

Spreading the risks: when genetically engineered organisms go wild

First scientific review of risks due to offspring of GE plants persisting in natural populations

4 March 2020 / A new peer reviewed paper is published in the international Environmental Sciences Europe journal. The paper addresses specific environmental risks associated with genetically engineered (GE) plants that can spread and propagate in the environment. It is the first publication with a focus on the risk assessment of so-called next generation effects. The review addresses unintended effects that were observed in spontaneous hybrid offspring but absent in the original plants. Some of the risks include a higher invasive potential of the GE plants and/or disruption of the associated ecosystems.

“If gene flow to natural populations cannot be prevented, this can put biodiversity and the livelihoods of future generations at risk. These risks concern the cultivation of GE plants such as oilseed rape in the US, Canada and Australia; Camelina in the US; rice in Asian countries and cowpeas in Africa,” says Christoph Then for Testbiotech who is one of the authors. “There is also a risk caused by import of GE plants for the EU if, e.g. spillage occurs during transport from viable kernels of GE oilseed rape. Plants growing from these kernels can survive in the environment and spread uncontrollably.”

In many cases the observed effects in the hybrid generations were not predictable from the first generations of the genetically engineered plants. They include a higher amount of seeds or pollen, enhanced stress resistance and changes in other biological characteristics of the GE plants. The reasons are diverse, including environmental stress factors as well as genomic interactions in the hybrid offspring.

In view of these findings, the authors suggest the introduction of new ‘cut-off criteria’ in risk assessment that explicitly address the spatio-temporal control of GE organisms. If the criteria are not fulfilled, the environmental release cannot be permitted.

“This additional step in risk assessment is becoming increasingly important as research is ongoing to develop, e.g. gene drives in GE insects that can persist and propagate in the environment. These projects could pose a major threat to nature conservation in the future,” says Christoph Then.

The paper was published in the follow up to the international RAGES research project (Risk Assessment of Genetically engineered organisms in the EU and Switzerland) which was carried out between 2016 and 2019.

RAGES was carried out independently of the biotech industry and funded by Mercator Switzerland. The project provides strong evidence that, contrary what is claimed by industry, the risks of genetically engineered plants are not sufficiently investigated. Against the backdrop of this new research, Testbiotech is particularly concerned about a possible EU-US trade deal which aims to

speed up the approval process for GE organisms in the EU and threatens the precautionary principle as a foundation of EU policy making. According to media, there are plans to take first decisions around mid-March already.

Contact:

Christoph Then, Tel 0049 151 54638040, info@testbiotech.org

Further information:

The new peer reviewed publication: <https://enveurope.springeropen.com/articles/10.1186/s12302-020-00301-0>

The results from RAGES: <https://www.testbiotech.org/en/content/research-project-rages>

Report about the planned new trade agreement with the US:

<https://www.politico.eu/article/eu-mulls-faster-genetically-modified-food-approvals-for-trump/amp/>