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Report Highlights:

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REPORT HIGHLIGHTS:

At the end of 2014, the Ministry of Agriculture and the Ministry of Environment submitted a new draft biosafety bill to the Cabinet, which is currently being cleared by the Cabinet's legal advisors before its submission to Parliament, once elections take place, for its ratification. On September 7, 2014 the former Minister of Agriculture Dr. Adel El Beltagy issued the Ministerial Decree # 1495 to reestablish the National Biosafety Committee (NBC). However, to date the NBC has yet to convene a meeting.

SECTION I: EXECUTIVE SUMMARY

The current strategy for agricultural development in Egypt emphasizes the necessity of applying biotechnology to develop disease and pest resistant crop varieties, and varieties resistant to adverse climatic and environmental conditions. These goals are the key drivers of the Ministry of Agriculture's (MALR) Agricultural Research Center's (ARC) biotechnology research and development efforts. Through ARC, Egypt successfully introduced the genetically engineered yellow corn variety Ajeeb-YG for its commercialization. However, on March 8, 2012, MALR adopted Ministerial Decree # 378 (MD378) rescinding the registration of Ajeeb-YG for its commercial use. Prior to the suspension, Egypt had planted approximately 3,800 acres of Ajeeb-YG variety, which conferred resistance to corn borers. The rescission was a setback for Egypt as it is a large consumer of imported agricultural biotech commodities such as yellow corn and soybeans for food and feed, as well as cotton for its garment industry.

Since the implementation of MD 378, no other GE varieties have been approved for commercialization. However, the Government of Egypt's (GoE) import policy on biotech commodities or products derived from biotechnology states that as long as the imported commodity/product is approved and consumed in the countries of origin, it is safe to import and consume in the Egyptian market.

On September 7, 2014 the former Minister of Agriculture Dr. Adel El Beltagy, a strong advocate of biotechnology research and development, issued the Ministerial Decree # 1495 to reestablish the National Biosafety Committee NBC with new members from the Ministry of Environment (MOE), Ministry of Health (MOH), Ministry of Scientific Research (MOSR), industry, legal advisor, and a representative of the Consumer Protection Agency.

The MALR and MOE jointly amended the draft biosafety bill that was proposed by MOE back in 2007 and produced a new draft biosafety law. On December 28, 2014, the new draft was introduced to the Cabinet and is currently being studied by the Cabinet's legal advisors before its submission to Parliament for its ratification. Egypt currently lacks a Parliament and elections are expected to take place by the end of this year, so in the best case scenario the approval would not happen until late 2016. Post continues working with its Egyptian counterparts to demonstrate the benefits of the technology, provide accurate and balanced information about biotech issues, and emphasizes the importance of having a functional regulatory regime based on international guidelines.

SECTION II: PLANT AND ANIMAL BIOTECHNOLOGY

CHAPTER 1: PLANT BIOTECHNOLOGY

A: PRODUCTION AND TRADE

a. PRODUCT DEVELOPMENT:

Biotechnology research and development continues in Egypt, despite the moratorium on the commercialization of GE crops in the country. Agricultural biotechnology research capacity has evolved and expanded through a network of universities and national research institutions that include the Ministry of Agriculture and Land Reform's (MALR) Agricultural Research Center (ARC), the National Research Center (NRC) of Ministry of Scientific Research (MOSR), the Genetic Engineering Research Center (GERC) of the Faculty of Agriculture at Cairo University, the Genetic Engineering Biotechnology Research Institute (GEBRI) of University of Sadat City, as well as a web of other university research centers..

2-The Agricultural Research Center (ARC)

Within the Agricultural Research Center (ARC), the Agricultural Genetic Engineering Research Institute (AGERI) is Egypt's premier biotechnology research organization with a mandate to promote the transfer and the application of biotechnology. AGERI's goals are to develop drought and salt tolerant crops, as well as pest and disease resistance traits; to expand and diversify the pool of highly qualified trained professionals in biotechnology; and to broaden the cooperation in biotechnology research with public and private sectors. Scientific Research Domains in AGERI are:

- Molecular Biology
- Microbial Molecular Biology
- Molecular Entomology
- Plant Tissue Culture & Transformation
- Genome Mapping & Marker Assisted Selection
- Structural and Functional Genomics
- Proteomics
- Bioinformatics
- Molecular Virology
- Gene Silencing
- Immunology/ ELISA & Virus Diagnosis

Departments in AGERI include:

- Plant Genetic Transformation
- Plant Molecular Biology
- Microbial Molecular Biology
- Nucleic Acids & Protein Structure
- Bioinformatics & Computer Networking
- Genome Mapping Research

In collaboration with other institutes within ARC such as the Plant Protection Research Institute (PPRI), Field Crops Research Institute (FCRI), Cotton Research Institute (CRI), Horticulture Research Institute

(HRI), other national research centers and universities, AGERI is conducting research on the following crops:

I. Field Crops

Wheat

The wheat program in AGERI focuses on:

- Establishment of transformation and regeneration systems for wheat cultivars.
- Construction of plasmids bearing genes that enhance drought and salinity tolerance in bread wheat.
- Transformation of wheat cultivars.
- Evaluation of transgenic wheat lines in field trials under salt and drought stresses.

