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European Agriculture: Between Scientific Progress and the Fear of Corporate Seed Monopolies

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The European Union is on the verge of the most significant agricultural reform in decades. With a historic vote on June 17, 2026, the European Parliament definitively approved a regulation establishing new rules for plants created through so-called new genomic techniques (NGTs). The new regulation, which was agreed upon between the European Parliament and the Council of the EU back in December 2025, marks a substantial shift in how Europe will regulate these technologies. The aim is to facilitate the development and market entry of new varieties that require less pesticide use while being more resilient to climate change and pests.

The New Classification: Focus on the Outcome, Not the Method

Until now, the emphasis in European legislation was placed on the method by which a plant was created. The new rules mark a conceptual shift – they direct attention to the final result, that is, what genetic characteristics the plant possesses, regardless of the technology used to create it. Plants obtained through new genomic techniques are divided into two categories:

The first category – **NGT-1** – includes plants whose genetic changes could also be achieved through traditional breeding. Following verification, they will be treated essentially as conventional plants, exempt from cumbersome administrative procedures. **An exception** applies only to varieties created for herbicide resistance or for the production of insecticidal substances, which automatically fall under the stricter regime.

The second category – **NGT-2** – encompasses plants with more complex genetic alterations. These will remain subject to the strict European rules for genetically modified organisms (GMOs), including mandatory risk assessment, market authorization, full traceability, and labeling. Member states will retain the right to restrict or prohibit the cultivation of NGT-2 plants on their territory, even when they are approved at the European level.

Differences between Standard GMOs and NGT-1

Method of Modification: Standard GMOs involve inserting DNA from a completely different biological species (transgenesis). Plants in Category NGT-1 use

only genetic material from the same or a closely related species (cisgenesis and mutagenesis).

Equivalence: NGT-1 plants are considered equivalent to conventional ones because the changes could occur naturally or through traditional breeding.

Regulatory Regime: Traditional GMOs undergo expensive and lengthy approval procedures and are subject to mandatory labeling. NGT-1 plants are exempt from these requirements and only need a rapid verification procedure.

Traceability: Products from standard GMOs are strictly tracked throughout the entire chain. For NGT-1, only an entry in a public online register is required to ensure transparency for farmers.

Scientific Methods Behind NGTs

Unlike the old generation of GMOs, the new techniques act like a "molecular scissor" and make fine adjustments to the plant's own DNA.

• *CRISPR-Cas9 (Gene Editing):* This is the most widely used method. A system of two components – an RNA molecule (which finds the exact location in the genome) and the Cas9 enzyme (which cuts the DNA strand). The plant itself repairs the cut, thereby silencing an unwanted gene (e.g., for disease susceptibility) or improving an existing one.

• *Cisgenesis:* Transferring genes between plants that can naturally crossbreed (e.g., from a wild apple to a cultivated apple). This accelerates traditional breeding, which otherwise takes decades.

• *Targeted Mutagenesis:* Inducing mutations at specific points in the DNA without introducing new genetic material. The method mimics the natural process of evolution but occurs in a controlled and immediate manner.

• *Epigenetic Modification:* Changing the way genes are activated or deactivated without altering the DNA sequence itself. Thus, the plant adapts to stress (e.g., drought) without permanent changes to the code.

Impact on Organic Farming

The major change that generated significant media coverage is the removal of mandatory labeling of NGT-1 category products for the end consumer. Nevertheless, to enable farmers to decide what to grow, seeds and planting material will be explicitly designated as NGT-1, and the European Commission will establish a public European database.

The legislation confirms that the use of new genomic techniques will not be permitted in organic farming.

However, the new regulation introduces a key compromise aimed at protecting farmers: it provides that the accidental and technically unavoidable presence of plants from category NGT-1 will not automatically lead to the loss of organic status. During the negotiations (especially in February 2024 and subsequent stages), the European Parliament voted on amendments stating that the accidental and technically unavoidable (*adventitious and technically unavoidable*) presence of NGT-1 material (below a certain threshold) will not automatically lead to the revocation of the organic certificate. The purpose of this amendment is precisely to mitigate the impact on organic farming, since NGT-1 plants are equated with conventional ones and their traceability is very difficult.

The European Commission has committed to carefully analyze how the new rules affect organic producers and consumer trust in organic food.

The law states there is no automatic loss of status upon accidental presence of NGT-1 material in production, but the organic sector (IFOAM, BÖLW, etc.) fears that in practice there will be financial losses due to the lack of compensation and market realities:

Burden of Proof: The organic farmer must prove the contamination was "accidental and technically unavoidable," which is a complex and costly process.

