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Report Highlights:

Israel does not have a policy restricting the use of imported genetically engineered (GE) commodities or derivative products. There are no changes in Israel's policy towards plant, animal biotechnology, and microbial biotechnology since 2023.

EXECUTIVE SUMMARY

As of October 2024, Israel has no policy restricting the use of imported genetically engineered (GE) commodities or derivative products. Israel’s 2005 “Seed Regulation for Plants and Other GE Organisms” (GE Seed Regulation)¹ states that the sale of GE crops is not permissible without a valid “Registration Certificate.”

In Israel, GE crop production is allowed for research purposes. Regulations allow for GE commodities and products to be imported, sold, and used for food and feed production, as well as for pharmaceutical use. Israel’s Kashrut (religious authority) determined that the use of GE ingredients in food does not affect its kosher status as these ingredients are used in “microscopic” proportions.

Currently, Israel does not quantify the volume of agricultural biotechnology imports. Various countries supply grains and oilseeds, some of which may be biotech varieties. GE crops are restricted to research and development, and while some GE ornamental flowers developed in Israel are sold abroad, no GE animals are produced or imported in the country.

In October 2013, the Israel Ministry of Health (MoH) drafted regulations for novel food² including food produced using biotechnology. It is unclear when the new regulation will be approved. After official approval, the measure will come into effect one year after publication.

In the past few years, Israel has adopted EU food standards and regulations. In August 2024, the Israeli Food Control Services (IFCS) of the MoH, published an amendment to the “Protection of Public Health Law (Food)-2015” which adopted over 40 new EU food standards and regulations. (See GAIN Report Israel Adopts Additional European Union Standards for Agricultural Imports).³ According to IFCS officials, the amendment does not apply to novel foods, but that legislation related to novel food will come in the next few years.

Although Israeli scientists are usually supportive of biotechnology, environmental activists have expressed concerns regarding its use. Most Israelis do not have an opinion regarding the use of GE products, and many people do not understand the difference between traditional plant breeding and genetic modifications.

In March 2017, Israel’s National Committee for Transgenic Plants (NCTP) ruled that genome-edited plants created solely by deleting nucleotides—without inserting foreign DNA—are not classified as transgenic and are exempt from GE seed regulations. In contrast, genome-edited plants that do incorporate foreign DNA, along with their offspring, will fall under the existing GE regulations.

¹ https://www.gov.il/BlobFolder/legalinfo/regulations-seeds-engineered-plants-heb-2005/he/legal_info_gmoregulations2005.doc

² <https://www.gov.il/he/pages/novel-food>

³

https://apps.fas.usda.gov/newgainapi/api/Report/DownloadReportByFileName?fileName=Israel%20Adopts%20Additional%20European%20Union%20Standards%20for%20Agricultural%20Imports_Tel%20Aviv_Israel_IS2024-0020

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CHAPTER 1: PLANT BIOTECHNOLOGY

PART A: PRODUCTION AND TRADE

a. **RESEARCH AND PRODUCT DEVELOPMENT:** Israel is an international center for genetic engineering and research, focusing on improving plant resistance to pests, disease, herbicides, salinity, and drought. Israeli universities, governmental institutes, and the private sector all conduct research on such topics. Genetic engineering is permitted in Israel for research and development purposes, subject to conditions established by law and acquiring a valid permit for research.

Israel's 2005 "Seed Regulation for Plants and Other GE Organisms"⁴ stipulates requirements for conducting research with GE propagation material. All trials are approved by a 13-member National Committee for Transgenic Plants (NCTP), chaired by the Ministry of Agriculture and Food Security's (MOAFS) Chief Scientist.

The stages and advances made in GE research are kept as a company proprietary secret until registration. During registration, applicants are required to reveal product details to the National Committee for Transgenic Plants (NCTP). The number of NCTP authorized experiments between the years 2013-2021 (latest data available) is presented in Table 1.

**Table 1: ISRAEL - National Committee for Transgenic Plants
Authorized Experiments, 2013-2021**

	2013	2014	2015	2016	2017	2018	2019	2020	2021
Laboratory	13	44	12	7	21	18	37	33	17
Greenhouse	27	31	20	13	10	24	19	25	16
Field Trail	15	6	8	5	5	5	4	2	2
Total	55	81	40	25	36	47	60	60	35

Source: NCTP

Some of the research projects can be found on the website of the National Center for Genome Editing in Agriculture.⁵ In May 2020, the Israel Innovation Authority approved the establishment of a Genome Editing Consortium, coined CRISPR-IL.⁶ The CRISPR-IL consortium was established to develop a generic, artificial intelligence-based solution, with the goal of increasing the efficiency, precision, and safety of gene editing tools to facilitate their approval for commercial use in the future. This system is intended to be effective for human, plant, and certain animal DNA, and is applicable to market segments in pharma, agriculture, and aquaculture.

