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Approved by:

Jamie Rothschild
U.S. Embassy, Santo Domingo

Prepared by:

Sylburn Thomas

Report Highlights:

Jamaica's biotechnology and bio-safety policies remain largely unchanged from 2007. The anticipated passage of the Bio-safety Act-- which is necessary in establishing the legal framework for the ratification of the Cartagena Protocol on Bio-safety-- was not realized. Throughout the year, work continued on transgenic papaya and Sea Island Cotton at the laboratory level. Field trials of new gene construct for Papaya Ring Spot Virus resistance is scheduled to commence in 2008. Other constructs were field tested, but yielded sub-optimal resistance. The sections of the report that have been revised are: 2.1, 2.2 and 3.0.

Includes PSD Changes: No
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1.0 Executive Summary

Jamaica is an important market for U.S. bulk agricultural products (corn, rice and wheat), intermediate products (soybean meal and crude oil), and high value products (refined soybean oils, snack foods, etc), with a total value of approximately USD 255 million. In the future, imports of U.S. food and agricultural products will be influenced increasingly by the nature of Jamaica's biotechnology and bio-safety policies. As a party to the Convention on Biological Diversity and a signatory to the Cartagena Protocol on Bio-safety (CPB), Jamaica's biotechnology policies seek a balance between the economic benefits of genetic engineering and the preservation of biological diversity. Jamaica is currently developing legislation to ratify the CPB. The present regulatory framework governing the importation, development and use of the products of modern biotechnology is in the draft stage. Regulations for the importation of genetically modified organisms (GMO) for laboratory purposes are well established. Jamaica prohibits the commercial introduction of living modified organisms (LMO) into the natural environment.

2.0 Biotechnology Trade and Production

2.1 Production

There is no commercial production of transgenic (biotechnology) crops in Jamaica. The Biotechnology Center of the University of the West Indies continues work on developing transgenic variety of papaya (*Carica papaya L.*) that is resistant to the Papaya Ringspot Virus. Laboratory experiments are also being conducted to develop transgenic varieties of West Indian Sea Island Cotton (*Gossypium barbadense L.*) that are resistant to domestic plant pests. Jamaica's National Biotechnology Strategy extensively incorporates the potential to apply the tools of modern biotechnology to specific crops that are of economic importance to Jamaica, including hot pepper (*Capsicum chinense*), pumpkin (*Cucubita pepo L.*) and citrus (*Citrus sinensis*).

During the early to mid-1990's Jamaica's papaya industry experienced an intense resurgence of the Papaya Ring Spot Virus (PRSV), which devastated the industry and threatened the economic livelihood of farmers and others along the distribution chain. Cultivation of papaya in Jamaica is estimated to have declined under the attack of the PRSV from approximately 405 hectares in the early to mid-1990's to less than 180 hectares at present. Like other papaya producing territories, such as Hawaii, Thailand, Venezuela, and Brazil, where genetic resistance to the PRSV is not naturally available, Jamaica embarked on developing a transgenic variety resistant to the Jamaican isolate of the PRSV. The project adopted the concept of pathogen-derived resistance, using the coat protein gene of a mild mutant of the Jamaican PRSV.

The project progressed to the field trial stage, with transgenic lines of papaya that produced varying degrees of resistance to the PRSV. Given the sub-optimum results from those trials, new gene constructs were explored over the last two years. The new constructs have yielded optimistic laboratory and greenhouse results and a second round of field trials is scheduled to commence during 2007. The regulating authority has granted permission for the one acre field trial plot to be reestablished. The specific resistance achieved under laboratory and greenhouse environments are not publicly available. However, they are presumed significantly superior to previous constructs.

Jamaica's present biotechnology and bio-safety environment does not accommodate the deregulation and commercialization of products of modern biotechnology in the country. This could partly be the influence of relatively low private sector interest in commercial agricultural biotechnology in Jamaica due to the absence of attractive investment alternatives

in biotechnology. It is generally believed that commercially viable biotechnology projects will drive the regulatory environment towards deregulation and commercialization. In this regard, the results of the transgenic papaya project could hold the key to unlocking Jamaica's biotechnology environment and potential.

The National Bio-safety Committee (NBC), the arm of the National Commission on Science and Technology that is mandated to regulate the development, import, handling, and production of Genetically Modified Organisms in Jamaica, continues to monitor the transgenic papaya project. A project to develop insect-resistant transgenic Sea Island Cotton (*Gossypium barbadense* L), which began in 2002, remains at the laboratory stage. The project has been reported to be making progress towards its objective. Genetic research on scotch bonnet peppers, tomatoes and pumpkin remains as traditional selection. However, biotechnology is widely seen in the scientific community as a viable alternative to develop disease resistant and high-yielding varieties.

