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Report Highlights:

On March 8, 2020, the Hashemite Kingdom of Jordan's cabinet of ministers approved the regulation, "Instructions for Handling Food and Food Products Originating from Genetically Modified Substances Produced by Modern Biotechnology for 2018," which was published in Jordan's Official Gazette on April 3, 2020. The regulation supports the free movement and import clearance of food and agricultural products, while protecting consumer choice. However, the measure remains subject to further regulatory development. Jordan must promulgate implementing regulations covering trade in genetically engineered (GE) products, further build its laboratory capacity to sample test living modified organisms (LMOs) at greater scale, as well as develop a notification mechanism to administer its policies.

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Executive Summary

As one of the world's most arid nations, Jordan imports approximately 95 percent of its food needs. The Government of Jordan has prioritized food security in several of its strategic initiatives. Global exports of corn, soybeans, and their products totaled about 900,000 tons from various origins; primarily produced using genetically engineered (GE) production methods, totaling about \$128 million annually.

Jordan has prioritized the development of a national biotechnology policy framework since 2004 when it signed as a party to the United Nations Convention on Biodiversity Conservation (Cartagena Protocol). Jordanian environmental officials navigate a complex set of more than 250 articles of legislation and regulation related to environmental issues. Ministry of Environment Law No. 1 of 2003 established protections for environmental health and conservation, as well as risk assessment criteria and specifications to regulate GE products for release into the environment. Ministry of Agriculture (MOA) Law No. 4 of 2002 established protections for human, animal, and plant health with respect to risk assessments and sanitary and phytosanitary criteria. However, this measure lacks any regulatory oversight of living modified organisms (LMOs) and their products. Under the authority of this law, Jordan's MOA strictly prohibits imports of GE crops and any products derived from crops expressing GE traits intended for cultivation and environmental release, including seed and feed products.

Before 2020, the Jordan Food & Drug Administration (JFDA) strictly prohibited imports of GE crops and any products derived from crops expressing GE traits as raw material intended for processing into food products under the authority of Law No. 21 of 1971, which restricts the use of food adulterants and contaminants, and Bylaw No. 8 of 1994, which addresses hygiene a food safety for imported products, including biosafety requirements. JFDA regulatory authorities are subject to discretion and interpretation. The Jordan Standards and Meteorology Organization (JSMO) is authorized to regulate food labeling and standards of identity for food products, including GE-produced and GE-derived products.

From 2002 to 2019, Jordan's Ministry of Environment, Ministry of Agriculture, and Royal Scientific Society, in partnership with the United Nations Environmental Program (UNEP), Global Environment Facility (UNEP-GEF), implemented a series of programs to evaluate and develop Jordan's National Biosafety Framework.¹ In 2019, UNEP-GEF reported that a national biosafety framework policy was near implementation, and a draft policy was completed and submitted for government review. However, the consultative process continues, and the Government of Jordan is working to develop its laboratory testing capacity to detect LMOs. Lastly, UNEP reports that outreach materials addressing biosafety awareness have been prepared but not disseminated.

In 2006, Jordan's Ministry of Environment enacted its "Regulation for Biosafety of Genetically Modified Organisms" which strictly regulates genetically engineered (GE) products with the intent to

¹ <https://www.thegef.org/projects-operations/projects/4086>

eliminate and mitigate risks to human health and environmental harm.² This regulation closely follows European Union regulations and European Commission rulings.

Today, Jordan supports GE-related research and development, but does not currently enforce any biosafety laws or specific biotechnology regulations.³ Jordan's Ministry of Environment (MOE), "[Agriculture Sector Green Growth National Action Plan 2021-2025](#)," and Jordan's Ministry of Agriculture, "[National Strategy for Agricultural Development 2016-2025](#)" does not highlight biotechnology as a pathway to address resource constraint to plant and animal production in Jordan. Additionally, the World Bank's "[Jordan Climate Smart Action Plan](#)" and "[Agriculture Resilience, Value Chain Development and Innovation](#)" (ARDI or "My Land") Program do not highlight biotechnology as a pathway to address resource constraint to plant and animal production in Jordan.

