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Agricultural Biotechnology Annual

Caribbean Biosafety and Biotechnology Situation

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Report Highlights:

Updated Sections: I, II (Chapter 1. Parts A, B, C & D; Chapter 2. Part H).

Biotech regulation has been virtually non-existent in the Caribbean. However, that may change in the years ahead as twelve Caribbean Community (CARICOM) countries move forward with a United Nations Environment Programme/Global Environment Facility (UNEP/GEF) Regional Project for Implementing National Biosafety Frameworks (NBFs) in the Caribbean. The project is ending in December 2015, with its outcomes likely becoming the guideposts for future regulation of biotechnology within the participating CARICOM countries. Currently, the United States is the region's main supplier of food and agricultural products, and this trend is expected to continue.

Section I. Executive Summary:

Several institutions within the Caribbean Basin Agricultural Trade Office's (CBATO) region of coverage [1] are conducting biotech research on crops such as sugarcane, cassava, papaya, rice, coconuts, cocoa, coffee, peppers, and spices and to a lesser extent on ornamentals and animals. This research has yielded a number of advances, including developing transgenic papaya varieties resistant to devastating papaya viruses as well as the development of biochemical compounds suitable for use as bio-pesticides. However, actual commercial production of biotech products is still sometime off in the future. The Caribbean region is also not yet at the stage where biotech engineering (or cloning of animals) is being developed.

Post is not aware of any specific requirements related to the importation of biotech products in its region. Currently, the United States is the region's main supplier of food and agricultural products. Nearly, 95 percent of all corn, soybean, cotton and canola products are imported from the United States.

Suppliers may encounter greater regulation of biotech products as well as increased consumer awareness in the years ahead. Over the past several years most of the countries within CARICOM [2] have worked at developing their own draft NBF, a combination of policy, legal, administrative and technical instruments geared toward addressing safety for the environment and human health in relation to modern biotechnology. These countries are now seeking to finalize and adopt legislatively their NBFs and implement them with the help of a UNEP/GEF four-year, \$13 million project. The project is assisting 12 of the 13 CARICOM countries that are parties to the Cartagena Protocol on Biosafety (CPB) [3] to implement effective, operable, transparent and sustainable NBFs, deliver global benefits that are compliant with the CPB in the Caribbean sub-region countries, and protect against potential risks from the introduction of living modified organisms (LMOs) into the environment. To date, only St. Kitts and Nevis has enacted any biosafety legislation. While an important first step toward establishing its comprehensive NBF, regulations have yet to be developed and thus the regulatory and institutional structures are not operational.

[1] The CBATO islands of coverage are: Anguilla, Antigua & Barbuda, Aruba, The Bahamas, Barbados, Bermuda, British Virgin Islands, Cayman Islands, Dominica, Guadeloupe, Martinique, Grenada, Montserrat, the former Netherlands Antilles (Curaçao, Bonaire, Sint Maarten, Saba & St. Eustatius), St. Kitts & Nevis, St. Lucia, Saint Martin, St. Barthélemy, St. Vincent & the Grenadines, Trinidad & Tobago, and Turks & Caicos Islands.

[2] CARICOM Member States are: Antigua and Barbuda, The Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Haiti, Jamaica, Montserrat, St. Lucia, St. Kitts and Nevis, St. Vincent and the Grenadines, Suriname, and Trinidad and Tobago (CARICOM Associate Members are: Anguilla, Bermuda, British Virgin Islands, Cayman Islands, Turks and Caicos Islands).

[3] CARICOM Member States that are Parties to the CPB are: Antigua and Barbuda, The Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Jamaica, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, and Trinidad and Tobago. It should be noted that Jamaica is not part of the UNEP/GEF Regional Project for Implementing NBFs in the Caribbean because it did not ratify the CPB until after the project was initiated. Jamaica is carrying out its own NBF project instead.

Section II. Caribbean Biosafety and Biotechnology Situation

Chapter 1: Plant Biotechnology:

Part A: Production and Trade

Overall, agricultural production throughout the CBATO region is minimal, and most countries within the region must import the majority of their agricultural products. Total land area is 23,783 sq. km. (9,183 sq. miles), roughly the size of New Hampshire. Of this amount, only about seven percent of the land is arable and an even smaller percentage is actually utilized for farming. There is no known commercial production of biotech products in the region. Several institutions in the CBATO region have engaged in biotech research, mainly to do with crops produced locally.

Currently, no country in the Caribbean region has an approved, fully-functioning biosafety legal framework in place to oversee the production or release of LMOs, which may represent an impediment to taking research to the next level of field trials and later commercialization.

On a regional level, research institutions throughout the Caribbean have recognized that the production of biotech products could lead to an increase in yields, and reduced use of water in agriculture. These institutions have identified several local products (sugarcane, cotton, rice, coconuts, cocoa, coffee, peppers, and spices) that could be improved using biotechnology. Some of the institutions leading the way are: the University of the West Indies (UWI), the Caribbean Agriculture and Development Institution (CARDI), the Caribbean Industrial Research Institute (CARIRI) in Trinidad and Tobago, and the National Agriculture Research Institute (NARI) in Guyana.

