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Honduras

Agricultural Biotechnology Annual

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Report Highlights:

Honduras allows commercial production and field trials of genetically engineered (GE) crops. In 2014, there were 34,000 hectares of commercial GE corn varieties planted, as well as several field trials. Multi-trait "stacked" events are already in the semi-commercial and commercial stages.

Section I. Executive Summary:

Honduras allows field-testing and commercial production of genetically engineered (GE) crops. At present, Honduras produces commercially (MON810), Roundup Ready (RR) (NK603), Herculex I, VTPRO (MON 89034) and (MON 88017). Honduras produces "stacked" events (MON 89034 + MON 88017) in the commercial phase; and in the semi-commercial stage (MON 89034 + NK603 + TC1507).

In 2014, commercial GE corn was 34,000 hectares (ha.) in Honduras. There was a slight decrease compared to the previous year due to the drought and land used for African Palm and sugarcane instead of corn. Farmers plant GE corn in seven Departments in Honduras. GE corn is not planted in the Departments of Intibucá, Lempira, Gracias a Dios, and in the municipality of Pespire, Choluteca, as these communities demanded that GE corn not be planted there. Additionally, commercial production of GE corn has been restricted to areas away from native corn stocks. It should be noted that the areas of the country that do not allow GE corn are known to have high levels of poverty. Preliminary data from producers indicate that the per hectare maximum traditional corn yield is 4 metric tons, hybrid yield is 9 metric tons, and GE yield is 10.3 metric tons.

Honduras' biotechnology system is sanctioned by the Phytozoosanitary Law of the Secretariat of Agriculture and Livestock (SAG) and is regulated by the Biosecurity Regulation with Emphasis in Transgenic Plants. As part of Central American-Dominican Republic Free Trade Agreement (CAFTA-DR), the Phytozoosanitary Law was reviewed and modified. Honduras ratified the Cartagena Protocol in September 2008. The Honduran Congress approved the Law for the Protection of New Varieties of Plants in 2012.

The biosecurity regulation assigns SAG's National Service of Plant and Animal Health (SENASA) as the responsible agency for creating the regulatory framework for agricultural biotechnology. A special committee, the National Committee of Biotechnology and Biosecurity (NCBB) composed of technical scientists from ten public and private sector institutions, evaluates requests, makes scientific analysis, and advises SENASA in the decision making process.

Honduras' corn seed is sold within the domestic market for the agroindustry and is exported to Colombia and the United States. Honduras imports corn and soybeans from the United States to supply its poultry, livestock, shrimp, and tilapia industries.

Section II. Author Defined:

REPORT OUTLINE

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Section II: Plant and Animal Biotechnology

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PART A: Production and Trade

PART B: Policy

PART C: Marketing

PART D: Capacity Building and Outreach

CHAPTER 2: ANIMAL BIOTECHNOLOGY

PART E: Production and Trade

PART F: Policy

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PART H: Capacity Building and Outreach

CHAPTER 1: PLANT BIOTECHNOLOGY

PART A: PRODUCTION AND TRADE

a) PRODUCT DEVELOPMENT: Honduras has the following current GE crop under development, which may be commercialized in the coming year.

Developer:	DOW AGROSCIENCE		
Traits:	MON 89034 + NK603 + TC1507		
Stage of Development:	Semi-commercial		
Commercial Name:	Power Core	Area:	15 hectares

b) COMMERCIAL PRODUCTION: Honduras allows the commercial cultivation of GE crops, including GE for seed production. Authorizations for planting do not have an expiration date. The commercial cultivation of GE crops is for both food/feed consumption and for seed production.