2.2 TRADE

Currently Jamaica has no regulations governing the importation of Living Modified Organisms (LMO) for animal feed or processing (such as grain corn and soybean), or high value products that are derived from GMOs (such as cooking oil). However, there are regulations governing the importation of LMOs for experimental purposes. The importation of LMOs for intentional commercial release into the natural environment is prohibited. Jamaica's draft Biosafety Policy and Act have not progressed substantially during 2008. The instruments, which were expected to be submitted to the political directorate during 2007, are in draft stage with the respective technical agencies. The most optimistic projection is for a late 2009 submission. The biotechnology policy is also expected to follow a similar time line. A series of public consultation on the biotechnology policy was conducted during 2007 as a prerequisite to concluding a final draft for Cabinet's deliberations. While Jamaica intends to ratify the Cartagena Protocol on Biosafety (CPB), the national bio-safety act is necessary to establish Jamaica's legal framework to adopt the provisions of the protocol.

Jamaica's livestock industry utilizes a large proportion of imported grains (corn and soybeans) from the United States. Currently there is no identity preservation (IP) program, or other regulations in Jamaica that requires the segregation of shipments of grains, or other bulk agricultural commodities into GMO-free products, or that establishes minimum tolerance for contamination. However, these issues will likely be addressed by the draft Biosafety Policy. Jamaica is also a beneficiary of food aid from the United States, typically in the form of wheat flour, soybean oil, cornmeal, and whole milk powder. At the retail level, processed products are not monitored or regulated for GMO content, despite calls from consumer groups for mandatory labeling of such products. Jamaica's draft National Bio-safety Policy is explicitly skewed towards mandatory labeling of products of modern biotechnology. This is a direct reflection of public opinion in Jamaica.

Under the Plants Quarantine Act, Jamaica has legislated the Plants (Importation) Control Regulations in 1997 to govern the importation of LMOs for the purpose of experimentation under controlled conditions. The regulations require that all importers must apply to the National Bio-safety Committee for permission to import such products, and, upon approval, the application is submitted to the Plant Quarantine Division for granting of a permit by the Chief Plant Quarantine Officer. The NBC considers, chief among an array of variables, the importer's ability to enforce adequate procedures and safeguards to ensure that no contamination by or release of the plant, seed, cutting, or other plant parts, which is detrimental to the health or safety of any human, animal or other living organism will occur at the port of entry or in the country. In addition to very stringent stipulations on the physical characteristics of the packaging container, materials, and the size of the plant or

plant part, the regulation requires that individual packages be labeled, indicating, inter alia: the content, place of origin, name and address of consignee and consignor, along with respective telephone numbers, a statement indicating that the propagative material is derived from genetic engineering procedures and possesses novel traits along with the notation " For experimentation purposes only, not for sale or reuse." Despite the existence of the regulations, interests in experiments with imported LMOs are insignificant.

3.0 BIOTECHNOLOGY POLICIES

Jamaica is a party to the Convention on Biological Diversity (CBD), and is currently drafting a comprehensive biosafety-specific legislation and policy (National Biosafety Framework) to support the ratification of the Cartagena Protocol on Bio-safety (CPB), and the full implementation of its relevant provisions. In accordance with the CPB, the draft National Bio-safety Framework focuses primarily on developing regulations to ensure adequate protection in the safe transfer (import, export and transit), handling, contained use, deliberate release or placing on the market of any LMOs that may have adverse effects on the conservation and sustainable use of biological diversity, taking into account risks to human health. The Framework specifically addresses LMOs for intentional introduction into the natural environment, and GMOs that are to be used directly for food, feed or processing, omitting pharmaceutical products and high-value products derived from GMOs.

Although the framework gives adequate consideration to the use of science-based risk assessment, given Jamaica's inherent lack of capacity in conducting frequent and adequate risk analysis, the implementation of the framework is expected to be heavily skewed towards adopting the precautionary principle, as is provided in Article 15 of the Rio Declaration on Environment and Development and reiterated in the CPB. In fact, Jamaica's draft National Biotechnology strategy accommodates risk analysis based on the precautionary principle. The Biosafety Policy and Act are expected to be legislated during early 2007 for ratification of the CPB during the same year.

Presently, Jamaica has a relatively fragmented institutional structure for the regulation of activities and procedures relevant to biotechnology and bio-safety. The Ministry of Agriculture administers the Plant Quarantine and Animal (Disease and Importation) Acts, which are implemented respectively through the Plant Quarantine Division and the Veterinary Services Division to regulate the importation of plants and plant parts, and live animals and animal products, respectively. The National Environment and Planning Agency administers the Natural Resources and Conservation Act, which directly relates to the conservation and sustainable use of biological diversity. The Ministry of Health administers the Food and Drug Act; the Pharmacy Act; the Pesticides Act and the Public Health Act. The Ministry of Commerce, Science, and Technology administers the Standards Act, under which the labeling policies of the county are developed. The National Bio-safety and National Biotechnology Coordinating Committees are mandated to develop procedural guidelines for the importation, production, development and use of products of biotechnology in Jamaica, and advise the government on issues pertaining to biotechnology and bio-safety. The NBC also grants approval for the importation of LMOs for experimental purposes. The NBC is representative of a broad cross-section of the public and private sectors and civil society. Under the Bio-safety Strategy, there should be significant institutional rationalization to establish a Competent Authority and National Focal Point, pursuant to the obligations of the CPB. Further, the consideration for institutional amalgamation across the Caribbean Community (CARICOM) is explored in Jamaica's draft biotechnology strategy and could be one of the most effective methods of building scientific capacity within the bloc.

