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Report Highlights:

Agricultural research in Egypt is primarily focused on improving crops and developing new crop varieties. However, advancing agricultural biotechnology in the country requires the establishment of a biosafety legal framework. Without such a framework, field trials and the commercial cultivation of genetically engineered (GE) crops remains restricted, as the planting of GE crops is not currently permitted. This lack of a biosafety framework also hinders public awareness and trust in agricultural biotechnology.

Executive Summary

Agricultural research in Egypt is primarily focused on improving crop varieties and developing new ones to maximize yields while addressing challenges posed by biotic and abiotic stresses. Advances in agricultural production and biotechnology hold significant potential for crop enhancement. Egypt has utilized different agricultural biotechnology research tools in crop improvement programs through a network of universities and national research institutions to address challenges facing the agriculture sector.

Although Egypt does not have specific legislation regulating biotechnology, the government allows for the import of biotech products provided they are also consumed in the exporting country. It also does not require biotech products to be labeled. During the past five calendar years (2020-2024), Egypt imported roughly 44.5 million metric tons (MMT) of corn, averaging nearly 9.0 MMT annually. Brazil, Ukraine and Argentina are the largest suppliers of corn to the Egyptian market.

Soybean exports to Egypt during the past five years totaled roughly 18 MMT, the majority of which came from the United States, Ukraine, and Brazil. In calendar year (CY) 2024, Egypt imported 3.8 MMT of soybeans to meet the feed demands of its expanding poultry, aquaculture, and dairy industries.

To advance agricultural biotechnology, Egypt needs a comprehensive biosafety legal framework. The lack of such a framework hinders the country's ability to conduct field trials and prevents the commercial cultivation of GE) crops. This regulatory gap also undermines public awareness and trust in agricultural biotechnology.

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PART A: PRODUCTION AND TRADE

a) RESEARCH AND PRODUCT DEVELOPMENT: The primary goal of agricultural biotechnology research in Egypt is to develop plant varieties that require less water while delivering higher yields. Research efforts are spearheaded by the Ministry of Agriculture and Land Reclamation's (MALR) Agricultural Research Center (ARC) and the Ministry of Higher Education and Scientific Research's (MOHESR) National Research Center (NRC), which employ modern biotechnology tools to achieve these objectives.

1) **The Agricultural Research Center:** The Agricultural Genetic Engineering Research Institute (AGERI), part of the MALR/ARC, is Egypt's leading biotechnology research organization, tasked with advancing biotechnology transfer and application. AGERI's research spans plant molecular biology, genetic transformation, genome mapping, bioinformatics, and protein structure analysis. Its field crop research focuses on wheat and corn, with efforts to enhance drought and salinity tolerance through genetic transformation and field trials. Additionally, AGERI works on regenerating Egyptian maize and sorghum lines, optimizing gene expression systems, and developing bio-fortified sorghum. In Addition, work has been conducted to establish regeneration and genetic transformation System for Egyptian Sesame (Sesamum indicum L.)

2) **The National Research Center:** The National Research Center (NRC) is a multidisciplinary institution focused on improving agricultural production through modern technologies. Its Agricultural and Biological Divisions conduct applied research to increase food yields, enhance soil properties, and optimize water use. By incorporating biotechnology and nanotechnology, the NRC works to improve resource efficiency, reduce soil and water pollution, and support sustainable farming practices. Key projects include international research collaborations, genetic improvement of date palm varieties, biotech-based production of bioactive substances, biological pest control using Bacillus thuringiensis isolates, and studying the effects of nanoparticles on plant growth, metabolism, and tissue culture. These efforts aim to address agricultural challenges and contribute to sustainable development.

3) **Universities:**

Faculty Of Agriculture – Cairo University: The University is advancing research to develop drought-tolerant crops, such as wheat and chickpeas, to address the challenges of climate change and improve agricultural productivity in Egypt. Leveraging the multiplex sgRNA-CRISPR/Cas9 system, researchers successfully edited the TaSal1 gene in the Giza168 wheat variety, identifying five active homologs and precisely targeting specific exons. Out of 120 transgenic plants, 41 exhibited heritable mutations, with 5 achieving complete gene knockouts. Edited plants demonstrated enhanced drought tolerance, characterized by closed stomata, larger bulliform cells, and improved water retention, without significant changes to overall plant morphology. These findings underscore the potential of CRISPR/Cas9 as a powerful tool for precise genome editing in hexaploid wheat, paving the way for improved stress resilience.

