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Agricultural Biotechnology Annual

Agricultural innovation stalled, despite low productivity and food insecurity

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Report Highlights:

Since 2006, Guatemala has allowed genetically engineered (GE) plants for field trials and seed production for export, however, not for food production. Despite extremely low yields in corn production, and some of the highest malnutrition rates in the world, Guatemala lacks a comprehensive regulation that allows for the use of biotechnology.

Section I. Executive Summary:

Guatemala continues to import genetically engineered (GE) food and products, but has not approved the use of GE plants for agricultural production. Guatemala is a net importer of animal feed. In 2015, Guatemala imported 882,000 MT of corn from the United States, mostly yellow corn for animal feed.

Guatemala's policy on GE plants goes beyond compliance with the Cartagena Protocol, imposing a *de facto moratorium* on the use of the technology. GE animals have not been included in the discussions,

except for potential interests of the academia and health researchers on GE mosquitos to combat Zika and Chinkunguya diseases.

The National Council of Protected Areas (CONAP) maintains control over biotechnology policy and recently submitted a draft of new regulations to be considered by the Ministries of Agriculture, Environment, and Health. The Interagency Commission on Biotechnology at the Council of Science and Technology is revising CONAP's draft regulatory proposal.

Section II. Author Defined:

Plant and Animal Biotechnology

CHAPTER 1: PLANT BIOTECHNOLOGY

PART A: Production and Trade

- a) **PRODUCT DEVELOPMENT:** There is no legal cultivation of commercial GE crops in Guatemala. Local development is not permitted under present regulation. There are no GE developments in the pipeline.
- b) **COMMERCIAL PRODUCTION:** Guatemala allows for commercial production of GE plants for seed production and export purposes exclusively. But the field-trial approval process is extremely slow and unpredictable, and has kept interested sectors away from production.
- c) **EXPORTS:** Though Guatemala allows for GE seed exports, Guatemala has not produced nor exported any GE seeds.
- d) **IMPORTS:** Guatemala continues to be a net importer of animal feed. In CY2015, Guatemala imported 882,000 metric tons (MT) of corn valued at \$187 million from the United States, its main supplier. Corn is the most widely imported grain; the United States exported 824,000 MT of yellow corn and 58,000 MT of white corn.
- e) **FOOD AID RECIPIENT COUNTRIES:** Guatemala is a major food aid recipient country. It has the highest rate of chronic malnutrition in Latin America and the third highest rate in the world. Guatemala receives roughly \$200 million a year in food aid from the United States, in both donated and monetized commodities. Food donations consisting largely of beans, corn-soy blend, rice, and vegetable oil, accounting for almost 50 percent of the value of food aid received by Guatemala. As a result of such food aid, acute and chronic malnutrition have decreased in the areas of intervention but overall chronic malnutrition and food insecurity continue to be a major concern.
- f) **TRADE BARRIERS:** There is a *de facto moratorium* imposed on research and field trials of GE plants, creating a clear trade barrier.

PART B: Policy

a) **REGULATORY FRAMEWORK:** The Ministerial Agreement 386-2006 allows for field trials and commercial production of GE seeds for export only. The Guatemalan Ministry of Agriculture, Livestock, and Food (MAGA) is responsible for approving risk analysis conducted by interested parties. The Institute of Agricultural Science and Technology (ICTA) in MAGA is responsible for verifying the on-site trial protocols of the risk analysis. The regulation is outdated and cumbersome. It was drafted to comply with the Cartagena Protocol and makes the approval process extremely difficult.

Parallel to MAGA's authority, the Council of Protected Areas (CONAP), an office in the executive branch that answers directly to the president, oversees Presidential Decree 207-2014, which established the national policy on GE live organisms¹. The policy acts as a disincentive to use biotechnology in agriculture and food production. As a result of the policy, CONAP continues efforts to impose regulations on MAGA, and the Ministries of Environment and Health. Proposed regulations are discussed by the Interagency Commission on Biotechnology at the Council of Science and Technology (CST). Despite positive recommendations on biotechnology from CST, CONAP does not incorporate this view in their proposed regulations.

b) **APPROVALS:** Guatemala has not approved any GE plant events for commercialization. The current regulation does not allow it.

c) **STACKED or PYRAMIDED EVENT APPROVALS:** Ministerial Decree 386-2006 does not refer to single or stacked events.