Jamaica has shown commitment to the tenets of the CPB, including the Advance Information Agreement, which provides strict guidelines for the importation of LMOs for intentional

release into the environment. Given that this is the greatest area of concern for member countries, Jamaica is expected to adopt, in full, the strict language of the CPB to govern such imports. The country has established a bio-safety clearing-house (BCH) and is actively exchanging pertinent information with other contracting parties. With respect to LMOs for feed, food or processing, the national strategy is also expected to reflect the text of the CPB.

While the CPB omits clear guidelines on the labeling of GMO, beyond the relevant categories of LMOs, labeling of products derived from genetic engineering remains one of the most contentious topics for consumers and consumer groups in Jamaica. The general consensus among consumer groups, policy makers, and scientists is to legislate mandatory labeling of all products derived from or containing products of genetic engineering, irrespective of the extent of detectable modified DNA or protein. The National Bio-safety Framework is expected to reflect the desires of the populace, as far as this subject is concerned. The ratification of the CPB is high on Jamaica's list of priorities, especially due to the small size of the country, its rich biodiversity (ranking number five in the world among island states), the increasing emphasis on the nutraceutical industry, and the preservation of endemic biological resources. In this context, the draft legislation and policies to support the ascension to membership of the CPB is expected to progress smoothly.

The field trial of transgenic papaya in Jamaica, the only transgenic product in the history of the country to progress to this stage, was limited to a one-acre plot located in the central region of the country. There are guidelines developed by the NBC to monitor the field-trial process. Jamaica does not, however, allow the field-testing of LMOs that are derived outside of the borders of the country. Further, from a marketing and scientific standpoint, Jamaica does not allow the coexistence of transgenic and conventional products. The NBC has established guidelines for minimum distance between transgenic varieties (trials) and other conventional products of the same genus. Apart from the scientific justification of not planting adjacent trial transgenic and conventional fields, Jamaica is concerned with any possible market repercussions in the European Union from its biotechnology program. In fact, the position adopted by Jamaican regulators, with respect to mandatory labeling of GMOs, is possibly influenced by existing European policies. The Economic Partnership Agreement between CARIFORUM (Caribbean Forum of African, Caribbean and Pacific – ACP – States) countries and the European Union give further necessity for Jamaica to carefully consider its biotechnology program.

Jamaica's National Biotechnology Strategy emphasizes a balance between the economic benefits of biotechnology and any associated adverse effect to the conservation and sustainable use of biological diversity, taking into account risks to human health.

4.0 MARKET ISSUES

While the domestic media has resisted sensationalizing the consumption of genetically engineered products, consumer sentiments in other parts of the world, especially Europe, have been extended to Jamaican. Jamaica's Consumer Affairs Commission and the National Consumer League have repeatedly asserted their position of the mandatory labeling of products derived from GMO, in support of consumers' right to full information to make informed purchasing decisions. Retailers, bulk commodity importers, and livestock farmers have shown the strongest support for GMOs in Jamaica. Their views are rationalized based on the price competitiveness and nutritional enhancement of GE products. The mandatory labeling of GE products should not significantly affect the imports of bulk agricultural commodities, if it is not associated with an identity preservation program. In the latter case this would increase the price of grains and animal feeds to the livestock sector. Given the importance of the livestock industry to Jamaica's agricultural sector, an IP program is not anticipated in the legislation. On the retail side however, mandatory labeling of such products

could produce a temporary response by consumers. The positive attitudes of Jamaican retailers and scientists towards products derived from GMO, and a relatively diverse domestic media environment will help to promote Jamaica's biotechnology environment. Additionally, per capita income, and resultant price sensitivity of the Jamaican consumer market will not support the types of consumption discriminations as observed in Europe and other developed territories.

5.0 CAPACITY BUILDING

Jamaica continues to build technical capacities in biotechnology through its academic programs and research centers. Stronger collaboration with international institutions could assist the country in advancing its biotechnology agenda and realizing the associated socio-economic benefits. Expertise in the areas of bio-safety risk analysis, traceability and testing, and deregulation and commercialization protocol, are crucial to the country's biotechnology program. USDA's efforts in this respect have focused on bio-safety risk analysis and information exchange at the government level.