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Agricultural Biotechnology Annual

Mozambique Agricultural Biotechnology

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Report Highlights:
Mozambique planted its first genetically engineered (GE) corn trial at Chókwè Agricultural Station in 2017, as part of the Water Efficient Maize for Africa (WEMA) program aimed to test drought and pest resistance after the approval of the Biosafety Regulation on management of "Genetically Modified Organisms (GMOs)" (Decree no. 6/2007 of April 25, updated in late 2014). After two planting seasons, preliminary results were shared and have shown promising results in containing pests such as spotted stem borer/stalk borer (*C. partellus* and *B. fusca*) and fall armyworm (*Spodoptera frugiperda*).

CHAPTER 1: PLANT BIOTECHNOLOGY

PART A: PRODUCTION AND TRADE

a) PRODUCTION DEVELOPMENT

Mozambique's agricultural sector is characterized mainly by farming; about 80 percent of its estimated 29 million people are active in farming. Of the 80 percent in agriculture, only 10 percent are involved in commercial farming and the remaining are subsistence farmers. Over 80 percent of the total cultivated area is used for production of staple food crops for self-consumption, including cassava, corn, rice, sorghum and pulses.

Genetically engineered corn plants were planted in the Confined Field Trial (CFT) run by the Mozambican Agricultural Research Institute (Instituto de Investigação Agrária de Moçambique, IIAM) as part of the WEMA program, which is a public/private partnership designed to develop drought and pest tolerant corn varieties with the use of biotechnology and conventional breeding. The project is in line with the Mozambican government's agricultural strategies to augment agricultural production and productivity with the use of modern technologies.

In two planting seasons, trials tested the tolerance of GE corn to pests during the first stage. It is expected that in the second stage drought tolerance will also be tested, since in the previous planting was irrigated. In addition, Mozambique is considering using innovative biotechnologies in product development, such as plant disease diagnoses on animals (Newcastle disease) and plants (cassava, tomatoes viruses), and bio fortified crops, like orange sweet potatoes. Animal genetic improvement, biodiversity studies on forestry, and poultry studies are other innovative technologies that Mozambique is considering, but has not implemented.

In February 2017, Mozambique started its first GE trial in Chókwè district, Gaza province. This trial was aimed to evaluate the efficiency of the Bt gene in controlling spotted stem borer/stalk borer (*C. partellus* and *B. fusca*) in Mozambican corn in Mozambique, by measuring the level of damage caused by insects.
Preliminary results were shared and concluded that:

- The Bt gene is efficient at protecting corn against spotted stem borer/stalk borer on corn in Mozambique, which was the primary subject for this trial; and
- The trial proved that Bt gene can also protect corn from fall armyworm

b) COMMERCIAL PRODUCTION

No commercial production of GE crops is currently taking place in Mozambique. Nevertheless, the country has appropriate legislation in place. The revised Biosafety Legislation also clarifies the process of import, export and transit of GE products which includes specific requirements for testing samples, grain import for human consumption, and quarantine measures.

c) EXPORTS

Mozambique is not exporting any GE crops. However, exports are regulated by the Biosafety Legislation regulation.

d) IMPORTS

Mozambique allows for the importation of GE crops intended for direct use as food, feed, or for processing, but requires approval from the National Biosafety Authority.

e) FOOD AID

Mozambique is a U.S food aid recipient country. The import of GE products for food aid is generally authorized in emergency situations, but only for commodities destined for human consumption and only if there are no alternative sources to respond to emergencies on a timely manner. Any GE food grains imported need to be processed prior to distribution to the final recipients of food aid to avoid utilization as seed. Under the Food for Progress and McGovern Dole Food for Education programs, the country receives corn soy blend (CSB) from the United States for school feeding projects, soybean cooking oil, and wheat for monetization under Food for Progress.

f) TRADE BARRIERS

Post has not identified any additional biotechnology-related trade barriers that may negatively affect U.S. exports, nor potential to do so.

PART B: POLICY

a) REGULATORY FRAMEWORK

The government of Mozambique acknowledges the contribution that modern biotechnology can make to meet critical needs for food and nutritional security. At the same time, the government also recognizes that the development of modern biotechnology needs to go hand-in-hand with appropriate regulations in order to maximize the benefits while minimizing potential risks.

