Required Report - public distribution

Date: 11/7/2018
GAIN Report Number: BM 8026

Burma - Union of

Agricultural Biotechnology Annual

Biotechnology - GE Plants and Animals

Approved By:
Rachel Nelson, Agricultural Affairs Officer

Prepared By:
Swe Mon Aung, Agricultural Specialist

Report Highlights:
There are no significant developments to convey since the previous report from January 2018. Currently, Myanmar does not have biosafety legislation; however, Bt cotton has been approved for planting under the Seed Law.

EXECUTIVE SUMMARY

Myanmar does not have comprehensive biosafety legislation. While existing laws such as the Pesticide Law, Plant Pest Quarantine Law, Seed Law, and Animal Health and Development Law have some relation to biosafety issues, there are no comprehensive guidelines or regulations governing plant or animal genetic engineering (GE). Myanmar regulators have drafted a Biosafety Law, but it has not yet been adopted. BT cotton was approved for planting under a previous version of the Seed Law, but all other imported seeds must arrive with a non-GE certificate. In summary, Myanmar does not have clear legislation governing the development, planting, selling or importing of GE food, feed or animal products, nor any process for requesting approvals.

TABLE OF CONTENTS

CHAPTER 1: PLANT BIOTECHNOLOGY ……..Page 3

PART A: Production and Trade ……..Page 3

PART B: Policy ……..…..Page 4

PART C: Marketing…….Page 7

CHAPTER 2: ANIMAL BIOTECHNOLOGY…….Page 7

PART D: Production and Trade…….....Page 7

PART E: Policy …….....Page 7

PART F: Marketing…….....Page 8

CHAPTER 1: PLANT BIOTECHNOLOGY

PART A: Production and Trade

a) PRODUCT DEVELOPMENT: Myanmar has many scientists with advanced degrees in biotechnology working at universities and the private and public sectors. The Ministry of Agriculture, Livestock and Irrigation (MOALI) has a Plant Biotechnology Center. However, there is currently no domestic research producing new genetically engineered (GE) crops. This is most likely due to uncertainty surrounding the legality of such research. Clear biosafety laws and regulations for GE product research and field trials are needed to create an environment for domestic GE product development. Myanmar researchers are interested in learning more about advanced breeding techniques, including genome editing, and would welcome capacity building in this area.

b) COMMERCIAL PRODUCTION: The only GE crop approved for production in Myanmar is Bt cotton. Myanmar farmers primarily produce the long staple bollworm resistant Bt cotton variety "Ngwe Chi 6" (Silver-6). This was produced using an Indian Bt variety backcrossed with a local long staple variety at the Lungyaw Cotton Research Farm and released for the first time in 2006. The average yield for Ngwe Chi 6 cotton is about two metric tons per hectare (MT/Ha). An estimated 75 percent of Myanmar's cotton farmers planted Bt cotton in 2017/18. It has been reported that newly developed varieties such as Ngwe Chi 9 and Shwe Taung 8, also developed at the Lungyaw Cotton Research Farm, have been introduced, and two new varieties, Shwe Taung 10 and Ngwe Chi 11, will soon be released from the same research station soon. Bt cotton is estimated at 490,000 metric tons (MT) in 2017/18.

c) EXPORTS: All of the Bt cotton grown in Myanmar is consumed domestically.

d) IMPORTS: There is no official data on the import of agricultural biotech products.

e) FOOD AID: As a least-developed country, Myanmar does not typically donate food aid to other countries. Myanmar receives food aid from the World Food Program (WFP) primarily for internally displaced persons (IDP) in the form of rice, pulses, oil, and salt. It also distributes high-energy biscuits for its school feeding programs. There are no issues related to biotechnology that impede the importation of these products. It is the WFP's policy that all donated food meets the food safety standards of the donor and recipient countries and all applicable international standards, guidelines, and recommendations.

f) TRADE BARRIERS: Myanmar amended its Seed Law in 2015 and published related seed regulations in February 2016. Imported seeds (with the exception of cotton) for both for trial and commercial distribution are required to have a non-GE certificate from the country of origin. Therefore, most foreign GE seeds cannot be imported or planted. Other than this, the major barrier to the use of biotechnology in Myanmar is the uncertainty caused by the lack of regulations, combined with a general limited knowledge about the technology. Trade sources indicate that Myanmar consumers may be receiving negative and false information from anti-biotech groups.

