

New GMOs

a risky distraction to climate & food security

FRIENDS OF THE EARTH EUROPE
MEDIA BRIEFING ON THE ENVIRONMENTAL
RISKS OF NEW GMOS

BRIEFING | December 2022



Europe is again at a major crossroads between intensive agriculture driven by a new generation of genetically modified plants (new GMOs) and a shift to truly sustainable farming systems. In the spring of 2023, the European Commission will propose dropping safety and labelling barriers for plants created using new GMO techniques,¹ including CRISPR-CAS9. Officials have been pushed by Bayer and other biotech corporations, which value the honey pot this new technology could represent, but not the normal EU safety tests it would require. The Commission is repeating unrealistic marketing claims and seems ready to accept the risks, which are that new GMOs are less precise than claimed; more risky in the wild; impossible to reverse; threaten the organic sector; and will inevitably intensify industrial agriculture that is a major cause of collapsing biodiversity. FoEE concludes that new GMOs are a distraction from the real solution to food security and nature recovery: agroecological farming.



What is changing?

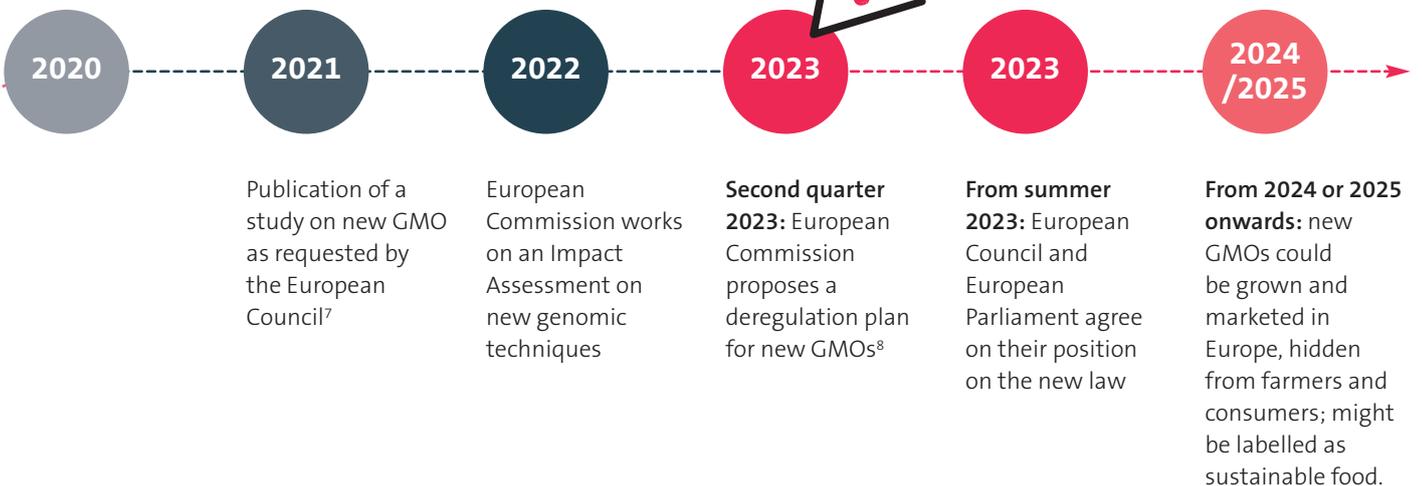
A new generation of genetically modified organisms (new GMOs) is being created through techniques, including CRISPR, that can alter the genetic code of plants and animals more quickly, at more points in the DNA sequence, with more accuracy than current GM methods. The European Court of Justice² concluded that it is now possible to alter plants “at a rate out of all proportion to those resulting from the application of conventional methods” but also “*that risks linked to the use of these techniques might prove to be similar to those that result from the production of other GMO.*” The first pending new GMO application in Europe is for EU-wide import rights for a Pioneer maize³ (for imports as food and feed, not for cultivation) bred to resist the herbicide Glufosinate. About 30 pre-commercial new GM plants, animals and microorganisms are in the pipeline and could reach the market within 5 years, according to a Commission study,⁴ with over a hundred plants expected by 2030. This includes a greatly expanded range of vegetables and an expansion into modified shrubs and trees.

The Commission’s detailed plans for the new legislation have been kept secret from the public so far. But communication with stakeholders showed that it wants to exclude certain new GMO plants from the EU wide definition of GMO. An internal consultation with decision makers and stakeholders reveals two further changes. First, the exclusion of new GM plants and food from all safety tests if they could theoretically be created through non-GM plant breeding. Second, their exclusion from current GMO labelling requirements and instead the possibility to be labelled as “sustainable”.⁵

WHEN?

