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Colombia remains open to new technologies

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Report Highlights:
Colombia remains open to the adoption of biotech-derived commodities. However, area planted of genetically engineered (GE) corn and cotton decreased this past year due to high production costs and lower international prices. The Constitutional Court ruled in favor of mandatory labeling of GE organisms in response to a lawsuit.

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Colombia is generally open to biotechnology. However, pending labeling legislation, as well as synchronicity issues that result from a fragmented internal approval process are causing regulatory uncertainty, and potentially hindering the adoption of new technologies.

The implementation of the U.S.-Colombia Trade Promotion Agreement (CTPA) propelled Colombia to become the second largest market in Latin American for U.S. agricultural exports. In 2015, trade values were above $2.4 billion. U.S. exports in GE derived agricultural products such as corn, cotton, soybeans, soybean meal, soybean oil, and distillers' grains were valued at $1.3 billion in 2015.

Parts of the Colombian agricultural biotechnology regulatory framework remain under review by the Government of Colombia (GOC). Colombia approved the Cartagena Protocol on Biosafety (CPB) in 2002. In 2005, Decree 4525 was published to implement the CBP. Since then, several other GOC regulatory measures were published to outline specific requirements and procedures for approving and using GE agriculture and derived products in Colombia. Colombia's biotechnology regulations are regularly reviewed and modified, providing opportunities to engage GOC regulatory agencies with technical outreach that facilitates the adoption of science-based regulatory policies.

The GOC has created three technical biotechnology committees to analyze environmental, biosafety and food safety impacts of biotech-derived products (see Part B, Policy). The MHSP issued Resolution 4254 establishing the requirements for labeling of foods derived from modern biotechnology. The resolution was implemented in June 2012. In addition, the GOC developed the Technical Annex to supplement resolution 4254, but internal GOC deliberations continue, and this has yet to be implemented In the meantime, on September 8, 2015, the Constitutional Court ruled in favor of mandatory labeling of GE organisms in response to a lawsuit attacking Consumer Law 1480, Article 24, which refers to labeling, but does not address GE labeling.

In 2002, GE cotton was the first GE plant cultivated on a non-restricted commercial basis in Colombia. The first GE corn traits were approved in 2007 and GE corn continues to surpass GE cotton adoption with area planted of 85,251 hectares in 2015. Also, GE Dutch blue carnations continue to be produced under greenhouse conditions for export to Europe and GE blue petal roses for exports to Japan.

Regarding animal biotechnology, Colombia continues to import GE vaccines for animal diseases (see appendix C). In addition, there seems to be an increased interest from overseas companies on accessing the Colombian market with GE mosquitoes.