d) **FIELD TESTING:** In 2004, MAGA approved field trials of the YieldGard gene in corn for Lepidopteron resistance, and the Liberty gene in cotton for glufosinate resistance, which are both deregulated events in the United States. The field trials were carried out successfully, but because of the slow process, the products were no longer of commercial interest by the time they were approved. University Del Valle of Guatemala (UVG) developed ring-spot resistant papaya which has not received approval to be tested in the field. From 2012 to 2013, Herculex corn (Bt, RR) was tested on the Southern coast of Guatemala. The Biosafety Committee approved the results of the trials given the reduction in pesticide application and weed control, resulting in positive agricultural impact without negative environmental impacts. Despite the promising results, commercialization is not yet an option. Field trial paperwork approval of the Herculex corn took almost two years.

In order to conduct field trials, interested parties must file a request with MAGA's Direction of Plant and Animal Genetics. The paperwork needs to include a risk analysis for the event and a botanic/biodiversity study for the crop. MAGA may consider additional requirements during the approval process prior to the approval, as it happened with approval of the Herculex field trial in 2012, when MAGA required an extensive study be done on the field-trial plot and surrounding areas to determine current species and risks for biodiversity.

e) **INNOVATIVE BIOTECHNOLOGIES:** Guatemala has not discussed options on innovative

¹ Decree 207-2014 text in Spanish:

http://186.151.231.80/CAPP/documentos/46/Politica_Nacional_de_Bioseguridad_de_Los_Organismos_vivos.pdf.

biotechnologies.

f) **COEXISTENCE:** The subject of coexistence has not been addressed by policy or regulatory means. At present, commercially available GE corn is most suitable for Guatemala's lowlands and not for the Western Highlands due to elevation. The lowland regions of Guatemala, mainly the Southern coast and the Northern department of Petén, have planted hybrid corn varieties for over 30 years and currently see the highest yields in the country. There are currently no GE corn options for the Western Highlands.

Corn production in this area is marked by the use of saved or creole seed, with drastically lower yields compared to hybrids. Guatemala produces non-certified and certified organic agriculture. Coexistence of agricultural technologies has not been addressed, though there is a widespread belief that organic agriculture strengthens biodiversity while GE plants harm biodiversity.

g) **LABELING:** Guatemala is a member of the World Trade Organization (WTO) and participates in Codex Alimentarius. Guatemala largely implements Codex guidelines regarding food safety and standards. The food processing industry is openly opposed to the labeling of GE food products. The National Council of Protected Areas (CONAP) insists on labeling, but no regulation is in place.

h) **MONITORING AND TESTING:** Guatemala does not actively test for GE traits in imports or exports. A few years ago, some European buyers complained about traces of GE traits in Guatemalan honey. The apparent traces were connected to GE corn meal used in the bees' diet.

i) **LOW LEVEL PRESENCE (LLP) POLICY:** No policy in place.

j) **ADDITIONAL REGULATORY REQUIREMENTS:** There are no additional regulatory requirements beyond GE crop approval requests, prior to field-trial approvals. As explained in d) Field Testing, a biodiversity baseline can be required as part of the risk analysis.

k) **INTELLECTUAL PROPERTY RIGHTS (IPR):** IPR in Guatemala has gone through several amendments following the negotiation of free trade agreements. As a result of such commercial engagement, Guatemala became a member of the International Union for the Protection of New Varieties of Plants (UPOV) in 2009. The UPOV law in Guatemala was temporarily approved by Congress in June 2014. Prior to entering into force, Congress disapproved the law, due to significant opposition from environmental, social, indigenous groups, and activists, who discouraged plant protection rights, under the misguided perception that the UPOV law negatively impacted native plant species.

j) **CARTAGENA PROTOCOL RATIFICATION:** The Guatemalan Congress approved the Cartagena Protocol in 2003 by Legislative Decree 44-03. The Protocol took effect in January 2005. The point of contact for the Cartagena Protocol in Guatemala is the Technical Office for Biodiversity (OTECBIO), which is part of the Council of Protected Areas (CONAP). CONAP received support from the President of Guatemala to approve the "GMO Biosafety National Policy 2013-2023", via the publishing of Presidential Decree 207-2014. The policy mandates CONAP to coordinate regulatory efforts with the different ministries, such as Ministries of Agriculture, Environment, and Health.