GE corn is planted in the Departments of Francisco Morazán, Comayagua, Olancho, La Paz, Valle, Yoro, and El Paraíso. GE corn is not planted in the Departments of Intibucá, Lempira, Gracias a Dios, and in the municipality of Pespire, Choluteca, as these communities demanded that GE corn not be planted there. Additionally, commercial production of GE corn has been restricted to areas away from native corn stocks.

c) EXPORTS: Honduran exports GE corn seeds to Colombia and the United States. The export documentation declares the content of GE material. The product exported to the United States receives the approval from the U.S. regulatory system.

d) IMPORTS: GE crops, GE processed products, and GE seeds are imported directly into the country. Honduras imports corn and soybeans from the United States that include GE grains in support of its poultry, livestock, shrimp, and tilapia industries. In Calendar Year (CY) 2014, Honduras imported from the United States mostly yellow corn valued at US$97.3 million. Imports of soybean meal from the United States reached a record high of US$98.5 million. During 2014, Honduras imported GE yellow corn seeds from Argentina. This year, there are no recorded imports.

e) FOOD AID RECIPIENT COUNTRIES: Honduras has been a food recipient country since 1999. The Government of Honduras (GOH) has accepted U.S. food donations of soybean meal and yellow corn for the agroindustry. There are no issues related to biotechnology that impede the importation of food aid.

PART B: POLICY

a) REGULATORY FRAMEWORK: The opening of the country to biotechnology began when the Standard Fruit Company submitted a request to evaluate GE banana plants in 1996. As there were no regulations related to biotechnology at the time, the Seeds Certification Department of SENASA

initiated the "Biosecurity Regulation with Emphasis on Transgenic Plants." The regulation was approved by the GOH in 1998 through Agreement No.1570-98. The legal basis for this regulation is the Phytozoosanitary Law of 1994. As part of CAFTA-DR, the Phytozoosanitary Law was reviewed and modified by Decree No. 344-2005 published in 2006.

The Biosecurity Regulation with Emphasis in Transgenic Plants makes SENASA responsible for the regulatory framework for agricultural biotechnology, including GE product import requests, field testing, and commercialization requests for GE crops.

ii. **Role and membership of the National Committee of Biotechnology and Biosecurity**: The Biosecurity Regulation with Emphasis in Transgenic Plants provides the procedures to evaluate a request and assigns the scientific analysis to the National Committee of Biotechnology and Biosecurity (NCBB). The NCBB was created in 1998 to provide advice to SENASA in the decision-making process. The Committee is composed of technical scientists from the following ten public and private institutions:

- National Service of Plant and Animal Health (SENASA), Secretariat of Agriculture and Livestock (SAG)
- Directorate of Science and Agricultural/Livestock Technology (DICTA)/SAG
- Focal Point of the Codex Alimentarius in SAG
- Secretariat of Public Health
- Secretariat of Energy, Natural Resources, Environment and Mines (MI AMBIENTE)
- Competitiveness and Innovation Directorate
- National University of Honduras (UNAH)
- Honduran Foundation for Agricultural Research (FHIA)
- Pan American School of Agriculture - "Zamorano"
- Standard Fruit Company

iii. **Assessment of political factors:** After the NCBB provides a scientific recommendation, the political decision for an approval of an event, and its commercialization, is with the General Director of SENASA. The legal grounds of the Phytozoosanitary Law of 1994 modified by Decree No. 344-2005 published in 2006, and the regulation with Emphasis in Transgenic Plants, are to provide the General Director of SENASA reliable tools for the field trials, semi-commercialization, and commercialization of GE crops.

iv. **Distinctions between the regulatory treatment of the approval for food, feed, processing, and environmental release**: Honduras does not have distinctions between food and feed regulations. The exceptions are the ones mentioned in the Cartagena Protocol.

v. **Pertinent and Pending Legislation**: The commercialization of GE products in Honduras does not have a potential that may affect U.S. exports. This is based in the legal framework already approved, the acceptance of the agroindustry, and the consumers of the GE products from the United States. The Law for the Protection of New Varieties of Plants was approved by Decree 21-2012 of the Honduran Congress in May 2012 and by the Honduran President in 2014. SENASA already wrote the regulation

of this Law in 2013. Currently, the regulation is pending for signature of the President of Honduras in order to have the publication in the official Gazette.

vi. **Timeliness for Approvals**: The process for the commercialization of an event has various stages: field test, pre-commercial, and commercialization. The regulation for biosecurity indicates that the NCBB should provide an answer to a request within 90 days. The estimated time until commercialization varies according to the questions or doubts that the NCBB raises. In some cases, the NCBB requests more information from field tests as part of the pre-commercial stage.