What happened so far:

2020, 2021, 2022: Consultations with governments & stakeholders⁶



Who wants change?

The market leaders in new GMOs are **Corteva, Syngenta, Bayer/Monsanto**. Industry voices are growing increasingly strident to demand the exclusion of new GMOs from current safety and labelling rules.⁹ This would allow them to finally enter the EU food market and sell their GM food to consumers who, when given the choice, do not buy them. **Europe has long resisted GMOs:** whilst more than 60 GMOs are authorised to be imported to the EU, supermarkets have phased them out since the early 2000s. And even in other regions with historically low safety and labelling requirements, such as Canada or the United States, only two new GMOs are currently being grown.



What are the risks?



Removing EU safeguards will raise direct and indirect threats to the environment:

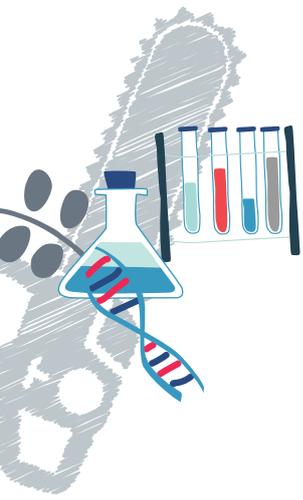
- **CRISPR precision is exaggerated** Alarmed at a drive to deregulate new GMOs, 100 expert scientists¹⁰ recently warned against exaggerating the accuracy of CRISPR. *“A large number of peer-reviewed studies reveal unintended genetic changes from gene editing. A review of the literature shows that gene editing-induced changes are different from changes that occur in natural breeding, they wrote.”* The Commission claims certain new GMOs are no more risky than normal plant breeding. In fact, new GMOs create specific new risks. The genome editing tool of CRISPR relies on terribly complex repair mechanisms of the DNA. This repair process cannot be predicted. Its outcome can impact the interactions of molecules and cells^{11,12} that may increase change vital traits such as the fitness of the plants and could impact how organisms act in ecosystems. Gene editing can also lead to unexpected production of new toxins and allergens in plants, which could affect the safety of new GM products for humans but also for wild species.¹³ Altering multiple genes in one organism, known as multiplexing, leads to new, untested impacts combinations that make risk assessment considerably more difficult.

The pharmaceutical sector understands well the serious consequences of unintended side effects. Asked about its new GMO deregulation plans, the European Federation of Pharmaceutical Industries and Associations (EFPIA) told the Commission (page 14):¹⁴ *“These technologies are still in their infancy and most methods have relatively low on-target efficiency and some off-target effects... More research should be directed to further develop these technologies, reduce off-targets and increase efficiency...”* Given the uncertainties, various research¹⁵ concluded that more, not less, risk assessment is needed for new GMOs. Researchers from five relevant public authorities recommend specific checks for environmental impacts of new GMOs.¹⁶

- **Unchecked risks** If you don't look for problems, you rarely find them until it is too late. That has been a repeated and costly warning¹⁷ made to EU lawmakers about novel technologies from their official advisors. Yet of the €356 million European Union spent on New GMO research in the 5 years prior to 2021, just 1.6% were spent on detection methods, risk assessment and monitoring, the Commission found.¹⁸
- **Empty promises, lost time** New GMOs are now presented as a tool to help resist drought.¹⁹ As Bayer's plant biotechnology research lead, Ty Vaughn, told Politico:²⁰ *“The thing about drought tolerance is that it's extremely complex... and it's important to analyse and test how this works in different environments.”* The complexity of how plants react to drought stress is not yet understood. It might take decades to come up with new GM plants able to deal with this complexity and the variety of other environmental stresses assimilate this complexity, if at all. With increasingly extreme weather conditions, farmers need solutions now.²¹

The promise to produce healthier food via gene editing of a plant is a similar story. Modifying a plant's fatty acid metabolism can negatively impact plant hormones, growth, stress tolerance and the plant's role in the food web.²² Promises of viral resistance are also doubtful, due to high mutation rate. Viral resistance lasted only 8 weeks in transgenic cassava,²³ for example.

