

FAO

Food and Agriculture Organization Regulation of Genetically Modified Products

Overview

Humanity has been experimenting with selective breeding on crops and livestock for thousands of years. The first instance of modern genetic modification occurred in 1973, when Stanley Cohen and Herbert Boyle invented DNA cloning.¹ With their innovation emerged genetically modified organisms, or GMOs, which are defined as any plant, animal or microbe whose genetic makeup has been artificially altered.² Since then there have been bounds in related research and development, allowing us to increase food production and consistency. Due to these developments, people worldwide have benefitted from improved access to cheaper food. However, as with any new technology, concerns began to grow about adverse effects from consumption. Many groups protested for the requirement of labeling GMO products, which has since become standard in 64 countries.³ Nations continue to grapple with the benefits and disadvantages of genetic modification and how to handle its future in the agricultural industry.

What is FAO?

The Food and Agriculture Organization (FAO) is a specialized agency of the United Nations dedicated to leading international efforts to eliminate hunger. With 195 members— 194 countries and the European Union— FAO works in over 130 countries to ensure food security and provide people with regular access to high-quality food for active, healthy lives.⁴ Just as science has advanced, so too have concerns about safety; from human consumption to the effects on animals, regulation of genetically modified products can have great or disastrous effects on the global ecosystem. As such, it falls under the purview of the FAO to regulate the modern practice and ensure the safety of the products.

¹ Bawa, A. S., and K. R. Anilakumar. "Genetically Modified Foods: Safety, Risks and Public Concerns- A Review." *Journal of Food Science and Technology*, December 2013. [https://pmc.ncbi.nlm.nih.gov/articles/PMC3791249/#:~:text=The%20first%20genetically%20modified%20\(GM,intr,duction%20of%20virus%20resistant%20tobacco.](https://pmc.ncbi.nlm.nih.gov/articles/PMC3791249/#:~:text=The%20first%20genetically%20modified%20(GM,intr,duction%20of%20virus%20resistant%20tobacco.)

² "Genetically Modified Organism (GMO)." National Human Genome Research Institute. Accessed January 13, 2025. <https://www.genome.gov/genetics-glossary/Genetically-Modified-Organism-GMO>.

³ "Labeling Around the World." Just Label It! Accessed January 13, 2025. <https://www.justlabelit.org/right-to-know-center/labeling-around-the-world/>.

⁴ "About FAO." FAO. Accessed January 13, 2025. <https://www.fao.org/about/about-fao/en/>.

GMOs and their Consequences

Scientists who want to manipulate a crop identify certain desirable factors- size, color, insect resistance, etc.- find an organism that features what they're looking for. This allows them to copy the organism's genes and insert them into others, allowing the new life to develop with new and preferred traits.⁵ As more of the market fills up with GMO products, consumers are facing a more uniform selection of goods. However, much like any scientific advancement, there are pros and cons with this shift.

As mentioned, GMO crops resist unfriendly interference from insects, pesticides and viruses. This is vital in preventing food waste and climate-related crop damage. These factors converge to aid farmers in areas with poor food security, whose crops may have otherwise been threatened by erratic climate or a harsh environment.⁶ With these advantages, however, struggling producers can earn more profit on their output, with consumers getting a better product in return. Environmentally, this newfound toughness will lessen pesticide usage, decreasing harmful aerosol air pollution.

However, buyers and sellers alike should be cautious with excessive GMO usage. One concern with modified products are allergic reactions. If a useful gene is taken from an allergen, like a peanut, and inserted into something else, the new product has a small chance of triggering a reaction in someone with a peanut allergy.⁷ Most other bodily risks from GMOs have little scientific backing, but environmental concerns remain. By flooding fields with uniform crops, other plant types will suffer, contributing to biodiversity loss. Genes from modified organisms can also spread to different wildlife, damaging their genetic structure.⁸ While many of these concerns seem less pressing than the benefits of GMOs, the rapid spread of these products should be closely monitored to ensure maximal testing and safety before they become the only available option.

Current Obstacles and Opposition

⁵ "How GMOs Are Regulated in the United States." U.S. Food and Drug Administration. Accessed January 13, 2025.

⁶ U.S. Food and Drug Administration.

⁷ "Pros and Cons of GMO Foods: Health and Environment." Medical News Today, January 5, 2024. <https://www.medicalnewstoday.com/articles/324576#gm-os-and-the-environment>.

⁸ Medical News Today.

Regulating GMOs is challenging because scientific advancements like gene editing are progressing faster than current regulatory frameworks can adapt. New technologies make it difficult to categorize and assess GMOs properly, while long-term environmental and health effects are still not fully understood. Different countries also have varying regulations, with some being stricter than others, creating trade barriers and delays in adoption.⁹ Generally, worries are higher in Europe than in North America, with the EU having stricter requirements for GMO products.¹⁰ These concerns exist both at a government level and a consumer level, with many European producers demonstrating more hesitancy to import and export genetically modified products. This can be attributed to the smaller family, local-produced culture of Europe versus the industrial farming culture of the rest of the United States, Canada and other Western nations.¹¹

There are also economic and political obstacles. The high costs of testing and approval processes limit the ability of smaller companies to enter the market, which can stifle innovation. Regulatory decisions are often influenced by lobbying from both biotech companies and anti-GMO advocacy groups, leading to policies that may not always align with scientific evidence.¹² Additionally, public resistance to GMOs, driven by ethical, cultural and health concerns can lead to stricter regulations or even bans despite scientific support for their safety. The demand for clear labeling and effective testing further complicates the regulatory landscape.