Genetic Engineering and Biotechnology Research Institute – University of Sadat City: The Genetic Engineering and Biotechnology Research Institute (GEBRI), located at the University of

Sadat City, is the one of the country's leading research centers in biotechnology. The institute utilizes biotechnology tools to develop crops that can tolerate salinity, drought, and heat, as well as promote water-efficient semi-arid crops (e.g., olives and dates). It is also developing strategies to tackle the effects of climate change on yields, in addition to expanding the area of germ plasm collection and conservation and using tissue culture for mass propagation of banana and other crops.

b) COMMERCIAL PRODUCTION: Ministerial Decree 378/2012 suspended production and commercialization of GE crops. Cultivation and commercialization are not allowed.

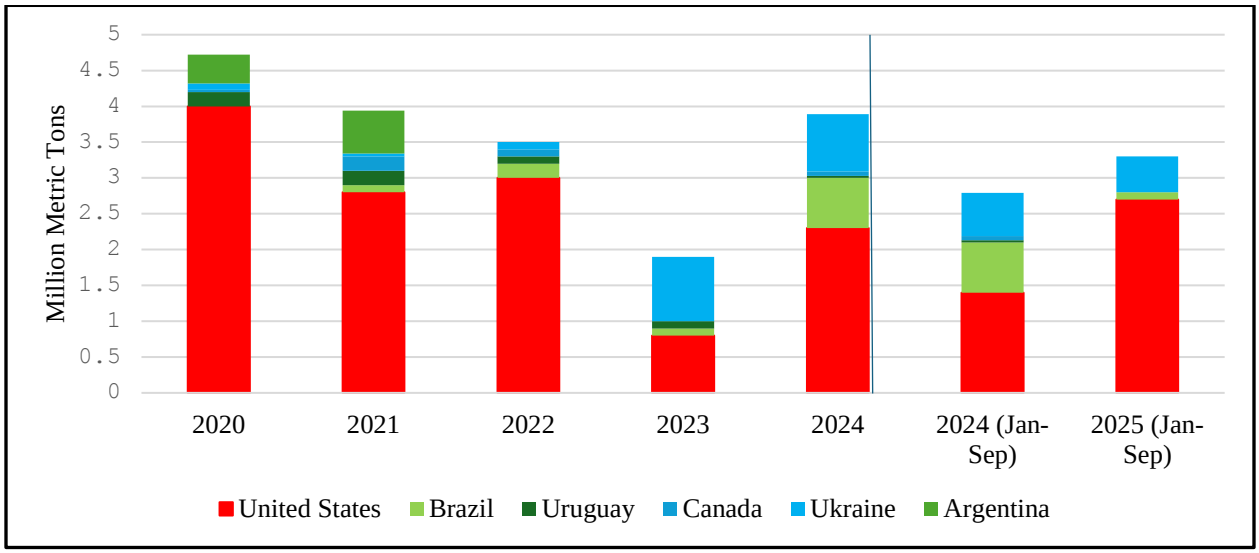
c) EXPORTS: Egypt does not produce nor export GE products.

d) IMPORTS: Egypt permits the importation of GE crops if the exporting country of origin approves the product for its own consumption and authorizes its export. Egypt is a net importer of GE soybeans and corn for feed use. From calendar year (CY) 2020 to 2024, Egypt imported 18.0 MMT of soybeans. Throughout that period, Egypt's main suppliers have been the United States (13.1 MMT), Ukraine (1.9 MMT) and Brazil (1.1MMT) (see Figure 1). U.S.-origin soybean exports to Egypt have risen dramatically in recent years. CY 2020 was a record year for U.S.-origin soybean exports to Egypt – 4.04 MMT of the total 4.7 MMT of soybeans Egypt imported that year were U.S.-origin soybeans (accounting for nearly 86 percent of total soybeans exported to the Egyptian market).

Egypt is also a net importer of corn. From CY 2020 to 2024, Egypt imported corn from Brazil (17.5 MMT), Ukraine (12.5 MMT), Argentina (11.4 MMT) and the European Union (EU) (2.2 MMT) (see Figure 2). However, due to its competitive price and quality, U.S. exports of corn realized a significant return to the Egyptian market (i.e., 590,228 MT from April-July 2025).