Post is not aware of any specific requirements related to the importation of biotech products in its region [1]. Nine [2] of the countries in the CBATO region are parties to the CPB, and while they are all in the process of trying to meet their obligations under such protocol, none has fully implemented it to date. Currently, the United States is the region's main supplier of food and agricultural products. Nearly, 95 percent of all corn, soybean, cotton and canola products are imported from the United States.

Within the Caribbean region, CARICOM is focused on establishing the Caribbean Single Market and Economy (CSME) to facilitate the free movement of CARICOM-origin products between Member States. It remains to be seen whether CARICOM will develop regional rules affecting trade in biotech products.

Part B: Policy

Most of the countries within CARICOM appear to want to address their biotech requirements through a NBF. To date, only St. Kitts and Nevis has enacted any biosafety legislation. While an important first step toward establishing its comprehensive NBF, implementing regulations have yet to be developed and thus the regulatory and institutional structures are not operational. None of the other CARICOM countries have enacted any biosafety legislation.

[1] Guadeloupe and Martinique, as departments of France, may be exceptions to this statement.

[2] Antigua and Barbuda, The Bahamas, Barbados, Dominica, Grenada, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, and Trinidad and Tobago.

The Regional Project for Implementing NBFs

In June 2011, UNEP/GEF initiated a four-year, \$13 million Regional Project for Implementing NBFs in the Caribbean. The project, which is being executed by UWI, is assisting the 12 CARICOM countries that are parties to the CPB with implementation of their obligations. This project is a continuation of previous UNEP/GEF biosafety capacity building efforts in the region.

The overall goal of the UNEP/GEF project is to implement effective, operable, transparent and sustainable NBFs, and deliver global benefits that are compliant with the CPB in the Caribbean sub-region countries while also protecting against any potential risks from introduced living modified organisms (LMOs). The four project aims are to:

- establish institutional (policy/legal) frameworks for biosafety at both the national and regional levels that will allow Parties to the CPB to utilize modern biotechnology in compliance with this Protocol;
- facilitate the establishment, enhancement and operation of institutional capacities as well as technical and technological resources among the participating Caribbean Member States for the detection, assessment and management of potential risks from modern biotechnology (in combination with invasive alien species (IAS) where appropriate) at the national and regional levels;
- develop and strengthen the human resource base and level of expertise in biosafety on a national and regional scale, in support of biosafety management and national biosafety systems in the Caribbean;
- improve and consolidate biosafety information management within the Caribbean project countries in a way that can promote transparency, raise public awareness and facilitate the biosafety decision making, and be up scaled to provide broader regional information services as needed, and if possible, establish links to information sources.

The regional portion of the project aims to support the establishment of a region-wide mechanism for coordinating and supporting countries in biosafety management by providing them with training on biosafety risk assessment and the management of LMOs. According to various sources, the regional aspect could also create a Regional Biosafety Clearing House (BCH) to support and coordinate information exchange. The regional process also aims to strengthen institutional capacities and provide technical guidance on biosafety issues in the region as well as assist with the implementation of NBFs.

Meanwhile, national activities of the project will support the establishment in the twelve countries of the necessary legal and institutional frameworks, public education programs, and training necessary for effective and sustained implementation of the CPB. Projected country-specific outcomes include establishing:

- functional NBFs in line with the CPB and the national and regional needs of each country;
- functional national systems able to detect LMOs and perform risk assessments;
- functional systems to monitor the environment and enforce regulations;
- national systems for biosafety information management while stimulating public awareness, biosafety education, and participation in the decision-making process.

Although the project officially began in June 2011, the project's steering committee held its inception meeting in November 2012, and the first drawdown of project funds took place in early 2013. With the project set to conclude by December 2015, project activity has accelerated since late 2014. However, progress remains uneven among the 12 participating countries. To date only St. Kitts and Nevis has passed its Biosafety Act and it remains to be seen which others can at least have their biosafety bills and regulations in final form by the end of the year. Trinidad and Tobago signed its partnership agreement with UWI late in 2014 and is behind in its schedule of national level activities but working actively to reach project goals this year. Barbados and The Bahamas have yet to sign the partnership agreement with UWI, which in essence precludes them from drawing on any project funds for national level activities.

To help bring all project participants forward toward the December 2015 finish line, UWI has sub-contracted the International Centre for Genetic Engineering and Biotechnology (ICGEB) in Trieste, Italy to conduct all the remaining regional capacity building workshops and facilitate the development and finalizing of each country's legislation. Rather than just focus on capacity building, the workshops are being geared toward actually helping countries make strides in bringing their draft biosafety laws and regulations to their final stage before enactment/approval. Practically all project participants are working toward this end and have hired consultants to help them update their drafts and conduct stakeholder consultations. While it is highly unlikely that all countries will pass their biosafety bills and implementing regulations by the time the project concludes, the expectation is that all countries will have such documents in final form and ready for enactment/approval.

