

PESTICIDE RESIDUES IN STRAWBERRIES SURVEYED IN 2008

INTRODUCTION

Strawberries are one of the most popular fruits in Germany. But due to their vulnerability, especially towards molds, pesticides are often employed in their cultivation. Thus, from January till July 2008, CVUA Stuttgart analyzed a total of 105 samples of conventionally grown strawberries and 15 samples of organically grown strawberries of different origins for pesticide residues. The samples were collected by official food inspectors mainly from local growers or wholesale fruit markets, the rest was collected in retail. The analyzed pesticide spectrum included ca. 500 different substances.



RESULTS

CONVENTIONALLY GROWN STRAWBERRIES:

Mainly strawberries of German and Spanish origin were tested (see table), due to their prevalence on the market of the Federal State of Baden-Württemberg. The results of the survey were as following:

- In 54 (96 %) of the German samples and in 43 (88 %) of the samples of other origin, pesticide residue were detected.
- In 2 strawberry samples from Egypt and in 3 samples from Germany, pesticide residues above the set maximum residue level (MRL) were found. But in none of the samples the acute reference dose (ARfD) was exceeded, thus none of the samples were assessed to be of concern, health-wise.
- In 93 % of the German strawberries and in 76 % of the foreign strawberries multiple pesticide residues were detected. On average, German strawberries contained 4.3 substances per sample and foreign samples contained 3.6 substances per sample.

- German strawberries contained on average 0.31 mg/kg pesticide residues (same value as in 2007). Due to an improvement of Spanish strawberries concerning pesticide residues, the foreign samples analyzed in 2008 contained on average only 0.22 mg/kg pesticide residues. Last year foreign strawberries contained on average 0.52 mg/kg!
- Non-authorized pesticides were not detected in any of the German samples.
- Primarily, residues of fungicides were detected (e.g. Cyprodinil, Fludioxonil, Boscalid, Fenhexamid, Myclobutanil, Azoxystrobin, Pyraclostrobin). In total, 49 different active substances were found in this survey.

Table: Pesticide residues in conventionally grown strawberries distinguished by country of origin (CVUA Stuttgart Jan. - July 08)

	Origin	No. of samples	Samples with residues	Samples with multiple residues	Samples above MRL	Pesticides above MRL	Samples with non-authorized substances****
Strawberries 08	Germany	56	54 (96%)	52 (93%)	3 (5%)	3 x haloxyfop	0
	Spain	40	36 (90%)	30 (75%)	0	-	-
	Egypt	5	3 (60%)	3 (60%)	2 (40%)	2x ethion; 1x fenpropathrin	-
	Misc.**	4	4*	4*	0	-	-
	SUM	105	97 (92%)	89 (85%)	5 (5%)	6	0
	In comparison:***						
	2007	114	98%	97%	2%	3	1 (0.9%)
	2006	171	100%	95%	5%	10	1 (0.6%)
2005	176	98%	94%	4%	6	0	
2004	172	99%	94%	13%	23	11 (6%)	

*Too few data for percentage evaluation; **2x Italy, 1x Greece and 1x Morocco; ***This data should not be compared directly to the different years because different amounts of strawberries from different origins were analyzed per year; ****Active substances found in samples of German origin that are not authorized for the usage in the specific culture in Germany
MRL = maximum residue level

ORGANICALLY GROWN STRAWBERRIES:

Furthermore, from January till July 2008 CVUA Stuttgart analyzed a total of 15 samples of **organically grown** strawberries of different origins. Ten of these samples were of German origin. Fortunately, in none of the tested samples residues of synthetic pesticides, which are not permitted in organically grown produce, were detected. Thus, concerning pesticide residues, all of the surveyed organic strawberry samples complied with the provisions of organic farming.

CONCLUSION

The survey shows, that conventionally grown strawberries still contain a higher level of pesticide residues compared to other fruits. In total, 85 % of the analyzed samples contained multiple residues. However, especially Spanish strawberries showed an improvement in the average number of detected pesticides as well as in the average content of pesticide residues in comparison to the last few years.

If the consumer prefers strawberries that are free of synthetic pesticides, organically grown berries are a good alternative . All of the 15 surveyed organically grown strawberries contained no detectable pesticide residues, and thus complied with the provisions of organic farming (concerning pesticide residues).