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# GAIN Report

Global Agricultural Information Network

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## Ghana

### Agricultural Biotechnology Annual

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**Report Highlights:**

Diligence on the part of local researchers and concerted efforts by various stakeholders in Ghana are yielding tangible results as the country is on the verge of commercializing its first genetically engineered (GE) product in 2018, a year ahead of schedule. The Minister of Environment, Science, Technology and Innovation (MESTI) has urged the new National Biosafety Authority (NBA) Board to educate the Ghanaian public on biotechnology and biosafety issues so as to help them better understand and embrace biotechnology as a key tool in the country's socio-economic advancement.

#### Executive Summary

Successive Ghanaian governments have, in recent years, prioritized food and nutrition security as the foremost national economic goal amid strong growth in food demand as a result of rapid demographic shifts and changing consumption habits. Ghana imports food from all over the world to help meet its domestic need. Ghana's major trading partners in Africa include Algeria, Cote d'Ivoire, Egypt, Kenya, Morocco, Senegal and South Africa. Food imports from Asia, Australia, Europe, North and South America are also common on the Ghanaian market.

U.S. agricultural exports to Ghana consist primarily of wheat, rice, poultry, processed vegetables and other consumer oriented food products. Trade data from the U.S. Census Bureau indicates the value of U.S. agricultural exports to Ghana in CY 2016 was \$69 million, a decrease of about nine percent as compared to that recorded in CY 2015 (\$75.6 million). Available data for the period of January - September 2017, however, reveals an increase in value of exports of more than 60 percent over the same nine month period in 2016. In CY 2016, U.S. consumer oriented product exports to Ghana totaled \$57.7 million.

The Government of Ghana (GOG) recognizes the potential of biotechnology as a key innovation in the quest for national food and nutrition security. The new administration's initiative, "Planting for Food and Jobs," seeks to drastically increase food security and domestic production of key crops such as maize, rice, and soybean. Provision and usage of improved inputs is a key part of this initiative, and biotechnology, while not explicitly stated in the initiative, can be a key tool in achieving the GOG's goals. In terms of current commercialization efforts, appreciable progress has been made, especially with regard to plant biotechnology. There is the possibility of a joint commercial release of Bt cowpea with Burkina Faso and Nigeria in 2018.

A common Memorandum of Understanding (MoU) has been prepared, and was expected to have been signed between the NBA and all the regulatory agencies as of the end of November 2016. So far, four of the seven regulatory agencies have signed the MoU. It will replace the separate bilateral agreements that have been signed between the NBA and each of the regulatory agencies, engendering cooperation. A new Board of Directors of the NBA has been inaugurated. Training on environmental release and "GMO" emergency situations has been received by the NBA.

There is currently no restriction on the importation of GE products or products containing GE material, and Ghana currently imports food products from elsewhere in Africa, Asia, Australia, Europe, South America and the United States that may contain biotechnology elements.

