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Legal Analysis of the Import Ban on GMO under the SPS Agreement: The Case of Peru and Mexico: Part I

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This research is divided in two papers. The first paper explains how Genetically Modified Organisms (GMO) have brought enormous advantages to farmers, as products can be more resistance to pests and droughts. Some countries have raised concerns regarding their use. Particularly, this paper analyses the import ban on GMO approved by Mexico (which applies only to GM corn) and Peru (which applies to all type of GM seeds and animals).

These domestic measures affect international trade, as companies are unable to export certain types of GMO to Mexico and Peru. Hence, this first paper focuses on the emergence of GMO in human history and its relevance to guarantee food security and to boost international trade. Additionally, it explains some of the concerns GMO have brought. Thus, the loss of cultural heritage, the risk on food safety and the impact on biodiversity, arguments raised by Peru and Mexico to support their GMO regulation, are covered. Finally, Peru's and Mexico's regulation are explained as well as the current situation of these trade measures.

The second paper focuses on the legal compatibility of the import bans on GMO approved by Peru and Mexico under the law of the World Trade Organization (WTO).

Keywords: GMO, non-tariff measure, WTO, USMCA

1 Introduction

Humans have been experimenting with genetically modified products for thousands of years. Although, as far back as 8000 BCE, humans have used traditional modification methods such as breeding and cross-breeding to breed plants and animals with desirable traits, the real evolution of Genetically Modified Organisms (GMO) began in 1973 when biochemists Herbert Boyer and Stanley Cohen developed genetic engineering by inserting DNA from one bacterium into another. Since that achievement, scientists have developed different GMO.[1]

Biotechnology companies directed the first generation of GM crops to the agricultural industry, with features such as pest resistance and herbicide tolerance. The first pest-resistance gene to be isolated and later used was Bacillus thuringiensis (known as 'Bt'), a soil bacterium that produces proteins toxic to certain insects. This is a very common pesticide used by organic farmers, and by inserting a Bt gene into a crop plant, the plant could produce its own pest-resistant proteins, thereby reducing the financial and environmental costs of spray-on pesticides.[2] The use of GM technology has made more feasible to grown crops. In fact, GMO have increased farm income benefits in products such as GM soybeans, GM maize, GM cotton, among other GMO.[3]

Since the introduction of GM crops, farm production has increased significantly. By 2010, twenty-nine countries had planted commercialized GM crops, and thirty countries had granted regulatory approval on the importation of GM crops for food and feed use, and for the release into the environment. By 2014, fifty-nine countries had granted approvals for GM crops, with the US leading the list, followed by Japan, Canada, Mexico, and Australia. Among the products with the most approvals, maize has become the leader with sixty approvals, followed by cotton with thirty-five, canola with fifteen, and potato and soybean with fourteen each. This trend has been followed

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1 US Food & Drug Administration, *Science and History of GMOs and Other Food Modification Processes*, https://www.fda.gov/food/agricultural-biotechnology/science-and-history-gmos-and-other-food-modification-processes#:~:text=1973%3A%20Biochemists%20Herbert%20Boyer%20and,human%20insulin%20to%20treat%20diabetes (accessed 24 Jan. 2026).

2 Brooke Glass-O'Shea, *The History and Future of Genetically Modified Crops: Frankenfoods, Superweeds, and the Developing World*, 7(1) J. Food L. & Pol'y 9 (2011), doi: 10.54119/jflp.qbva5617.

3 Graham Brookes & Peter Barfoot, *Economic Impact of GM Crops. The Global Income and Production Effects 1996–2012*, 5(1) GM Crops & Food 67, 68, 69 (Biotechnology in Agriculture and the Food Chain 2014).

by approvals for GM herbicide-tolerant soybeans and maize, and GM insect-resistant maize and cotton. However, some countries have implemented zero-tolerance policies, which prohibit the entry of any food or feed material containing GM substances that have not been authorized in the importing country, or low-level presence (LLP) policies, which allows LLP of certain GM substances in imported products.[4]

Despite the widespread adoption of GMO, concerns have been raised regarding their use. Among the main concerns, health risks are the most commonly cited, with antibiotic resistance and allergenic potential being the major issues. On the other hand, another argument against GMO relates to the environmental risks it may cause, including its potential threat to biodiversity.[5]

This research is divided in two papers. In this first paper, the author explains the emergence of GMO and their relevance in solving problems such as food scarcity, as well as their role in boosting international trade. Later, the paper covers the concerns raised against GMO, including biodiversity and health risks, as well as the potential loss of cultural heritage. The paper ends explaining the current situation of the GMO bans policies in Peru and Mexico. The second paper analyses the legality of Peru's and Mexico's bans on certain GMO under the Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement).

2 The emergence of GMO as a solution for food security and to boost international trade

Currently, a lot of debate has emerged regarding the advantages of GM crops which has caused the implementation of restrictive measures against these products. Thus, some countries have implemented regulatory framework that govern the assessment and approval for new plant varieties which has increased the barriers for their commercialization. While some countries have modified their current science regulatory framework to assimilate the innovation of agricultural biotechnology, other countries have increased regulatory requirements for GM crops, and some have departed from the science-based risk assessment and have included socio-economic and precaution concerns to restrict the entrance of GM crops.[6] However, there are some positive aspects undeniable to GM crops. In this section, this paper will cover the relevance of GM crops to secure food security and improve international trade.

2.1 *Guarantee of Food Security*

The Sustainable Development Goal number 2 of the United Nations (UN) calls for actions of the UN Member States in order to 'end hunger, achieve food security and improved nutrition and promote sustainable agriculture'.[7] In this context, food security has become one of the most relevant goals of the UN.

The concept of Food security has changed in time. During the World Food Conference of 1974, the term food security was coined. Food security was defined as 'availability at all times of adequate world supplies of basic food-stuffs'.[8] In this sense, during the 1970s the efforts were focused on increasing production to make available food products. Later, in the 1980s poverty was included as a problem to guarantee food security because the lack of money could reduce the access and demand for food and cause food insecurity. Thus, during this period the strategy was focused on increasing production (availability), but also on granting people with opportunities to earn enough income (access).[9] Thus, in 1986, the World Bank defined food security as 'access by all people at all times to enough food for an active and healthy life'.[10] In the 90s the concept of food security was enlarged to cover development.[11] Thus, in 1996, the World Food Summit proposed a definition from which four dimensions could be extracted: (1) Availability, (2) Access, (3) Products that are safe and nutritious that meet the dietary needs, and (4) Stability of the products.[12]

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4 Cemal Atici, *Low Levels of Genetically Modified Crops in International Food and Feed Trade: FAO International Survey and Economic Analysis* 6 (FAO commodity and trade policy research working paper No. 44 2014).