The JFDA, Department of Biosafety of Food is responsible for regulating the safety of GMO foods and their products. GE products for all scientific research and commercial uses are regulated by several government ministries in Jordan, including MOA, MOE, and JFDA. Additionally, Jordan strictly prohibits imports of crops expressing GE traits that are intended for cultivation and release into the environment, as well as the marketing of all food consisting of and/or containing unapproved GE traits with current authorization for cultivation in Jordan by the Jordanian National Biosafety and Biosecurity Committee. In 2019, Jordan's Ministry of Health (MOH) enacted Regulation No. 29 of 2019, a biosafety law based on the Cartagena Biosafety Protocol, establishing a National Committee on Biosafety and Biosecurity (NCBB) which is tasked with "overseeing and harmonizing biosecurity-related efforts in Jordan" and enforcing legal regulations.

The NCBB is comprised of 20 representatives from government ministries, private industry, academic institutions, research institutions, and regulatory authorities, including⁴:

- Ministry of Environment (Chair and Secretariat staff for the Committee);
- Ministry of Agriculture;
- Ministry of Finance-Customs;
- Ministry of Health;
- Ministry of Industry and Trade;
- Ministry of Planning;
- General Organization for Food and Drugs;
- Jordan Institution for Standards and Metrology;
- Agriculture Engineer Association;
- General Association for Foodstuff Merchants;
- Jordan Veterinarians Association;
- General Union for Farmers;
- Higher Council for Science and Technology;

² <https://bch.cbd.int/en/database/LAW/BCH-LAW-JO-47467-1>

³ <https://www.fao.org/4/al310e/al310e02.pdf>

⁴ https://www.fao.org/fileadmin/user_upload/gmfp/docs/jordan%20country%20report%20on%20gmo.pdf

- National Association for the Protection of the Consumers;
- National Center for Agriculture Research and Technology Transfer;
- Two national experts nominated by the Chair;
- Two Universities nominated by the Chair.

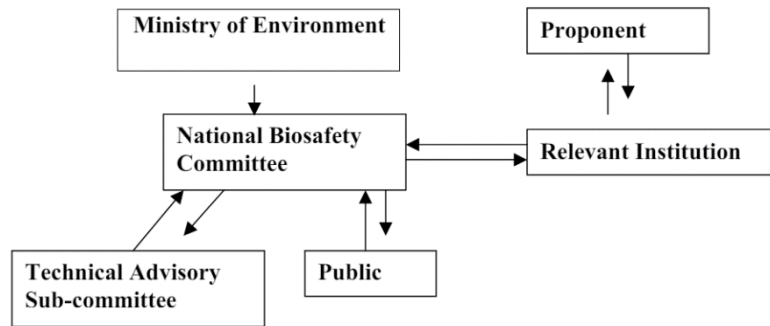
Jordan has established several biosafety committees and regulations and bylaw; however, lacks a coherent national biosafety regulatory framework to implement and enforce regulations addressing biotechnology and genetically engineered ingredients. Please see GAIN report “Agricultural Biotechnology Annual” [JO2022-01](#) for more detail.

Jordan neither has a clear agricultural biotechnology framework covering the trade in LMOs nor a notification mechanism in place. Jordan continues to work on development of its institutional capacity to establish a National Biosafety Committee to assess risk assessment/management, and decision making on LMOs in accordance with its biosafety law and Ministerial directives. This effort includes organization of academic institutions, research institutions, civil society groups, and private sector capacity.

The components of the national regulatory system for biosafety will include:

- National by-law on biosafety;
- Specialized regulations concerning biosafety; and
- Management procedural regulations, including institutional legislation concerning assessment procedures and technical guidelines for assessment.

3.3 Proposed Procedure for Biosafety Framework of Jordan



Source: Jordan, MOE, National Biosafety Framework of Jordan, August 2004

Chapter 1: Plant Biotechnology

PART A: PRODUCTION AND TRADE

- a. **RESEARCH AND PRODUCT DEVELOPMENT:** The Government of Jordan supports several biotechnology research centers. However, there are no ongoing product development trials to develop new plant varieties using biotechnology, or studies of genetically engineered (GE) crops in Jordan. University researchers are keen to take the lead in introducing GE applications in Jordan; they seek to reduce the excessive use of pesticides and address abiotic stresses such as extreme heat, drought, and salinity.⁵ UNEP and FAO report that Jordanian researchers are still developing basic biotechnology, immunology, and molecular biology techniques, as are many other developing nations.⁶

Jordan's National Center for Biotechnology is a virtual center housed under the Higher Council of Science and Technology and is charged with fostering the development of biotechnology in Jordan. This virtual institute also manages cooperative agreements with regional and international partners. The following research partnerships and initiatives primarily focus on non-GE related efforts to apply technologies to conserve water and resources in the agricultural sector:

- Jordan Higher Council for Science and Research Technology, National Center for Research and Development, Water and Food Research Programme (WFRP);
- World Food Programme - Jordan Zero Hunger Project;
- United Nations.