## ***TABLE OF CONTENTS***

***PLANT AND ANIMAL BIOTECHNOLOGY***

***CHAPTER 1: PLANT BIOTECHNOLOGY***

***PART A: PRODUCTION AND TRADE***

***PART B: POLICY***

***PART C: MARKETING***

***CHAPTER 2: ANIMAL BIOTECHNOLOGY***

***PART D: PRODUCTION AND TRADE***

***PART E: POLICY***

***PART F: MARKETING***

## ***CHAPTER 1: PLANT BIOTECHNOLOGY***

### ***PART A: PRODUCTION AND TRADE***

#### **a) PRODUCT DEVELOPMENT:**

Ghana continues to build its capacity for the development and production of modern agricultural biotechnology crops. There is the possibility of commercializing Bt cowpea in 2018, according to a source within a Ghanaian research institution that has been working on Bt cowpea. The commercial release of Bt cowpea is to be a joint action with neighboring Burkina Faso and Nigeria. Funding remains the only constraint that could jeopardize the commercial release of Bt cowpea in 2018. So far five applications have been submitted for research on biotech crops in Ghana. These were received by the National Biosafety Committee (NBC), which is the predecessor of the NBA. The applications were received from the Council for Scientific and Industrial Research (CSIR) Crop Research Institute (CRI) for Nutrient Enhanced Sweet Potato, and Nitrogen-use Efficient, Water-use Efficient, Salt Tolerant (NEWEST) rice; and from the Savanna Agricultural Research Institute (SARI) for Bt cowpea, Bt cotton and GM cotton (dual traits). Trials on Bt cowpea and NEWEST rice are still on-going but trials for Nutrient Enhanced Sweet Potato and GM cotton have been halted due to lack of funding.

b) **COMMERCIAL PRODUCTION:** There is no commercial production of biotechnology crops.

c) **EXPORTS:** Not applicable

#### **d) IMPORTS:**

Ghana requires prospective importers of bioengineered products to obtain approval from the NBA prior to importation. Clearance is first given by the NBA, and then the FDA in the case of products that are classified as food per the NBA's issued guidelines. Non-LMO agricultural products such as soybean meal, soybean oil and processed foods are freely imported from Argentina, Brazil, the European Union and the United States, which may contain biotechnology elements considered safe because product processing is deemed to render the genes inactivated. In 2016, Ghana imported a total of 24,824 MT of soybean meal from Argentina (86 percent), United States (10 percent), Paraguay (two percent) and Uruguay (two percent). In past years, significant imports of soybean meal have also come from Brazil, Netherlands, India, Belgium and China.

#### **e) FOOD AID:**

Ghana is the recipient of U.S. food assistance under USDA's Food for Progress program, and there has not been any barrier that impedes importation of GE food aid.

f) **TRADE BARRIERS:** Currently, there are no biotechnology-related trade barriers in Ghana.

### ***PART B: POLICY***

#### **a) REGULATORY FRAMEWORK:**

The GOG established the NBC in 2002, with a mandate to draft the Biosafety Bill, produce guidelines for the implementation of the Biosafety Law, and to prompt the GOG to move forward on biotechnology issues. It consisted of officials from government institutions, scientists, farmer organizations, and other

stakeholders. The committee, in dialogue with the GOG, drafted the Biosafety Bill in 2004 and produced the National Biosafety Framework and biosafety guidelines.

The NBA has since been established to manage the implementation of the Ghana Biosafety Act 2011 (Act 831). A thirteen-member Board of Directors is in place, with its membership to be reconstituted after a three-year mandate. The current mandate ends in 2020. A common MoU was prepared and expected to have been signed between the NBA and the seven regulatory agencies by the end of November 2016. This would replace the separate bilateral agreements that have been signed between the NBA and each of the regulatory agencies, namely; Food and Drugs Authority (FDA), Ghana Standard Authority (GSA), Environmental Protection Agency, Customs Services, Plant Protection and Regulatory Services Directorate, Veterinary Services Directorate, and Local Government. This initiative engenders cooperation among the regulatory agencies. The NBA has finally relocated to its new office, giving it the sense of autonomy that it craved as an institution of authority. Membership of an Appeals Tribunal that will address concerns by the public before issues are taken to the High Court has been approved by the NBA's Board.

i. Responsible Institutions for Implementing the Biosafety Bill (now Law):

The key institutions tasked with the implementation of the Biosafety Law are:

- The National Biosafety Authority
- The Technical Advisory Committee
- Institutional Biosafety Committees

NBA is the designated national authority on all issues related to modern agricultural biotechnology in Ghana. All applications, except for contained use and field trials, go through this authority. The governing body of the NBA is a Board whose chairman and members are appointed by the President for a period of three years.