CRISPR-IL includes companies in the fields of bioinformatics, biotechnology, and agriculture (both animal and vegetable), medical institutions, and academia. Participating

⁴ <https://www.gov.il/he/departments/legalInfo/regulations-seeds-engineered-plants-heb-2005>

⁵ <https://igea.org.il/en/about-us/scientific-committee/>

⁶ <https://nrgene.com/about-us/>

companies include Evogene, Better Seeds, BTG – Bio-technology General Israel, Colors Farm, FreeZem, Hazera Seeds, NRGene, Pluristem, Rahan Meristem Ltd., and TargetGene.

b. **COMMERCIAL PRODUCTION:** The only crop currently grown commercially is the GE tobacco plant.⁷ The plant is grown in confinement for cosmetic and pharmaceutical use.⁸ [Note: Genetically engineered tobacco is grown in confinement to isolate it from potential pathogens and vectors.]

c. **EXPORTS:** As the Israeli industry uses imported raw materials that include GE components, it is likely that some fraction of Israeli food products exported to the United States and/or to other countries contains some biotechnology (biotech) content. This is especially likely among those products that rely on imported grain, oilseeds, or cotton as inputs. In these cases, Israeli exporters must follow the importing country's regulations regarding GE labeling. If a product includes a GE component and is shipped to a destination that requires specific labeling, the producers must mark it accordingly.

d. **IMPORTS:** Israel imports all soybeans and corn used in food and feed manufacturing – both of which are mainly genetically engineered. In 2023, Israel imported 280 thousand metric tons (TMT) of soybeans and 888 TMT of corn, of which only small quantities came from the United States.⁹ Other supplier origins include South America and the Black Sea region. There is no information available specifying the percentage of GE varieties included within these imports.

e. **FOOD AID:** Some food aid to the Palestinian Authority (Gaza and the West Bank) enters through Israeli ports and according to the Paris Agreement¹⁰ are inspected by Israeli Moas/MoH officials to confirm they meet Israeli standards and regulations.

f. **TRADE BARRIERS:** Currently, there are no trade barriers regarding GE products. If the proposed novel food regulation is approved, imported GE food products would face labeling requirements. The responsibility for labeling would fall to the local importers and distributors. The novel food regulation would also institute a pre-market approval process for GE foods.

PART B: POLICY

a. **REGULATORY FRAMEWORK:** Currently, responsibility for GE research, development, use, and approval is shared primarily between Moas and MoH's IFCS.

⁷ <https://collplant.com/technology/technology-rhcollagen/>

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<https://hafakulta.agri.huji.ac.il/%D7%9E%D7%9E%D7%A6%D7%90%D7%99%D7%9D/%D7%A9%D7%95%D7%A1%D7%99%D7%95%D7%91>

⁹ FAS/Tel Aviv Office Research

¹⁰ https://unctad.org/system/files/information-document/ParisProtocol_en.pdf?_cf_chl_tk=ByGk6byTt86AeaE1s5ChCgCVepW.VzfmF3yM3JJOBqo-1729077921-1.0.1.1-w9ZfEjpViW7C_orNxyI3dFzbVNu0Wv1GRIFsygarR2M

Table 2: Language Used in Israeli Regulations

Legal Term (in official language)	Legal Term (in English)	Where Term is Used	Legal Definition (in English)
אורגניזם מהונדס	Genetically Modified Organism	Seed Regulation for Plants and Other GE Organisms	An organism, including a microorganism, a virus, a viroid, and any unicellular or multicellular, which has been modified by way of genetic engineering in relation to the plant's life cycle
צמח מהונדס	Genetically Modified Plant	Plant Protection Law of 1956 (Hebrew) Plant Import Regulation Seed Regulation for Plants and Other GE Organisms	A plant modified by means of genetic engineering
חומר ריבוי מהונדס	Genetically Modified Propagation Material	Seed Regulation for Plants and Other GE Organisms	A genetically engineered plant and all its parts used for propagation and cultivation

Ministry of Agriculture and Food Security's Regulatory Framework

The MoAFS's Plant Protection and Inspection Service (PPIS) is the competent national authority for enforcement of the Plant Protection Law of 1956,¹¹ which is the existing legal framework for GE plants. The GE seed regulation from 2005 provides specific regulations regarding research activity, sales, export, and import of GE materials.

The MoAFS is responsible for all trials of genetically engineered plants, as well as those organisms that are directly related to GE plants which could include pathogens, pollinators, natural enemies, and the like. The MoAH is also responsible for overseeing handling, commercializing, importing, and exporting of GE propagation material.

Within Israel's legal and regulatory framework, there are three bodies:

1. **The National Committee for Transgenic Plants:** The 13-member NCTP is an inter-ministerial committee. Two members are from MoAFS (the chairperson and deputy), one member from the Ministry of Environment (MOE), one member from the MoH, one member from the Ministry of Science (MOS), and eight members from academia and the private sector. This committee exists to formulate guidelines for conducting GE trials,

¹¹ <https://faolex.fao.org/docs/pdf/isr19155.pdf>

publish procedures and application forms for researchers, and serve as an advisor to government and academia on GE issues.

2. **Plant Protection and Inspection Services**¹² **Field Inspection Teams:** Field inspection teams from the PPIS enforce the NCTP guidance and regulations related to the handling of GE materials.
3. **The Plant Protection and Inspection Service – Laboratory for Molecular Techniques and Transgenic Plants:** The lab manages the identification of GE seeds, vegetative propagation materials, and processed foods. This laboratory uses a “ring test” to determine the presence of GE content in a consignment for import or export.