5 Kristina Hug, *Genetically Modified Organisms: Do The Benefits Outweigh The Risks?*, 44(2) Medicina (Kaunas) 90, 91 (2008), doi: 10.3390/medicina44020012.

6 Karinne Ludlow & Stuart J. Smyth et José Falck-Zepeda, *Introduction to Socio-Economic Considerations in the Regulation of Genetically Modified Organisms, Socio-Economic Considerations in Biotechnology Regulation* 4 (Springer 2014).

7 Food security is also related to food safety. Many biological and chemical agents, can cause food-borne diseases with a variety of degrees of severity, which ranging from mild indisposition to chronic or life-threatening illness, or both. Fritz K. Käferstein, *Food Safety in Food Security and Food Trade, Food Safety as a Public Health Issue for Developing Countries* (International Food Policy Research Institute, Focus 10, Brief 2 of 17 2003).

8 UN, *Universal Declaration on the Eradication of Hunger and Malnutrition* (1974).

9 Teeba M. Mohammed, *Food Security: The Concept's Evolution and its Coverage*, 11(1) J. Hum. Sec. Stud. 4–5 (2022).

10 World Bank, World Development Report 1986, *The Hesitant Recovery and Prospect for Sustained Growth Trade and Pricing Policies in World Agriculture World Development Indicators* 8 (Oxford University Press 1986).

11 Mohammed, *supra* n. 9, at 6–7.

12 George-André Simon, Basic readings as an introduction to Food Security for students from the IPAD Master, SupAgro, Montpellier attending a joint training programme in Rome from 19 to 24 Mar. 2012 5–8 (University of Roma Tre Faculty of Economics 2012).

Currently, food security is facing new challenges such as lack of investment in agricultural research,[13] water scarcity, rural infrastructure.[14] In fact, in some areas there has been a drop-off of yields due to a decline in groundwater availability, pest-built up and soil fertility decline. Other problem, is the growing demand for meat, which will result in an increase of grain as fodder.[15]

The 2025 report on The State of Food Security and Nutrition in the World explained that in 2024, 8.2% of the global population may have faced hunger, a lower number compared with 2023 and 2022 where 8.5 and 8.7 of the global population may have faced hunger, respectively. In 2024, it is estimated that 673 million people of the global population suffered hunger, which indicates a decrease of fifteen million people compared to 2023 and twenty-two million compared to 2022.[16] Although the decrease on the global population facing hunger, it is undeniable that access to food is still a problem.

Efforts conducted to reduce hunger have been implemented. In fact, it is estimated that from 2025 to 2030, the global number of undernourished people will decrease, but 512 million people are still projected to be facing hunger in 2030, of whom nearly 60% will be in Africa.[17] In this sense, GM crops could serve as a mechanism to solve food scarcity. In fact, for some scholars, over the last decades global food production has been increased to the point to provide food for the world's population, but inequalities forbid people to get access to food. Thus, GM crops could serve as a mechanism to provide food to those that do not have access to it.[18]

GM crops could create crops with greater tolerance for soil alkalinity, free aluminium, and iron toxicities. These advances could allow farmers to grow crops in acidic soil areas, something that will add more arable land to the global production base. GM crops may also be designed to have greater tolerance of extreme weathers, such as drought, heat and cold. Furthermore, GM crops could be designed to be less water intensive. In fact, some authors consider that GM crops could become more efficient in the use of fertilizers.[19]

Among other uses of GM crops, it has been raised that these can be used to provide people with essential micronutrients through consumption of the more staple crops, which will help to reduce malnutrition. GM crops could help to improve shelf-life of fruit and vegetables and the production of biopharmaceuticals, such as vaccines, through the use of plants.[20]

On the other hand, there are some traits that are still under development. For example, these studies could enable the transfer of genes conferring apomixis, which is the capacity to produce seeds in the absence of normal sexual reproduction. This technology could keep traits over generations without the need to buy new seeds. Other research is looking to produce GM crops that can be used for the production of bioplastics or biofuels, as substitutes for fossil fuels and their products; which would help to reduce the reliance on fossil fuels.[21]

However, GM crops are not the solution to all scenarios. In some cases, GM crops have not been a solution to the problem of food scarcity or have been effective boosting developing countries' economies. The causes vary regarding each product, but some of the reasons that have been raised to explain this situation is corruption, declining of international commodity prices, armed conflicts, inequalities in land, diseases in the population, improper application of GM crops in regions with native pests, among others.[22]

In this context, investment in agricultural research may be one option to increase production. Yield-enhancing strategies include research to increase the harvest index, plant biomass, and stress tolerance. Thus, application of Genetic Modified technology could help to secure food security, however, its use has been limited to small number of farmers and products. Although, many of the tools and intermediate products of biotechnology are transferable to solve problems in the tropics and subtropics areas of the world, this may not occur naturally by the private sector for the limited market potential of some developing countries. In this scenario, public sector investment will be required.[23]

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[13] Laurien Unnevehr, Lawrence Haddad & Cristopher Delgado, *Food Safety in Food Security and Food Trade, Food Safety Policy Issues for Developing Countries* (International Food Policy Research Institute, Focus 10, Brief 17 of 17 2003).

[14] Mark W. Rosegrant & Sarah A. Cline, *Global Foods Security: Challenges and Policies*, 302 Sci. 1917 (2003), doi: 10.1126/science.1092958.

[15] Ian Scoones, *Agricultural Biotechnology and Food Security: Exploring the Debate*, IDS Working Paper 145, at 4, 14 (Institute of Development Studies 2002).

[16] FAO, IFAD, UNICEF, WFP and WHO, *The State of Food Security and Nutrition in the World 2025 – Addressing High Food Price Inflation for Food Security and Nutrition* 4 (Rome 2025).

[17] *Ibid.*, at 4.

[18] Nuffield Council on Bioethics, *The Use of Genetically Modified Crops in Developing Countries* 29 (2003).

[19] Norman E. Borlaug, *Ending World Hunger. The Promise of Biotechnology and The Threat of Antiscience Zealotry*, 124 Plant Physiology 487 (2000), doi: 10.1104/pp.124.2.487.

[20] Nuffield Council on Bioethics, *The Use of Genetically Modified Crops in Developing Countries* 26 (2003).

[21] *Ibid.*, at 26–27.

[22] Aharon deGrassi, *Genetically Modified Crops and Sustainable Poverty Alleviation in Sub Saharan Africa: An Assessment of Current Evidence* i–iv (Third World Network Africa 2003).