TAC consists of not more than eleven individuals from the regulatory agencies and from the private sector who are knowledgeable in science and socio-economic matters related to biotechnology. TAC is the national advisory committee on matters concerning or related to biotechnology and undertakes risk assessments of applications at the request of the Board. MESTI appoints the members based on recommendations by the Board for a period not exceeding five years. The seven regulatory agencies of the Government of Ghana responsible for monitoring and enforcement are also represented on the TAC. IBC reviews applications for contained use and field trials.

ii. Role and membership of the NBA:

The National Focal Point on Biosafety in Ghana is MESTI, which is responsible for liaising with the Secretariat of the Convention on Biological Diversity for the administrative functions required under the Cartagena Protocol on Biosafety. The Ghana Biosafety Regulatory System is a coordinated framework. The Biosafety Act established the NBA, which is interdisciplinary in nature, to process applications relating to biotechnology products specified under the Act. The NBA ensures adherence to the Cartagena Protocol on Biosafety through implementation of the national biosafety guidelines and other regulations. Additionally, the Act made provision for the NBA's governing board to have an advisory committee to provide technical advice. Establishment of the IBCs was also provided under the Act. The Biosafety Act also provides for issuance of further guidelines to facilitate better performance of the NBA. The NBA has the powers as stated under section 39 of the Biosafety Act 2011 (Act 831) to:

- Draft and adopt regulations or guidelines to ensure safety of humans and the environment;
- Stop a project through the relevant IBC after establishing that further continuation of the project is unsafe to the personnel, community and environment; and
- Approve deregulation of all regulated materials for free movement and commercial release on the recommendation of relevant IBCs.

The Act states that a person or organization intending to introduce a bioengineered product into the environment or import or place a bioengineered product on the market must first obtain the written approval of the NBA. Composition of the NBA's governing body is as follows:

1. An expert in biotechnology and related biological sciences including biosafety, as Chairman;
2. The Chairman of the Technical Advisory Committee;
3. The Chief Director, or representative of MESTI;
4. One representative from the Association of Ghanaian Industries (AGI);
5. One legal practitioner of not less than ten years' experience;
6. One representative of non-governmental organizations (NGOs);
7. One member from Academia;
8. One member from CSIR;
9. One member from the Ministry of Food and Agriculture (MOFA);
10. One member from Ministry of Health (MOH);
11. One member from FDA
12. One member from the Customs Division of the Ghana Revenue Authority (GRA);
13. The Chief Executive Officer of the NBA.

### iii. Assessment of Political Factors:

The Biotechnology and Nuclear Agricultural Research Institute (BNARI) of the Ghana Atomic Energy Commission (GAEC) coordinated the project to draft a Biosafety Framework for Ghana between November 2002 and July 2004. United Nations Environment Programme/Global Environment Facility (UNEP/GEF) provided financial and technical support for the project. The framework is unique to Ghana but it is modeled after the UNEP/GEF blueprint which includes: a government policy on biosafety, a regulatory regime, a system to handle requests for authorizations (including risk assessment, decision-making) and administrative functions, systems for 'follow up' (such as enforcement and monitoring for environmental effects), and systems for public awareness and participation.

Before the Ghana Biosafety Law was passed, the GOG's position on biotechnology was guided by other principles stated in the National Science and Technology Policy (2000), the Constitution (Art 36, 41) and the Ghana Poverty Reduction Strategy (GPRS) documents. The GOG ratified the Cartagena Protocol on Biosafety in May 2003. The Ghana Biosafety Act 2011 (Act 831) has been passed and is favorable to the use and acceptance of biotechnology. The "precautionary approach and the environmentally sound management of biotechnology" are also factors that were strongly considered in drafting the Framework and Biosafety Act. For example, the Act begins by stating that the first objective is "to ensure, in accordance with the precautionary principle, an adequate level of protection in the field of safe transfer, handling and use of Genetically Modified Organisms ("GMO") that may have an adverse effect on the environment."