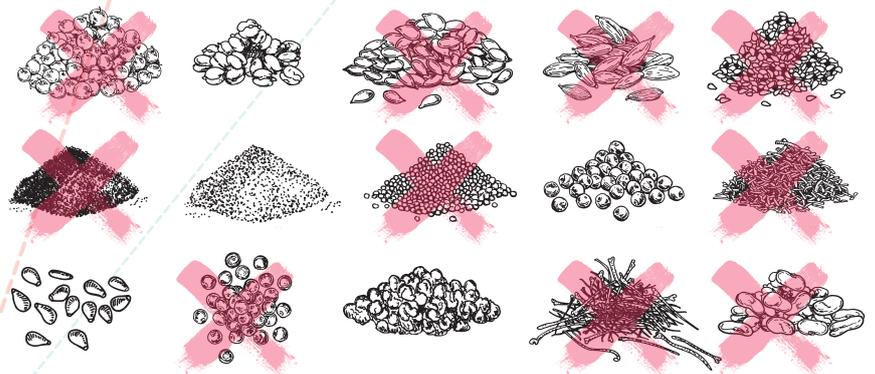
Despite the marketing claims that new GMOs would contribute to healthier diets and secure production under droughts, those 16 most advanced in the pipeline are again often resistant to herbicides. In the last 20 years, herbicide resistant crops have actually led to a greatly increased use of herbicides.²⁴ Therefore, those encouraging new GMOs in Europe are likely encouraging more intensive agriculture, pesticide use and environmental harms, while deflecting focus and funding from proven solutions to climate and food security needs.



- **Irreversibly mixing with or dominating wild plants**

Experience with existing GM plants has shown that they contaminate nature and cross out into wild plants as well as in neighbour fields. A GM oilseed rape was never grown in Switzerland, even on a test basis, but has been found today widely beside railway tracks there,²⁵ presumably having escaped from grain waggons and in Japan.²⁶ The simple question of how far pollen from GM maize can spread took more than 14 years of research.²⁷ Interactions between GM plants and their environment (microorganisms, animals, other plants) are unpredictable²⁸ and gene transfer to crops cannot be reliably prevented in the field.²⁹ Research showed glyphosate-resistant rice has crossed with wild rice and produced more seedlings.³⁰ This favours the undesired spread of glyphosate resistance in wild species.

New GMO crops are less understood, but likely more complex. The fertility rate and outcrossing distances for many intended new GMO plants are hardly studied while the number of possible wild crossing partners is far greater than for current GMO crops. Perennial plants, especially woody plants and those with invasive characteristics, are particularly concerning. Trees produce large quantities of seeds, which are also spread over several kilometres by wind and animals.³¹ If more nutritious or drought tolerant crops are ever produced, they could be more vigorous and persistent and spread into ecosystems. In view of the new possibilities of producing plants with several modifications, their impacts could increase considerably. Faced with the dramatic loss of species and whole ecosystems, putting untested new GMO plants into nature feels irresponsible.



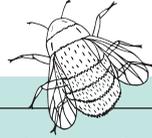
REGULATE NOW



Endnotes:

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What are the real solutions?



Agroecological farming³² drastically cuts climate emissions and pesticide use. It avoids disease-prone monocultures and soil erosion, pays farmers better,³³ offers climate resilience,³⁴ protects biodiversity,³⁵ and boosts food security and nutrition.³⁶ These are systemic benefits, rather than ones focused on isolated genetic traits. Insofar as such traits are useful, conventional breeding benefits from whole genome resistance to pests and disease, and continues to top genetic modification.³⁷



400,000 EUROPEANS SIGNED A PETITION

CALLING TO MAINTAIN STRICT EU REGULATIONS



PUBLIC DEBATE

Nearly all respondents to a recent poll³⁸ representative of all French adults said they want transparent labelling of new GMOs, while three quarters said they want to maintain strict EU regulations. Over 400,000³⁹ Europeans have signed a related petition. 161 civil society, academic and organic farming sector organisations⁴⁰ are urging the Commission to apply existing safety rules to new GMOs, echoing the 2018 European Court of Justice ruling. Leading retailers⁴¹ support this call. Ministers from Austria,⁴² Germany⁴³ have called for clear safety checks, labelling and the precautionary principle to be applied to new GMOs.

Friends of the Earth Europe is the largest grassroots environmental network in Europe, uniting more than 30 national organisations with thousands of local groups. We are the European arm of Friends of the Earth International which unites 74 national member organisations, some 5,000 local activist groups, and over two million supporters around the world. We campaign on today's most urgent environmental and social issues, challenging the current model of economic and corporate globalization, and promoting solutions that will help to create environmentally sustainable and socially just societies. We seek to increase public participation and democratic decision-making. We work towards environmental, social, economic and political justice and equal access to resources and opportunities on the local, national, regional and international levels.

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