In March 2017, NCTP published the decision that genome edited plants resulting only in a deletion of nucleotides and with no insertion of foreign DNA, are not considered to be transgenic¹³ and will not be subjected to the GE seed regulation. The applicant must, however, submit data showing that they meet the determined criteria to ensure that foreign DNA sequences were not incorporated into a plant genome. Genome edited plants (where foreign DNA was incorporated and their progeny) will be subject to regulations and guidelines found in the GE seed regulation.

In March 2019, the NCTP reaffirmed that plants resulting from targeted mutagenesis using genome editing techniques—specifically those that delete nucleotides and do not incorporate foreign DNA—are not classified as transgenic plants. The NCTP also clarified that cutting out DNA sequences from an organism is not to be considered as a transgenic organism, but that adding DNA sequence would be.

Ministry of Health’s Regulatory Framework

The Israeli IFCS within the MoH regulates novel food, per the procedure guidelines.¹⁴ <https://www.gov.il/he/pages/novel-food> In October 2013, IFCS notified the World Trade Organization (WTO) of the draft regulation on novel food via notification G/TBT/N/ISR/710G/TBT/N/ISR/710.¹⁵ The proposed regulation is pending, with further revision expected. Key provisions in the draft regulation entitled “Public Health Regulations Food – Novel Foods 5773 – 2013”¹⁶ include:

- Registration of novel foods through a risk assessment process.
- Prohibition on processing, importing, storing or selling unregistered novel foods.
- The creation of an official novel food list, which is updated periodically.
- Labeling instructions for food items containing GE ingredients.

¹²

<https://www.gov.il/en/departments/units/2ppis#:~:text=The%20Plant%20Protection%20and%20Inspection%20Services%20is%20a%20competent%20authority,quality%20of%20fresh%20agricultural%20produce.>

¹³ <https://news.agropages.com/News/NewsDetail---22144.htm>

¹⁴ <https://www.gov.il/he/pages/novel-food>

¹⁵ <http://tbtims.wto.org/en/RegularNotifications/View/93249?FromAllNotifications=True>

¹⁶ <http://tbtims.wto.org/en/RegularNotifications/View/93249?FromAllNotifications=True>

Novel Food Definition: The definition of “novel food” is limited to food or food ingredients that meet the following requirements:

- Contains a new primary structure at the molecular level or which has been modified in its primary structure at the molecular level and is not yet proven safe for human consumption in Israel.
- Contains a “genetically modified organism” or part of one.
- Contains plants, animals, microorganisms, fungi, or algae or extracted from one of these and does not contain enzymes that are not proven safe for human consumption in Israel.
- Was manufactured in a new process, except for cleaning and disinfecting, and that the process created a change in the formulation of the food or in its ingredients that made a change in its nutritional values, the body metabolism, or the level of unwanted ingredients in the food.
- Not a food additive previously approved in the food additive regulation.
- Not a food ingredient previously approved in the food ingredient regulation.
- Is not used as a material production aid or a food flavoring.

For a new product to become commercialized, products must undergo a risk assessment prior to approval. Once a product is approved, it will be registered and added to the official list of approved products¹⁷ and registered online.¹⁸

Furthermore, a new risk assessment will not be required for a novel food if it has already been reviewed by at least two out of the international associations listed below, and approved by the head of IFCS for risk assessments:

- The European Union – European Food Safety Authority (EFSA)
- United States – U.S. Department of Agriculture (USDA) and Food and Drug Administration (FDA)
- Canada – Health Canada
- Australia and New Zealand – Australia and New Zealand Food Authority (ANZFA) and Food Standards Australia New Zealand (FSANZ)
- Japan – Ministry of Health, Labor and Welfare/Department of Food Safety
- Specialist Committees of the *Codex Alimentarius* (including the Food and Agricultural Organization and the World Health Organization)