[23] Rosegrant & Cline, *supra* n. 14, at 1918.

2.2 *Boost of International Trade*

In 2023, GM crops reached 206.3 million hectares. This area was dedicated to cultivate eleven different GM crops by twenty-seven countries. In 2023, United States was the biggest exporter of maize; a product that had 69.3 million hectares worldwide in 2023, from which 35.7 million hectares were located in the United States.[24] Thus, GM technology may give developing countries an opportunity to increase agricultural productivity and the agriculture's contribution to their economic growth. However, this will require developing and adopting appropriate biosafety and food safety regulations.[25]

In South Africa, from the 1999/2000 season to the 2001/2002 season, there was an increase to 60% of the hectares adopted Bt cotton. As a consequence of the increased yields, and the reduced costs of pesticides and labour cost related to pesticides, farmers were able to augment their gross margin by 11% in the first season and 77% in the second season, compared to farmers that growth non-Bt cotton. Interesting, these increases were achieved despite the fact that the Bt cotton seeds were twice the cost of conventional seeds. Additionally, it was estimated that the use of Bt cotton led to saving approximately 1,500 litres of water per farm.[26]

In the case of wheat, GM technology allowed the production of dwarf varieties. During 1960s and 1970s the introduction of semi dwarfing genes into wheat allowed to double the wheat yields worldwide. The wheat variety had the advantage of increasing yield directly through a greater number of grains in the ear. The application of dwarf technology was also applied in rice varieties. In fact, in the case of rice, GM technology was also used to develop B-carotene, an important micronutrient located in the leaves of the plant which is converted in vitamin A in the body, in the rice endosperm. This was called *Golden Rice.* However, due to the debates risen about the risks associated with the use of GM crops, some regulatory agencies in developing countries have been hesitant to grant licenses for field trials.[27]

Another interesting case, is the case of sweet potato in Kenya. Since 1991, the Kenya Agricultural Research Institute (KARI), jointly with Monsanto and universities in the US developed GM sweet potato strains that are resistant to the feathery mottle virus. Royalty-free licensing agreements were signed that allow KARI and other research institutes in other African countries to use the technology in the future. It is expected that these crops will increase yields by approximately 18–25%. However, some commentators argued that resistance to the feathery mottle virus would not ensure protection against three other main viruses.[28]

Bananas is another crop that provides income to local communities in developing countries. Leaves and fibres of bananas are used for a multitude of household and industrial purposes. However, Bananas are exposed to different infestations such as nematodes, viruses, and fungal diseases. The most common fungal disease is black Sigatoka which can reduce fruit yields by as much as 50–70%. This can cut productive lifetime of a plant from approximately thirty to two or three years. The remedy has been the use of fungicide. The spraying of fungicide represents up to 25% of the production cost, harms the environment, and affects the health of farm workers. In this context, some researchers are trying to sequence the genome of inedible wild bananas in South East Asia because these are resistant to black Sigatoka and others are trying to produce bananas that are resistant to nematodes or viral diseases that affect bananas.[29]

Among other benefits that GM crops may bring is the reduction of the use of pesticides. In 2001, 20% of pesticides applied globally were used in cotton, which equates to USD 1.7 billion. Although, cost reduction will rely on different factors, such as the price of seed, licensing agreements with the manufacturer of the seed, costs of insecticides and global cotton prices. Reduction of pesticides could also have health benefits to farm workers who apply them or who work in fields in which these have been applied.[30]

Notwithstanding all the benefits that GM crops can bring to boost international trade, there are still some problems we may need to solve to democratize their use. Most of GM technology is still mainly produced in some developed countries. Thus, developing countries will need to implement physical and scientific infrastructure, and establish clear Intellectual Property rules to protect imported technology in order to import GM technology and developed capabilities to have GM crops.[31]

Furthermore, other sectors of the economy may be benefited through horizontal linkages. For example, crops and livestock are typically complementary in food processing. Thus, more cheaper GM crops will result in a reduction on prices of livestock products. On the other

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[24] Agbio Investor, *Global GM Crop Area Review February 2024* 5, 6, 8 (2024).

[25] James Oehmke, Mywish Maredia & Dave Weatherspoon, *The Effects of Biotechnology Policy on Trade and Growth*, 2(2) The Estey Centre J. Int'l L. Trade Pol'y 288, 289 (2001).

[26] Nuffield Council on Bioethics, *The Use of Genetically Modified Crops in Developing Countries* 32 (2003).

[27] *Ibid.*, at 36–38.

[28] *Ibid.*, at 39.

[29] *Ibid.*, at 39–40.

[30] *Ibid.*, at 30.

[31] Peter W. B. Phillips, *Will Biotechnology Feed the World's Hungry?*, 56(4) Int'l J. 676 (2001), doi: 10.2307/40203610.

hand, the expansion of GMO may also rely on how much trade is restricted by import tariff quotas. If there are no import tariff quotas, there may be more incentives to produce and export GM crops.[32]

In the case of Peru, the moratorium on the importation and production of GMO has reduced incentives of investment on research on plant innovation. Thus, the genetically engineered developments made in Peru remain at the research level due to the moratorium. Before the moratorium, the International Potato Center (IPC), the Molina Agrarian University and the National University of the Center developed a new type of potato variety. This potato produced a toxin similar to the Bacillus thuringiensis bacteria. This gene provides potato moth resistance. Despite the fact that this new variety is sterile, which is useful to prevent concerns regarding crossbreeding with native potatoes, the IPC has not been able to release this new variety into the market due to domestic regulation on GM seeds.[33]

Other industries such as coffee, cacao, banana, papaya, bell peppers and mango could get benefit from access to GM seeds. In fact, another research on plant biotechnology includes a GM seed that generates a decrease absorption of cadmium in Peruvian cocoa. This technology could make Peruvian cocoa attractive to the EU market that has reduced the percentage of cadmium allowed with the Regulation (EU) No 488/2014. Thus, due to the extended moratorium on biotechnology cultivation, until now, there is no commercial use of GM seeds in Peru.[34]

3 The spread of GM crops has raised unjustified concerns

GM crops have been with humans for thousands of years. Indeed, many of the common crops for humans – such as rice, wheat, corn and beans – are not able to reproduce themselves without human help, as these have been altered over millenniums to make them better for us. Despite the advantages brought to the agriculture sector, people have been sceptical about trying new foods and new production methods. For example, potatoes were brought from South America to Europe by Spanish, but European, during the late eighteenth century, still believed that potatoes caused leprosy, cholera, scrofula among other diseases.[35] Thus, changing human consumption patterns is not easy. However, once the population has a favourable opinion regarding new crops, GM crops could serve to guarantee food security and boost international trade.