It is within this context that the Parliament of Mozambique ratified the Cartagena Protocol on Biosafety in 2001(Resolution no. 11/2001, of December 20th) and created the inter-institutional National Biosafety Working Group (GIIBS - Grupo Inter-Institucional Sobre Bio-Segurança) to coordinate the process of developing National Biosafety Framework for Mozambique. The Ministry of Science and Technology was designated to serve as the National Biosafety Authority. This process culminated in development of the Draft National Biosafety Framework (NBF) published in 2005. The draft NBF was further refined through public consultation process that lead to the development of a consolidated document which served as basis for the Decree no. 6/2007, of April 25, containing the Regulation on Biosafety related to Management Regulation.

The National Biosafety Authority (NBA), located within the Ministry of Science and Technology, is responsible for approving GE crops for cultivation, import, and direct use as food, feed, or for processing.

In 2007, Mozambique approved Decree no. 6/2007 of April 25, the country's Biosafety Legislation on management of "Genetically Modified Organisms (GMOs)". In 2012, an inter-

institutional working group known as the GIIBS (Grupo Inster-Institutional Sobre Bio-Segurança) was established to serve as the National Biosafety Committee.
The regulation was last updated in late 2014. Mozambique Biosafety Regulation is made up of seventy four articles, covering all aspects of Biosafety related to the management of GE crops. The object of it is described in the second article stating that "*The present regulation establishes Biosafety norms and mechanisms of control of authorization of import, export, transit, research, liberation to the environment, management and use of Genetically Modified Organisms and its derivate, resulted from modern Biotechnology, contributing to the human health safety and environment and, particularly to the conservation of the biological diversity*". By saying this, Mozambique is included in the few African countries that formally authorize any activity with GE products.

The objective of the regulation is to establish domestic legislation aimed at regulating GE activities in Mozambique in order to contribute for adequate protection of the environment, biological diversity, and human health. The approval of Decree no. 6/2007 by the Council of Ministers constituted an important landmark towards establishment of enabling environment for safe and responsible application of modern biotechnology in Mozambique.

Currently, GIIBS is tasked to co-ordinate biosafety activities in Mozambique. The Ministry of Science and Technology is the national competent authority and chair GIIBS. GIIBS consists of the representatives seven ministries, namely:

- Ministry of Science and Technology
- Ministry of Agriculture;
- Ministry for Coordination of Environmental Affairs;
- Ministry of Health
- Ministry of Industry and Trade;
- Ministry of Fisheries;
- Ministry of Planning and Development; and

The GIIBS meet on a quarterly basis and representatives from public and private entities and experts may be invited to the meetings of GIIBS. The GIIBS is empowered:

- To advise the government in decision making on safe transfer, handling and use of GE products;
- To coordinate the development and updating of rules that adequately address the country's sustainable development objectives, consistent with the Cartagena Protocol on Biosafety;
- To produce periodical technical reports on the status of the biotechnology and biosafety in Mozambique;
- To ensure the exchange of biosafety information at the national, regional and international levels;
- To promote public awareness and education programs on biotechnology and biosafety at a national level;

- In collaboration with other relevant entities, to evaluate the biosafety component in the applications, proposals and projects related to activities involving GE, based on risk assessment reports, inputs from the public and any other socio-economic considerations;
- To establish technical and scientific requirements for GE development and trials;
- To promote short-, medium- and long term training programs on biotechnology and biosafety; and
- To ensure the monitoring and evaluation of the enforcement of the Regulation.

Applicants must submit a report on the risk assessment and management for human health and the environment, including monitoring measures. The applicant may also be required to submit samples for testing purposes.

The Biosafety Legislation also establishes regulations for production sites, transport, identification and labelling of "GE" products.

The Process to obtain the Authorization

The Mozambique Biosafety Regulation determines the norms and processes for public and private sector tending to acquire authorization to manage GE products in the country. The process includes application, ministerial dispatch, public advertisement of the decision, and proof of technical and financial competence.

Risk Management Evaluation, Confidentiality, Information Fidelity and Responsibility

This is the chapter in the revised Biosafety Legislation that post has worked with local authorities in elaboration of the document. Previously this chapter was leaving all liability aspects to the investor. It now states that the evaluation of risk of GE products resulted in application of import, export, transit, research, release to the environment, management and use of GE products need to comply with technical and scientific requirements defined by the National Biosafety Working Group (GIIBS - Grupo Inter-Institucional Sobre Bio-Segurança) and approved by the National Biosafety Authority. This chapter also talks on information fidelity, accidents and responsibility. The improvement made to this aspect includes GIIBS collaboration with the operator.

b) APPROVALS

No plants or crops have been approved or registered in Mozambique for cultivation, import or export, with the exception of food aid in emergency situations. However, the NBA has approved GE corn confined field trials, which started in 2017.