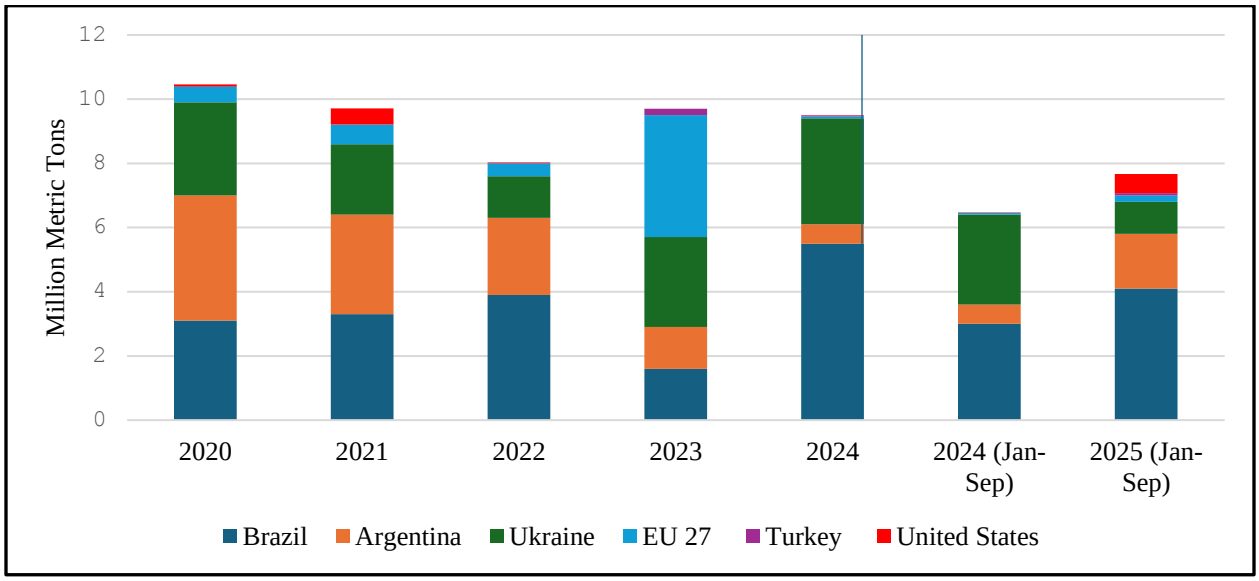
In addition, Egypt imported U.S. corn gluten meal, corn gluten feed, and dried distillers' grains (DDGs). The United States was the major supplier of these feed commodities to Egypt.
Egypt does not consider non-DNA-containing products derived from GE plants to be GE as the process of producing such products removes all the DNA and protein, including the transgene and its protein product.

FIGURE 1: Egyptian Soybean Imports by Volume (2020-2024)



Source: Trade Data Monitor LLC

FIGURE 2: Egyptian Corn Imports by Volume (2019-2023)



Source: Trade Data Monitor LLC

e) FOOD AID: N/A

f) TRADE BARRIERS: Egypt maintains an open market for agricultural commodities and products produced with biotechnology. Imports are permissible if the exporting country-of-origin approves the product for its own consumption and authorizes its exportation. Imports of biotech seeds for the purpose of cultivation are not permitted due to the Decree banning Egyptian cultivation.

PART B: POLICY

a) **REGULATORY FRAMEWORK:** Egypt's lack of a biosafety framework has led to a promulgation of various decrees dealing with agricultural biotechnology (see Table 1). Biotechnology oversight falls under the purview of four different ministries, all of which have representation on the National Biosafety Committee (which has been dormant since 2014).