After the test stage is completed, the NCBB can advise SENASA to extend the pre-commercial area from one hectare up to 500-600 hectares, depending on the company's request. The NCBB recommends companies carry out field tests within normal production cycles: the first cycle of planting begins in May or June and the second cycle begins in August or September.

After the NCBB reaches a consensus, provides a scientific recommendation and forwards the decision for an approval of an event and its commercialization to the General Director of SENASA. The Director of SENASA notifies the resolution and findings of the NCBB to the requesting company.

vii. **Legislation or regulation is not in place**: Not applicable.

b) **APPROVALS**:

Table 1. Approved Crop/Events

Approval Year	Company	Crop	Event	Type of approval	Commercial Cultivation
2001	Monsanto	Corn	MON 810 & NK 603	Commercial	Feed consumption & seed production
2010	Pioneer	Corn	TC 1507	Commercial	Feed consumption & seed production
2011	Bayer Cropscience	Rice	LLRice62	Commercial	Food consumption
2012	Monsanto	Corn	MON 89034	Commercial	Feed consumption & seed production
2013	Monsanto	Corn	MON 88017	Commercial	Feed consumption & seed production
2013	Monsanto	Corn	MON 89034 + MON 88017	Commercial	Feed consumption & seed production

Source: SAG's National Service of Plant and Animal Health (SENASA), Seeds Department

c) **FIELD TESTING**: Honduras currently allows field-testing and commercialization of GE crops. The requirements to request field testing and commercial liberation of an event are based on the Phytozoosanitary Law and the Biosecurity Regulation with Emphasis in Transgenic Plants. The process

is the following: (1) a company submits a request to SENASA; (2) SENASA's Director summons the NCBB to review the request; and (3) each institution in the NCBB carries on its analysis and depending on issues raised during the analysis, they continue to meet until a consensus is reached. The area for the field test is usually conducted on one hectare of land.

d) STACKED EVENTS: Honduras approved stacked events since 2010. If an event is already registered individually, it doesn't need to be registered again when is part of a stack. The NCBB requests that a risk analysis of the stack has to be reported to the Biosafety Clearing House of the Cartagena Protocol.

e) ADDITIONAL REQUIREMENTS: After an event has been approved to be commercialized it needs to be registered at the Seeds Department of SENASA.

f) COEXISTENCE: GE corn is not planted in the Departments of Intibucá, Lempira, Gracias a Dios, and in the municipality of Pespire, Choluteca, as these communities requested that GE corn not be planted there. Additionally, commercial production of GE corn has been restricted to areas away from native corn stocks.

g) LABELING: SENASA requires labeling for GE corn seed for planting. It does not require labeling for bulk product, feeds or packaged foods.

h) TRADE BARRIERS: None

i) INTELLECTUAL PROPERTY RIGHTS (IPR): The Law protects intellectual property rights of the developer of new varieties and the variety itself. This is done through the Law for the Protection of New Varieties of Plants approved by Decree 21-2012 by the Honduran Congress in May 2012 and signed by the President of Honduras in 2014.

j) CARTAGENA PROTOCOL RATIFICATION: The Honduras Congress ratified the Cartagena Protocol on Biosafety in September 2008.

k) INTERNATIONAL TREATIES/FORA: Honduras complies with the International Union for the Protection of New Varieties of Plants (UPOV). UPOV is an intergovernmental organization established by the International Convention for the Protection of New Varieties of Plants. The Convention promotes an effective system of plant variety protection, with the aim of encouraging the development of new varieties of plants, for the benefit of society. Honduran officials normally participate in meetings of international standard-setting bodies related to biotechnology.

l) RELATED ISSUES: Expanded use of biotechnology has the potential to benefit Honduran society. In 2014, across the country, there are about 34,000 commercial hectares planted with GE corn. There has been a slight decrease compared to the previous year due to the effects of the drought and land used for planting African Palm and sugarcane instead of corn. The remaining areas have about 175,000 hectares of subsistence farmers. These farmers' use conventional varieties (non-hybrids) seeds saved from previous harvests. This traditional practice affects their food security since they have fewer yields per hectare. Preliminary data from producers indicate that the per hectare maximum traditional corn yield is 4 metric tons, hybrid yield is 9 metric tons, and GE yield is 10.3 metric tons.

