GM rapeseed can mix with weeds

A recent study examined the fate of a herbicide (glyphosate) resistance transgene from genetically modified (GM) rapeseed in a wild relative. The study found that the gene could persist in the wild relatives for several generations, persisting in the population for up to six years in a small number of plants.

Crops have exchanged genes with their weedy relatives for centuries in a process called hybridisation, and the same may occur with GM crops. With the introduction of GM crops, genes with novel properties can now be introduced into ecosystems. There are fears that this could create issues for both conservationists and farmers, although such problems are yet to be identified.

New research assessed hybridization between GM rapeseed, *Brassica napus*, and its wild relative, *Brassica rapa*. The hybrid was found in Québec, Canada in 2001. Although *Brassica napus* has many wild relatives worldwide, there is only a high potential for hybridisation with *B. rapa*.

Several generations of hybrids were allowed to grow in field settings; glyphosate was not applied during the study period. This removed any selective pressure on the hybrid to retain the transgene. The researchers collected samples of the hybrid plants annually. These were assessed for the presence of the herbicide resistance (HR) trait, male fertility and species-specific genetic markers from both parental species plants. This allowed the researchers to build a picture of the potential of the transgene to persist in the environment in the absence of any selective pressures that would favour retention of the transgene.

The research found that while some hybrids had the HR trait as well as reduced fertility and species-specific markers, the number of hybrids decreased drastically over the period of monitoring, from 85 out of 200 plants in the first year of monitoring to only 5 out of 200 plants, 5 years after the GM crop and wild plants were first in contact with one another. However, the presence of even a small number of transgenic hybrids may ensure persistence over time.

There is no evidence to suggest that the presence of an HR transgene in wild plants is inherently problematic. The study suggests that wild hybrids containing the transgene are only likely to be present in large numbers in agricultural areas where herbicides are applied frequently and appropriately. This is because application of herbicides provides a selective pressure favouring these hybrids.

The study concludes that the risks of hybridisation depend on the trait in question, with some traits likely to cause more problems than others. Where the plants are located or which other genes they are combined with will also influence the risk-factor.


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