GE-related scientific techniques are subject to ongoing studies for the following plant health-related biotechnology adjacent subjects:

- DNA fingerprinting and phylogenetics of plant varieties and species;
- Biodiversity of wild plant species and detection mutations in Jordan;
- In vitro induction of plant tissues;
- Plant tissue cultures;
- Gene transformation;
- Plant growth inhibitors;
- Protein solvent concentration;
- Biological nitrogen fixation;
- Detection of adulteration of food products based on DNA analysis.

- b. **COMMERCIAL PRODUCTION:** Jordan has no commercial GE crop production.

⁵ <https://cgspace.cgiar.org/server/api/core/bitstreams/d91aba9d-ece9-4934-a565-74cd96e14e56/content>

⁶ <https://www.fao.org/4/al310e/al310e02.pdf>

- c. EXPORTS: Jordan does not export commodities or products derived from agricultural biotechnology.
- d. IMPORTS: Jordan has not authorized the commercial cultivation of GE crops. It does, however, rely extensively on imports of food and agricultural products derived through GE (e.g., soybean meal, corn, and processed foods). Imports of processed food products, including cereals, snack foods, and oils, may contain GE ingredients. Jordan’s dairy and poultry sectors, the country’s largest agribusinesses, are dependent on imported soybeans and soybean meal, as well as on corn and distillers’ dried grains with solubles (DDGS).

In 2023, according to Trade Data Monitor trade statistics, Jordan imported from all sources:

- 565,000 metric tons (MT) of corn (mainly from South America).
- Nearly 150,000 MT of soybean meal;
- 8,000 MT of soybeans;
- 4,500 MT of DDGS.

Recent studies report that 100 percent of all tested samples of maize seed from Jordan detected the presence of GE traits.⁷ A separate study concluded that about 5 percent of randomly selected food samples detected the presence of GE soybean ingredients. Between 37.5 to 62.5 percent of the total test group of food and feed samples tested positive for GE events.⁸

- e. FOOD AID: Jordan is a food aid recipient; it does not restrict the use of GE commodities.
- f. TRADE BARRIERS: There are no biotechnology issues or barriers impeding U.S.-bulk products. Labeling requirements are outlined below in Part B, section f. of this report.

PART B: POLICY

- a. REGULATORY FRAMEWORK: In March 2020, Jordan’s Cabinet of Ministers approved a regulation titled as “[Instructions for Handling Food and Food Products Originating from Genetically Modified Substances Produced by Modern Biotechnology for 2018](#).”⁹ These Instructions implement Article (8/b) of the Food Law No.30 of 2015 and Article (7K) of the Food and Drug General Corporation Law No. 41 of 2008, or “GE Handling Instructions” and subsequently published in Jordan’s Official Gazette on April 3, 2020 (see GAIN report [JO2020-005](#)).

⁷ Aburumman, A., Migdadi, H., Akash, M., Al-Abdallat, A., Dewir, Y. H., & Farooq, M. (2020). Detection of genetically modified maize in Jordan. *GM Crops & Food*, 11(3), 164–170. <https://doi.org/10.1080/21645698.2020.1747353>

⁸ Herzallah, Saqer (2012), Detection of genetically modified material in feed and foodstuffs containing soy and maize in Jordan, *Journal of Food Composition and Analysis*, Volume 26, Issues 1–2, 169-172, <https://doi.org/10.1016/j.jfca.2012.01.007>

⁹ <https://faolex.fao.org/docs/pdf/jor212720.pdf>

Jordan Laws Affecting Biotechnology Policy:

- Law of Higher Health Council
- Law of Pharmacists Association
- Clinical Studies Law
- Public Health Law
- Ordinance Licensing Private
- Medical Laboratories
- Higher Council of Science and Technology Law
- Ordinances of the National Biotechnology Center
- Drug and Pharmacy Law
- Principles and requirements for licensing parties and accreditation of Laboratories
- Public Health Law regarding drug ingredients
- Ordinance on testing of drugs
- Principles for importing and circulating drug supplies
- Art 49 of Public Health Law on waste disposal from laboratories, vaccines, drug factories, health research centers only
- Environmental Health
- Copyright Law
- Patent Law
- Article 20 of the Labor Law on treatment of inventions by employees*Registration of Drugs
- Registration Procedures, Article 14
- “Contractual” production of registered drug pricing Procedures
- Clinical Studies Law¹⁰
- Food Law No. 30 of 2015
- Food and Drug General Corporation Law No. 41 of 2008
- Instructions for Handling Food and Food Products Originating from Genetically Modified Substances Produced by Modern Biotechnology for 2018

Jordan, however, lacks a clear biosafety regulatory framework and specific biotechnology regulations. Jordan does not yet have a legal implementing regulation covering the trade in “living modified organisms (LMOs)” as defined in the Protocol, nor a notification mechanism in place. The draft implementing regulation would implement the protocol’s provisions on trade of “LMOs.”

¹⁰ http://pdf.usaid.gov/pdf_docs/PNADM869.pdf

The measure established the Jordanian Genetically Modified Food Committee (GMF), which is responsible for the import and circulation of all food, food products, food additives, and preparations containing GE-derived materials, or living GE organisms, as a share of the overall components of a food item, intended for human consumption. The scope of products under this regulatory oversight addresses products with more than 5 percent of GE-containing materials.

The GMF administers a subagency called the Food Biosafety Department, which conducts evaluates the safety of GE-containing foodstuffs compared to similar foodstuffs containing conventionally produced, or non-GE, ingredients, and provides an authorization recommendation to the GMF on a case-by-case basis. Article 4 establishes that the health certificate is considered one of the mandatory health documents accompanying the consignments. Article 10 notes that JFDA may verify the validity of the health certificate and its content in the manner it deems appropriate. Article 11 of the GE Handling Instructions lists the cases in which the JFDA Director “may prohibit the import, or the circulation, seizure, or withdrawal of any food, food products, food additives, or food additive preparations containing GMOs.”

- b. **APPROVALS/AUTHORIZATIONS:** Jordan’s Ministry of the Environment enacted a biosafety law in 2016 regulating agricultural products derived from biotechnology. Until the implementing regulation is in place, products cannot be submitted for approval.
- c. **FIELD TESTING:** There are no GE field trials in Jordan. The country’s lack of a science-based biosafety regulation impedes the approval mechanism for field tests. Jordan does not grow GE crops such as soybeans and cotton. Corn production is not significant and is limited to plantings of conventional seed.
- d. **INNOVATIVE BIOTECHNOLOGIES:** There is no regulatory policy for innovative biotechnologies such as genome editing using ZFNs, TALENs, and CRISPR/Cas9.
- e. **COEXISTENCE:** Jordan does not have a policy on coexistence between GE crops and conventional crops. With the development of a National Seed Bank, future GE research and commercialization will require coexistence policies as well as extension activities to disseminate agricultural practices that ensure plant variety protection.
- f. **LABELING AND TRACEABILITY:** Jordan’s new GE food labeling regulation nullifies older administrative directives that were used to ban the import of food products labeled as containing GE ingredients or components. Importers of products labeled as “may contain GE ingredients” according to new 2020 regulation can register, in advance, their products at JFDA and facilitate the imports. JFDA often detains and destroys imported U.S.-origin consumer-oriented food products labeled as “containing” or “may contain components derived from genetic

engineering.” JFDA administers labeling requirements according to a 5 percent threshold of GE-containing materials.

- g. **MONITORING AND TESTING:** There is no formally enacted system for GE monitoring and/or testing. It is uncertain whether Jordan has the capacity to effectively, and reliably, test for GE ingredient content.
- h. **LOW LEVEL PRESENCE POLICY:** Jordan has no low-level presence policy.
- i. **ADDITIONAL REGULATORY REQUIREMENTS:** None.
- j. **INTELLECTUAL PROPERTY RIGHTS (IPR):** Jordan adopted Plant Variety Protection Law in 2004. The Law meets the WTO’s TRIPS Section 5 Article 27 (3.b), providing for the protection of plant varieties by an effective sui generis system.
- k. **CARTAGENA PROTOCOL RATIFICATION:** In 2016, MOE enacted the biosafety law based on the Cartagena Biosafety Protocol. Jordan, however, lacks a clear agricultural biotechnology framework. Jordan actively participated in the negotiations leading to the Convention on Biological Diversity (CBD Protocol). Jordan signed the CBD Protocol at the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro, Brazil in June 1992 and ratified the measure in 1993. Jordan participated in the intergovernmental negotiations of the Cartagena Biosafety Protocol, signed the measure in October 2000, and ratified it in November 2003. In 2016, MOE enacted a biosafety law based on the Cartagena Biosafety Protocol.