Scientists in AGERI have produced drought -tolerant wheat by transferring the barley HVA1 gene into wheat varieties. In 2009, NBC approved the field trails of transgenic wheat lines. Currently, the new lines have been incorporated in the national wheat-breeding program of ARC for further field testing and seed multiplication.

Corn

- Establishment of in vitro regeneration of Egyptian maize inbred lines
- Maize transformation using genes for drought and salinity stress tolerance that included work on transformation of the dehydrin gene for the production of Egyptian inbred corn lines with enhanced tolerance to abiotic stresses

Sorghum

- Establishment of in vitro regeneration system for sorghum
- Optimization of transient gene expression system
- Genetic transformation of sorghum with genes for drought tolerance
- Genetic transformation for production of bio-fortified sorghum.

II. Horticultural Crops

Tomato

Tomato yellow leaf curl virus (TYLCV) has spread to all of the main vegetable-producing regions of Egypt where it has become the limiting factor for tomato production, causing up to 100 percent yield loss.

TYLCV-resistant tomato varieties have been engineered through collaboration between Cairo University, AGERI, and the Donald Danforth Plant Science Center using the siRNA strategy to block the viral life cycle in the plant and prevent it from spreading, thus acquiring virus resistance. If successful, the plants will enable the economic production of high quality tomatoes while reducing the need for chemical protection methods. The tomato varieties are still waiting NBC approval to conduct field trials.

Potato

- Genetic Transformation of potato cultivars for resistance to bacterial pathogens *Ralstonia solanacearum*
- Overexpression of potato β -1, 3 glucanase gene to enhance resistance to late blight disease
- Insertion of chitinase gene to attenuate early blight disease in some potato virus resistant lines

Gerbera Plants for Producing Novel Flower Color

- Establishment of in vitro regeneration system for Gerbera.
- Optimization of transient gene expression system in *Gerbera jemosonii* petals

2-The National Research Center (NRC)

This is a multidisciplinary research center that is engaged in agricultural biotechnology research activities through its agricultural and biological division. The current biotechnology research activities at NRC are focused on biotechnology-based production of pharmaceutically bioactive substances and molecules, transgenic plants resistant to biotic and abiotic stresses, and mapping of disease resistance genes.

In recent years, NRC researchers investigated a number of biotechnology tools for propagation, conservation, genetic improvement of date palm varieties, as well as the production of secondary metabolites of date palm cultivars in Egypt.

NRC's future plan includes bioethanol and biofuel production, improvement of neglected drought tolerant crops (sorghum, flax, and date palm) and effective and better utilization of native valuable genetic resources.

Research on producing biological pesticides for pest control to reduce environmental pollution using Egyptian isolates of the bacteria *Bacillus thuringiensis* is also being conducted.

3-Universities

Biotechnology research activities in the universities became well established during the past decade.

The most famous of these centers are:

- The Genetic Engineering Research Center (GERC) of the Faculty of Agriculture at Cairo University.
- GEBRI at the University of Sadat City
- Regional Center for Mycology and Biotechnology (RCMB) of the Faculty of Agriculture of AL Azhar
- Genetic Engineering unit, Faculty of Agriculture, Ain Shams University

These centers carry out research in the following fields;

- Genetic diversity of plant species at the molecular level.
- Genes controlling biotic and abiotic stresses.
- Marker assisted selection breeding for field crops
- Developing genetically modified bacteria and viruses to control insect and plant fungal diseases
- Developing of genetically engineered microbial strains with the ability to degrade environmental pollutants and others having the capability to produce antibiotics.
- Biosynthesis of new forms of antimicrobial agents and metabolic regulations of mycotoxin production.
- Utilizing metagenomics to identify novel microbes and bacterial communities

b) COMMERCIAL PRODUCTION:

All commercial production is currently stalled due to Ministerial Decree #378 on March 8, 2012, which suspended the registration and cultivation of the corn variety Ajeeb-YG .