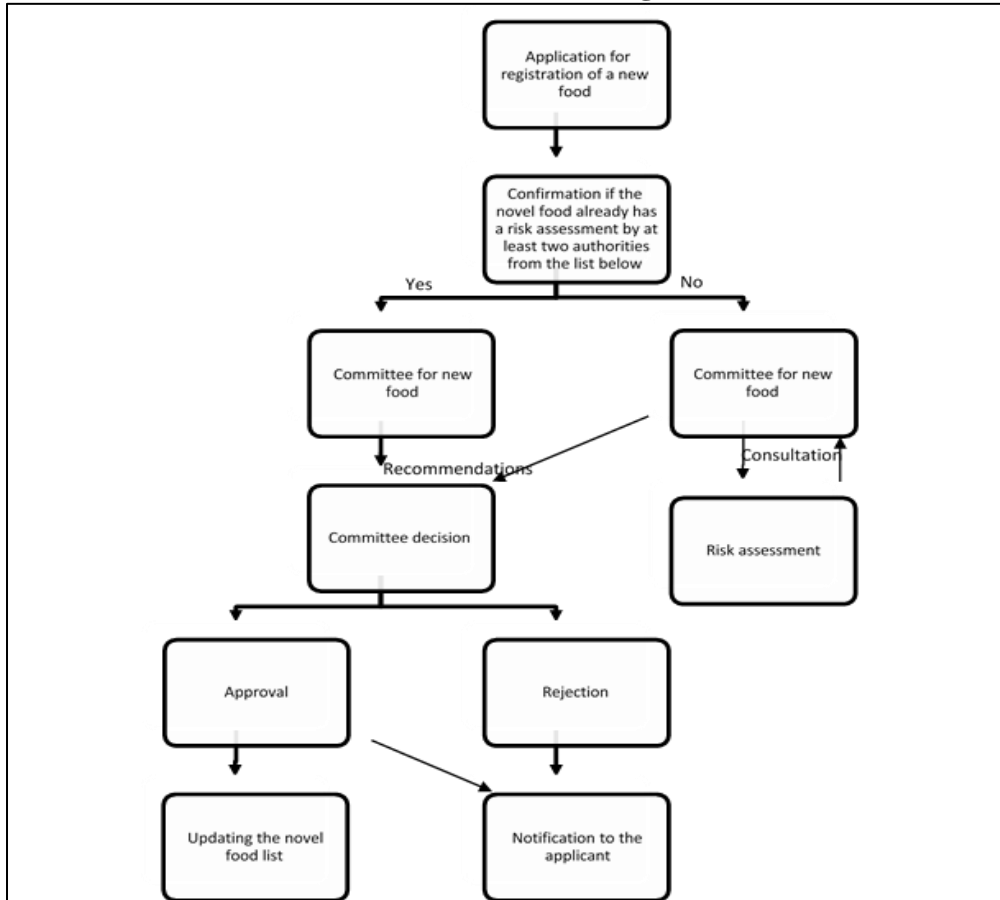
The approval timeline for novel foods varies according to the risk assessments. If the food has two or more approvals from the certifiers listed above, the application could be completed in six months. If the product is new-to-market, approval could take up to 12-months. All novel foods are required to undergo the same process, regardless of their final use.¹⁹

¹⁷ www.gov.il (www.gov.il) הבריאות משרד | הארצי המזון שירות בנושא והנחיות נהלים חוזרים

¹⁸ <https://www.health.gov.il/hozer/Food004-08.pdf>

¹⁹ <https://www.gov.il/he/Departments/policies/food004-08>

Chart 1: Israeli Novel Food Registration Process



Source: FAS/Tel Aviv office research

Alternative Protein

Israel has made many advances in the development of alternative proteins, primarily cell cultured beef, poultry meat, milk, and honey, and are defined by the IFCS as “novel foods.” Within IFCS, there is dedicated working group (led by the Risk Management Unit) which examines the products and ensures the advancement of the field to ensure public health. The working group was also established to help address unique characteristics of the products, different production technologies, and different types of products with an aim of maintaining Israel’s position as a leader in the field. However, regulations for the approval and supervision of alternative proteins are still in development between the Israeli Veterinary Services (IVSAH) and IFCS.

- b. **APPROVALS:** To date, only GE tobacco has been approved in Israel for commercial production. The National Committee for Transgenic Plants has nonetheless granted approvals for field trials of other crops (see “Field Testing” below). Israel does not currently require event-by-event pre-market approval for GE imports intended for use as food, feed, or processing. However, this could change under the proposed novel foods regulation.
- c. **STACKED EVENT APPROVALS:** If a plant is genetically engineered for more than one trait, each trait must be approved separately. After approval, each trait will then be listed

separately on the approved list. The current novel food registration process does not address the issue of stacked events.

- d. **FIELD TESTING:** Field experiments of plants produced through biotechnology began in Israel in the early 2000s. Experiments must be authorized by the NCTP, based on a complete, detailed application, and consultation with experts. The experiments are under the regulatory supervision of the Israeli Plant Protection and Inspection Service.
- e. **INNOVATIVE BIOTECHNOLOGIES:** [See Part B: POLICY a) Regulatory Framework] Israel maintains that plants which are the result of targeted mutagenesis using genome editing technologies and do not incorporate any foreign DNA into the genome, will not be considered as transgenic. NCTP also confirmed that cucumber plants resistant to viruses and developed with genome editing are not considered transgenic.
- f. **COEXISTENCE:** There are no regulations regarding coexistence. The NCTP must approve the application to work with GE products; it will also solicit the opinion of the National Committee for Experiments (NCE). If the NCE has doubt regarding the experiment or its location (i.e., proximity to other crops), it may ask for external expert opinions prior to approval.
- g. **LABELING AND TRACABILITY:** Currently, Israel has no governmental policy on the labeling of GE products (see Israel GAIN FAIRS 2024 Report).²⁰ However, in the development of drafting “Public Health Regulations (Food) – Novel Foods 5773 – 2013,” mandatory labeling of food items that contain GE ingredients could be implemented. According to the MoH, mandatory labeling is not a deterrence or warning; it exists to address consumers’ rights regarding access to information about food. Under the proposed regulation, the following product categories are exempt from labeling:
 - Products not containing foreign DNA or protein.
 - Products with less than 0.9 percent of the product being comprised of GE ingredients.

