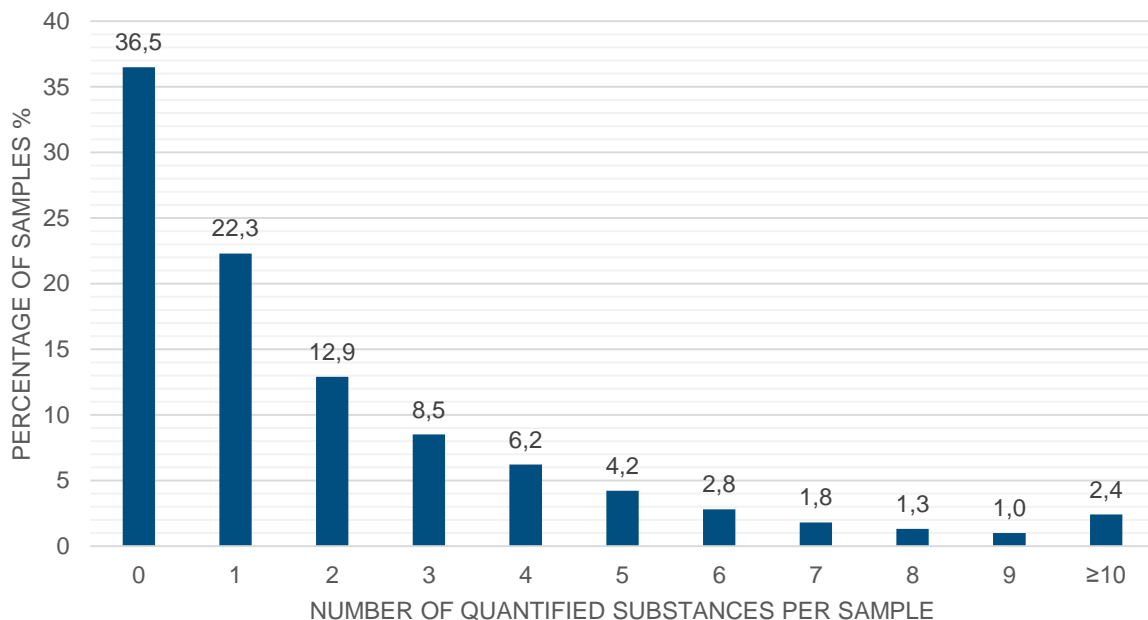
Since the fungicide fosetyl is analysed together with its degradation product phosphorous acid, it cannot be decided whether the positive findings are due to a treatment with the fungicide or stem from other sources.

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

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

## 5 Findings of multiple residues

In 41.2 % 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 2015 multiple residues were found particularly in currants, mandarins, table grapes and rocket.

## 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.

In 2015 chlorate was quantified in 14.7 % of the samples. In 6.9 % 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' and fruit and vegetables, many samples (ea. 3.1 %) were objected for containing too much chlorate.

In products from organic farming, the residue situation with regard to chlorate is even poorer than in conventional products. In 8.5 % 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 2015, residues of DDAC or BAC above the maximum level were analysed in 9.9 % 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.