Stakeholders Involved

While the FAO operates globally with a broad mandate to eradicate hunger, improve nutrition, and promote sustainable agriculture, several organizations and agencies have more specific focuses. Whether in favor or against, independent bodies have influence in the GMO-sphere and their arguments must be considered to prevent civil upset.

⁹ Karalis, Dimitrios T, Tilemachos Karalis, Stergios Karalis, and Angeliki S Kleisiari. "Genetically Modified Products, Perspectives and Challenges." Cureus, March 18, 2020. https://pmc.ncbi.nlm.nih.gov/articles/PMC7164548/?utm_source=chatgpt.com.

¹⁰ "US vs EU: Getting American Microbial Products into the European Market." Biosafe. Accessed January 13, 2025. <https://www.biosafe.fi/insight/us-vs-eu-getting-american-microbial-products-into-the-european-market>.

¹¹ Delude, Sarah A. "The Food Fight between the United States and Europe: Why GMOs Divide the West ." *Surface*, 2006. https://surface.syr.edu/cgi/viewcontent.cgi?article=1638&context=honors_capstone#:~:text=While%20American%20companies%20continue%20to,of%20GM%20food%20will%20bring.

¹² "Social and Economic Effects of Genetically Engineered Crops." Essay. In *Genetically Engineered Crops: Experiences and Prospects*. National Academies Press, n.d.

Governments and Regulatory Agencies

The Food and Drug Administration, or FDA, oversees the safety of food and agricultural products in the United States, including GMOs. It evaluates scientific data to ensure that GMOs are safe for consumption and monitors compliance with safety standards.¹³ However, concerns have been raised about the FDA's reliance on voluntary corporate action to fill regulatory gaps, potentially allowing unsafe chemicals in food.

In the EU, the European Food Safety Authority (EFSA) provides independent scientific advice on food-related risks in the European Union. It conducts risk assessments on GMOs to ensure they do not pose harm to human health or the environment.¹⁴ EFSA's rigorous evaluation process has led to stricter GMO regulations in the EU compared to other regions.

Consumer Advocacy Groups

Friends of the Earth is an international network advocating for environmental and social justice who oppose GMOs due to concerns about corporate control over food systems and environmental risks.¹⁵ While influential in raising awareness, their members do not have the same scientific backing as the FDA, which could raise concerns in the validity of their claims. Still, delegates should not dismiss the link between food producers and private distributors.

The non-GMO project, a separate group, offers third-party verification and labeling for non-GMO food and products.¹⁶ It aims to provide consumers with informed choices but could be criticized for potentially implying that non-GMO products are inherently safer or healthier, despite scientific evidence to the contrary. Nations may want to consider a middle ground: enforcing producers to inform customers of how their products were developed, while promoting education on the benefits and risks of each alternative.

Environmental Organizations

The Union of Concerned Scientists combines scientific research and advocacy to address global problems, including those related to food and agriculture. It has expressed cautious

¹³ "How GMOs Are Regulated in the United States." U.S. Food and Drug Administration. Accessed January 13, 2025. <https://www.fda.gov/food/agricultural-biotechnology/how-gmos-are-regulated-united-states>.

¹⁴ "Genetically Modified Organism (GMO)." National Human Genome Research Institute. Accessed January 13, 2025. <https://www.genome.gov/genetics-glossary/Genetically-Modified-Organism-GMO>.

¹⁵ "GM Crops." Friends of the Earth Europe, December 15, 2023. <https://friendsoftheearth.eu/what-we-do/food-farming-and-nature/gm-crops/>.

¹⁶ "GMO Facts." The Non-GMO Project, December 2, 2024. https://www.nongmoproject.org/gmo-facts/?gad_source=1&gclid=Cj0KCOiAkJO8BhCGARIsAMkswyieuirSW2U_dJ9qbvpAtXP_4B_udpGoXTVXWDhBDIA0-Gh_wyAPG3waAuPNEALw_wcB.

positions on GMOs, emphasizing the need for rigorous safety assessments and sustainable practices. However, they are open to producers using well-tested and safe GMO products, understanding their benefits.¹⁷

Moving Forward

Balanced GMO regulations require more stringent safety evaluations of GMO crops, enactment of labelling regimes and regulation through research. This protects the health of the public and the environment, with consumer trust built through responsible biotech. As such, international collaboration is essential to maintain uniform standards, leading to safety and innovation in GMO biotechnology. However, enforcing global regulations for GMOs is not easy. In order to establish effective oversight, regulators need to balance scientific innovation with consumer safety and secure funding for regulatory bodies. Cultural, political, and public skepticism around GMOs further complicate efforts to create universal standards.

The Cartagena Protocol on Biosafety covers global management of GMOs. The agreement, under the Convention of Biological Diversity, regulates handling and transporting LMOs (living modified organisms) across borders.¹⁸ It permits nations' reliance on precautionary measures in determining potential risk to biodiversity and human health. Enhancing the Protocol or establishing new accords may improve global transparency, safety and promote responsible use of GMOs. Nations should determine the benefits of signing such an agreement and whether fellow countries should all be held to the same standard.

¹⁷ “Genetically Engineered Crops and Pesticide Use.” Union of Concerned Scientists. Accessed January 13, 2025. <https://www.ucsusa.org/resources/genetically-engineered-crops-pesticide-use>.

¹⁸ “About the Protocol.” The Biosafety Clearing-House, May 18, 2021. <https://bch.cbd.int/protocol/background>.

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