

# Sources of contamination of honey with genetically modified material.

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## **Abstract**

Since the foraging range of bees encompasses several kilometers, bees and bee products are uniquely susceptible to exposure from GMO crops. While there has been an extensive debate about what measures are necessary to facilitate the coexistence between different farming methods, the promises of coexistence, freedom of choice and zero-tolerance remain largely unfulfilled for beekeepers and their customers.

Beekeeping is an exceptionally open production system, which is highly dependent on the farming systems in use within the area covered by the foraging activity of the honey bees. The impacts of the GMO cultivation on the honey sector are complex and depends on the properties of the GM crop in question and the target market for the bee products. The supply chain from the beekeepers to the consumers is subject to numerous market forces and regulations. The cultivation of GM crops can become a major factor for the viability of beekeeping operations.

GMO-contamination can make it all but impossible to market the bee products in certain markets, because they no longer meet regulatory standards or are rejected by retailers and consumers.

The introduction of GMO-cultivation creates additional cost for analysis and careful separation of GM and non-GM products in the logistics of the food, feed and seed business. The honey sector is no exception, but the open production system presents many significant additional challenges beyond the control of the individual beekeeper.

So far, most of the discussion has revolved around the presence of GMO pollen from GMO crops. But there are several additional sources for GMO cultivation, which have been mostly overlooked.

After GMO contamination was found in canola honey of a professional beekeeper in Germany, it was possible to trace the problem back to the commercially available pollen substitute used by the beekeeper.

Since this is not pollen, but pollen substitute containing soy meal, maize meal and mustard, this is definitely NOT covered by the change in the EU honey directive declaring pollen including GMO-pollen to be a natural

constituent of honey.

Since the manufacturer of the pollen substitute made no attempts whatsoever to use GMO-free ingredients in his product, there is no guarantee, that the GMOs in all production batches have a food authorization in the EU. Beekeepers using this product are running the risk of their products not being marketable in the EU, because non-authorized events render any product unfit to be marketed. There is no 0.9% threshold for this. In the EU zero tolerance applies at the detection level.

Many beekeepers have relied on the manufacturer's false claim, that this product is GMO-free.

In yet another case of contaminated honey found in Germany, the source is most likely not pollen or pollen substitute, but animal feed containing genetically modified material from soy and maize. This material was actively collected by bees confusing it with pollen.

The discussion of GMO-contamination of honey needs to take not just pollen but also pollen substitute and animal feed into account.