History of Biotechnology in Honduras:

Approval Year	*Company*	*Crop*	*Commercial Name*	*Event*	*Type of Approval*
1997	Syngenta	Banana		H17, H20, H51, H53	Field trial
1998	Monsanto	Corn		MON 810 & NK 603	Field trial
2001	Monsanto	Corn	YieldGard & Roundup Ready	MON 810 & NK 603	Commercial
2002	Monsanto	Soybeans		40-3-2	Field trial
2003	Syngenta	Banana		40-3-2	Field trial
2006	Pioneer	Corn		TC 1507	Field trial
2006	Monsanto	Corn		MON 88017	Field trial
2007	Pioneer	Corn		TC 1507	Field trial
2008	Monsanto	Corn		MON 89034	Field trial
2009	Pioneer	Corn		TC 1507	Semi-Commercial
2010	Pioneer	Corn	Herculex I	TC 1507	Commercial
2010	Monsanto	Corn	VTPRO	MON 89034	Semi-Commercial
2011	Bayer Cropscience	Rice		LLRice62	Rough rice authorized not for planting only for human consumption
2012	Monsanto	Corn	VTPRO	MON 89034	Commercial
2013	Monsanto	Corn		MON 88017	Commercial
2013	Monsanto	Corn		MON 89034 + MON 88017	Commercial
2014	Dow	Corn	Power Core	MON 89034 + NK 603 TC 1507	Semi-Commercial

Source: SAG's National Service of Plant and Animal Health (SENASA), Seeds Department

m) **MONITORING AND TESTING**: Not applicable.

n) LOW-LEVEL PRESENCE POLICY (LLP): Not applicable**.**

PART C: MARKETING

a) MARKET ACCEPTANCE: Market acceptance related to the sale and use of GE plants and products is favorable. The fruit and vegetable producers that grow products for export find it very useful to rotate their crops with GE corn. This assures them that the fruit and vegetables exported are free of pesticide residues and pests. Producers who use GE crops see a great difference in the increase of their yields. The increase in yields benefits the consumers in their food security, since their staple food is available.

b) PUBLIC/PRIVATE OPINIONS: There are small groups that make negative campaigns against GE crops. These groups have always been against transnational companies that manage seeds, agrochemicals, and mining. Please refer to Market Acceptance in part C a) above.

c) MARKETING STUDIES: Rogelio Trabanino of Zamorano University and Carlos Almendares of the Seeds Department of the Plant Health Division of SENASA in Honduras wrote the following guidelines that are useful for firms looking at Honduras as an export market for GE crops. Companies requesting a risk evaluation for a test trial or the commercial liberation of a GE product must provide the following information to the Biotechnology and Biosafety Committee:

- *Personnel involved*. Names, addresses, and telephone numbers of the people that have developed or supplied the event.

- *Purpose of the evaluation*. Provide a detailed description of the purpose of the introduction of the event, including the experimental design and/or the proposed production.

- *Description of the genetic material*. Provide a description of the desired or real characteristic of the modified genetic material. Also include how the characteristic differs from the parent non-modified organism (i.e., morphologic or structural characteristics, activities and physiological processes, number of copies of the material inside of the recipient organism (integrated or extracromosomic) products and secretions and characteristics of growth.

- *Transformation methods*. Country and place where the parent plant, the receptor organism and the vector were collected, developed and produced. Transformation methods and selection processes employed.