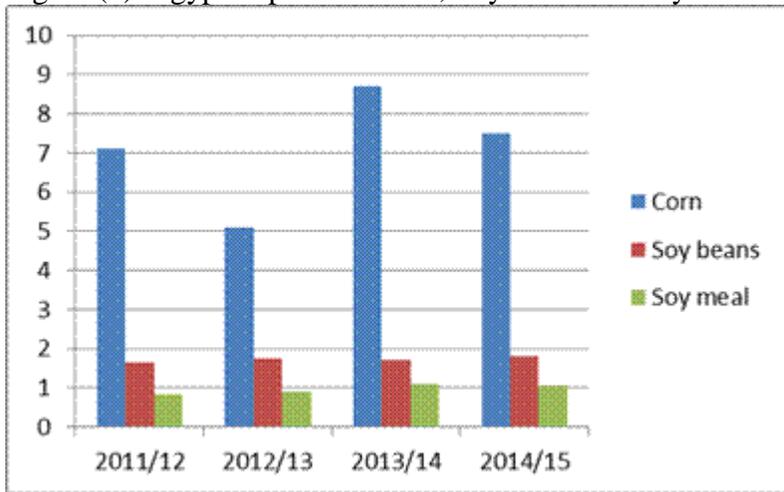
c) EXPORT:

With no commercial production of GE crops, Egypt does not export GE crops to the United States or any other country.

d) IMPORTS:

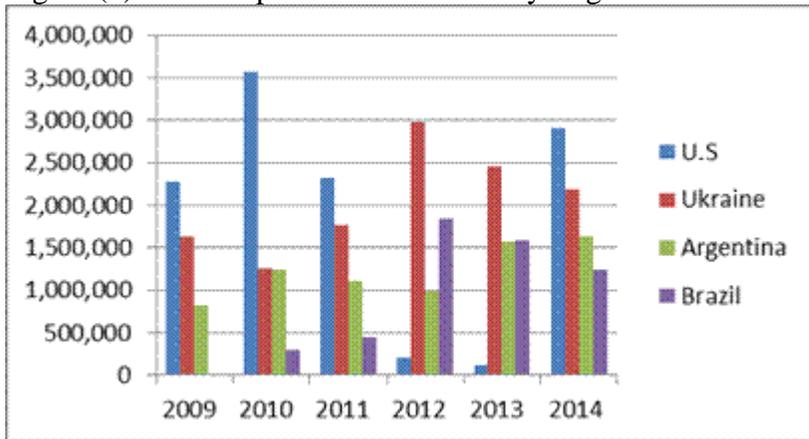
Egypt is a net importer of agricultural commodities including soybeans for food and feed and yellow corn for feed (figures 1,2 and 3). Except for Ukraine, the key origins produce mostly GE corn and soybeans. The government maintains a general import policy of allowing imports of agricultural commodities as long as the imported product is approved and is also consumed in the countries of origin..

Figure (1): Egypt imports of Corn, Soybeans and Soy meal in MMT



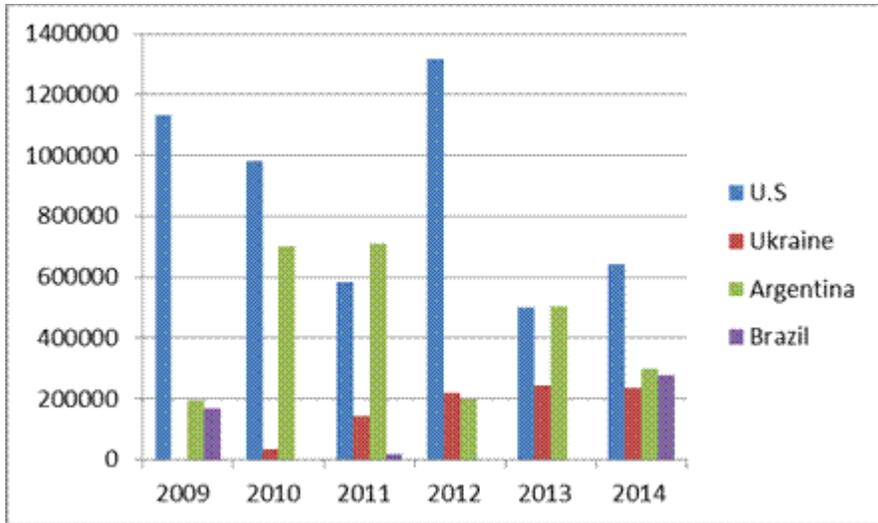
Source: USDA

Figure (2): Corn imports in metric tons by origin



Source: GTA

Figure (3): Soybeans imports in metric tons by origin



Source: GTA

e) FOOD AID RECIPIENT COUNTRIES:

Not Applicable

Part B: POLICY

a) REGULATORY FRAMEWORK:

Due to Egypt's lack of a biosafety law, in order to comply with legal requirements it has issued a number of ministerial decrees to move biotechnology forward (Table 1). The decrees have granted several ministries and agencies the responsibility to administer and/or regulate the different features of biotechnology as follows:

I. Responsible Ministries and their roles in Biotech food policy:

Ministry of Agriculture (MALR):

The Ministry of Agriculture is the main authority responsible for food cultivation and GE crops issues. Within the ministry, the following agencies play a key role in Egypt's seed sector:

1-The Agricultural Research Center (ARC):

ARC has 17 research institutes and support organizations. It has the primary responsibility for crop improvement research, cultivar development and testing throughout the country. ARC supervises national field crop breeding programs for cereals, fiber materials, oils, legumes, fodder, and sugar. The majority of field crop varieties and, to a lesser extent, vegetable varieties have been developed by the ARC research institutes. AGERI represents the vehicle within ARC for the research and development of agriculture biotechnology.

2- The Central Administration for Seed Testing and Certification (CASC):

CASC, established in 1995, is the agency responsible for seed quality control, seed legislation and policy enforcement. CASC reviews all relevant legislation, updates and prepares rules required to control all seed activities, and works to integrate and harmonize the seed legislative framework. CASC is the designated seed certification authority and performs lab and field testing for certified and uncertified seed.

3- The Central Administration for Seed Production (CASP):

The Central Administration for Seed Production (CASP) implements government seed production policies, advises ARC on foundation and registered seed requirements, and supervises certified seed production and multiplication.

4- Food and feed Safety and control

There are three bodies responsible for food safety and control:

1. The Reference Laboratory for Safety Analysis of Food of Animal Origin (RLSAFAO)
2. The Regional Laboratory for Food and Feed (GLFF);
3. AGERI

To help in achieving this goal AGERI, the third organization playing a role, addresses the public to explain the real benefit of the use of biotechnology applications.

Ministry of Health (MOH):

The Ministry of Health is charged with maintaining and improving the overall health of the population. Its responsibilities include approving all food products for sale in Egypt, supervising food quality, regulating the use of preservatives in foods, and ensuring that products are labeled properly with expiration dates.

The ministry has the following committees and organizations:

- The Supreme Committee for Food Safety ensures the safety of food production and consumption and controls food import permitting.
- The National Organization for Drug Control and Research oversees pharmaceutical research and controls distribution.
- The Food Safety and Control General Directorate (FSCGD)
- The Central Public Health Laboratories (CPHL)
- The National Nutrition Institute (NNI) Egyptian Standardization organization (ESO)

Ministry of Trade and Industry (MTI):

The ministry executes its activities through the following organizations:

- The Egyptian Organization for Standardization and Quality Control (EOS) sets the standards for food and industrial products whether imported or locally produced.

The General Organization for Export and Import Control Authority (GOEIC)

Ministry of Environment (MOE):

The MOE's role, in tandem with MALR, is to assess the impacts of releasing GE crops in the environment.

In 2013 The Egyptian Environmental Affairs Agency (EEAA) of MOE established a biosafety unit under the biodiversity component. The mandate of the new biosafety unit includes:

1. Ensuring adequate level of protection for safe transfer, handling, and use of living modified organisms that may have an adverse effect on the conservation and sustainable use of biological diversity, taking into account risks to human health and specifically focusing on trans boundary movements and imports and exports of genetically modified organisms.
2. Establishing a database of existing regulatory structures and legislation pertaining to the import and export of GEOs, environmental protection, animal and human health safety, and biotechnology research existing capacity on the national level.

II. The National Biosafety Committee (NBC):

Roles and Responsibilities of NBC:

According to the Ministerial decree # 1495 issued in 2014 by the Former Minister of Agriculture to re-establish the NBC, the purpose of the NBC is to establish policies and procedures to govern the use of modern biotechnology in Egypt. The committee would also provide technical advice to the regulatory authorities and the institutions responsible for conducting transgenic research.

The NBC requested that all institutions that will conduct transgenic research and are about to reach to the point of biocontainment greenhouse trials, small scale field trials or large field trials should go

through the application procedure in order to get approval by the committee for continuation of the research for the conduct of safe handling procedures governing the work in in greenhouse containment facilities and the field.

Activities of NBC include:

- a) Formulate, implement and update safety codes.
- b) Risk assessment and license issuance.
- c) Coordination with international and national organizations.
- d) Provide training and technical advice.
- e) Report at least annually to governmental authorities.