In this section the author will explain some of the main concerns raised against GM crops. This section will focus on food safety, the impact on biodiversity and the alleged cultural heritage loss caused by GM crops.

3.1 *GMO Do Not Affect Food Safety*

Much of the critics to GMO are related to how it may alter food safety. This statement is based on the idea that non-GM crops are safety. However, this is not necessarily true. Plants have an abundant natural defence system, that includes a variety of toxic chemicals, from which we consume about 5,000 to 10,000 per day. In general terms, plant breeding generates minimal concentrations of these toxins, but the unpredictable genetic concentration due to conventional breeding can sometimes raise toxin levels.[36] In this sense, non-GM crops could cause a high concentration of toxins that are not adequate for humans.

Regarding GM crops, it is difficult to see that these products can produce allergenic or toxic reactions in consumers. However, some concerns have arisen with the possibility that some GMO approved for some uses end in other type of uses. For example, in 2020, traces of StarLink™ corn were detected in some food products, such as taco shells. StarLink™ was approved only for use in animal feed, and not for human consumption. In fact, human consumption was not approved as the Bt Cry9c protein in corn does not disappear as fast as other Bt proteins. This situation led to concerns about food safety in the food supply chain. The US Food and Drug Administration (FDA) developed a method to detect the antibody which could help to identify the hypersensitivity to the Cry9c protein. Further studies made by the FDA did not find allergenic reactions associated with Cry9c.[37] In this sense, to reduce the chances that GMO end having non-approved uses, national authorities will have to improve traceability mechanisms.

Another aspect that could be problematic is Food Safety assessments for GMO. These tests are conducted by the GM providers with the seed or other material harvested.

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[32] Chantal Nielsen & Kym Anderson, *GMOs, Trade Policy, and Welfare in Rich and Poor Countries* 5, 14, 15 (Centre for International Economic Studies, Policy Discussion Paper 0021 2000).

[33] *USDA, Report Name: Agricultural Biotechnology Annual* 4 (PE2024-0014, 2024).

[34] *Ibid.*, at 4–5.

[35] Brooke Glass-O'Shea, *The History and Future of Genetically Modified Crops: The History and Future of Genetically Modified Crops: Frankenfoods, Superweeds, and the Developing World Frankenfoods, Superweeds, and the Developing World*, 7(1) J. Food L. & Pol'y, Art. 3, at 3, 4 (2011), doi: 10.54119/jflp.qbva5617.

[36] *Ibid.*, at 5.

[37] Joel I. Cohen, Hector Quemada & Robert Frederick, *Food Safety in Food Security and Food Trade, Food Safety and GM Crops: Implications for Developing-Country Research* (International Food Policy Research Institute, Focus 10, Brief 16 of 17 2003).

However, for developing countries, that may count with few capabilities to conduct these tests, it will be difficult to count with information on the tests or data required. For these reasons, food safety testing has become problematic in the GM crop sector.[38] However, before the release of a GMO to the market, in average, research is conducted for thirteen years. Thus, during this period different entities conduct procedures to guarantee the safety of the product. Indeed, GMO in average are subject to seventy-five test to guarantee that these are safe for humans, animals and the environment.[39] In this sense, GMO should be safe, but countries will have to cover tests to conduct Food Safety assessments, something that could be expensive for developing countries.

3.2 *GMO Have Not Demonstrated to Be a Problem to Biodiversity*

Another common argument against GMO has focused in the risk these products could create to biodiversity, but some publications have concluded that GMO are safe.[40] Indeed, biodiversity has been influenced by human activity. Humans have changed the diversity of agricultural products.[41]

Some critics to GMO have focused on 'Gene flow' as a problem GMO may cause. In fact, Mexico argued during the dispute *Mexico – Measures Concerning Genetically Engineered Corn* that there was a risk of cross-pollination between GM corn and Mexico's native non-GM corn varieties growing together in the same field.[42] This phenomenon refers to the transfer of genes through cross pollination from a crop species to another species either wild or domesticated. Cross pollination could lead to a situation where the new hybrid plant may threaten to replace its wild parent. This may be an issue specially for those crops that are wind or insect pollinated that are planted near wild crops. However, any risk that this may cause could be reduced by refraining from growing a crop in an area where its wild pees are located, or by growing only sterile male cultivars that do not produce pollen.[43] In fact, the loss of biodiversity for the introgression in a population sexually compatible is not a very common phenomenon. In the case of corn, it is required 10,059 years for a transgene to be included in a wild corn crop.[44]

For others authors, GM crops do not create a risk for the environment or human health per se. However, the risk assessment should be focused on product novel characteristics rather than the process by which the product was developed. Thus, the test should be concentrated on whether the novel characteristics of the plant are likely to create a risk to human health or the environment, the scope of uncertainty regarding the severity of potential harm as well as potential for human exposure.[45] In this sense, methodologies need to be changed to determine the extent to which GMO may cause damage to the environment or human health.

3.3 *No Cultural Heritage Loss behind GM Crops*

Another concern that has been raised is the loss of biological diversity. The elaboration of GM crops might have an impact on traditional knowledge and folklore, such as displacing traditional farming and cultural practices.[46] Milpa is a traditional agricultural system used to grow crops in Mexico. It is a polyculture in which the main species is corn, grown alongside various types of beans, chillies, tomatoes, and other vegetables.[47] Since Mexico imports corn from the US, the number of milpas has steadily decreased. Milpas produce a large variety of seeds, giving farmers more options to grow corn of different colours and sizes. The mix of genes found in various

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[38] *Ibid.*

[39] Jaime Dupuy Ortiz de Zevallos, *¿Cuál es el sustento técnico de ampliar la moratoria al ingreso de semillas transgénicas?* Parte 4 (19 Dec. 2024, 8:50PM), https://www.linkedin.com/pulse/cu%C3%A1l-es-el-sustento-t%C3%A9cnico-de-ampliar-la-moratoria-4-jaime/?msgControlName=reply_to_sender&msgConversationId=6222144630536880128&msgOverlay=true (accessed 24 Jan. 2026).

[40] Jaime Dupuy Ortiz de Zevallos, *¿Cuál es el sustento técnico de ampliar la moratoria al ingreso de semillas transgénicas?* Parte 1 (19 Dec. 2024, 8:50PM), https://www.linkedin.com/pulse/cu%C3%A1l-es-el-sustento-t%C3%A9cnico-de-ampliar-la-moratoria-jaime/?msgControlName=reply_to_sender&msgConversationId=6222144630536880128&msgOverlay=true (accessed 24 Jan. 2026).