Highly refined foods (such as oils) would not require special labeling as refining removes proteins from the product. When the new labeling regulations are approved, exporters of food items to Israel must declare if the products contain ingredients derived from GE crops. Animal feed will be exempt from the labeling requirements. Sellers will also have to place a sign beside GE products that are sold in bulk.

On August 2024, Israel adopted over 40 new EU food standards and regulations under the “Protection of Public Health Law (Food)-2015.” (See GAIN Report Israel Adopts Additional European Union Standards for Agricultural Imports).²¹ It will come into force on January 1,

²⁰ <https://fas.usda.gov/data/israel-fairs-country-report-annual>

²¹

https://apps.fas.usda.gov/newgainapi/api/Report/DownloadReportByFileName?fileName=Israel%20Adopts%20Additional%20European%20Union%20Standards%20for%20Agricultural%20Imports_Tel%20Aviv_Israel_IS2024-0020

2025, and will require changes to food labeling requirements; however, there will be no change in the labeling requirements for GE products.

- h. **MONITORING AND TESTING:** Israel does not have a system for testing and controlling the entry of GE products into the country; currently, products containing GE components are permissible. Exporters that produce food items from imported raw materials for export are subject to the destination country's regulations which would include any labeling and testing requirements.
- i. **LOW LEVEL PRESENCE POLICY:** N/A
- j. **ADDITIONAL REGULATORY REQUIREMENTS:** Genetically engineered seeds and plants are not commercially planted or grown in Israel for human or animal consumption. However, genetically engineered products, such as other novel foods, could face regulatory hurdles. Some novel foods (e.g., red grape cells) are approved for human consumption in Israel under very specific conditions.
- k. **INTELLECTUAL PROPERTY RIGHTS:** Israel is a signatory of the Agreement on Trade-Related Aspects of International Property Rights (TRIPS Agreement) and a member of the International Union for the Protection of New Plant Varieties (UPOV).
- l. **CARTAGENA PROTOCOL RATIFICATION:** Israel is not a signatory to the Cartagena Protocol. The Cartagena Protocol National Focal Point²² is the Plant Protection and Inspection Services (International Relations) of the MoAFS.
- m. **INTERNATIONAL TREATIES AND FORUMS:** Israel is a member of the WTO,²³ Codex Alimentarius,²⁴ IPPC²⁵ and the FAO GM Foods Platform.²⁶ Israel does not actively participate in discussions related to GE plant or seed varieties with international organizations.
- n. **RELATED ISSUES:** N/A

PART C: MARKETING

- a. **PUBLIC/PRIVATE OPINIONS:** In the past, some environmental activists expressed concerns regarding the safety and the potential harm that could result from the use of GE crops. One fear is that GE seeds will "leak" into the wild and cross-pollinate wild plants causing new unwanted varieties. Despite such opinions, Israeli consumers continue to routinely purchase GE content products in many cases with no knowledge the products contain GE materials. Israeli scientists and researchers working with GE crops favor the technology and view it as a means of supplying global food markets.

²² <https://www.cbd.int/kb/record/focalPoint/1728>

²³ https://www.wto.org/english/thewto_e/countries_e/israel_e.htm

²⁴ <http://www.fao.org/fao-who-codexalimentarius/about-codex/members/detail/en/c/15676/>

²⁵ <https://www.ippc.int/en/countries/israel/>

²⁶ <http://www.fao.org/food/food-safety-quality/gm-foods-platform/browse-information-by/country/country-page/en/?cty=ISR>

b. **MARKET ACCEPTANCE/STUDIES:** Israeli consumer awareness regarding biotechnology is relatively low. There is little reference in the local media to the issue. FAS/Tel Aviv is not aware of any Israeli marketing studies on GE crops, seeds, or food-related products.

CHAPTER 2: ANIMAL BIOTECHNOLOGY

PART D: PRODUCTION AND TRADE

a. **RESEARCH AND PRODUCT DEVELOPMENT:** There is limited research on animal genetic engineering in Israel using human or animal cells. Most of this work is focused on repairing human tissue. Researchers and companies do not publicize specific information regarding these studies. FAS/Tel Aviv is not aware of any genome editing research done with livestock or edible fish. In June 2020, the Israel Innovation Authority approved the establishment of a Genome Editing Consortium, coined CRISPR-IL [For more information, see Chapter 1: Part A: PRODUCTION AND TRADE a. PRODUCT DEVELOPMENT].

b. **COMMERCIAL PRODUCTION:** There is no commercial production of GE animals or cloned animals in Israel, nor is any expected in the near term.

c. **EXPORTS:** Israel does not export GE or cloned animals or related products.

d. **IMPORTS:** Israel has most likely imported semen and embryos from cloned animals or their offspring. The specific quantity of these imports is not available.

e. **TRADE BARRIERS:** Any prospective GE or cloned animals would be subject to the same sanitary requirements as non-GE or cloned animals. There are no existing barriers to trade specifically targeting GE or cloned animals.

