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Pesticide and mycotoxin contamination of organic products and strategies for prevention

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Consumers generally expect organic food to be produced ecologically and in a way in which they can trust. They further expect it to be healthy, and not or less contaminated with pesticides and/or mycotoxins. Mycotoxins may be found in food or feed and lead to widespread occurrences of intoxication in animals and humans. Agricultural products are prone to contamination by mycotoxins. Recent results from the DOK trial in Switzerland support earlier findings that despite the exclusion of fungicides from the organic production systems, the mycotoxins analyzed on wheat (deoxynivalenol and nivalenol) did not differ from the levels found in grain from the non-organic systems. Contamination of organic produce must be taken seriously and weak points of the production system need to be identified and eliminated. The occurrence of pesticide residues on organic foods has become a special concern, not as a human threat but in terms of consumer expectations. The introduction of more sensitive analytical methods reveals more organic products with traces of minute amounts of pesticides that are not allowed in organic agriculture. However, the low levels of contamination, in the range of a few micrograms per kilogram, do not harm human health. When residues are present, they are usually of lower incidence and lower levels than residues in and on non-organically produced food. Organic agriculture claims not to use synthetic pesticides, but makes no claims concerning environmental background contamination or persistent compounds in soils that were applied twenty to thirty years ago. Efforts to prevent carrying off of pesticides or insufficient separation of organic and non-organic material are enormous and are standard procedure in organic farming and processing systems. There can be weak points throughout food supply chains in terms of unintended entry pathways of pesticides or other compounds. The organic controlling system – which is based upon food supply chain documentation and unannounced sampling for pesticide analysis, as well as upon the elaborated sampling plans of most retailers and operations – works efficiently. Findings of spraying of organic food in contravention of organic production standards are rare. Most of the cases identified can be related to

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weak points in quality assurance systems that can be prevented in the future. In Switzerland, there is the unique situation that most of the cases identified are investigated individually for their source of contamination and measures are elaborated for each case. FiBL has set up a database for background information on residue levels in organic and non-organic foods and the causes of contamination. Together with Swiss organic labels, FiBL has elaborated a strategy how to investigate potential weak points in organic quality assurance systems for e.g. fungicides in wine and pest control in storage of rice and cereals, which will be presented. In addition, the lecture will highlight examples of recent data about mycotoxin contamination of organic and non-organic grain and pesticide data collected in the FiBL database and will discuss the findings of monitoring programs of organic food in Switzerland and Europe.