In 2015, CONAP proposed a GMO Biosafety Regulation, as a Presidential Decree, in response to the

already approved National Biosafety Policy. The regulation proposal has yet to receive final approval of stakeholders. Both the private sector and academia have concerns that the new proposal would create unnecessary, unscientific barriers for biotechnology. At the same time, environmental and indigenous groups consider the introduction of biotechnology a risk to their communities. The proposal goes beyond the Cartagena Protocol, proposing general labeling and the inclusion of derived products.

k) INTERNATIONAL TREATIES/FORA: Guatemala is a member of the World Trade Organization (WTO), the World Organization for Animal Health (OIE), International Plant Protection Convention (IPPC), CODEX Alimentarius, and the International Union for the Protection of New Varieties of Plants (UPOV). Given budgetary constraints, Guatemala's participation in international fora is limited.

Guatemala actively participates in the UN climate change meetings (COP) and CONAP also attends the UN conference on biological diversity (COP-MOP). CONAP's position, which does not represent the country's position, is consistently aligned with a restrictive approach towards GE plants and animals, following precautionary principle and consistent with the Biodiversity Agreement and other related agreements.

l) RELATED ISSUES: Guatemalan farmers support the adoption of biotechnology, especially the commercial corn producers. They point to a lack of competitiveness compared to their Honduran neighbors. Honduras has been producing higher quality corn (low grain damage with low aflatoxin and mycotoxin levels) and at lower prices for the past ten years with the help of biotechnology. Because of this, the Guatemalan food industry and corn flour producers prefer Honduran corn. Fumonisin and aflatoxin levels in Guatemala are 10 to 50 times above world average levels. This issue of high mycotoxin levels in Guatemala is just starting to become a health concern. The World Health Organization recommends planting transgenic Bt maize for fumonisin control². The Government of Guatemala is not considering this recommendation as an option, despite evidence³ showing that stunting in Guatemala may be correlated with mycotoxin contamination in corn, the staple of the Guatemalan diet.

PART C: Marketing

a) PUBLIC/PRIVATE OPINIONS: Opinions about biotechnology have grown more educated with time. Guatemalan researchers at the public and private universities support the technology. The San Carlos National University is against agricultural biotechnology as evidenced by its strong opposition to the UPOV law approved by Congress and mischaracterized as a GMO law proposal. In the productive agricultural and industrial sectors there is a clear position on the use of food technologies that increase productivity and food security. The government has not taken an official position aside from CONAP. There are a number of active organizations that oppose biotechnology, such as conservation and environmental groups, subsistence farmer and indigenous groups, and human rights groups.

b) MARKET ACCEPTANCE/STUDIES: Guatemala has not carried an assessment of market acceptance of GE plants or products used in the textile or food industries. The consumers are more concerned with food prices than the technologies used in its production.

² World Health Organization publication No. 158 – “Improving Public Health through Mycotoxin Control”

³ Ron Riley, USDA Agricultural Research Service, 2014

CHAPTER 2: ANIMAL BIOTECHNOLOGY

PART D: Production and Trade

- a) BIOTECHNOLOGY PRODUCT DEVELOPMENT: Guatemala has no GE animal research or development.
- b) COMMERCIAL PRODUCTION: Guatemala has no production of GE animals.
- c) BIOTECHNOLOGY EXPORTS: Guatemala is not a GE animal exporter.
- d) BIOTECHNOLOGY IMPORTS: Guatemala has not imported nor shown interest in importing GE animals.
- e) TRADE BARRIERS: Unknown.

PART E: Policy

- a) REGULATORY FRAMEWORK: Guatemala has not discussed GE animal regulation.
- b) INNOVATIVE BIOTECHNOLOGIES: Guatemala has not discussed innovative biotechnologies.
- c) LABELING AND TRACEABILITY: Guatemala has not started to discuss GE animals, in general.
- d) INTELLECTUAL PROPERTY RIGHTS (IPR): Guatemala has no regulations in place for GE animal IPR.
- e) INTERNATIONAL TREATIES/FORA: As member of the WTO, Guatemala reports to the OIE and follows its guidelines. CONAP represents Guatemala at the COP-MOP meetings.
- f) TRADE BARRIERS: Guatemala has a de facto moratorium on GE materials, including animals.

PART F: Marketing

- a) PUBLIC /PRIVATE OPINIONS: Academia has shown interest in GE mosquitoes, in response to malaria control, but has not considered raising the inquiry with the government so far. Active organizations have not raised concerns on GE animals.

b) MARKET ACCEPTANCE/STUDIES: There have not been assessments on potential market acceptance of GE animals.