c) STACKED or PYRAMIDED EVENT APPROVALS

The Mozambique's Biosafety Legislation does not indicate how it will handle stacked event approvals.

d) FIELD TESTING

The Mozambique Biosafety Regulation allows the public and private sector to research GE crops. Research is subject to prior application, field and greenhouses inspection, confined research project submission and monitoring measures, and risk control. The first confined trial started in the 2016/17 cropping season and preliminary results were shared in 2018.

e) INNOVATIVE BIOTECHNOLOGIES

Mozambique has not developed a policy toward innovative biotechnologies such as genome editing, and is not currently considering one.

f) COEXISTENCE

To date, there is no specific guideline for coexistence.

g) LABELING

Compulsory labeling of GE products or food containing GE ingredients is necessary based on the Mozambique Biosafety Legislation.

h) MONITORING AND TESTING

There is no system in place for testing and monitoring of GE products.

i) LOW LEVEL PRESENCE (LLP) POLICY

There is currently no low level presence policy in Mozambique.

j) ADDITIONAL REGULATORY REQUIREMENTS

According to Mozambique Biosafety Legislation, there are no additional product and/ or seed registration required, beyond GE crop approval, prior to use. Re-registration is not required.

k) INTELLECTUAL PROPERTY RIGHTS (IPR)

The last two chapters of the Mozambique Biosafety Regulation discuss confidentiality, intellectual property, public participation, and access to information. It protects research information and intellectual property while foreseeing public participation and information access.

l) CARTAGENA PROTOCOL RATIFICATION

Mozambique ratified the Cartagena Protocol on Biosafety in 2001(Resolution no. 11/2001, of December 20th) and created the inter-institutional National Biosafety Working Group (GIIBS - Grupo Inter-Institucional Sobre Bio-Segurança) to coordinate the process of developing a National Biosafety Framework for Mozambique. The Ministry of Science and Technology was designated to serve as the National Biosafety Authority.

m) INTERNATIONAL TREATIES and FORUMS

Mozambique is a signatory of *inter alia*:

- The Agreement on the Application of Sanitary and Phytosanitary Measures of the World Trade Organization (WTO-SPS)
- Codex Alimentarius Commission (Codex)
- International Plant Protection Convention (IPCC) of the Food and Agricultural Organization (FAO)

n) RELATED ISSUES

There are no other issues related to plant biotechnology that are not captured under the current headings.

PART C: MARKETING

a) PUBLIC/PRIVATE OPINIOS

The government of Mozambique is committed to adopt new agricultural technologies to reduce hunger and poverty by increasing agricultural production. The government understands that this is only possible if the country adopts new agricultural technologies, including biotechnology. This is, however, contrasted by the public opinions which show a total lack of knowledge about GE and Biotechnology in general.

b) MARKET ACCEPTANCE/STUDIES

At this moment, post is not aware of any marketing studies on GE products conducted in Mozambique. Commercial farmers are seeking Bt cotton and drought tolerant corn seeds, should they become available.

CHAPTER 2: ANIMAL BIOTECHNOLOGY

PART D: PRODUCTION AND TRADE

a) PRODUCT DEVELOPMENT

There are no GE or genome edited animals (or clones) under development in Mozambique. However, Mozambique is considering using innovative biotechnologies in product development, such as disease diagnoses on animals (Newcastle disease), animal genetic improvement, and poultry studies.

b) COMMERCIAL PRODUCTION

Mozambique does not commercially use or produce any livestock clones, offspring clones, GE animals, or products derived from animal biotechnologies.

c) EXPORTS

Mozambique does not export GE animals, livestock clones, or products from these animals.

d) IMPORTS

Mozambique does not import GE animals, livestock clones, or products from these animals.

e) TRADE BARRIERS

Post has not identified any additional biotechnology-related trade barriers that may negatively affect U.S. exports, or have the potential to do so.

PART E: POLICY

a) REGULATORY FRAMEWORK

There is no regulation in place for GE animals, livestock clones, or products from these animals.

b) APPROVALS

Not applicable (N/A)

c) INNOVATIVE BIOTECHNOLOGIES

N/A

d) LABELING AND TRACEABILITY

N/A

e) INTELLECTUAL PROPERTY RIGHTS (IPR)

N/A

f) INTERNATIONAL TREATIES and FORUMS

N/A

g) RELATED ISSUES

N/A

PART F: MARKETING

a) PUBLIC/PRIVATE OPINIONS

N/A

b) MARKET ACCEPTANCE/STUDIES

There are no market acceptance studies on Animal Biotechnology in Mozambique.