President Nana Addo Dankwa Akufo-Addo, on Wednesday, April 19, 2017, launched the “Planting for Food and Jobs” program at Goaso, in the Brong Ahafo Region. Planting for Food and Jobs, the President explained, will be anchored on the pillars that will transform Ghanaian agriculture; the provision of improved seeds, the supply of fertilizers, the provision of dedicated extension services, a marketing strategy, and the use of e-agriculture. “The Planting for Food and Jobs program is expected to increase the production of maize by 30 percent; rice by 49 percent; soybean by 25 percent; and sorghum by 28 percent from current production levels,” he added. This initiative is seeking to drastically increase domestic production of maize, rice, soybean, sorghum and select vegetables by means of improved inputs, extension services, and improved infrastructure. Improved seeds are part of the improved inputs, and while biotechnology is not explicitly mentioned, it can play an important role in this initiative.

iv. Distinctions between Regulatory Treatment of Approval:

Approval process under the Ghana Biosafety Act 2011 (Act 831) is quite similar for food, feed, processing and environmental release. The NBA does the assessment in collaboration with the relevant regulatory agencies. The period of review and the regulatory agencies involved will depend on the type of request as well as the bioengineered product specified in the request. The NBA’s issued guidelines stipulate that for applications requesting introduction into the environment, and import or placement on the market, risk assessment shall be conducted in accordance with Schedule Four (4) of Act 831, and in accordance with the Cartagena Protocol on Biosafety. Again, per the guidelines, food safety assessment for applications to place bioengineered products on the market or introduce these into the environment shall be conducted in accordance with the current CODEX guidelines for safety assessment of food derived from recombinant DNA organisms. In the case of LMOs, an application for approval to import could take up to a maximum of 180 days for review by the NBA and the relevant regulatory agencies.

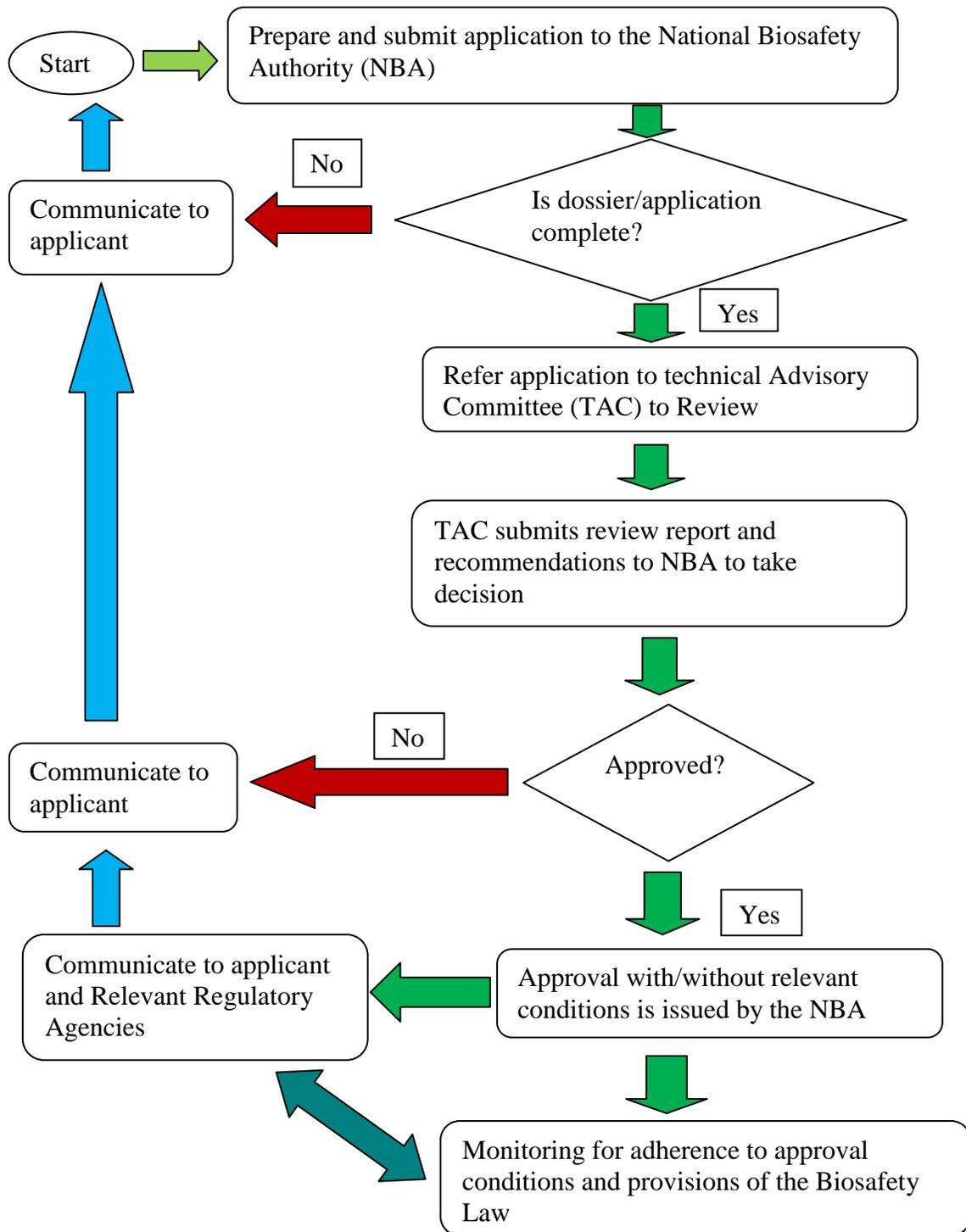
v. Reference to Pending Legislations and Regulations:

Draft legal instruments were prepared for the Minister to submit to parliament through the Attorney General before the end of 2016. The Attorney General is yet to submit these to parliament. These would only need to be gazetted. Two new guidelines have been drafted to provide needed guidance in decision making, namely; Variation Guidelines and “GMO” Unintended Presence Guidelines. Guidelines for all other types of applications pertaining to commercial and environmental release under the law received approval of the NBA Board in September 2016, and got released in December 2016. Worthy of note is the fact that none of the pending legislations or regulations indicated above has the potential to affect trade negatively.

vi. Timeline for Approvals:

The Ghana Biosafety Act 2011 (Act 831) does not contain any timeline for the approval of biotech or bio engineered food products. Timeline for approval is dependent on the application submitted to the NBA. Below is the flow chart for the review of biosafety applications:

**FLOW CHART FOR BIOSAFETY APPLICATION REVIEW PROCESS IN GHANA**



Source: Ministry of Environment, Science, Technology and Innovation (MESTI)

vii. Regulations on Biosafety: The Regulations on the management of biotechnology (Biosafety) in Ghana is yet to receive cabinet approval. It had been envisaged that approval would be granted by the end of 2017.

b) APPROVALS:

At present, no biotechnology crops (industrial crops, food crops, or feed) have been officially approved or registered in Ghana for cultivation, import or export.

c) STACKED OR PYRAMIDED EVENT APPROVALS:

The NBA requires additional approval for stacked events. There is also need for review of approval should there be sequencing change regarding an already approved GE trait.

d) FIELD TESTING:

Two field testing exercises are currently underway, namely; NEWEST rice (by CRI in the Ashanti Region) and Bt cowpea (by SARI in the Northern Region). Designated ground for the NEWEST rice's CFT has been completed with a rain out (screen out) shelter to provide control over rainfall. The trial has been moved from the on-field site to the on station premises of the research institution owing to lack of electricity, lack of accessible road, and the long distance between the site and the research station, which made monitoring difficult. The relocation was done after approval had been granted by the NBA. CFT for the Nitrogen Use Efficiency (NUE) rice resulted in the selection of the best genotypes, which will be taken through a regulatory trial before being deregulated by the NBA.

e) INNOVATIVE BIOTECHNOLOGIES: Unknown

f) COEXISTENCE:

The Ghana Biosafety Act 2011 (Act 831) is silent on co-existence. However, cultivation co-existence with non-GE crops (including organic agriculture) is implied. The Ghana Biosafety Act 2011 (Act 831) does not specify any additional product/seed registration or re-registration.

g) LABELING:

Though the biosafety legislation does not contain any labeling requirements for biotech or GE food products, or strict liability provisions, labeling is required for packaged foods and feeds in Ghana. The FDA's General Labeling Rules, 1992, (L. I. 1514) stipulate that food labeling be informative and accurate. Labeling of packaged and prepackaged products is for purposes of health, food safety and need to know. The minimum labeling requirements are that labeling should be clear, concise and in English. Also, labels should capture product name, net mass/weight, batch number, expiry date, and country of origin (if imported). A list of ingredients and food additives must be stated. It is mandatory to label any prepackaged food item that has nutritional composition. General labeling regulations for food products are strictly enforced, but they are not specific to biotechnology products. A national threshold regarding GE content is yet to be established beyond which labeling will be required for products with GE content.

h) MONITORING AND TESTING:

The Ghana Biosafety Act 2011 (Act 831) makes provision for the establishment of a monitoring body for biotechnology products. However, a monitoring program of GE food products is yet to be developed. Equipment has been acquired to establish a "GMO" detection lab on the premises of the GSA, and space has been secured at the GSA lab for this purpose. This is envisaged to help ensure that importation of

bioengineered products, especially LMOs is in harmony with the NBA's guidelines. A national threshold will be established to control the handling of imports and exports, and labeling will only be required for products with GE content exceeding the set national limit. There is currently no timeline on the implementation of this monitoring, but announcements providing further details are anticipated in 2018.

i) **LOW LEVEL PRESENCE (LLP) POLICY:**

Not at present but a LLP Policy is under development.

j) **ADDITIONAL REGULATORY REQUIREMENTS:**

Additional regulatory requirements are needed for environmental release and clearance for food by the EPA and FDA, respectively. And in the case of seeds, there is an additional regulatory requirement from the PPRSD. These additional regulatory requirements have nothing to do with the genetic makeup of the product. They are just mandatory requirement for all products, bioengineered or not.

k) **INTELLECTUAL PROPERTY RIGHTS (IPR):**

Ghana is a member of the World Intellectual Property Organization (WIPO), the Universal Copyright Convention (UCC) and the African Regional Industrial Property Organization (ARIPO). Manufacturers and traders are strongly advised to patent their inventions and register their trademarks in Ghana, and to do so through a patent or trademark agent. Fees for registration vary according to the nature of the patent, but local and foreign applications attract the same rate. The Ghanaian system for patent and trademark protection is based on British law, and it was only in 1992 that the patent laws of the UK ceased to apply in Ghana. Local courts offer redress when infringements occur, though few cases have been filed in recent years. The Copyright Act was passed in 1961 and the Trademark Act in 1965 (amended in 2004). The Copyright Administration in Ghana is responsible for patents, copyright and trademarks. Registration of a trademark permits the holder to have the exclusive right to use the registered mark for a specific product or group of products. Upon approval of a patent, the applicant is given the exclusive right to make, export, import, sell, use a product or apply a patented process. The Copyright Act of 1965 (amended in 1970 and 2005) makes it a criminal offense to counterfeit, reproduce, export, import, exhibit, perform, or sell any work without the permission of the copyright owner. The Biosafety law does not contain any IPR requirements for biotechnology food products. There is currently before the parliament of Ghana a Plant Breeders' Bill, which when passed into law, will help to address intellectual property rights related plant breeding in general.

l) **CARTAGENA PROTOCOL RATIFICATION:**

Ghana ratified the Convention on Biological Diversity in August 1994 and the Convention's Cartagena Protocol on Biosafety on May 30, 2003. As stated in the National Biosafety Framework for Ghana, the Protocol is in consonance with the country's constitutional obligations, environmental laws and policies, and the fulfillment of treaty obligations. A law on biosafety has been passed, and regulations have been developed. Trade has not been affected in any way.

m) **INTERNATIONAL TREATIES/FORA:**

Ghana has taken a pro-biotechnology position at the CPB, WTO and Codex, and acknowledges biotechnology and nanotechnology as a means of achieving much-needed development under the science, technology and innovation policy.

