

'Aliens' in Spain: Teosinte-maize hybrids are out in the fields

Risk of gene flow from transgenic maize needs urgent investigation

8 May 2017 / Analysis carried out by researchers at the ETH Zürich revealed that teosinte plants found in Spain cannot be grouped with any of the currently recognised teosinte taxa. Instead, these plants seem to be of mixed origin, most likely with teosinte and maize as parental plants. Experimental crosses indicate that there is ongoing hybridisation between teosinte growing in Spain and maize cultivated there. These research findings published in the peer-reviewed journal *Scientific Reports* indicate that transgenic maize cultivated in Spain will in all likelihood be able to pass its transgenic DNA on to teosinte plants. This could result in alien weedy transgenic teosinte plants producing insecticidal toxins and becoming resistant to herbicides. More research is necessary for detailed assessment of the actual risks.

Teosinte is a plant species originating from Mesoamerica and is the declared ancestor of maize. It is very closely related to maize and therefore able to hybridise with maize to produce viable offspring. It has been known since at least 2009 that newly introduced teosinte is growing and spreading fast in maize fields in Spain, the country in the EU where the most genetically engineered plants are cultivated. Teosinte has already spread over several hundred hectares in Spain causing substantial economic harm. Apparently, the teosinte found in Spain has already successfully hybridised with maize plants - whether in Spain or elsewhere is unknown.

“As the new article shows, teosinte plants found in Spanish maize fields are of unknown origin and mostly undefined in their biological characteristics,” says Christoph Then for Testbiotech. “Major uncertainties exist about what will actually happen if there is further gene flow from transgenic maize.”

The article in *Scientific Reports* does not assess the specific risks of the transgenes introgressing teosinte plants. Rather, the scientists aimed to identify the origin of the plants and ended up with surprising results. It is the first time that such data have been published.

EU regulations require the assessment of gene flow from genetically engineered plants to other related plant species with which they can interbreed. This is a critical issue in risk assessment since hybridisation may lead to the uncontrolled spread of transgenes, enhance the weediness of an alien weed and severely impact farmers and the environment. In the applications filed by Monsanto, DuPont und Syngenta, gene flow to related wild and weedy plant species is explicitly excluded. Nevertheless, even after it became known that teosinte is growing and spreading as a weed in Spain, the companies failed to provide any data.

Just recently, the EU Member States voted on the cultivation of three genetically engineered maize variants that produce insecticidal toxins (MON810, Bt11 and Maize 1507). Two of them (Bt11 and Maize 1507) are also engineered to be resistant to glufosinate herbicides. No overall majority was reached in the vote, therefore, it is expected that the EU Commission will, as usual, authorise

cultivation. Considering the new data published in *Scientific Reports*, Testbiotech expects the EU Commission to take measures to stop the cultivation of the transgenic maize plants.

“This is a new situation with new evidence. EU Member States were not informed about these findings when they voted on the genetically engineered maize,” says Christoph Then. “The cultivation of transgenic maize in Spain cannot be continued on the basis of the outdated applications.”

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Further informations:

The article in Scientific Reports: www.nature.com/articles/s41598-017-01478-w

Testbiotech backgrounder on the risks of genetically engineered maize:
www.testbiotech.org/node/1759