PART B: Policy

a) REGULATORY FRAMEWORK: While existing laws such as the Pesticide Law, Plant Pest Quarantine Law, Seed Law, and Animal Health and Development Law have some relation to biosafety issues, there are no comprehensive guidelines or regulations governing plant or animal genetic engineering (GE). Myanmar does not regulate agricultural biotechnology, except through the Seed Law, which prohibits the import and planting of all GE seeds except for Bt cotton. Some officials have stated that GE food is not permitted, but because of the lack of relevant legislation, the legal status in unclear. Myanmar regulators drafted a Biosafety Law, which was last updated in 2009 but has not yet been adopted. At present, the government is in the process of updating the draft guidelines in the Biosafety Law. The primary departments responsible for agricultural biosafety policy are the Department of Planning and the Department of Agriculture at MOALI. Other ministries involved in the development of biosafety policies include, but are not limited to:

(1) Ministry of Education
(2) Ministry of Natural Resources and Environmental Conversation
(3) Ministry of Commerce
(4) Ministry of Planning and Finance
(5) The Attorney-General's Office
(6) Ministry of Health and Sports.

There are numerous ongoing biotechnology activities at the different departments under MOALI. Examples of the kinds of research activities being conducted in Myanmar using biotechnology are listed in Table 1.

Table 1. Examples of Biotech Activities Undertaken by the Ministry of Agriculture, Livestock and Irrigation

Sr.	Departments	Activities
1.	Department of Agricultural Research	***Tissue culture*** - Identification of the anther culture response of Indica rice genotypes - *In vitro* nuclear technique for rice and banana improvement - Somatic embryogenesis in mango and coffee - Mass propagation of banana, sugarcane, and medicinal orchid - *In vitro* germplasm conservation of indigenous banana, potato, sweet potato, and some tuber crops ***Molecular Biology*** - Gene identification and genetic purification of hybrid rice - Investigation Opaque-2 gene of promising maize

		varieties - Identification of Xa genes in rice germplasm - Genetic diversification of maize, sugarcane, and rice germplasm - Marker assisted breeding programs for rice and tomato - Screening of molecular markers linked to Yellow Mosaic Virus (YMV) resistant genes in black gram
2.	Plant Biotechnology Centre	***Molecular Biology*** - Assessment of genetic diversity and population structure (DNA finger printing of mango and determining genetic diversity and specific grain qualities of Pawsan rice) - Crop improvement to climate resilient agriculture through molecular breeding stress tolerance, submergence and bacterial blight (BB) resistant gene pyramiding, salinity and heat tolerant rice variety, short duration rice variety for post flooded areas - Varietal improvement for high quality and nutritious crops- high aromatic rice by pyramid on aromatic genes, high amylose rice, Pawsan mutant backcross lines, brown color high yielding variety (HYV) rice, brown color HYV glutinous/sticky rice) ***Tissue Culture*** - Bananas, orchids, strawberries, potatoes, lilies, carnations, eucalyptus ***Service*** Providing non-GMO certificates
3.	Perennial Crops Research and Development Center	***Tissue Culture*** - Embryo culture and leaflet culture on oil palm
4.	Cotton and Allied Fiber Crop Division (Shwe Daung Cotton Research and Technology Development Farm)	***Molecular Biology*** - Developing cotton bollworm resistant varieties by using Marker Assisted Selection - Detection of bollworm resistant gene from Bt cotton (Ngwechi 6) by polymerase chain reaction (PCR)-based detection and developing bollworm resistant cotton variety by backcrossing

b) APPROVAL: Myanmar does not have a biosafety law nor approval mechanisms in place. Bt cotton was approved under the Seed Law, although that seemed to be a one-time only administrative decision rather than the result of a formal application.

c) STACKED or PYRAMIDED EVENT APPROVAL: There are no stacked or pyramided events approved, and there is no biosafety law specifying the regulatory process for stacked or pyramided events.

d) FIELD TESTING: Myanmar scientists are not conducting field trials for GE plants. Myanmar does not have a biosafety law governing the field-testing of GE plants.

e) INNOVATIVE TECHNOLOGIES: Myanmar does not have any policies regarding plant innovative technologies, such as gene editing, and Myanmar scientists are not conducting this type of research and development.

