Cracks appear in Europe's opposition to CRISPR gene editing and other New Breeding Technologies

Despite what the anti-genetic engineering forces want you to believe, there is growing political, scientific and agricultural support across Europe for food grown from genetically engineered (GE) seeds.

But is there enough political will to break the back of the ferocious opposition from environmental and organic food lobbies? Can politicians change the minds of a generally suspicious public that is ill-informed about the benefits offered by genetic engineering?

Opposition to new plant breeding techniques (NPBTs) is not uniform. Many EU politicians have expressed support for these new crop products because they understand that without their adoption, EU agriculture would be at a severe competitive disadvantage to other countries who have deregulated new genome techniques.

President Macron and other French politicians have emerged in Europe as leaders in the push for revising the restrictive EU rules that are forestalling adoption of new breeding techniques. Macron has spoken about a "third agricultural revolution", based on digitalization, robotics and genetics. That revolution, he said, will make it possible to "get away from certain pesticides, to get away from certain practices, to improve the quality of life and to improve productivity."

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In May 2022, he laid out an ambitious agricultural agenda during his second term based on four pillars: generational renewal to encourage younger people to farm as a livelihood; ecological planning and upholding France's commitment to reduce the carbon footprint of agriculture; reform of the EU's Common Agriculture Policy that provides a safety net to farmers through subsidies that finances rural development and sets a regulatory framework for agriculture; and a "third agricultural revolution" marked by the use of breakthrough technologies.

Macron's statements are in synch with comments made by Agriculture Minister Julien Denormandie. "NBTs are not GMOs," he said, referring to transgenic techniques that involve transfer of genes from one species to another. "NPT technology allows much quicker development of a variety that could have emerged naturally at some point. … NPTs should not be regulated like GMOs.

But green groups remain steadfast in their resistance to these new technologies. Benoit Biteau, a Green Party member representing France in the EU parliament, called NPBTs "false promises" made by French agribusiness. "The only GMOs that exist are pesticide GMOs, tolerant to molecules such as glyphosate or which produce pesticides themselves."

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Greenpeace has sharply criticized Macron's support for the use of genetics as a future pillar of French agriculture. It's "perpetuating the productivist logic of the dominant agricultural model, which supports the deleterious industrialization of our agriculture," it said.

But not all European greens are aligned with this rejectionist stance. In November of 2022, the Green Party of Finland unanimously urged that EU regulations should treat these new methods in the same manner as traditional breeding methods, writing that it …

> *… supports plant breeding methods which are compatible with sustainable development. These include novel genomic techniques (NGTs) such as CRISPR which enable the plant's genes to be edited more precisely.]*
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> *Researchers around the world are developing crop varieties that can reduce pesticide use and add nutritional value while making them more resilient to climate change. This is particularly promising for farmers and consumers in the Global South.*

Support for gene editing gradually growing across Europe

Several political parties have come out in favor of NPBT's. In the prelude to the Parliamentary election in Italy, in September 2022, Azione Italia Viva, +Europa and Leona all expressed support for NPBTs . Italian MEP Antonio Tajani, a former EU Commissioner in charge of enterprise and industry, said that the EU needed to "liberalize the use of new assisted plant evolution technologies by untying them from GMO rules …. New agricultural biotechnology can provide experimentation for more drought-and pest-resistant plants."

Tertsch Hermann, a MEP from Spain, said gene editing is critical to meet growing demands to reduce the use of agricultural chemicals. "The Farm to Fork or biodiversity strategies will not be successful if farmers are deprived of the tools they need to produce food while improving their environmental performance," he said. "If pesticide reduction is a pillar of the EU strategies, we cannot accept that genome editing and CRISPR are not fully recognized as key elements to achieve sustainability goals in agriculture."

In Germany, where resistance to NBTs is most intense, two parties have challenged rejectionism: the Free Democrats, which is part of the three-party coalition government that also consists of the Greens and the Social Democrats; and the center-right CDU/CSU coalition, the second largest bloc in the Bundestag.

In contrast to Germany, Netherlands has vocally embraced the potential of gene editing “The Dutch Government supports the European Commission conclusions that innovative biotechnologies can play an important role in greening food production,” notes a USDA report. Several of the parties that make up the coalition government support NPBTs including the Liberal Party, Liberal Democratic Party and Christian Democrats.

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Minister of Infrastructure and Water Management Vivianne Heijnen announced the government’s formal position last year:

> *Because the European Food Safety Authority has confirmed that targeted mutagenesis and cis-genesis are equally safe as conventional techniques, a risk assessment for plants that have been altered with NGTs could be replaced by an approval assessment…The Dutch Government believes that new genomic techniques can fulfill an important role in the transition to a more sustainable agri-food system — for example by reducing pesticide use.*

Sweden is equally supportive. "Since 2016, [Sweden] has argued to the European Commission (EC) and to the EU Court of Justice that the legal framework in the EU for GE products is not appropriate when applied to new plant breeding techniques," notes a USDA assessment.

European anti-biotechnology coalition holds

Despite cracks in the once-united European opposition to agricultural genetic engineering, rejectionists still hold sway. They've learned the lesson that it is easier to manufacture fear about biotechnology, which few laymen understand, then it is to reassure people about the clear benefits. EU political leaders who do support crop technology innovation have been reticent about mounting the kind of public education offensive that could reassure an anxious public regarding the safety of next-generation agro-technology. And many scientists are ill-equipped to engage in public policy debates.

The extent of the hysteria about NPBT's in the EU was illustrated by a cross-party coalition of European parliamentarians who sent a letter to the European Commission early last year demanding it fund research into the "potential risks [of gene editing technologies] and to enable the detection and traceability of GM products across the food chain. The letter continued:

> *Only a comprehensive research agenda on genetic engineering will allow the EU to develop well-informed policies in that regard…organisms developed with genome editing technology pose new and different risks from conventional breeding and genetically modified organisms (GMOs) currently commercialized…We are convinced that the EU can and must…maintain a high level of protection for our public health and the environment. However, this will not be possible without dedicated EU research.*

The reality is that the European Commission does not have to conduct more research on the safety of GMOs and NPBTs. All they have to do is use Google Scholar to find hundreds of studies on the safety and sustainability benefits of genetically engineered crops. Or they could request the opinions of the esteemed scientific institutions in the EU and elsewhere which endorse using genetic engineering for crop cultivation.

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They also might want to speak to Stanford University chemist and biologist Jennifer Doudna, who along with geneticist Emmanuelle Marie Charpentier of France won the Nobel Prize for chemistry in 2020 for their pioneering work on CRISPR. Doudna is a vocal proponent of using CRISPR for food production.

If the EU refrains from reforming its regulatory framework it will forego the advances in plant genomics that are creating disease, drought, insect, stress and browning-resistant fruits, vegetables and grains; healthier and more nutritious foods; and crops that could make their own nitrogen and sequester more carbon. The EU needs to decide whether it wants to be left behind to grow food in the same manner as it did in the 20th century or join the 21st century global agricultural revolution.

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