At the regional level, progress is being made but much work still remains to be done. A Center of Excellence in Biosafety, which will serve as a virtual information hub for the region, is under development. The Center will take over responsibility for the regional laboratory which is being planned for Barbados. This will be a reference lab focusing largely on commercial aspects (testing and analysis of GMO's). In 2014, UWI initiated a graduate program in biosafety, offering a Master of Science (MSc) and a Postgraduate Diploma in the field. The first cohort of students is expected to graduate from the program in December 2015. This should help considerably with expanding capacity in the region. At least one of the MSc students is already working as an Assistant UNEP/GEF Biosafety Project Coordinator in St. Vincent and the Grenadines.

Independent of the project, in February 2014 UWI inaugurated the Centre for Food Security and Entrepreneurship at its Cave Hill Campus in Barbados. The center, which will sit on 40 acres of farmland donated by a local farmer, is to be a model for the production, distribution, marketing and use of food crops in an environmentally and economically sustainable manner and with the help of modern science and technology.

Part C: Marketing

There are no significant marketing issues that currently affect U.S. products. However, Dominica, which exports organically grown crops to niche markets in Europe, may have concerns that coexistence with any biotech material introduced into their small island environment could jeopardize their exports to Europe. This concern may be a factor in shaping Dominica's regulatory environment and could possibly have a marketing impact on some U.S. products.

Exporters of biotech commodities should also be aware that as part of the UNEP/GEF project, participating countries are undertaking "awareness raising activities" at the national level to educate the public on biosafety, biotechnology, bio-security and invasive species. The project is also supporting stakeholder consultations as part of the national processes to enact biosafety regulations.

Part D: Capacity Building and Outreach

Activities

Recognizing the region's capacity needs in the areas of biotechnology and biosafety, the CBATO facilitated Cochran Fellowships for ten Caribbean officials to attend either an International Short Course in Agricultural Biotechnology or an International Short Course in Environmental Aspects of Agricultural Biotechnology at Michigan State University (MSU) between 2011 and 2014. In 2015 another three Cochran Fellowships are available for Caribbean participation in the above-mentioned courses. At the request of UWI, the CBATO facilitated speakers for a Caribbean Biosafety Workshop (Agriculture, Environmental Risk Assessment and Socio-economics) held in Barbados in September 2014. The four speakers were from the Program for Biosafety Systems (PBS) of the International Food Policy Research Institute (IFPRI). PBS' independent and diverse team of experts works with stakeholders to develop and implement science-based, functional biosafety systems that ultimately expand producer choice, inspire consumer confidence, facilitate trade, and promote agricultural research and development. Approximately 30 Caribbean biosafety regulators and public policy officials participated in the workshop.

Strategies and Needs

Capacity building needs appear to be concentrated in three main areas.

- Institutional capacity

As countries progress toward implementing their NBF's (passing legislation, developing policies and regulations, and setting up the administrative and regulatory infrastructure to regulate the use of modern biotechnology), they need to strike a balance between what they intend to accomplish in terms of biosafety regulation and the practical and effective functions that their regulatory agencies carry out on a day-to-day basis. Risk assessment and risk management training is a high priority. Building capacity in these areas will help regulatory agencies develop practical protocols for dealing with genetically engineered products.

- Human resources

The number of scientists in the region who are trained in biotechnology related fields is very limited. Scientific and technical training, particularly in decision-making and risk management procedures, is a key need. Moreover, there is a need for basic understanding of biotechnology and biosafety among non-scientists (policy makers, regulatory officials, etc.). Continued training of government personnel involved with biosafety matters through short courses, workshops and seminars is essential.

There is also a need for biotechnology and biosafety-related training to become permanent fixtures in the curricula of educational institutions in the region to ensure knowledge gains are not lost over time. As mentioned earlier, UWI's new Biosafety MSc and Postgraduate Diploma programs are an important step in this regard.

- Public education and awareness

Public education and awareness of biotechnology and biosafety are critical to the success of any biosafety regulation effort. There is a significant need for training journalists and communication specialists as well as

policy makers, regulatory officials, and scientists on effective communication strategies for these complex issues. More specifically, training is needed on how to access and deliver current, scientifically sound, balanced, and consumer-friendly information to the public.

Chapter 2. Animal Biotechnology:

Part E: Production and Trade

The Caribbean region is not yet developing animal genetic engineering or cloning of animals. Although there has been some biotech research in Barbados on Blackbelly sheep, the region is far from having the capability to engage on specific animal biotechnology projects. However, experts in the region believe that an expansion of animal breeding using conventional and new embryo techniques as well as DNA techniques to characterize regional species would be a positive development. The use of molecular techniques to identify genes for breeding purposes will be high on the research agendas of several countries in coming years.

Part F: Policy

Not applicable.

Part G: Marketing

Not applicable.

Part H: Capacity Building and Outreach

In 2014, the CBATO facilitated a Cochran Fellowship for a TT veterinary official to receive training on dairy and beef genetics (embryo transfer techniques).