



Photo: Thomas Alföldi, FiBL

# What impact has environmental pesticide contamination on the organic food chain?

**AutorInnen**

**Schleiffer M., Speiser B.**

Contact: [mirjam.schleiffer@fibl.org](mailto:mirjam.schleiffer@fibl.org)

### **Scientific Article:**

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**A review on the current scientific literature showed that pesticides are widely present in soils, water and air and have a potential to contaminate organic produce. These contamination pathways must be considered when findings of pesticide residues are investigated.**

The use of synthetic pesticides is not allowed in organic production. In order to fight cases of fraud, the organic regulation obliges all operators along the organic food chain to monitor pesticide residues in their products (EU, 2018/848). The detection of such residues causes an investigation, to find the causes for the residue. The delay, the extra labour and the analyses cause significant costs.

Traces of synthetic pesticides are regularly detected in organic food and a significant share of these cases are due to environmental contamination. In order to understand the implications of environmental pesticide contamination for the organic food chain, the Research Institute of Organic Agriculture (FiBL) reviewed 92 scientific studies on the pesticide contamination of the environment and on how pesticides can enter the food chain from the environment.

### **Organic crops are at risk of contamination**

The literature shows that pesticides are omnipresent in the environment. Regarding soils, a Europe-wide study found that 83 % of soils are contaminated with at least one pesticidal substance. Organically managed soils also contain pesticides. Regarding water, European streams, rivers and lakes contain traces of various pesticides, so-called 'cocktails'. For example, mid-sized rivers in Switzerland contain on average 40 pesticides per sample. Regarding air, pesticides are frequently present in ambient air and are in some cases associated with long-range transportation processes.



A case-by-case investigation, where evidence for or against all possible origins of pesticide residues is collected, will deliver more reliable answers. Finally, it remains a challenge to determine the precise origin of residues and whether they are due fraud or technically unavoidable.

## **Conclusions**

- A review of the current scientific literature reveals that pesticides are omnipresent in European soils, water and air.
- Given the ubiquitous potential for environmental contamination, residue findings in organic food are not necessarily evidence for fraud.
- Organic operators have the possibility to reduce contamination risks, but a certain level of contamination ultimately remains technically unavoidable.
- Investigation of residue cases should be based on a case-by-case assessment, in which evidence for/against all possible origins of pesticide residues is collected. By contrast, a single numerical threshold value will not account for the multitude of pesticide contamination pathways.