[41] Jaime Dupuy Ortiz de Zevallos, *¿Cuál es el sustento técnico de ampliar la moratoria al ingreso de semillas transgénicas?* Parte 2 (19 Dec. 2024, 8:50PM), https://www.linkedin.com/pulse/cu%25C3%25A1l-es-el-sustento-t%25C3%25A9cnico-de-ampliar-la-moratoria-2-jaime/?msgControlName=reply_to_sender&msgConversationId=6222144630536880128&msgOverlay=true (accessed 24 Jan. 2026).

[42] Mexico—Measures Concerning Genetically Engineered Corn (MEX-USA-2023-31-01), Written Responses from the United Mexican States to questions from the Panel (2024), paras 76–77.

[43] Brooke Glass-O'Shea, *supra* n. 35, at 13.

[44] Sí Quiero transgénicos, *La Moratoria a los Transgénicos en el Perú: Historia de una Infamia* (3 Dec. 2024, 8:12PM), http://www.siquierotransgenicos.cl/2014/08/25/la-moratoria-a-los-transgenicos-en-el-peru-historia-de-una-infamia/ (accessed 24 Jan. 2026).

[45] National Academics, *Genetically Engineered Crops: Experiences and Prospects – New Report News Release* (17 May 2016), https://www.nationalacademies.org/news/2016/05/genetically-engineered-crops-experiences-and-prospects-new-report (accessed 24 Jan. 2026).

[46] Charles Lawson, Ch. 12 Intellectual Property, *Natural Resource Management and Policy – Socio-Economic Considerations in Biotechnology Regulation* 179 (Karinne Ludlow et al. eds, Springer 2014).

[47] Gobierno de Mexico, *Milpa: el corazón de la agricultura mexicana* (14 Sep. 2020), https://www.gob.mx/agricultura/articulos/milpa-el-corazon-de-la-agricultura-mexicana?idiom=es (accessed 24 Jan. 2026).

types of native corn may enhance the crop's ability to adapt to challenging environments. For example, a gene that provides drought resistance could be combined with a variety that struggles with water scarcity.[48]

In Hawaii, GM crops sometimes have raised some concerns. For example, the consumption of GM taro caused resistance in the local population. The opposition to GM taro was mainly religious and social as the GMO was considered incompatible with Hawaiian religious and social believes. Thus, GM taro was not accepted. On the other hand, in the case of GM Papaya, this product faced little opposition. Thus, Hawaii developed an industry for GM Papaya[49]; which saved USD seventeen million to Hawaii's economy.[50]

GM crops could reduce crop diversity as the Green Revolution did, for example, only a reduce number of rice varieties were improved and exported by rice growers. Thus, local varieties, called 'landraces' are abandoned in favour of improved variety and their genetic diversity could be lost unless it is stored in a seed bank or gene bank. On the other hand, genetic engineering could be used to preserve crop diversity, some landraces are sensitive to droughts or blights, which can be solved with GM technology.[51] This situation is different from country to country. In Vietnam some authors held that traditional knowledge about plant genetic resources with landraces are disappearing at a high rate with the destruction of habitats and the increasing use of new hybrids.[52] In some regions of Brazil, the introduction of modern crop varieties, mainly rice, reduced the use of crop varieties developed by early generations, mainly corn, which contributed to the loss of community roots such as rituals associated with traditional agricultural methods and the agricultural calendar. However, this situation was fixed with the reinsertion of traditional corn to these communities due to the creation of a gene bank.[53] Thus, cultural heritage loss should not be a problem if the government implement programs to preserve traditional crops.

4 Current situation in Peru and Mexico on GMO and proposals

In 2011, Peru passed the Law Nº 29811 which established an import ban and production on GM seeds and animals for ten years. The purpose of the moratorium was to enhance Peru's capacity to guarantee the protection of biodiversity and, later, allow the entrance of GMO. Despite the progress made, in 2021, the moratorium was extended until 2035.[54]

At the World Trade Organization (WTO), some countries expressed their concern to Peru's moratorium. In 2013, the US expressed its concerns to Peru's lack of notification of its moratorium on GM crops to the WTO. Peru argued that the moratorium fell under Article XX of the GATT as it was designed to protect its biodiversity. Thus, notification to the WTO was not required. However, the US claimed that Article XX of the GATT did not prevent a WTO Member from its obligation to notify trade measures to the WTO under the TBT Agreement.[55]

In 2013, during Peru's Second Trade Policy Review (TPR), the US raised concerns regarding Peru's moratorium on GM crops. The US argued that Peru did not notify its moratorium on GMO to the WTO, something that could affect some WTO Members as well as the competitiveness of Peruvian farmers and put in risk food security.[56]

Later, in 2014, the US submitted a specific trade concern to the TBT Committee regarding Peru's lack of notification of the moratorium on GM crops because its conformity assessment was not in line with the relevant guides and recommendations of international standardizing bodies; and the measure might have a significant impact on trade. The US requested that Peru provide an explanation of the guidelines and recommendations with which, according to Peru, the measures complied. In addition, the US manifested its disagreement with Peru's view that the moratorium was not a technical

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[48] Miranda Lipton, *¿Por qué el maíz de EE. UU. es una amenaza para México? National Geographic España* (23 Jul. 2025), https://www.nationalgeographic.com.es/ciencia/por-que-el-maiz-de-ee-uu-es-una-amenaza-para-mexico_25661 (accessed 24 Jan. 2026).

[49] Alexandra Coe, Ch. 17 Culture and Religion, *Natural Resource Management and Policy – Socio-Economic Considerations in Biotechnology Regulation* 253–255 (Karinne Ludlow et al. eds, Springer 2014).

[50] Martina Newell-McGloughlin, Ch. 9 Health Impacts, *Natural Resource Management and Policy – Socio-Economic Considerations in Biotechnology Regulation* 135 (Karinne Ludlow et al. eds, Springer 2014).

[51] Brooke Glass-O'Shea, *supra* n. 35, at 14.

[52] Le Quy An, *The Use and Commercialization of Genetic Resources and Traditional Knowledge in Vietnam: The Case of Crop and Medicinal Plants, Protecting and Promoting Traditional Knowledge: Systems, National Experiences and International Dimensions* 8–9 (Sophia Twarog et al. eds, United Nations, UNCTAD/DITC/TED/10 2004).