#### n) RELATED ISSUES:

At the inauguration of a new 13-member board of Directors of the NBA in Accra on September 25, 2017, Professor Kwabena Frimpong-Boateng, Minister of Environment, Science, Technology and Innovation said since “GMOs” were good technological systems that help improve crop and plant varieties and ensure food security, it was proper that the public was well engaged to help them better understand and accept biotechnology. The Minister therefore urged the NBA Board to educate the public on biotechnology and biosafety issues. This, he said, will help the public understand and embrace biotechnology as a key tool in socio-economic advancement. He added that such public education on biotechnology, especially on “GMOs”, was needed to be carried out by the Board “to help correct the wrong perception created in the minds of the public regarding the technology. Biotechnology is so important and we can’t develop without it”, the Minister noted, adding that countries like China in 1986, embraced biotechnology and did extensive research in various biotechnology systems, which resulted in its fast advancement globally. (<http://mesti.gov.gh/nba-board-inaugurated/>)

### ***PART C:      MARKETING***

#### a) PUBLIC/PRIVATE OPINIONS:

A lawsuit brought by Food Sovereignty Ghana (FSG), an anti-GE group, against the commercialization and release of GE products in Ghana was dismissed in 2015. Please follow the link below for details of this news item: <https://www.graphic.com.gh/news/general-news/court-dismisses-injunction-on-commercialising-of-gmos.html>. With the prospect of Bt cowpea commercialization, campaigns against the introduction of biotechnology by anti-GE groups and individuals in Ghana could be renewed in the near future.

More recently, several stakeholders have engaged the media on issues related to biotechnology in an effort to convey accurate, science-based information to Ghanaians with regard to GE technologies. This has led to a growing interest in having an impartial discussion on the topic of biotechnology across the country.

#### b) MARKET ACCEPTANCE/STUDIES:

In Ghana, many deliberations on biotechnology are done by academia, researchers and GOG officials from the relevant ministries. That notwithstanding, producers are eager to adopt GE crops as a means of achieving improved productivity. For instance, after observing the results of the Bt and GM cotton trials, farmers were highly impressed that cotton could be produced with only two insecticide applications per production cycle, and demanded that the seeds be made available to them immediately.

Post is not aware of any specific study assessing Ghanaians’ acceptance of biotechnology products. However, Post expects that the Ghanaian producer, importer/retailer, and consumer would accept duly deregulated biotechnology inputs and/or products if it guarantees increased yield and income, lower cost of import and handling and affordable products, respectively. Ghana continues to import food products from elsewhere in Africa, Asia, Australia, Europe, South America and the United States that may contain biotechnology elements.

## ***CHAPTER 2: ANIMAL BIOTECHNOLOGY***

### ***PART D: PRODUCTION AND TRADE***

- a) PRODUCT DEVELOPMENT: Post is not aware of the development of any bioengineered animal product in Ghana.
- b) COMMERCIAL PRODUCTION: Not applicable
- c) EXPORTS: Not applicable
- d) IMPORTS: Would not be any different from that for plant biotechnology.
- e) TRADE BARRIERS: Not applicable

### ***PART E: POLICY***

- a) REGULATORY FRAMEWORK: Same as promulgated for plant biotechnology.
- b) INNOVATIVE BIOTECHNOLOGIES: Not applicable
- c) LABELLING AND TRACEABILITY: Not applicable
- d) INTELLECTUAL PROPERTY RIGHTS (IPR): Not applicable
- e) INTERNATIONAL TREATIES/FORA: Ghana is a member of the World Organisation for Animal Health (OIE)
- f) RELATED ISSUES: Not applicable

### ***PART F: MARKETING***

- a) MARKET ACCEPTANCE: Not applicable
- b) PUBLIC/PRIVATE OPINIONS: Not applicable
- c) MARKET STUDIES: Not applicable

### **Reference Material**

1. National Biosafety Framework Document: [staging.unep.org/biosafety/files/GHNBFrep.pdf](http://staging.unep.org/biosafety/files/GHNBFrep.pdf)
2. Ghana Biosafety Act, 2011 - Act 831:  
<https://nba.org.gh/mdocs-posts/biosafety-act/>

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