Section II. Plant and Animal Biotechnology

CHAPTER I: PLANT BIOTECHNOLOGY

PART A: Production and Trade

a) Product Development

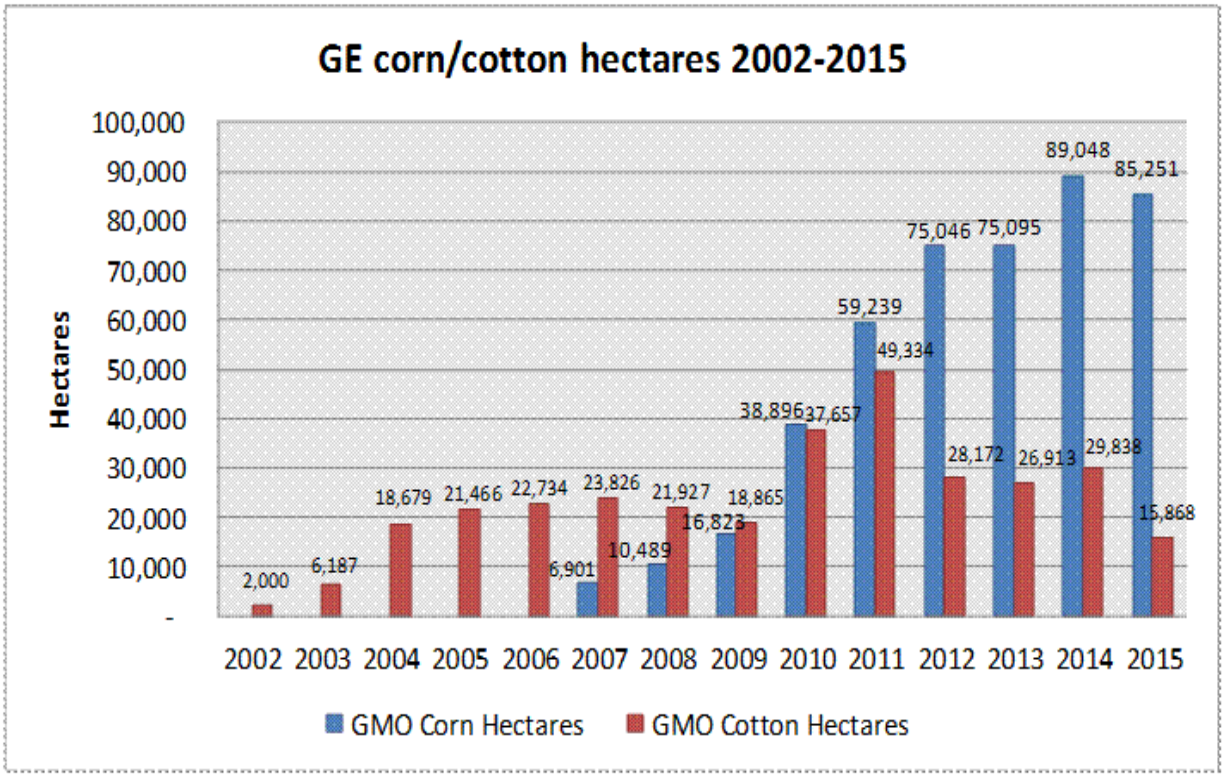
Colombia has not developed any biotechnology crops to date. There are several Colombian organizations conducting specific research projects. The Colombian sugar cane research center (CENICAÑA) is developing a sugar cane variety resistant to the yellow leaf virus. The International Center for Tropical Agriculture (CIAT) is researching GE rice, cassava and grass. The Colombian Coffee Research Center (CENICAFE) is conducting GE research on tobacco (nicotiana), the fungus Beaveria bassiana, and a coffee variety resistant to coffee borer (broca). The International Corporation for Biological Research (CIB) is investigating potatoes resistant to lepidopterous insects. Colombian universities and research institutes are working together to develop rice and potato biotechnology events. There is increasing GOC and farmer interest to expedite the development of biotechnology events that enhance competitive benefits for local crops that are sensitive to competition from imports. All varieties of events that are developed must go through the regulatory approval process whether intended as an ornamental, for human consumption and/or animal feed.

b) Commercial Production

Prior to 2006, the only non-restricted GE approval in Colombia was for the cotton varieties Bollgard and Roundup-Ready. In February 2007, the GOC approved the first stacked event, a cotton variety combining Bollgard and Roundup-Ready. The GOC also approved controlled planting of GE corn. In 2010, GE soybean production was approved for commercial cultivation, but has yet to be planted. Biotech blue carnations and blue petal roses are cultivated for solely export markets. Total area planted for these ornamental crops is 12 hectares. In 2015, Colombia planted 85,251 and 15,868 hectares of GE corn and cotton, respectively. Although GE corn planting decreased by 3,797, it continues to be the most widespread GE plant cultivated in Colombia (see Charts 1, 2, and 3). It represents 24% of the total area planted to corn. GE cotton area planted decreased dramatically by about 13,970 hectares. However, this was part of an overall decrease in cotton plantings, and GE crops still represent 77% of total area planted. GE technology continues to be adopted, but high production costs and lower international prices have discouraged greater adoption by farmers country wide.

In addition to the above-mentioned GE events, there are pending applications for several other crops that are in varying phases of approval (see appendices A and B).