PART E: POLICY

a. **REGULATORY FRAMEWORK:** Israel's Prevention of Cruelty to Animals Law (Experiments on Animals)²⁷ stipulates requirements for experiments on animals. The MoAFS' Veterinary Branch is responsible for GE animal production experimentation and regulation. All requests for experiments must pass through the Ministry for evaluation and approval. There is no regulation regarding the import of GE animals.

b. **APPROVALS:** N/A

c. **INNOVATIVE BIOTECHNOLOGIES:** It is unclear on how gene edited animals may be treated in the future.

d. **LABELING AND TRACEABILITY:** There is no policy for the traceability and labeling of GE or cloned animals.

²⁷ <https://www.cbd.int/kb/record/focalPoint/1728>

e. **ADDITIONAL REGULATORY REQUIREMENTS:** N/A

f. **INTELLECTUAL PROPERTY RIGHTS:** Israel is a signatory of the Trade-Related Aspects of Intellectual Property Rights (TRIPS) agreement.

g. **INTERNATIONAL TREATIES and FORUMS:** Israel is a member of *Codex Alimentarius* and a member of the World Organization for Animal Health (OIE).²⁸ However, it does not actively participate in discussions related to animal biotechnologies.

h. **RELATED ISSUES:** Genetically engineered animals are not a topic of concern in Israel, and there is no legislation or regulation related to the development, trials, commercial use, imports or exports of GE or cloned animals. The MoAFS' Veterinary Branch is the lead agency.

PART F: MARKETING

a. **PUBLIC/PRIVATE OPINIONS:** Genetically engineered animals are not discussed by the public or the private sectors. The media rarely reports on the topic and many Israelis do not understand the concept of GE animals. There is general knowledge obtained from the international media that cloning exists (e.g., Dolly the sheep), but specific information remains very limited. Future concerns regarding GE animal products will likely focus more on kosher issues than on the source of the animal.

b. **MARKET ACCEPTANCE/STUDIES:** FAS/Tel Aviv is unaware of any time and/or money being invested in market studies and analysis, nor does the public or private sector have plans to do so in the future.

CHAPTER 3: MICROBIAL BIOTECHNOLOGY

PART G: PRODUCTION AND TRADE

a. **COMMERCIAL PRODUCTION:** According to Israel's Innovation Authority report,²⁹ there are 218 startups active in biological, agricultural, and food technologies in Israel which develop novel ingredients, including alternative proteins, and sugar substitutes. Israel does not commercially produce food ingredients derived from microbial biotechnology. Table 3 presents several Israeli companies active in developing novel foods. In addition, see Good Food Institute's "Israel State of Alternative Protein Innovation Report 2021"³⁰ and Startup Nation Central's database.³¹

²⁸ <https://www.oie.int/en/who-we-are/members/>

²⁹ https://innovationisrael.org.il/en/press_release/israel-innovation-authority-report-the-potential-of-israeli-foodtech/

³⁰

https://innovationisrael.org.il/sites/default/files/GFI%20Israel%20State%20of%20Alternative%20Protein%20Innovation%20Report%202021_0.pdf

³¹

<https://finder.startupnationcentral.org/startups/search?§orclassification=agxfmlsbGlzdHNpdGVyJAsSF0Jhc2VDbGFzc2lmaWNhdGlvbklvZGVsGICA4Jvz2KAJDA&targetindustry=agxfmlsbGlzdHNpdGVyJAsSF0Jhc2VDbG>

Table 3: Select Israeli Companies Developing Novel Foods

Company	Category	Website
Brevel	Alternative protein from microalgae, suitable for animal-free products such as dairy, egg, meat, and seafood alternatives	
Beyond Oil	Solution for food-processing and food-service	https://www.beyondoil.co/
Bountica	Safe alternative to artificial preservatives	https://bountica.com/
DairyX	Creating animal-free and clean-label dairy products using functional milk proteins made in yeast through precision fermentation	
Enzymit	Developing cell-free enzymatic manufacturing technology	https://enzymit.com/
Ever After Foods/ Plurinuva	Developed a proprietary technology platform to produce cultivated meat	https://everafterfoods.com/
Platypus	Raw material that serves as a platform enabling the controlled, slow release of bioactive ingredients	http://www.platypus-ecodesign.com/
ProFuse Technology	Enhance the production capacity of cultured meat by accelerating the growth of muscle fiber	https://profuse-tech.com/
RNAway	Platform technology to deliver RNA molecules into the plant	https://rnaway.com/
SeaGenix	Gene editing technology, specifically designed to breed salinity-resistant plants, starting with rice	
Steakholder Foods/ MeaTech	Creation of plant-based foods that replicate the taste, texture, and appearance of traditional meat	https://www.steakholderfoods.com/
Agrematch	Development of sustainable bioactive compounds	https://www.agrematch.com/
AgroCulture	Cloning the vegetative propagation in tissue cultures	
Aleph Farms	Cellular agriculture technology	https://aleph-farms.com/
Alfred's Food-Tech	Plant-based alternatives to meat and dairy product	https://www.alfreds.tech/
AlgaeCore	Cultivated and harvesting edible spirulina	https://simpliigood.com/

