

# Results from the Monitoring Programm 2002 - 2011 – Pesticide Residues in Organically Grown Commodities from the German Market

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## Introduction

In 2002 the federal state of Baden-Württemberg established a special program to systematically monitor organically grown samples for various parameters including pesticide residues.

This program pursues the following objectives: describing the actual situation with regard to pesticide contamination; comparing organic with conventionally grown products; controlling for the reliability of organic products; and, last but not least, identifying and eliminating the cause of contamination along the trade chain (e.g. illegal application, blending of lots, cross contamination).

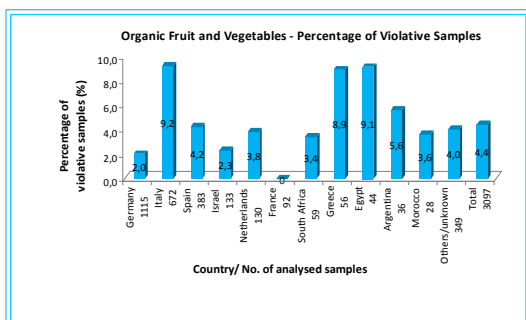
## Analysis

Since starting in 2002 a total of 4481 organic samples have been analysed using the QuEChERS method in combination with GC/MS(/MS) and LC/MS/MS, covering a broad spectrum of pesticides (about 600), at low detection limits.

## Results

We have analysed mainly fruit and vegetables but also cereals, infant nutrition products and other processed products originating from 55 different countries.

Only about 2 % of organically grown German fruit and vegetables were found to contain residues exceeding the 0.01 mg/kg threshold level. For other origins a higher percentage of violative samples was found.



29 % of all 4481 organic samples were found to contain residues, with only 8 % of them exceeding the 0.01 mg/kg threshold level. 5 % of the organic samples showed residues at a concentration level which indicated that the sample had not been produced in accordance with the requirements of the EU regulation 834/2007.

MRL violations occurred very seldom in organic samples: About 1 % of the analysed samples contained residues exceeding the MRLs.

**Reference:** [www.untersuchungsamter-bw.de/pdf/oekomonitoring2002-2011.pdf](http://www.untersuchungsamter-bw.de/pdf/oekomonitoring2002-2011.pdf)

Organic samples analysed from 2002 - 2011					
Commodity	No. of samples	Violations (%) *)	With residues (%)	With residues > 0,01 mg/kg (%)	With multiple residues (%)
Berries	181	1,7	19,3	1,7	4,4
Table grapes	223	4,0	30,9	7,2	13
Pome fruit	242	3,7	19,0	5,0	3,7
Stone fruit	120	5,0	22,5	5,8	5,0
Citrus fruit	368	6,8	30,2	10,6	10,9
Exotic fruit	174	2,9	20,7	3,4	3,4
Leaf vegetables/ herbs	416	2,6	26,4	4,8	9,4
Fruiting vegetables	644	4,3	27,5	5,1	7,8
Brassica, Stem and Bulb vegetables	138	7,2	26,1	9,4	3,6
Root vegetables	289	3,1	19,4	5,5	9,3
Fungi	105	11,4	61,0	22,9	14,3
Potatoes	140	5	35,7	13,6	10
Processed Products	1384	5,9	35,0	11,8	16,0
Others	57	3,5	10,5	5,3	7,0
<b>Total</b>	<b>4481</b>	<b>5</b>	<b>29</b>	<b>8</b>	<b>11</b>

\*) Exceeding the MRLs or not in accordance to EU regulation 834/2007

## Trends over the last 10 years in summary

To demonstrate the differences in residue load between organically and conventionally grown products, we calculated the average cumulative amount of all pesticides: For conventional fruit and vegetables the total concentration of all pesticides found per sample was on average 185 times higher than that in organic ones (0,37 mg/kg vs. 0,002 mg/kg (violative organic samples excluded)).



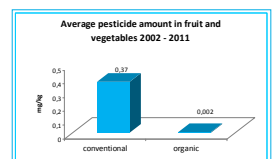
Over the last decade violations due to pesticide residues occurred each year in different commodities, e.g.:

- 2003-2005: a high number of violations concerning sweet peppers mainly from Spain and Italy;
- 2005-2008: citrus fruits with a high percentage of violative samples (10 %);
- 2006: carrots with a high percentage of violative samples (15 %);
- 2008: cucumbers from Spain, Italy and Morocco with residues of fosety, broccoli from Italy with residues of herbicides (fluazifop, haloxyfop, 2,4-D).

In all these cases we have seen a positive trend with hardly any violations occurring in the last two years.

In some cases we were able to identify cross-contamination as the reason for our residue findings. E.g.: Chlorpropham residues in potatoes, chlormequat residues in cereals, preservative residues in citrus fruits and pesticide residues in wine were caused by the coexistent processing of conventional and organic products. Additional studies (e.g. at a flour mill, winery) were conducted in order to examine how to avoid cross-contamination.

Our results confirm that the residue situation in organic food differs significantly from that found in conventional samples. The program clearly showed the suitability of the 0,01 mg/kg threshold level as a maximum residue limit for organic products and the high reliability of organic products.



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