- S*ystem used to produce the event*. Provide a detailed description of the molecular biology of the system (For example: donor-recipient-vector) that will be used to produce the event.

- *Place of evaluation.* Country and geographic location of the evaluation, specifying the exact description of the areas to be evaluated.

- *Biosecurity measures*. Provide a detailed description of the processes and security measures that have been used or will be used in the country of origin, the countries that will be in transit and in Honduras, to prevent the contamination, liberation and dissemination of the production of the donor organism, the recipient organism and the vector, the constituent of each event and the event.

- *Programmed destination.* Provide a detailed description of the programmed destination (including the final destination and all the intermediary destinations), uses, and/or distribution of the event (Example: greenhouses, laboratories, or place of the growth chamber, site of the field test, site of the pilot project, production, spreading, manufacturing site, proposed site of sale and distribution).

- *Containment measures*. Provide a detailed description of the procedures, processes and security measures proposed that will be used to prevent the escape and spreading of the event in each of the programmed destinations.

- *Method of final disposal*. Provide a detail description of the proposed method for the final refusal of the event.

PART D: CAPACITY BUILDING AND OUTREACH

a) ACTIVITIES: In May 2012, the first International Conference on Agriculture and Environment (ICAE) took place at Zamorano University. The ICAE was organized by Zamorano with the support of regional and national host organizations such as: the Ministry of Agriculture and Livestock (SAG), the Ministry of Natural Resources and Environment (SERNA), the Inter-American Institute for Cooperation in Agriculture (IICA) and the Central America Integration System (SICA). The collaborating institutions were: the International Food Policy Research Institute (IFPRI), the Service for the Acquisition of Agri-biotech Applications (ISAAA), the Public Research and Regulation Initiative (PRRI), the United States Department of Agriculture (USDA), and the Department of State.

The ICAE's objective was to strengthen the development and safe use of agricultural biotechnology as a key tool to improve productivity and competitiveness in the agricultural sector. ICAE aimed to discuss

factors such as: "the ability of the biotechnology sector to deliver appropriate technologies to farmers, while ensuring environmental protection, the development of a functional biosafety system that contributes to agricultural development and environmental protection efforts, the need to address a shared vision for implementing the agricultural and environmental agenda as it relates to biosafety and biotechnology."

The Conference brought Ministers and Vice-Ministers of Agriculture and Environment of the Central America region. ICAE noted that "decision makers often face conflicting views on policy issues, such as the science-based versus precautionary approach, and economic development versus environmental conservation". ICAE pointed out that "the discussion needs to be firmly based on facts, scientific evidence and analysis of policy issues relevant to the region.

During the three days of ICAE, a wide range of presentations were given to representatives of the Central America Agricultural Council (CAC), the Central American Commission for Agriculture and Environment (CCAD), regulators, research and technology representatives from the Ministries of Agriculture and Environment of Central America, national and international agricultural and environmental agencies, universities, NGOs, and industry representatives. The speakers were scientists and regulators with international experience from Argentina, Brazil, Colombia and the United States.

b) STRATEGIES AND NEEDS: ICAE proposed that "a shared vision is critical to Latin America's ability to implement the necessary paradigm shift towards agricultural food/fiber/energy systems that successfully ensure food security and foster economic growth, while caring for the environment"

ICAE also indicated "the need for Central America, to start discussions in order to devise a platform to advance common interests in international discussions, while simultaneously introducing innovative domestic approaches to biotechnology development and innovation. This requires collaboration and agreement among regional actors and competent authorities within countries. The scientists and regulators that attended ICAE wrote the "Zamorano Declaration" which in summary draws attention to:

"Central America, as the other countries in Latin America, is in a crossroads. It is where the agricultural production for food, bioenergy, fiber and other biomass converge with poverty, food insecurity and loss of biodiversity. Latin America will face in the XXI century a similar situation that the world lived in the XX century, when the food production was slower than population growth, causing massive problems of food insecurity. The challenge of global agriculture for the next decades is to produce 80 percent more food, while caring for the environment. The goal will be difficult to achieve because agriculture will confront complex challenges including accelerated climate change, water deficit and urban population growth. The world will again face a severe crisis of food. We should stand facing challenges with technology and not with ideology. There are two big obstacles that should be analyzed by decision makers:

1) The little investment and lack of tangible incentives for research, agricultural development and technological innovation.