Jordan has also expanded its engagement on biosafety measures as a matter of national security related to non-proliferation efforts, as well as through the establishment of a new [National Seed Bank](#) at the Hashemite University of Jordan in Zarqa dedicated to conserving local plant genetic resources.

- l. **INTERNATIONAL TREATIES AND FORUMS:** Jordan ratified the Convention on Biological Diversity and Kyoto and Montreal protocols. It is a member of the International Plant Protection Convention, the World Trade Organization, and of the Codex Alimentarius. Jordan does not take a strong position on use of agricultural biotechnology and does not actively participate in discussions related to GE plants within these international organizations.
- m. **RELATED ISSUES:** None.

PART C: MARKETING

- a. PUBLIC/PRIVATE OPINIONS: Jordan’s MOA, National Agricultural Research Center reports that “Despite the potential benefits raised from a new technology, the sounds of public and scientific concerns have been raised about the environmental and food safety of products derived from the use of modern biotechnology.”¹¹ Jordan adopts the “precautionary principle” to assess the risks of LMOs. Public opinion is heavily influenced by European Union policies as it is one of Jordan’s largest export markets for agricultural products. As a result, the business community and Jordanian public are not fully aware of the economic and environmental benefits GE crop production and trade. Recent research studies indicate that GE technology is a controversial subject in Jordan. A lack of consumer awareness about GE products raises the collective risk perception of GE products on consumer and environmental health, as well as the risk of widespread misinformation regarding the science of GE technology.¹²

The public sector’s views on biotechnology are inconsistent. Instructions for Handling Food and Food Products Originating from Genetically Modified Substances Produced by Modern Biotechnology for 2018, based on Article 8.B of Food Law No. 30/2015 and Article 7.K of Law of Food and Drug General Administration No. 41/2008. On other hand MOE has enacted a 2016 biosafety law that will require the labeling of biotech products. MOA, however, realizes that it would be a costly and an erroneous proposition. The dairy and poultry sectors, Jordan’s largest agribusinesses, are dependent on imported feedstuff mainly derived from GE-inputs. Meanwhile, JFDA aims to take a sole oversight of GE food products, premising its actions on unsubstantiated food safety concerns.

- a. MARKET ACCEPTANCE/STUDIES: Market acceptance of GE products is controversial. Anti-biotech campaigns are very active on social media. These generate misconceptions, and often make unsubstantiated claims about the potential health risks associated with the consumption of GE-products. Jordan is dependent on food imports from global markets; any disruption to trade potentially poses a food security risk. The food industry has mixed views about biotechnology’s risks and benefits. Jordan’s export sector, mainly fruit and vegetable exporters, wish to be perceived as GE-free to appease more affluent European export destinations. Export-focused producers oppose the introduction of any GE crops. The general consumer hears from anti-GE activist groups, but these have yet to garner significant momentum in a price sensitive market. There are no marketing studies on GE plants.

¹¹ Rawashdeh, Ibrahim, “Status and Options for Regional GMOs Detection Platform: A Benchmark for the Region,” Chapter III: Individual Country Reports - Jordan Country Report,” United Nations, Food and Agriculture Organization, <https://www.fao.org/4/al310e/al310e02.pdf>

¹² Alalwan, AA et al., “Examining the Key Determinants of the Jordanian Customer’s Adoption of Genetically Modified Food,” Heliyon. 2023 Jun; 9(6): e16920, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10360941/>, Accessed on June 5, 2024.

CHAPTER 2: ANIMAL BIOTECHNOLOGY

PART D: PRODUCTION AND TRADE

- a. **RESEARCH AND PRODUCT DEVELOPMENT:** Government-sanctioned research into GE-related scientific techniques for animal and animal health-related biotechnology topics have been conducted in the past:
- In vitro fertilization of ovine species (Awassi sheep)
 - Embryo transfer
 - Animal pathology techniques using biotechnology approaches
 - Early diagnosis using monoclonal antibodies
 - Enzymes and antibiotics
 - Single cell protein
 - Cloning
 - Gene isolation
 - Molecular markers in Baladi broilers and cattle¹³

Private laboratories have successfully developed vaccines and disease diagnosis kits for animal and fish diseases. The FAO concluded that Jordan requires significant developments to expand biotechnology applications in its veterinary drug development industry.