Amai Proteins	Sweet designer proteins as a sugar substitute	https://amaiproteins.com/
Algatechnologies	Cultivation of micro-algae	https://www.algatech.com/
Ambrosia Bio	Revamping sugar refineries into specialty ingredients	https://www.ambrosia.bio/
AquiNovo	Non-hormonal, non-GMO specialty feed additives designed to increase fish yields	https://aquinovo.com/
Asterix Foods	Animal-free proteins, focusing on glycoproteins	https://www.asterixfoods.com/
BarAlgae	Microalgae cultivation	https://www.baralgae.com/
Bee-io Honey	Cultured honey via an artificial bee stomach	https://bee-io.com/
Believer Meats/ Future Meat Technologies	Animal-free meat	https://www.believermeats.com/
Better Juice	Biotech solution for reducing sugars in fruit juice	https://www.better-juice.com/
Better Pulse	Plant-based proteins for food	https://better-pulse.com/
BetterSeeds	Gene Editing for Improved Crops	https://betterseeds.com/
Bio-Cloud	Insect-repelling organic crop protection	https://www.biocloudglobe.com/
Biobetter	Protein manufacturing and biologic drug purification	https://biobetter.bio/
BioHarvest	Functional biofood production	https://bioharvest.com/
BugEra	Insect biotechnology	https://bugera-bio.tech/
CanBreed	Breeding technology based on CRISPR-Cas9	http://www.can-breed.com/
Celleste-Bio	Producing high-value cocoa ingredients using cell culture methods, eliminating the dependence on the cultivation of cocoa trees	https://celleste-bio.com/
ChickP Protein	Plant-based proteins and has developed a next-generation chickpea protein isolate	https://www.chickp-protein.com/
Chunk Foods	Enabling large-scale manufacturing of healthy, realistic whole muscle cut meat alternatives. Its first target is beef; seafood and poultry are next	https://www.chunkfoods.com/
ClimateCrop	Gene editing technology for increased crop yields	https://climate-crop.com/
Coffeesai	Technology to craft coffee through cellular agriculture	https://coffeesai.com/
CultivO2	Platform for the autonomic culture of animal tissue utilizing photosynthetic microalgae	https://www.cultivo2.com/
Danziger Dan Flower Farm	Floriculture and flower breeding	https://www.danzigeronline.com/

E-FISHient Protein	Cultured fish meat	https://efishient.co.il/
Eggmented Reality	Functional protein fermentation technology	https://eggmented.com/
Enzootic	Cell transplantation technology that is used for the commercial production of all-female shrimp populations	https://enzootic.com/
Enzymofit	Bio-catalyst solutions for plant-based food	https://www.enzymofit.com/
Evogene	Advancing product pipelines for human microbiome-based therapeutics	
EXOSOMM	Natural immune-effective food ingredient for a variety of medical conditions	https://www.exosomm.com/
Finally Foods	Modifying plants by AI engines to plan and produce proteins	https://www.finally-foods.com/
FuturaGene	Genes to improve plant yields	https://www.futuragene.com
GeneNeer	Enhance crop traits and performance by precisely controlling the gene-editing process,	https://geneneer.com/
Imagindairy	Animal-free dairy products	https://imagindairy.com/
Ingrediome	Meat from CO2: Animal muscle proteins grown in algae	https://www.ingrediome.com/
Kaiima Bio-Agritech	Genomic multiplication to boost crop productivity	https://kaiima.com/
KaYama Foods	Oil-based fat	
Kinoko-Tech	Fungi fermentation-based food	https://kinoko-tech.com/
Kokomodo	Cacao production through cellular agriculture	https://www.thekokomodo.com/
Koracell	Biosynthetic agricultural products	
Lavie Bio	Microbiome-based products for improved food quality	https://lavie-bio.com/
Lemna Pro	Plant protein	https://www.lemnapro.com/
MAOLAC	Precision proteins	
MEALA	Replacing methyl cellulose and hydrocolloids in alternative proteins	https://mealafood.com/
Meat.The End	Solution for industrial extrusion	https://www.meattheend.tech/
Meatafora	Ethically grown meat alternative	https://meatafora.com/
MEATOLOGIC	Synthetic biology to re-engineer the cellular agriculture production process	https://meatologic.com/