2) The existence of outdated regulations that make the application of new technologies difficult.

These obstacles, besides other structural ones, endanger the ability of our countries to face food

insecurity and the protection of the environment.

The specific needs, strategies, and new activities of Honduras for agricultural biotechnology identified by scientists and producers using biotechnology are described below:

1. Continued education and training activities for the GOH, the private sector, agricultural technical schools, universities, producers, exporters and the public at large in order to:

a. Address the food crisis and serve as a development tool by increasing agricultural productivity and food security, reducing crop input costs, and helping to alleviate poverty.

b. Acknowledge the global scientific consensus on the safety of eighteen years of research on biotechnology products.

c. Address the environmental gain from decreased pesticide use and reduced soil erosion, while stressing the potential for improved nutrition and disease prevention.

d. Raise the capacity to abide by global trading rules and apply science-based evaluation of agricultural production methods and regulations.

2. Strengthen the alliance between the private sector and the GOH to:

a. Preserve native varieties of corn through the establishment of germ plasma banks or the financing of the production of local varieties.

b. Establishment of pilot projects in key regions of Honduras in which growers could see and compare the various qualities of GE corn (e.g. resistance to pests/disease and increased yield potential/profitability) in comparison to non-GE corn.

c. Bolster food security by using the positive impact of GE crops on costs-of-production and yields, reduced use of agrochemicals, and research and development that can promote agricultural growth and reduce rural poverty.

d. Strengthen competiveness and food safety for exporters to comply with CAFTA-DR and other trade agreements by using corn within fruits and vegetable crop rotations.

e. Enhance the positive benefits of GE crops to human health, e.g., the ability of GE corn to decrease the presence of fumonisins and aflatoxins caused by conventional corn. The rotting of the ears of corn comes from a fungus. This fungus does not grow in GE corn. There is a need of studies that research the increase of stomach cancer and spina bifida in population.

3. Following up on the achievements and agreements of ICAE, the agriculture and environmental governmental agendas need to work towards clear biosafety regulations that promote sustainable agricultural development.

The Government of Honduras (GOH) has provided training, seminars and conferences to groups such as

the Global Fund of Environment of the United Nations, universities, NGOs, Honduran and Central American producers, members of the National Congress and Ministers of Agriculture and Environment of Central America. The GOH has participated in congresses and seminars to share the country's experience and benefits with GE with the Central American countries and India. Honduran official delegations have participated during many years in the international meetings of the Cartagena Protocol and the Biosafety Clearing House.

CHAPTER 2: ANIMAL BIOTECHNOLOGY

PART E: PRODUCTION AND TRADE

a) BIOTECHNOLOGY PRODUCT DEVELOPMENT: In Honduras, there are no agricultural products that have been developed or derived from animal biotechnology.

b) COMMERCIAL PRODUCTION: Not applicable**.**

c) EXPORTS: Not applicable.

d) IMPORTS: Not applicable.

PART F: POLICY

a) REGULATION: Honduras is currently not developing regulations for GE animals or Cloning.

b) LABELING AND TRACEABILITY: Not applicable.

c) TRADE BARRIERS: Not applicable.

d) INTELLECTUAL PROPERTY RIGHTS (IPR): Not applicable.

e) INTERNATIONAL TREATIES/FORA: Not applicable.

PART G: MARKETING

a) MARKET ACCEPTANCE: Not applicable.

b) PUBLIC/PRIVATE OPINIONS: Not applicable.

c) MARKET STUDIES: Not applicable.

PART H: CAPACITY BUILDING AND OUTREACH

a) ACTIVITIES: Not applicable.

b) STRATEGIES AND NEEDS: Not applicable.