TABLE 1: Ministerial Decrees Dealing with Biotechnology

<p>Decree nr. 85 (1995): Established the National Biosafety Committee (NBC), and gave it the task of setting regulations and guidelines concerning the safe use of genetic engineering and molecular biology, to ensure safety of the environment including human health.</p> <p>Decree nr 136 (1995): Established an obligation to obtain a permit from the NBC before using or dealing with any genetically engineered product for experimental usage in laboratory or greenhouse or in the open field, regardless of the cultivated areas.</p> <p>Decree nr. 1648 (1998): Established a protocol for the registration of genetically modified seed. Consequently, marketing of GE seed variety requires approval by the Seed Registration Committee, which seeks the advice of the NBC.</p> <p>Decree nr 19 (January 2007): Nominated new members of the NBC. Article 1 gives the names and qualifications of the 24 members. Article 2 nominates the two officials of the Executive Secretariat of the NBC. Article 3 restates parts of Decree 85 (1995) and article 4 underlines that the NBC can call upon outside experts and can establish subsidiary committees on special topics.</p> <p>Decree 767 (June 2006): the Minister of Agriculture established the National Competent Authority for the functions of the Cartagena Protocol on Biosafety. This Authority is located AGERI/ARC.</p> <p>Decree nr1495 (September 2014): to reestablish the National Biosafety Committee NBC with new members from the Ministry of Environment (MOE), Ministry of Health (MOH), Ministry of Scientific Research (MOSR), industry, legal advisor, and a representative of the Consumer Protection Agency.</p> <p>Decree Nr.242 (1997) requiring approval from the SCFS for the import of GEOs intended for food</p>

b) APPROVALS:

Since the complete suspension of GE crops planting and cultivation in 2012, not a single NBC meeting has been held; hence, no new approvals for greenhouse trials, field testing, or for commercial release have been granted. However, under the ministerial decrees describe the approval process for GE propagative material as follows:

Approval Process for Imported GE Propagative Material for Research and Commercial Purposes

1. The applicant completes a permit application form providing details of the genetic material introduced, the process used for inserting it, and other relevant information. The applicant also provides data from food and feed safety studies and evidence supporting a determination of low or negligible environmental risk. Where applicable, the applicant provides documents indicating approval of similar

GEOs for release in their country of origin.

2. The application form is submitted to the NBC, which, after examination and approval, forwards it to the Seed Registration Committee for their preliminary approval to proceed with standard field trials conducted at several locations. The seed registration committee (SRC) from CASP assigns a team of qualified inspectors drawn from relevant ARC units and/or private certified laboratories to supervise cultivation, ensure adherence to any biosafety requirements, confirm the new phenotype, and evaluate agronomic performance.

3. The NBC has the right to confirm the nature of the genetic modification by taking samples from the field for molecular analysis.

4. After successful completion of the field trials and submission of a report to the NBC, the NBC authorizes the applicant to submit an application to the SRC for final approval to commercially release the new variety. Pending this, three years or seasons of agronomic performance trials are conducted under the supervision of the SRC.

c) FIELD TESTING:

Due to the lack of a national law governing the release of GE propagative material into the Egyptian market, the relevant ministerial decrees will be followed as a comprehensive regulatory regime, which covers the use, transfer, release, and commercialization of GE plants into the environment. The Agricultural Competent Authority (ACA)-NBC will have a monitoring role over applications concerning cross-boundary movement of genetically modified plants and animal feed (containing ingredients produced through biotechnology).

d) STACKED EVENT APPROVALS:

There are no current stacked events used in any of the transgenic crops that were produced. If there are applications for stacked event varieties in the future, the NBC will take a case by case approach on whether to treat the event as novel and requires their approval separate from the approval of each individual event in the stack.

For imports of food and feed derived from biotech varieties, as long as the varieties with the stacked events are approved in the country of origin they are acceptable in Egypt.

e) ADDITIONAL REQUIREMENTS:

CASC is responsible for handling all issues concerning seed registration, certification and field testing while CASP is responsible for certified seed multiplication and production.

f) COEXISTENCE:

Egypt does not have a policy on coexistence between GE crops and conventional crops.

g) LABELING:

No decisions on the labeling of genetically engineered organisms GEO-based food products have been made. Egyptian law does not require that biotech crops or products with biotech content have special approval or labeling, and government authorities deal with biotech products as they deal with non-

biotech products

If implemented as it is, the draft Biosafety Law of 2014 contemplates the labeling of GE products. The Egyptian Standardization Organization (ESO) will be the authority to develop labeling for the GE crop that complies with Cartagena Protocol.

h) TRADE BARRIERS:

Egypt maintains an open market for agricultural commodities and products derived through biotechnology. However, Egypt's current draft Biosafety Law, if passed by the future Parliament, could present a trade barrier, which might potentially affect exports from Argentina, Brazil, Canada and the U.S., among others, to Egypt.