[53] Antonio C. Guedes & Maria José Amstalden Sampaio, *Genetic Resources and Traditional Knowledge in Brazil, Protecting and Promoting Traditional Knowledge: Systems, National Experiences and International Dimensions* 30–31 (Sophia Twarog et al. eds, United Nations, UNCTAD/DITC/TED/10 2004).

[54] ComexPeru, *América Latina avanza en el uso de Transgénicos: ¿Por qué el Perú se queda atrás?* (20 Sep. 2024), https://www.comexperu.org.pe/articulo/america-latina-avanza-en-el-uso-de-transgenicos-por-que-el-peru-se-queda-atras (accessed 24 Jan. 2026).

[55] WTO, Committee on Technical Barriers to Trade, Minutes of the Meeting of 17, 19 and 20 Jun. 2013, G/TBT/M/60, 14 (2013). WTO, Committee on Technical Barriers to Trade, Minutes of the Meeting of 30–31 Oct. 2013, G/TBT/M/61, 42 (2013).

[56] WTO, Trade Policy Review – Peru Minutes of the Meeting, WT/TPR/M/289, 18–19 (2014). WTO, Trade Policy Review – Peru Minutes of the Meeting Addendum, WT/TPR/M/289/Add.1, 78 (2014).

regulation. On the other side, Peru held that the moratorium on genetically engineered crops was an environmental measure for a period of ten years that didn't require notification under the TBT Agreement.[57]

Then, in 2015 and 2016, Mexico raised concerns on Peru's moratorium on GM crops. According to Mexico, this measure, by requiring absolute zero presence of GM events in seeds, could be inconsistent with Articles 5.1. and 5.2. of the TBT Agreement with respect to the access of conventional seeds to Peru as compliance with this measure is neither possible nor commercially practical. For Mexico, an absolute zero threshold for GM seeds is not possible as these products passed through different stages in their production processes and all the detections techniques have a margin of error which could produce false positives and false negatives. The regulation creates an unnecessarily restrictive obstacle for the Mexican export industry as the penalties do not allow the implementation of corrective measures if the seed shipment was found to contain Living Modified Organisms (LMOs). Thus, this regulation would affect the seed industry in Mexico.[58]

Finally, the more important quality standards for seeds, the OECD and the Association of Official Seed Certifying Agencies (AOSCA), have established that 100% of purity is almost impossible and economically not viable. In fact, Mexico claimed that a conventional seed might contain unintended low levels of genetically modified events (less than 2%). Thus, a less trade-restrictive alternatives measure could be the imposition of a threshold of 2% of genetically modified events. Under Article 4 of Law N° 29811, a zero-tolerance policy on GM events on seeds was imposed. This situation could lead to the seizure of the shipment, destruction of the seeds, and sanctions imposed on the exporter. Indeed, Mexico argued that Peru may have breached Article 2.4 of the TBT Agreement as its measure was not justified under international standards. In this sense, Mexico requested (1) the recognition by Peru of the OECD and AOSCA standards and the recognition of Mexico's certification as compatible with Peruvian legislation to avoid GMO inspections at the border, (2) recognition of non-LMO certificates issued by third-party laboratories, (3) promote bilateral dialogue, and (4) consider Mexican seed industry and other countries affected by the conformity assessment procedure of Peru's legislation.[59] On the other hand, Peru held that its measure was an environmental one, designed to protect biodiversity. Therefore, this was not a technical regulation, and didn't require notification.[60]

During Peru's third TPR, in 2019, the US raised concerns regarding Peru's moratorium on GMO regarding its lack of notification to the WTO and its impact on international trade. Peru argued that the purpose of the moratorium of ten years (2011–2021) was to implement biosafety rules in the country. Thus, the moratorium would be used for the elaboration of basis lines of genetic diversity of different crops. Later, the basis lines would be used for the risk evaluation and management.[61] In 2015, Peru determined the need to make basis lines for thirty-two crops and thirteen animals.[62] Until now, Peru has only published basis lines for fifteen crops and one animal with the information of the different species of each crop and animal, the ecosystem where these crops and animals are grown or breed in Peru, traditional practices and knowledge associated with these crops and animals, among other information.[63]

Currently, Peru's moratorium is still in force and it will be applied until 2035. The second paper will conduct a legal analysis of the compatibility of Peru's measure with the WTO regulation. For the moment, let's analyse the economic impact the moratorium has caused on Peru's agriculture sector.

The moratorium has caused severe damage to various products in the Peruvian agricultural sector. In the case of yellow corn, during the first six months of 2024, production averaged 4.8 tons per hectare, while GM yellow corn reached up to 11.5 tons per hectare in 2014. Thus, GM yellow corn could potentially double the yield of conventional yellow corn in Peru.[64] In the case of cotton, even though Peru's cotton is recognized for its high quality in

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[57] WTO, Committee on Technical Barriers to Trade, Minutes of the Meeting of 19–20 Mar. 2014, G/TBT/M/62, 46 (2014). WTO, Committee on Technical Barriers to Trade, Minutes of the Meeting of 18–19 Jun. 2014, G/TBT/M/63, 39–40 (2014).

[58] WTO, Perú – Reglamento de Ejecución, de 14 de Noviembre de 2012, relativo a la Moratoria sobre el Cultivo de Variedades Modificadas Genéticamente Declaración de México al Comité de Obstáculos Técnicos al Comercio 4–6 de Noviembre de 2015, G/TBT/W/426, 1–2 (2016). WTO, Committee on Technical Barriers to Trade, Minutes of the Meeting of 9–10 Mar. 2016, G/TBT/M/68, 38–39 (2016). WTO, Committee on Technical Barriers to Trade, Minutes of the Meeting of 10–11 Nov. 2016, G/TBT/M/70, 64–65 (2016).

[59] WTO, Perú – Reglamento de Ejecución, de 14 de Noviembre de 2012, relativo a la Moratoria sobre el Cultivo de Variedades Modificadas Genéticamente Declaración de México al Comité de Obstáculos Técnicos al Comercio 4–6 de Noviembre de 2015, G/TBT/W/426, 1–2 (2016). WTO, Committee on Technical Barriers to Trade, Minutes of the Meeting of 9–10 Mar. 2016, G/TBT/M/68, 38–39 (2016). WTO, Committee on Technical Barriers to Trade, Minutes of the Meeting of 10–11 Nov. 2016, G/TBT/M/70, 64–65 (2016).

[60] WTO, Committee on Technical Barriers to Trade, Minutes of the Meeting of 4–6 Nov. 2015, G/TBT/M/67, 58 (2016).

[61] WTO, Trade Policy Review Peru – Minutes of the Meeting Addendum, WT/TPR/M/393/Add.1, 206 (2019). WTO, Trade Policy Review Peru – Minutes of the Meeting, WT/TPR/M/393, 27 (2019).