- b. **COMMERCIAL PRODUCTION:** There are no approved GE animals approved for commercial production.
- c. **EXPORTS:** None.
- d. **IMPORTS:** Jordan does not import GE animals or livestock clones, or products derived from these animals, including genetics.
- e. **TRADE BARRIERS:** Same as those associated with plant biotechnology.

PART E: POLICY

- a. **REGULATORY FRAMEWORK:** Jordan's biosafety law covers GE animals, but it lacks an implementing regulation. There are no regulations in place for animal cloning.
- b. **APPROVALS/AUTHORIZATIONS:** Not applicable.

¹³ <https://www.fao.org/4/al310e/al310e02.pdf>

- c. **INNOVATIVE BIOTECHNOLOGIES:** Jordan has no regulatory policy for the use of innovative biotechnologies such as genome editing for either research or breeding animal species.
- d. **LABELING AND TRACEABILITY:** Same as with plant biotechnology.
- e. **ADDITIONAL REGULATORY REQUIREMENTS:** None.
- f. **INTELLECTUAL PROPERTY RIGHTS (IPR):** Currently undetermined.
- g. **INTERNATIONAL TREATIES AND FORUMS:** Jordan is a member of the FAO and Codex Alimentarius. Jordan follows World Organization for Animal Health (WOAH/OIE) standards and protocols for live animal and beef product imports. It does not support the production of GE animals. It does not actively participate in discussions related to animal biotechnologies, including cloning, within international organizations.
- h. **RELATED ISSUES:** None.

PART F: MARKETING

- a. **PUBLIC/PRIVATE OPINIONS:** There is skepticism about biotechnology's benefits. Jordan's dairy and poultry sectors hold favorable views of biotechnology.
- b. **MARKET ACCEPTANCE/STUDIES:** No known information exists on market acceptance or public opinion studies regarding GE animals or cloning.

CHAPTER 3: MICROBIAL BIOTECHNOLOGY

PART G: PRODUCTION AND TRADE

- a. **COMMERCIAL PRODUCTION:** Jordan produces monoclonal antibodies to produce test kits E. sakazakii, a contaminant affecting infant formula and food production. Monitoring and testing for risks are key to maintain food safety in some production processes.
- b. **EXPORTS:** FAS Amman is unaware of Jordan exporting food ingredients derived from microbial biotechnology.
- c. **IMPORTS:** FAS Amman is unaware of Jordan specifically prohibiting the import of food ingredients derived from microbial biotechnology.

- d. **TRADE BARRIERS:** Currently, there are no known trade barriers regarding food ingredients derived from microbial biotechnology.

PART H: POLICY

- a. **REGULATORY FRAMEWORK:** There is no regulatory policy for microbial biotechnology derived food ingredients.
- b. **APPROVALS:** None.
- c. **LABELING AND TRACEABILITY:** [see Chapter 1, Part B: POLICY g) LABELING AND TRACABILITY].
- d. **MONITORING AND TESTING:** There is no formally enacted system for GE monitoring and/or testing. It is uncertain whether Jordan has the capacity to effectively, and reliably, test for GE ingredient content.¹⁴
- e. **ADDITIONAL REGULATORY REQUIREMENTS:** None.
- f. **INTELLECTUAL PROPERTY RIGHTS:** Jordan adopted the Plant Variety Protection Law in 2004. The Law meets the WTO's TRIPS Section 5 Article 27 (3.b), providing for the protection of plant varieties by an effective sui generis system. It would apply to microbes, yet has no precedence.
- g. **RELATED ISSUES:** None.

PART I: MARKETING

- a. **PUBLIC/PRIVATE OPINIONS:** There is no research on how the public perceives the use of microbial biotechnology. The public attitude towards research institutions that use microbial biotechnology for food ingredient or nutritional purposes is undetermined.
- b. **MARKET ACCEPTANCE/STUDIES:** No studies have been conducted.

Attachments:

No Attachments

¹⁴ <https://www.fao.org/4/al310e/al310e02.pdf>