Meatosis	Lab-grown fish cell lines for cultivated seafood products	
Mermade Seafoods/ Foresea/Weforsea	Sustainable cultured seafood	https://mermadefoods.com/
Miruku	Animal free dairy	https://www.miruku.com/
Moon Steak Technologies	Artisanal meat cuts	https://www.moonsteaks.com/
Mush Foods	Mushroom mycelium-based protein	https://mush-foods.com/
NewMoo/Imagene Foods	Plant-based protein production	https://newmoofoods.com/
NextHen	Genome editing and breeding technologies for eggs	https://www.nexthen.net/
NextFerm Technologies	Non-GMO yeast food ingredients	http://www.nextferm.com/
Novella Innovative Technology	Plant cell cultures for mass production of cell suspension	https://www.novella.co.il/
Nuna	Cell-cultured seafood technology	
Nuversys	Food enrichment platform essential nutrients	https://nu-versys.com/
Omaiko	Farming protein	https://www.omaiko.eco/
Oshi/Plantish	Alternative protein seafood	https://oshi.com/
Phytolon	Production of natural food colorants	https://www.phytolon.com/
PhytoPharma	Medical research and plant breeding	https://bee-fuse.com/
Plantae Bioscience	Plant optimization echnology	
PlantArcBio	Gene Discovery Platform for Crop Enhancement	https://plantarcbio.com/
Plantopia	Scalable plant-based production platform of bio-compounds	
PoLoPo	Plant-based protein production through metabolic engineering	https://www.polopo.tech/
Poultry	Genome editing and breeding technologies for eggs	
Prevera	Food protection proteins	https://prevera.co/
ProLeafEra	Clean protein isolation process	https://www.proleafera.com
Qortein	Processing jellyfish biomass for use in the food	https://www.qortein.com/
Reagenics Research	An intelligent bioreactors platform to produce essential plant molecules	https://www.reagenics.com/
ReGEV Bio	Regulating genetic expression volume in planta	https://agchimedes.com/regev-bio/
Remilk	Animal-free dairy products	https://www.remilk.com/

Resugar	Sugar replacement technology	https://www.resugar.com/
Rumafeed	Biotechnology solutions for solanaceae plants	https://rumafeed.com/
Salicrop	Advanced seed innovation for enhanced plant resilience in a changing climate	https://www.salicrop.com/
Sea2Cell	Sustainable cell-based fish	https://sea2cell.com/
ShneorSeed	Virus-resistant vegetable seeds	http://www.shneorseed.com
SPV Technologies	Breeding for stomata closure	
SuperMeat	Clean chicken meat	https://supermeat.com/
Synergio/MothersChoice	Plant-based bioactive technologies for nutritional products	
Targene Advanced Agriculture	Science-driven technology for pharmaceutical-grade cultivation	http://www.targene.com/
The Bland Company	Upcycled proteins for alternative food and nutritional beverages	
The Mediterranean Food Lab	Fermentation for the production of plant-based flavor solutions	https://www.med-food-lab.com/
Ukko	Safer proteins for people with food allergies and sensitivities	https://www.ukko.us/
Vaxa Technologies	Algae cultivation technology	https://www.vaxa.life/
Wanda Fish	Sustainable cell-cultured fish meat	https://wandafish.com/
Wilk Technologies/BioMilk	Cultured milk production	https://wilkismilk.com/
Yemoja	Microalgae production manufacturer	http://www.yemojald.com/

Source: FAS/Tel Aviv office research.

b. **EXPORTS:** Israel exports alcoholic beverages, dairy products, and processed products which may contain microbial biotech-derived food ingredients.

c. **IMPORTS:** Israel imports alcoholic beverages, dairy products, and processed products which may contain microbial biotech-derived food ingredients.

d. **TRADE BARRIERS:** Currently, there are no trade barriers regarding food ingredients derived from microbial biotechnology. If the proposed novel food regulation is approved, imported GE food products would face labeling requirements. The responsibility for labeling would be to the local importers and distributors. The novel food regulation would also institute a pre-market approval process for GE foods.

PART H: POLICY

- a. **REGULATORY FRAMEWORK:** Microbial biotech-derived food ingredients are considered novel food which is regulated by the Ministry of Health [see Chapter 1, Part B: POLICY a) REGULATORY FRAMEWORK, Ministry of Health's Regulatory Framework.]
- b. **APPROVALS:** See official list of approved products (in Hebrew).³²
- c. **LABELING AND TRACEABILITY:** [see Chapter 1, Part B: POLICY g) LABELING AND TRACABILITY].
- d. **MONITORING AND TESTING:** Israel does not actively test for evidence of genetic engineering in imports and exports of processed products.
- e. **ADDITIONAL REGULATORY REQUIREMENTS:** N/A
- f. **INTELLECTUAL PROPERTY RIGHTS:** Israel is a signatory of the Agreement on Trade-Related Aspects of International Property Rights (TRIPS Agreement).
- g. **RELATED ISSUES:** N/A

PART I: MARKETING

- a. **PUBLIC/PRIVATE OPINIONS:** No research has been done on how the public perceives the use of microbial biotech. The public attitude towards research institutions that use microbial biotech for food ingredient or nutritional purposes seems to be positive.
- b. **MARKET ACCEPTANCE/STUDIES:** No market acceptance studies have been conducted. However, based on the success of FoodTech startups to raise funding (ex. Remilk,³³ Imagindairy,³⁴ and ChickP³⁵) there is positive market acceptance. In addition, Israel's largest food manufacturing companies took the initiative to create, participate, and invest in food technology (FoodTech) incubators and hubs.

Attachments:

No Attachments

³² https://www.gov.il/he/Departments/DynamicCollectors/fcs-regulations?skip=0&fcs_regulations_subject=7

³³ <https://www.calalitech.com/ctech/articles/0,7340,L-3926451,00.html>

³⁴ <https://www.calalitech.com/ctechnews/article/hksmuxzvq>

³⁵ <https://www.calalitech.com/ctech/articles/0,7340,L-3927870,00.html>