[62] Ministerio del Ambiente, *Plan Bianual para la Identificación de Centros de Origen y Diversidad con fines de Bioseguridad* 6 (2015).

[63] To read the basis lines made by Peru review: Ministerio del Ambiente, *Implementación de la Ley de Moratoria*, Líneas de base (23 Sep. 2025), https://bioseguridad.minam.gob.pe/normatividad/implementacion/lineas-de-base/ (accessed 24 Jan. 2026).

[64] ComexPeru, *América Latina avanza en el uso de Transgénicos: ¿Por qué el Perú se queda atrás?* (20 Sep. 2024), https://www.comexperu.org.pe/articulo/america-latina-avanza-en-el-uso-de-transgenicos-por-que-el-peru-se-queda-atras (accessed 24 Jan. 2026).

the textile industry, its production has declined in recent years. In 2007, cotton production reached 215,000 tons. Since then, Peru's cotton industry has experienced a steady decline. In 2022, production reached 38,000 tons, representing a 158% increase compared to 2021. However, this figure is still 82% lower than the amount reported in 2007.[65] In addition, an import ban on GM seeds has made impossible for the Peruvian cotton industry to import GM seeds, something that has destroyed the Peruvian cotton industry. Peru used to have 250,000 hectares of cotton, and now it has only 10,000 hectares of cotton because GM cotton, which is more competitive, is imported to Peru.[66]

On the other hand, the ban on GM seeds in Peru has been ineffective. In 2014, Peru's Environmental Evaluation and Enforcement Agency – Organismo de Evaluación y Fiscalización Ambiental (OEFA) – conducted several interventions in different seed markets in Peru. From the thirty-one samples collected, four resulted positives on GM seeds.[67] During the period 2016–2022, 2201 inspections were conducted in corn fields, from which in 327 of them GM corn was detected. Furthermore, forty-five inspections were executed in soy fields, from which in four of them GM soy was detected. Finally, twenty-four inspections were released in yellow corn markets, from which in four of them GM yellow corn was identified. Peruvian national authorities declared that GM yellow corn seeds, soy seeds, cotton and canola seeds entered Peruvian market for purposes of feeding animals and to be used by the industry, but these seeds could be used for farmers to grow plants. Thus, some of the intervention that resulted positives on GM fields could reflect a misuse of GM seeds.[68]

Interventions are not the only aspect that must be improved in Peru. Consumers should know which products contain GMO. In this sense, labelling should be implemented. Article 37 of the Act Nº 29571, Code for the Protection and Defense of Consumer, establishes the obligation to label those products that contain components genetically modified. However, up to this point, the regulation required to implement this provision has not been approved.[69] Another aspect that should be regulated is the transportation of GMO.[70] Regarding the concerns about GMOs and biodiversity, Peru could designate specific areas for the use of GM seeds to avoid the issues mentioned in the previous sections of this paper.

In the case of Mexico, in 2020, a local regulation was approved to reduce gradually the use of GM corn and the use of glyphosate by 2024. In 2023, Mexico passed a new regulation forbidding the import of yellow GM corn for human consumption.[71]

The US brought a claim against Mexico under the United States-Mexico-Canada Agreement (USMCA). In 2024, the arbitral tribunal in the case *Mexico – Measures Concerning Genetically Engineered Corn* rendered its award. Mexico expressed its opposition, but it declared that it would comply with the arbitral award.[72] In this context, a debate emerged about the possibility to modify the USMCA to grant more policy space for its members. The 2026 USMCA renegotiation phase may be an opportunity to include more specific exceptions for this type of policies.[73] In the second part of this research it will be discussed one exception that could have been applied by the arbitral tribunal to justify Mexico's measure under the USMCA.

On the other hand, Mexico has decided to modify its Constitution. In January 2025, the president of Mexico prepared a text to modify the Constitution of Mexico to protect Mexican corn.[74] On 17 March 2025, the Chamber of Deputies and the Chamber of Senators of Mexico (the Parliament) approved the reform of Articles 4 and 17 of the Constitution of Mexico.[75] On 18 March 2025, this reform entered into force. Under the new version of Article 4 it will be prohibited to grow GM corn in Mexico and any other use for the GM corn must be

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[65] ComexPeru, *En 2022 se produjo un 82% menos de algodón que en 2007* (24 Feb. 2023), https://www.comexperu.org.pe/articulo/en-2022-se-produjo-un-82-menos-de-algodon-que-en-2007 (accessed 24 Jan. 2026).

[66] Chilebio Noticias, *Gobierno peruano plantea posibilidad de siembra comercial de maíz y algodón transgénico* (28 May 2024), https://chilebio.cl/2024/05/28/gobierno-peruano-plantea-posibilidad-de-siembra-de-maiz-y-algodon-transgenicos-en-costa/ (accessed 24 Jan. 2026).

[67] Dino Delgado Gutiérrez, *Regulación de los Transgénicos en el Perú* 56–57 (SPDA 2015).

[68] Ministerio del Ambiente, *X Informe Anual al Congreso de la República sobre los avances y resultados en el marco de la implementación de la Ley N° 29811* 17, 21 (Dirección General de Diversidad Biológica Ministerio del Ambiente 2022).

[69] For more information regarding the compatibility of labelling policies on GMO *see* s. III of this article: Tolulope Anthony Adekola et al, *Regulating Genome-Edited Products – an International Trade Law Perspective*, 23–49 (Max Planck Institute and Competition Research Paper No. 24–13 2024).

[70] Dino Delgado Gutiérrez, *Regulación de los Transgénicos en el Perú* 71–72 (SPDA 2015).

[71] Gobierno de México, *Decretos que establecen diversas acciones en materia de glifosato y maíz genéticamente modificado* (13 Oct. 2023), https://www.gob.mx/sep/acciones-y-programas/decretos-que-establecen-diversas-acciones-en-materia-de-glifosato-y-maiz-geneticamente-modificado (accessed 24 Jan. 2026).

[72] Gobierno de México, Panel del T-MEC distribuye Informe Final en el caso México – medidas relacionadas con el maíz genéticamente modificado (MEX-USA-2023-31-01) Comunicado Conjunto – Secretaría de Economía y Secretaría de Agricultura y Desarrollo Rural (20 Dec. 2024), https://www.gob.mx/se/prensa/panel-del-t-mec-distribuye-informe-final-en-el-caso-mexico-medidas-relacionadas-con-el-maiz-geneticamente-modificado-mex-usa-2023-31-01 (accessed 24 Jan. 2026).

