

## New GE: How to assess the environmental risks?

Scientific publication identifies important cornerstones

9 July 2021 / Experts from environmental authorities in Austria, Germany, Italy, Poland and Switzerland have published a new scientific paper that, for the first time, defines some important initial cornerstones in the environmental risk assessment of plants altered with new genomic techniques (i.e. 'New GE' or 'genome editing'). The authors show that there can be no justification for only risk assessing plants with additionally inserted genes or with extensive genomic changes. Rather, all plants derived from New GE must be subjected to mandatory risk assessment.

In this regard, the authors disagree with the findings set out in a recent EU Commission report, which suggests that only specific categories of New GE plants should be subjected to mandatory risk assessment. The authors of the new publication state: *"With a view to the wide range of plant species, GE methods and traits that need to be considered, there is no safety by default for whole groups of GE applications encompassing different individual GE organisms, i.e. without an appropriate ERA prior to the release of GE plants into the environment."*

Furthermore, according to the publication, it is not sufficient to simply assess the intended effects, any unintended changes should also be taken into account. The authors conclude: *"We suggest integrating two sets of considerations into the ERA: considerations related to the traits developed by GE and considerations addressing the assessment of method-related unintended effects, e.g. due to off-target modifications."* In this context, the experts also disagree with the EU Commission, which has suggested that, in many cases, only the intended changes in the plants should be subjected to mandatory risk assessment.

One of the examples, the authors of the paper use to support their findings is wheat genetically engineered with CRISPR/Cas-technology. This particular example is especially interesting because it has already been discussed by the European Food Safety Authority (EFSA), and is also an example that Testbiotech has looked into.

This specific wheat variety contains a group of gluten proteins (alpha-gliadins) which are thought to be a cause for inflammatory diseases in the large intestine. These genes are part of a larger gene family which can be found in several regions of the genome. So far, conventional breeding has been unable to sufficiently reduce this large number of genes. However, CRISPR/Cas technology was used in 2018 to knock out a great many (35) of the relevant genes.

Consequently, the altered wheat exhibits a unique pattern of genetic change. While single mutations in the relevant genes may also occur randomly, this specific combination of genetic alteration can only be achieved with New GE. It can also lead to the emergence of specific risks such as the possible accumulation of unwanted plant components. In addition, it can unintentionally trigger the production of new gluten protein variants that can subsequently trigger inflammatory processes. Interactions of the wheat plants with the environment are a further possible risk that could, for example, lead to the emergence of new plant diseases. Therefore, risk assessment must include detailed assessment of unintended changes in the genome and the metabolome of the New GE plants.

Contact:

Christoph Then, [info@testbiotech.de](mailto:info@testbiotech.de) [1], Tel 0151 54638040

**Further information:** [The new scientific publication](#) [2]

[The publication in a presentation](#) [3]

[Testbiotech on the EU Commission report](#) [4]

[Creative Commons:](#)



---

[Testbiotech on the EFSA report which includes the wheat example](#) [5]

[“Project Genetic Engineering and the Environment” \(FGU\) explainer videos on methods and risks of New GE](#) [6]

---

**Source URL:** <https://www.testbiotech.org/en/news/new-ge-how-assess-environmental-risks>

#### Links

[1] <mailto:info@testbiotech.de> [2] <http://www.mdpi.com/2673-6284/10/3/10/htm> [3]

[https://www.testbiotech.org/sites/default/files/TBT\\_Eckerstorfer\\_GenomeEditing-RA\\_21-June-2021.pdf](https://www.testbiotech.org/sites/default/files/TBT_Eckerstorfer_GenomeEditing-RA_21-June-2021.pdf)

[4] <http://www.testbiotech.org/en/news/eu-commission-wants-reform-gmo-regulation> [5] <http://www.testbiotech.org/en/press-release/efsa-risk-assessment-new-ge-plants-necessary-even-if-no-additional-genes-are-inserted> [6] <https://fachstelle-gentechnik-umwelt.de/en/videos-en/>