Zero Market Tolerance: Even if the law says "you can keep your certificate," many retail chains, private organic standards (such as Bioland, Demeter), and consumers themselves have zero tolerance for any GMO/NGT traces. If a batch is contaminated, it will most likely be rejected from the organic food market, leading to huge financial losses for the farmer.

Lack of Compensation: The fact is that the regulation does not provide for a Europe-wide compensation fund (free from the "polluter pays" principle). The risk and costs (for testing, for establishing buffer zones) indeed fall on organic farmers.

In Bulgaria, agricultural associations are divided. Conventional grain producers see an opportunity for higher competitiveness against imports from third countries, while the organic production sector insists on strict buffer zones to avoid cross-contamination.

The Voice of Supporters: Salvation for the Climate and Innovation in Action

On the other side of the barricade, supporters of the reform – including leading research institutes and large-scale farmer unions like Copa-Cogeca – welcome the decision as a vital step for the survival of the European agricultural sector. In an era of dramatic climate change, traditional plant breeding, which takes between 10 and 15 years, is too slow. New genomic techniques allow the same result to be achieved in a matter of months.

The main arguments in favor of the new rules are related to crop resilience. Using CRISPR/Cas, scientists are already creating wheat and corn varieties that withstand prolonged droughts and extreme heat, which is critical for Southern Europe and Bulgaria. For potatoes and sugar beets, traditionally grown in Western Europe, the goal is to create natural resistance to blight and pests, which will drastically reduce pesticide use. For tomatoes and vines, changes are aimed at extending shelf life after harvest and improving resistance to fungal diseases. Strengthening the natural immunity of plants against economically damaging viruses and fungal diseases will also change the current chemical plant protection practices.

Similar products are already being grown or are in an advanced stage of development outside the European Union. These include revolutionary crops such as wheat with reduced gluten content, potatoes with higher disease resistance, and corn that tolerates drought much better. It is important to note that the new rules will apply equally to plants produced in the EU and imported products.

Last but not least is the issue of geopolitical competitiveness – countries like the USA, the United Kingdom, and Japan have already liberalized these technologies, and if Europe had maintained its old veto, it risked becoming entirely dependent on foreign imports of seeds and food.

Global Leaders in NGTs

While the European Union is only now legalizing these techniques, the USA and China are already in an advanced phase of commercialization and are competing for global leadership.

The USA applies a policy oriented towards the final product, not the process. The US Department of Agriculture (USDA) does not regulate NGT plants as GMOs if the changes can be achieved through traditional breeding. Dozens of NGT products are sold on the market, such as soybean oil with an extended shelf life and drought-resistant corn. In North America, the commercial focus is on the end consumer (tastier, longer-lasting product) and on facilitating farmers under extreme climatic conditions.

China views NGTs as a key element for its national food security. The country invests billions in state scientific institutes, rather than relying solely on private corporations. As of today, China is a leader in the number of patents for CRISPR technologies in agriculture. In recent years, Beijing has approved for mass cultivation gene-edited wheat (disease-resistant) and soybeans with increased oleic acid content. The focus here is entirely on scale and yields – the goal is to feed the population and reduce dependence on grain imports from America.

The Hidden Threats: Patents and Corporate Pressure

The sharpest criticism of the new law, however, is not only environmental but rather economic and related to intellectual property. Unlike conventional varieties, plants developed through NGTs are subject to patenting. During the final debates in the European Parliament, proposals to ban patents on edited seeds did not gather the necessary majority.

"The possibility of patenting specific genetic traits threatens to monopolize the seed market in the hands of a few global agrochemical giants. Small and medium-sized breeding companies in Europe will not be able to pay expensive licenses and will be pushed out of the market, and farmers will become hostages of corporate seed subscription plans," warn the association ARCHE NOAH and other non-governmental organizations.

Critics also point out that removing labels for the end consumer violates the fundamental right of European citizens to know what they are buying and puts an end to the transparency of the food chain in the name of faster corporate profits.

When do the new rules come into effect?

The regulation will enter into force 20 days after its publication in the Official Journal of the EU. Its actual implementation, however, will begin two years later (in 2028), to give member states and industry sufficient time to adapt to the new legal framework.

Whether Europe will succeed in finding the middle ground between the technological leap and the protection of traditional and organic farming, or whether this reform will lead to a deep division of the market, remains to be seen in the coming years.

Media Sources:

Official documents of the European Parliament and the Council of the EU regarding NGTs (December 2025 - June 2026)

Analyses from agricultural publications Agriland, Bauernzeitung, and the information portal Raiffeisen.com

Official positions of non-governmental organizations and the organic sector (IFOAM Organics Europe)

Scientific reports and opinions from the Austrian Academy of Sciences (ÖAW)