f) COEXISTANCE: Myanmar has no policy on coexistence.

g) LABELLING: Myanmar has no official labelling requirements for GE products. Imported seeds must come with a non-GMO certificate to gain import approval, but this does not need to be listed on the label.

h) MONITORING: AND TESTING: There is no policy regarding testing imported or exported products for GE content. Some government agencies might be conducting random testing and general surveys.

i) LOW LEVEL PRESENCE (LLP) POLICY: There is no LLP policy.

j) ADDITIONAL REGULATORY REQUIREMENTS: Not applicable.

k) INTELLECTUAL PROPERTY RIGHTS (IPR): A new Plant Varieties Protection Law was approved in January 2016 and went into effect in January 2017, although this is not directly related to biotech crops. Myanmar is not a member of the International Union for the Protection of New Varieties of Plants (UPOV) but is actively discussing membership with UPOV, and hopes that membership will help attract foreign investment in the seed development industry in Myanmar.

l) CARTAGENA PROTOCOL RATIFICATION: The Myanmar Ambassador to the United Nations signed the Cartagena Protocol on Biosafety (CPB) on May 2001 and it was ratified. Myanmar recognizes the Association of Southeast Asian Nations (ASEAN) Guidelines on Risk Assessment of Agriculture-Related GE, but has not formally adopted related measures.

m) INTERNATIONAL TREATIES and FORUMS: Myanmar signed the United Nations Environment Program - Global Environment Facility (UNEP-GEF) Agreement to facilitate the development of a national biosafety framework in July 2003, and received assistance in writing the existing draft Biosafety Framework. Myanmar has also participated as an official observer at the last four Asia-Pacific Economic Cooperation (APEC) High Level Policy Dialogues on Agricultural Biotechnology.

n) RELATED ISSUES: None.

PART C: Marketing

a) PUBLIC/PRIVATE OPINIONS: Knowledge about GE technology in Myanmar is low. Thus, there is an opportunity to educate the public about the benefits of biotechnology on farmers, the environment, and food security.

b) MARKET ACCEPTANCE/STUDIES: There are no known publicly available studies on public acceptance of biotechnology in Myanmar.

CHAPTER 2: ANIMAL BIOTECHNOLOGY

PART D: Production and Trade

a) PRODUCT DEVELOPMENT: Myanmar researches are not producing or experimenting with GE animals or animal cloning.

b) COMMERCIAL PRODUCTION: Myanmar does not produce any livestock clones, GE animals, or products derived from animal biotechnologies and has no related regulations on this technology.

c) EXPORTS: Not applicable

d) IMPORTS: Myanmar does not import cloned animals or GE animals, although there is no legislation either prohibiting or allowing the import of animal biotechnology.

e) TRADE BARIERS: There are currently no known trade barriers for the import of clones or GE-derived animals other than the lack of related regulations.

PART E: POLICY

a) REGULATORY FRAME WORK: There is no regulatory framework or regulation governing the production of clones or GE animals. There is also no indication that Myanmar will be using this technology in the near term.

b) APPROVALS: There are no GE animals approved or registered for use in Myanmar.

c) INNOVATIVE BIOTECHNOLOGIES: Myanmar does not have any policies regarding animal innovative technologies, such as gene editing.

d) LABELLING TRACEBILITY: Myanmar has no official labelling requirements for GE animal products, clones, or products of clones.

e) INTELLECTUAL PROPERTY RIGHTS (IPR): Myanmar's lack of intellectual property (IP) rights has been a problem cited by potential investors in the country. To date, the country is still relying on the 1909 Registration Act and 1914 Myanmar Copyright Act to resolve issues concerning IP. Myanmar's Laws regarding intellectual property rights are currently being

rewritten, with the goal of bringing them more in line with international standards, and numerous NGOs are assisting with this work.

f) INTERNATIONAL TREATIES/FORUMS: Myanmar has been a member of the OIE since August 1989. Myanmar sends participants to OIE meetings, but does not have a strong position on cloning or GE animals.

g) RELATED ISSUES: None

PART F: MARKETING

a) PUBLIC/PRIVATE OPINIONS: Knowledge about GE products in Myanmar is low, thus, there is an opportunity to educate the public about the benefits of biotech products.

b) MARKET ACCEPTANCE/STUDIES: None.