TABLE 1: EGYPT, Ministerial Decrees Dealing with Biotechnology

Decree 85 (1995): Established the National Biosafety Committee, assigning it the task of setting regulations and guidelines concerning the safe use of genetic engineering and molecular biology; meant to ensure safety of the environment including human health.
Decree 136 (1995): Established an obligation to obtain a permit from the National Biosafety Committee before using or dealing with any GE product for experimental usage, regardless of the cultivated areas.
Decree 1648 (1998): Established a protocol for the registration of genetically modified seeds. The marketing of GE seed varieties requires approval by the Seed Registration Committee, which receives guidance from the National Biosafety Committee.
Decree 19 (January 2007): Nominated new members to the National Biosafety Committee. Article 1 provides the names and qualifications of the twenty-four members. Article 2 nominates the two officials of the executive secretariat of the National Biosafety Committee. Article 3 restates parts of Decree 85 (1995) and Article 4 underlines that the National Biosafety Committee's authority to call upon outside experts and establish subsidiary committees on special topics.
Decree 767 (June 2006): The Minister of Agriculture established the National Competent Authority for the functions of the Cartagena Protocol on Biosafety (Cartagena Protocol). This authority is under the AGERI/ARC.
Decree 1495 (September 2014): Reestablished the National Biosafety Committee with new members from the Ministry of Environment, Ministry of Health, Ministry of Scientific Research, Industry, a legal advisor, and a representative of the Consumer Protection Agency.

***Ministry of Agriculture and Land Reclamation (MALR)*:** MALR is the main authority responsible for food cultivation and genetically engineered crops in Egypt. Three organizations within the ministry play a role in the regulation of agricultural biotechnology:

1) **Agricultural Research Center (ARC):** The ARC includes 17 research institutes and support organizations. It has the primary responsibility for crop improvement research, cultivar development, and testing for cereals, fiber materials, oils, legumes, fodder, and sugar in Egypt. The ARC's institutes developed the majority of Egypt's field crop and vegetable varieties.

   The ARC's AGERI is responsible for the research and development of agricultural biotechnology, while the ARC's Regional Laboratory for Food and Feed oversees food and feed products produced through genetic engineering.

2) **Central Administration for Seed Testing and Certification (CASC):** CASC is the lead agency responsible for seed quality control, seed legislation, and policy enforcement in Egypt. It reviews all relevant legislation, updates and prepares rules required to control all seed activities, and works to integrate and harmonize seed legislation. It is also the designated seed certification authority of Egypt and performs lab and field-testing for certified seed.

3) **Central Administration for Seed Production (CASP):** CASP implements the government's seed production policies, advises the ARC on foundation and registered seed requirements, and supervises certified seed production and multiplication.

***Ministry of Environment (MOE)*:** The MOE's role, in tandem with MALR, is to assess the impact of releasing GE crops into the environment. The MOE's Egyptian Environmental Affairs Agency (EEAA) established a biosafety unit in 2013 for this task. The agency ensures that an adequate level of protection exists for the safe transfer, handling, and use of living modified organisms (LMO) that could have an adverse effect on conservation and biological diversity. The MOE uses the same definition for LMOs as defined by the Cartagena Protocol.

***Ministry of Higher Education and State for Scientific Research (MOHESR)*:** MOHESR supervises the Supreme Council of Universities (SCU), which oversees the Sectoral Committee on Biotechnology and Genetic Engineering Education in Egypt. The Ministry is also home to the Academy of Scientific Research and Technology, which is the executing agency for the Ministry's National Strategy and Program for Biotechnology and Genetic Engineering.

***The National Biosafety Committee (NBC)*:** In 2014, then Minister of Agriculture, Dr. Adel El-Beltagy -- a strong proponent of agricultural biotechnology -- issued Ministerial Decree 1495 reestablishing the NBC. The committee, however, has never met and is currently dormant.

b) APPROVALS: In 2012, the planting and cultivation of GE crops in Egypt was suspended. Since this suspension there have been no new approvals for greenhouse trials, field-testing, or for commercial release. Prior to this, between 2006 and 2010, 41 horticultural crops were approved for greenhouse or open field trials, 20 field crops were approved for greenhouse or open field trials, and one field crop (corn) was approved for commercial cultivation.

c) STACKED or PYRAMIDED EVENT APPROVALS: There are no stacked events used in any transgenic crops under development. However, GE varieties with stacked events, approved for consumption in the country-of-origin, are accepted for imports of food and feed.

d) FIELD TESTING: There is no ongoing field-testing in Egypt. The last field trials approved were in 2010.