[73] IBERO, *Reforma del maíz transgénico: ¿camino hacia la soberanía alimentaria de México?* (12 Feb. 2025), https://ibero.mx/prensa/reforma-del-maiz-transgenico-camino-hacia-la-soberania-alimentaria-de-mexico (accessed 24 Jan. 2026).

[74] CNN México, *Sheinbaum formaliza su reforma para prohibir la siembra de maíz transgénico en México* (24 Jan. 2025), https://cnnespanol.cnn.com/2025/01/24/mexico/sheinbaum-reforma-prohibir-maiz-transgenico-orix (accessed 24 Jan. 2026).

[75] Gobierno de México, *Presidenta Claudia Sheinbaum firma decreto para publicar en el DOF reformas a los artículos 4 y 27 en defensa del maíz mexicano* (17 Mar. 2025), https://www.gob.mx/presidencia/prensa/presidenta-claudia-sheinbaum-firma-decreto-para-publicar-en-el-dof-reformas-a-los-articulos-4-y-27-en-defensa-del-maiz-mexicano (accessed 24 Jan. 2026).

compatible with Mexico's legal regulation to guarantee biosecurity, health and the biocultural heritage of Mexico. The new version of Article 17 Mexico, in line with Article 4 of its Constitution, will promote traditional farming with native seeds for an optimal use of the land free of GM corn.[76] These modifications were approved to defend Mexico's native corn. It may be possible that these provisions will open the space to create subsidies programs to promote the grow of native corn. However, these provisions are not designed to forbid the entrance of GM corn unless its use may affect biosecurity, health or the biocultural heritage of Mexico. US GM yellow corn is used mainly to feed livestock animals and for industrial operations.[77] US GM yellow corn should not face any problem to enter into Mexico market. However, if Mexico prohibits the entrance of GM yellow corn arguing that its use in livestock animals and in the industry may affect the health of the end consumer or that GM yellow corn seeds may mix with native varieties, there may be a conflict with the arbitral award rendered under the USMCA.

Mexico cannot justify its lack of compliance with an arbitral award based on its constitution or any domestic legislation. Under Article 27 of the Vienna Convention on the Law of the Treaties (VCLTs), a state may not invoke its domestic law as justification for its failure to comply with a treaty unless the conditions under Article 46 are fulfilled. Article 46 of the VCLT establishes that a treaty is not valid if the consent to be bound has been expressed in violation of a provision of its internal law regarding competence to conclude treaties when the violation was manifest and concerned a rule of internal law of fundamental importance. This article explains that a violation is manifest if it would be objectively evident to any state conducting itself in the matter in accordance with normal practice and in good faith. Coming back to Mexico, this country cannot prohibit the entrance of GM yellow corn based on a modification of its Constitution. As it was explained, Article 27 of the VCLT does not allow states to use its domestic regulation to avoid compliance with treaties. The arbitral award under the USMCA defined the interpretation of this treaty. Thus, Mexico should not use its domestic regulation to avoid compliance with the USMCA. Additionally, Article 49 of the VCLT applies only when the consent to be a party in a treaty is challenged based on a manifest violation of domestic rules related to the express of consent. Thus, a modification of the Constitution of Mexico, as it is out of the scope of Article 49 of the VCLT, will not authorize this country to avoid compliance with the ruling of the arbitral tribunal in the dispute *Mexico – Measures Concerning Genetically Engineered Corn.*

The Parliament of Mexico had 180 days to adequate Mexico's legislation to the modification implemented to the Constitution of Mexico. On 18 September 2025, this period expired.[78] Up to now, the Parliament has not made any legislative modification following the reforms of the Constitution. In any case, Mexico cannot use a modification of its Constitution as an argument to avoid compliance with the ruling of the arbitral tribunal established under the USMCA; this would result in a violation of the USMCA.

5 Conclusion

GMO has been used for human beings for thousands of years. Humans have experimented with different seeds, which has resulted in better crops. The great momentum for GMO started since the last century, which has been surrounded of a great debate.

On the one hand, its supporters have argued that GMO can serve as a pathway to guarantee food security. An increasing world population requires more food production and climate change has made less predictable the changes on the weather. In parallel, some have argued that GMO can boost international trade, which could result in a reduction of poverty in developing countries and eventually improving those economies.

On the other hand, detractors have raised various arguments against GMO. Some have argued that GMO can affect food security. However, data has not proven that GMO are unsafe for human or animal consumption. Critics have also been focused on the possibility of reduced biodiversity due to GMO. As previously explained, this is very unlikely to occur, but the concern could be addressed by designating specific areas for growing GM crops. Another argument is focused on the potential loss of cultural heritage. However, traditional knowledge and cultural practices could be preserved through seed banks and government-implemented policies. Thus, it seems that all the concerns related to GMO could be addressed.

This paper has presented the critics raised by some WTO Members to Peru's measure on GMO, which could result in a formal dispute. Up to now, the moratorium has been extended until 2035; a situation that has caused severe damage to the national industry of cotton

Notes

[76] R. Leopoldo Cruz Balbuena, *Reforma Constitucional en materia de conservación y protección de los maíces nativos*, Tirant Prime (25 Mar. 2025), https://prime.tirant.com/mx/actualidad-prime/reforma-constitucional-en-materia-de-conservacion-y-proteccion-de-los-maices-nativos/ (accessed 24 Jan. 2026).

[77] Adam D. Williams, *Expected ban on Mexican GM corn fetches praise – and worry over imports*, Mongabay (5 Feb. 2025), https://news.mongabay.com/2025/02/expected-ban-on-mexican-gm-corn-fetches-praise-and-worry-over-imports/ (accessed 24 Jan. 2026).

[78] Israel Aguilar Esquivel, *Reforma contra maíz transgénico es oficial; Claudia Sheinbaum publica decreto en el DOF*, Infobae (17 Mar. 2025), https://www.infobae.com/mexico/2025/03/18/reforma-contra-maiz-transgenico-es-oficial-claudia-sheinbaum-publica-decreto-en-el-dof/ (accessed 24 Jan. 2026).

and yellow corn. Additionally, the moratorium has been ineffective as some GMO have been found in seed markets and in fields. On the other hand, Mexico's import ban on GM yellow corn has been declared inconsistent with the USMCA. A more detail explanation on the legal analysis of GMO import ban will be conducted in the second paper of this research. To date, the 2026 USMCA renegotiation may be used to include more policy space to its members. In parallel, the modification of Mexico's Constitution cannot be used as a mechanism to implement measures to forbid the import of GM yellow corn from the US. This would end in a violation of the USMCA.