US agricultural exports to Egypt currently face no import restrictions as a result of agricultural biotechnology policy. However, this could change if the advocates of the EU policy on Plant biotechnology from public research institutions, the organic industry and some voices in the media continue their negative and often confusing rhetoric about the "potential risks" of agricultural biotechnology and the need for Egypt to follow European regulations and standards in this regard.

i) INTELLECTUAL PROPERTY RIGHTS (IPR):

1-Ministry of Scientific Research

The Egyptian Patent Office (EPO)

The EPO was established in 1951 by Law 132 of that year and has been associated with the Academy of Scientific Research and Technology since 1971. In 2002, Law 82, was published to incorporate coverage of IP issues in life sciences.

The EPO is the sole national office for registering and issuing patents and is accredited by the World Intellectual Property Rights Organization (WIPO) as a regional IP database authority, playing a key role in technology transfer and IPR protection.

Goals of the EPO According to Law

- Register patent applications for the local & foreign inventions.
- Grant and issue patents to protect the ownership rights of the Egyptian & foreign inventors.
- Collect the foreign patent applications and arrange them to be easily accessible to examiners and users.
- Transfer technological information from patents granted internationally and provide it to specialists in order to develop their work and develop local industries.
- Encourage inventors by helping them to participate in exhibitions and compete for recognition and awards.
- Publish (monthly) the official Patent Gazette that includes filed, accepted applications, granted patents and terminated applications.

2-Ministry of Agriculture

Agricultural Research Center (ARC)

Technology Management and Commercialization Office (TMCO)

The TMCO was established by Ministerial Decree 3075/2001 under the jurisdiction of the ARC President. The Office runs its activities according to an "Internal Policy for Technology Management and Commercialization (IP Policy)" issued by Ministerial Decree 1402/2002. The IP Policy specifies the obligations and the responsibilities of the ARC, ARC-Staff and end-user in regards to intellectual property (IP) protection and technology transfer.

The Office also has access to other legal consultants and expertise in the areas of marketing, promotion, and plant variety protection. A "Trustee Committee" has been established to pursue and oversee implementation of the office's mission.

Services:

- To provide legal and professional services for all ARC staff to protect their innovations under the executive regulations of the Intellectual Property Law 82/2002
- Negotiation, execution and follow up of licensing agreements to ensure technology proper application and royalties' distribution.
- Provide all technical documents for ARC staff in the form of full patent text, database, and electronic connection with counterpart IPR strategic offices around the world.
- Provide legal support in completing/submission of intellectual property protection documents on behalf of the inventor or the breeder.
- Run awareness programs to improve ARC staff-knowledge of intellectual properties, ARC internal IP policy and related international conventions.
- Evaluation of ARC generated technologies to determine the marketability of each technology and its market niche.

j) CARTAGENA PROTOCOL RATIFICATION:

Egypt ratified the Cartagena Protocol on Biosafety (CPB) in 2003. The international regulatory agreement requires countries to address environmental safety and human health by ensuring safe handling, transport, and use of GE products. The biodiversity department of the MOE is Egypt's focal point to the CPB's Biosafety Clearing House, a mechanism set up by CPB to facilitate information exchange on GE product development and to assist member countries in complying with their obligations under the protocol.

k) INTERNATIONAL TREATIES/FORA:

On October 12th, 2014 Egypt ratified The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits. Egypt is a member of several international organizations that deal with plant protection and plant health, including the International Plant Protection Convention (IPPC), the Codex Alimentarius (Codex), and the aforementioned CPB. Egypt is also a member of WIPO and signed the Trade Related Aspects of Intellectual Property Rights (TRIPS) agreement.

l) RELATED ISSUES:

Not Applicable

m) MONITORING AND TESTING:

Currently no monitoring and testing of GE crops is taking place.

n) LOW LEVEL PRESENCE POLICY:

Egypt has no low-level presence policy.

PART C: MARKETING

a) MARKET ACCEPTANCE:

As in other countries around the world, Egyptians do not concern themselves much with the origin of food products or how processing is handled. Access to food and pricing are is paramount.

b) PUBLIC /PRIVATE OPINIONS:

The fear of biotechnology by the public is mainly due to successful anti-biotech campaigns of environmental groups supported by members of a small organic industry. A small segment of the Egyptian public believe there are health risks associated with the consumption of food products derived from biotechnology. Furthermore, one-sided reporting by the media on possible risks associated with planting GE seed varieties and cultivation affects the perception of the public about the technology.