e) INNOVATIVE BIOTECHNOLOGIES: There is no regulatory policy for innovative biotechnologies such as genome editing using Zinc-finger nucleases (ZFNs), transcription activator-like effector nucleases (TALENs), and CRISPR/Cas9. While there is research interest, the lack of funding is often an obstacle.

f) COEXISTENCE: Egypt does not have a policy on coexistence between GE crops and conventional crops.

g) LABELING AND TRACEABILITY: Egyptian law does not require special labeling for biotech crops or products with GE content. Authorities treat biotech products as they treat non-biotech products.

h) MONITORING AND TESTING: There is no GE monitoring and/or testing.

i) LOW LEVEL PRESENCE (LLP) POLICY: Egypt has no low-level presence policy.

j) ADDITIONAL REGULATORY REQUIREMENTS: In 2012, Egypt halted the planting and cultivation of GE crops. Since then, no new approvals have been granted for greenhouse trials, field testing, or commercial release. While the current regulatory framework includes an approval process for GE crop research and commercialization, this process remains suspended until Egypt's parliament or cabinet enacts a biosafety law. However, the likelihood of such legislation being passed soon is low. The existing application process for GE crops involves the following steps:

1. **Permit Application**: The applicant submits a detailed application form outlining the genetic material introduced, the method used for its insertion, data from food and feed safety studies, and evidence demonstrating minimal environmental risk. The application must also include documentation showing approval of similar GE products in the country of origin.
2. **Review by NBC**: The National Biosafety Committee (NBC) reviews the application. If approved, the application is forwarded to the Seed Registration Committee (SRC), which grants preliminary approval for standard field trials. The SRC assigns qualified inspectors—either from ARC units or private certified laboratories—to oversee cultivation, ensure compliance with biosafety requirements, confirm the new phenotype, and assess agronomic performance.
3. **Field Trials and Commercial Release**: After completing field trials and submitting a report to the NBC, the applicant may seek approval from the SRC for commercial release of the GE crop variety. The SRC supervises agronomic performance trials for three years (or growing seasons) before granting final approval for commercialization.

k) INTELLECTUAL PROPERTY RIGHTS (IPR): The Egyptian Patent Office (EPO) (Public Law 132/1951) is the national patent registrar. The World Intellectual Property Rights Organization (WIPO) accredits the EPO as a regional intellectual property (IP) database authority; the EPO plays a role in technology transfer and intellectual property rights protection. Since 1971, the EPO and Academy of Scientific Research have been in association. Public Law 82/2002 provides coverage of IP issues in the life sciences. Egypt's IPR protections apply to biotech seeds.

The Egyptian Patent Office:

- Registers patent applications for the local and foreign inventions.
- Grants and issues patents protecting Egyptian and foreign inventor rights.

- Collect foreign patent applications, making them accessible to examiners and users.
- Transfers technological information from international patents, providing this to specialists to develop their work and local industries.
- Encourage inventors by helping them participate in exhibitions and compete for recognition and awards.
- Publishes the official patent gazette (monthly) that includes filed, accepted applications, granted patents, and terminated applications.

l) CARTAGENA PROTOCOL RATIFICATION: Egypt ratified the Cartagena Protocol in 2003. The biodiversity department of MOE is Egypt's focal point to the Cartagena Protocol Biosafety Clearinghouse. The clearinghouse is a mechanism set up by the Cartagena Protocol to facilitate information exchange on GE product development and to assist member countries in complying with their obligations under the protocol.

m) INTERNATIONAL TREATIES and FORUMS: As of August 1994, Egypt became a member to the Convention on Biological Diversity (CBD). On March 31, 2003, Egypt ratified and joined the Cartagena Protocol. On October 12, 2014, Egypt ratified the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits. It is a member of several international organizations dealing with plant protection and plant health, including the International Plant Protection Convention (IPPC), and Codex Alimentarius (Codex). Egypt is also a member of the WIPO and signed the Trade Related Aspects of Intellectual Property Rights (TRIPS) agreement.

n) RELATED ISSUES: N/A

PART C: MARKETING

a) PUBLIC/PRIVATE OPINIONS: The lack of a biosafety system in Egypt has led to limited public awareness and trust in food derived from GE crops. This gap has allowed some media outlets to amplify misconceptions about biotechnology. A significant portion of the Egyptian public, influenced by social media, believes that consuming GE food products could pose serious health risks. Media coverage often focuses on potential health concerns related to GE crops, shaping public opinion and reinforcing the belief that GE products are linked to cancer. Anti-biotechnology campaigns on social media further fuels these misconceptions. Within the food industry, opinions on biotechnology's risks and benefits are divided. However, Egyptian agricultural businesses and food companies exporting to the European Union tend to avoid supporting biotechnology products.

b) MARKET ACCEPTANCE /STUDIES: FAS/Cairo is unaware of any recent formal market studies that have evaluated Egyptian public attitudes towards products derived from agricultural biotechnology.

CHAPTER 2: ANIMAL BIOTECHNOLOGY

PART D: PRODUCTION AND TRADE

a) RESEARCH AND PRODUCT DEVELOPMENT: No GE or cloned animals are under development in Egypt. The ARC does have ongoing biotechnology activities for enhancing livestock, poultry, and fish production, but these are predominantly focus on the development of livestock recombinant vaccines and disease diagnostic kits. Key institutions include:

- The Animal Health Research Institute (AHRI)
- The Veterinary Serum and Vaccine Research Institute (VSVRI)
- The Animal Production Research Institute (APRI) – which conducts research on genetic improvement in cows, buffalo, sheep, goats, and poultry, and disseminates animals with high quality genetics to livestock breeders and small farmers.
- The Central Laboratory for Aquaculture Research (CLAR)

b) COMMERCIAL PRODUCTION: There are no commercially produced GE animals in Egypt.

c) EXPORTS: N/A

d) IMPORTS: There are no regulations applicable to the import of GE or cloned animals in Egypt.

e) TRADE BARRIERS: N/A

PART E: POLICY

a) REGULATORY FRAMEWORK: There is no regulatory framework for the research, production, or importation of GE animals or cloned animals in Egypt.

b) APPROVALS/AUTHORIZATIONS: N/A

d) INNOVATIVE BIOTECHNOLOGIES: There is no regulatory policy for innovative biotechnologies such as genome editing using ZFNs, TALENs, and CRISPR/Cas9. Lack of funding is often an obstacle to using these technologies.

c) LABELING AND TRACEABILITY: N/A

d) ADDITIONAL REGULATORY REQUIREMENTS: None

PART F: MARKETING

a) PUBLIC/PRIVATE OPINIONS: There is public skepticism about biotechnology's benefits. However, FAS/Cairo is not aware of market studies that have researched public or private opinions on GE animals or animal cloning.

b) MARKET ACCEPTANCE/ STUDIES: FAS/Cairo is not aware of any recent market studies that have evaluated Egyptian public attitudes towards GE animals.

CHAPTER 3: MICROBIAL BIOTECHNOLOGY

PART G: PRODUCTION AND TRADE

a) COMMERCIAL PRODUCTION: Egypt does not commercially produce food ingredients resulting from microbial biotechnology.

b) EXPORTS: The country does not export GE microbes or any products that contain microbial biotech-derived food ingredients.

c) IMPORTS: There are no regulations applicable to the import of GE microbes or any products that contain microbial biotech-derived food ingredients.

c) TRADE BARRIERS: N/A

PART H: POLICY

a) REGULATORY FRAMEWORK: There is no regulatory framework governing production of microbial biotech-derived food ingredients or processed food products containing microbial biotech derived food ingredients.

b) APPROVALS: N/A

c) INNOVATIVE BIOTECHNOLOGIES: N/A

d) LABELING AND TRACEABILITY: There are no labeling or traceability policies on microbial biotech-derived food ingredients.

e) MONITORING AND TESTING: N/A

f) ADDITIONAL REGULATORY REQUIREMENTS: There are no additional microbial biotech-related regulations.

g) INTELLECTUAL PROPERTY RIGHTS (IPR): There are no known IPR issues related to microbial biotech at this time.

h) RELATED ISSUES: No related issues.

PART I: MARKETING

a) PUBLIC/PRIVATE OPINIONS: FAS/Cairo is not aware of studies that researched public or private opinions of food derived through biotechnology or processed products that use microbial biotech derived food ingredients.

b) MARKET ACCEPTANCE/STUDIES: FAS/Cairo is not aware of any recent market studies that have evaluated Egyptian public attitudes towards products derived from microbial biotechnology.

Attachments:

No Attachments