Scientists and public officials from research centers of MALR and MOSR are mostly pro-biotechnology and fully understand the benefits that can biotechnology bring to solve many of the challenges facing Egyptian Agriculture. The food industry has mixed views about biotechnology risks and benefits. Agri-businesses and food companies exporting to Europe prefer not to advocate biotechnology products

On the other hand, the Egyptian Biotechnology Information Center (EBIC) within the Faculty of Agriculture, Cairo University, plays an important role in raising public awareness about biotechnology and genetic engineering applications and works as a link between scientists and the public by simplifying scientific information to be understandable for all levels of the society, as well as clarifying both benefits and potential risks through reasonable and transparent fora.

c) MARKETNG STUDIES:

Post is unaware of any recent marketing studies that have evaluated Egyptian public attitudes towards products derived from agricultural biotechnology.

Part D: CAPACITY BUILDING AND OUTREACH

a) ACTIVITIES:

Over the last decade FAS-Cairo has conducted numerous training programs for policy-makers, academics, and journalists. The last two activities were the following:

In April 2014, FAS-Cairo hosted a series of events on agricultural biotechnology including risk communication, a media workshop on communicating food science, and a stakeholder outreach program in Cairo, Egypt.

The workshops and outreach program were developed by the International Food Information Council (IFIC) and conducted in collaboration with the Egyptian Biotechnology Information Center (EBIC) in response to the need for a risk communication strategy to raise public awareness and counter negative perceptions about biotechnology. The events provided Egyptian officials, scientists and media representatives' effective tools to better communicate the risks and benefits of agricultural biotechnology.

In July 2012, FAS organized a visit of a prominent US expert on legal matters on biosafety legislation. The purpose of the visit was to provide support to MALR, MOE and other stakeholders as they revised the draft Biosafety Law that was to be submitted to Parliament for its approval.

In light of Post's efforts to engage with stakeholder and meet senior and junior researchers in the field, post participated in the following events during 2015:

Biotechnology for Improving Agricultural Crops Workshop

The workshop was held on January 5, 2015, under the auspices of Former Minister of Agriculture Adel El Beltagy. The event addressed the current status of agricultural biotechnology research and development in the country. Speakers highlighted the importance of biotechnology as a tool to face issues of water scarcity and climate change. They also stressed the need to use molecular breeding and genomic tools to improve crop quality and production to address food security.

It was repeatedly highlighted the critical need of having a functional and integrated biosafety system that would stimulate innovation and bring commercialization up to speed. The workshop concluded that it is fundamental to inform decision makers and the media about the ongoing research in the field of biotechnology and its importance in a food secure Egypt.

Risk Assessment Application in Food Matrix and Feeds and its Impact on Human and Animal Health

The conference was held on May 3-4, 2015 under the auspices of Cairo University. Presentations during the conference covered methods of risk assessment in areas such as pesticide residues, feed additives, and contaminants. It highlighted the use of molecular markers in the risk assessment of food and feed. Dr Kenneth Olden Director of the National Center for Environmental Assessment (NCEA) at the US Environmental Protection Agency (EPA) addressed the audience on nutrients and epigenetics modification. Dr. John Vandenberg the Director of the Research Triangle Park Division of the National Center for Environmental Assessment at the EPA gave a presentation about risk assessment and the application of science to support risk management decisions.

The International Conference on Agriculture and the Environment for Sustainable Development

The International Conference on the “Agriculture and Environment for Sustainable Development” was held on 25 to 27 of May, 2015 in Cairo, Egypt. The conference was and organized by the Agricultural and Biological Research Division of the National Research Centre (NRC). Through the three-days conference, alongside the opening and closing sessions, there were 21 sessions and three symposiums regarding; Suez Canal and Sinai development, sustainable rural development, and renewable energy. A panel discussion on innovation in agriculture and technology transfer was held with the contribution of many agricultural companies. Additionally, an exhibition of agricultural products and innovations on the sidelines of the conference has organized. The conference presentations on biotechnology centered on:

- The need for an integrated biosafety regulatory framework to ensure that innovation is not hindered.
- Reduce the application of pesticides generally, and for leguminous crops specifically, and find the suitable alternatives. Moreover, give more concern to the use of biological control for different kinds of pests and take advantage of biotechnology research on this issue.
- The need to improve the decision makers’ knowledge and end-users’ awareness regarding the benefits and economic impacts of biotechnology applications.

Agriculture, Food security and Biotechnology

The International Conference on the “Agriculture, food security and biotechnology” was held on June 8th-9th, 2015 in NRC in Cairo, Egypt, and organized by the Islamic Educational, scientific and cultural organization (ISESCO), The Commission on Science and Technology for sustainable development in the South (COMSATS) and NRC.

The key objectives of this international Conference were to:

- Provide a forum to scientists, researchers, technologists and faculty members to update and share the recent developments in the field of agriculture and biotechnology.
- Provide opportunity to the delegates for knowledge-sharing on the understanding, current status and needs of food security.
- Build and strengthen linkages among R&D/S&T organizations working in the field of agriculture biotechnology and food security.
- Increase awareness on the benefits of biotechnology in relation to agriculture and food security and climate change.
- Make recommendations to the policy makers for developing policies and strategies to support

biotechnology.

b) STRATEGIES AND NEEDS:

The current situation of agriculture biotechnology in Egypt may be politically convenient, but it is a misuse of resources as Egypt has done great work in the area of biotechnology, and unfortunately is not benefiting from its research. A regulatory overhaul with an appropriate, functioning biosafety regime is critical for the commercialization of GE products. The lack of this regulatory regime is hindering innovation from both public and private sectors, as these require a stable regulatory environment.

Egypt needs a public dialogue on the benefits and risks of agricultural biotechnology. Stakeholders need to understand that some of Egypt's challenges such as water scarcity, climate change, salinity, food security and abiotic stressors can be partially addressed by the safe use of agricultural biotechnology. If stakeholders are influenced by misperceptions, Egypt will continue to lag in biotechnology development and be subject to increasing imports to meet its food needs. Its cotton industry, once famous and highly productive, is in dire straits as it has been unable to capitalize on new technologies and increasingly relies on imports to meet its needs, especially from countries that have benefited from the technology.

Egypt's centers of excellence conducting research in agricultural biotechnology need to speak publicly about the great work that they have accomplished. Egyptian scientists from MALR, MOE and MOSR are well regarded by the Egyptian public; therefore, it's in their interest that they use their platform to engage the public through a solid and sustained communications drive by building public understanding of technologies benefits, trust, and a political climate that would allow the resumption of product development and commercialization of GE crops, all in the interest of the greater good.

Chapter 2: ANIMAL BIOTECHNOLOGY

Part E: PRODUCTION AND TRADE

a) BIOTECHNOLOGY PRODUCT DEVELOPMENT:

No Genetically engineered animals are under development in Egypt. However, ongoing biotechnology activities for enhancing livestock productivity include development of livestock recombinant vaccines and disease diagnostic kits. The key institutions involved in this type of research are:

- Animal Health Research Institute (AHRI)
- The Veterinary Serum & Vaccine Research Institute (VSVRI).
- The Animal Production Research Institute (APRI) - conducts research on genetic improvement in cows, buffalo, sheep, goats and poultry and disseminates genetically superior animals to

livestock breeders and small farmers.

The aforementioned institutes are within the ARC.

b) COMMERCIAL PRODUCTION:

No genetically engineered animals have been approved in Egypt for any use.

c) BIOTECHNOLOGY EXPORTS:

Not applicable.

d) BIOTECHNOLOGY IMPORTS:

Not applicable.

PART F: POLICY

a) REGULATION:

Institutional biosafety committees are effective but on the national level there is almost no policy with respect to animal biotechnology

b) LABELLING AND TRACEABILITY:

Not Applicable

c) TRADE BARRIERS:

Not Applicable

d) INTELLECTUAL PROPERTY RIGHTS (IPR):

Post is unaware of any IPR problems in Egypt as the cultivation of GE Crops is presently suspended.

e) INTERNATIONAL TREATIES /FORA:

Egypt is a member of several international organizations dealing with plant protection and plant health like the Food and Agriculture Organization (FAO) , and Codex Alimentarius. Egypt follows OIE standards and protocols regarding importation of live animals and beef products. Egypt is not actively arguing against animal biotechnology.

PART G: MARKETING

a) MARKET ACCEPTANCE:

Not applicable.

b) PUBLIC/PRIVATE OPINIONS:

Egyptian public opinion is skeptical of benefits from new agricultural technologies, in general.

c) MARKET STUDIES:

Not applicable.

PART H: CAPACITY BUILDING AND OUTREACH

a) ACTIVITIES:

None

b) STRATEGIES AND NEEDS:

As with plant biotechnology, Egypt needs a strong, functioning biosafety regime that can address public concerns through an effective dialogue with the media and the public on the benefits and risks if any of biotechnology research in the animal sector.