Chart 1



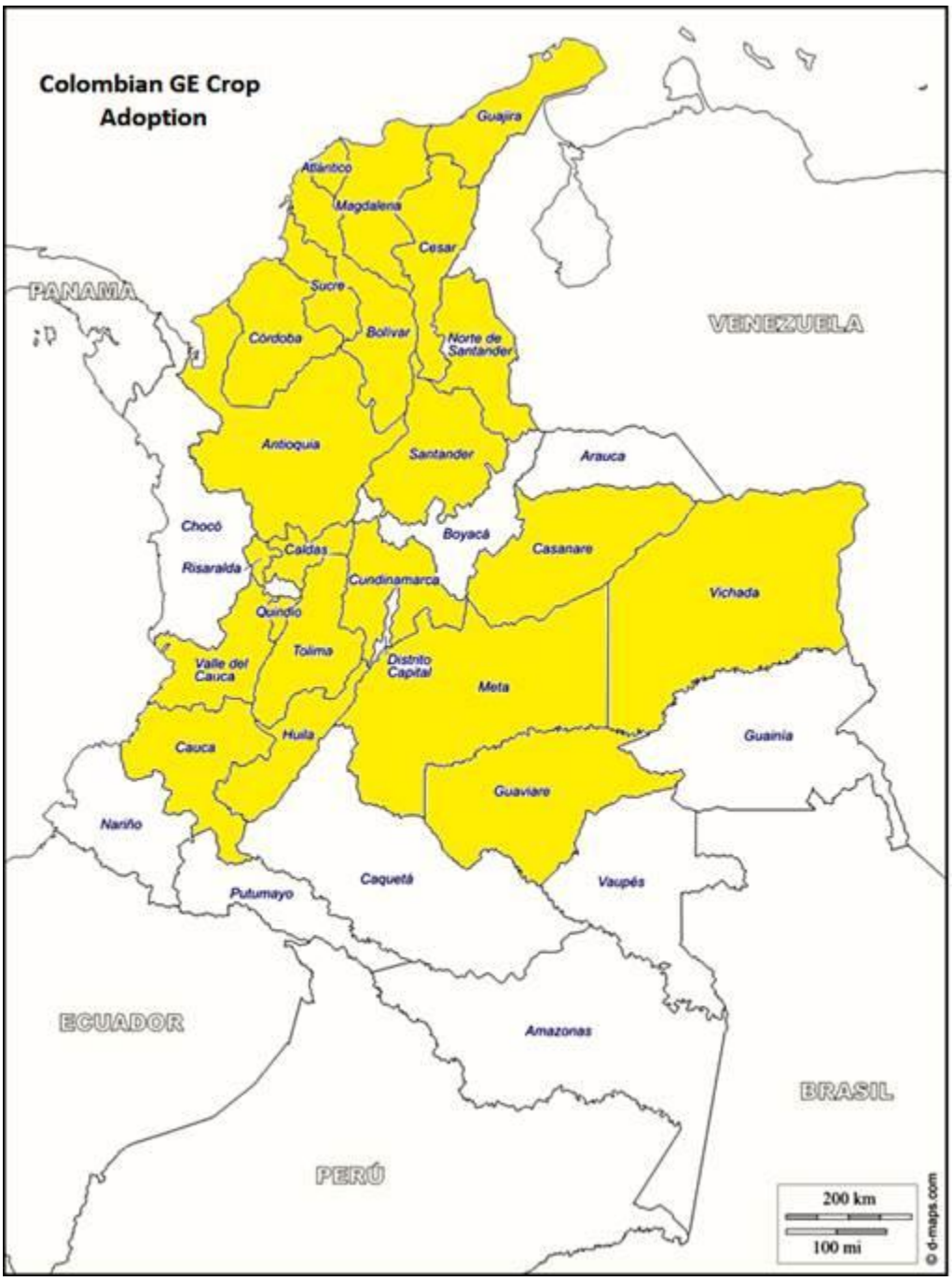
Data provided by ICA -Colombian Agricultural Institute

Chart 2

GE adoption per Department/Hectares			
Corn		Cotton	
Meta	26,416	Tolima	7,343
Cordoba	16,084	Cordoba	5,576
Tolima	15,504	Huila	1,454
Valle del Cauca	9,383	Bolivar	548
Vichada	5,311	Cundinamarca	471
Cesar	3,204	Sucre	362
Huila	2,234	Cesar	104
Risaralda	1,574	Guajira	10
Casanare	1,316		
Santander	884		
Sucre	871		
Quindio	631		
Cundinamarca	607		
Caldas	397		
Cauca	307		
Antioquia	304		
Bolivar	162		
Magdalena	23		
Atlantico	22		
Norte de Santander	12		
Guaviare	3		

Data provided by ICA -Colombian Agricultural Institute

Chart 3



c) Exports

Genetically engineered Dutch blue carnations are produced under greenhouse conditions for export to Europe and GE blue petal roses for exports to Japan. Area planted in 2015 for both Dutch blue carnations and blue petal roses remains unchanged at 12 hectares. One blue petal rose in the Japanese retail market has an estimated value of about $40-$50.

d) Imports

Genetically engineered seeds are imported mostly form the United States and occasionally from South Africa, Argentina and Australia (see appendices A and B).

e) Food Aid

Colombia receives limited food aid from the United States. Any food aid containing GE events must have regulatory approval in Colombia for human consumption.

f) Trade Barriers

Pending mandatory labeling requirements have the potential to destabilize Colombia's regulatory environment for GE products and to squander benefits for consumers and the agricultural sector. (See PART B, Section g).

PART B: Policy

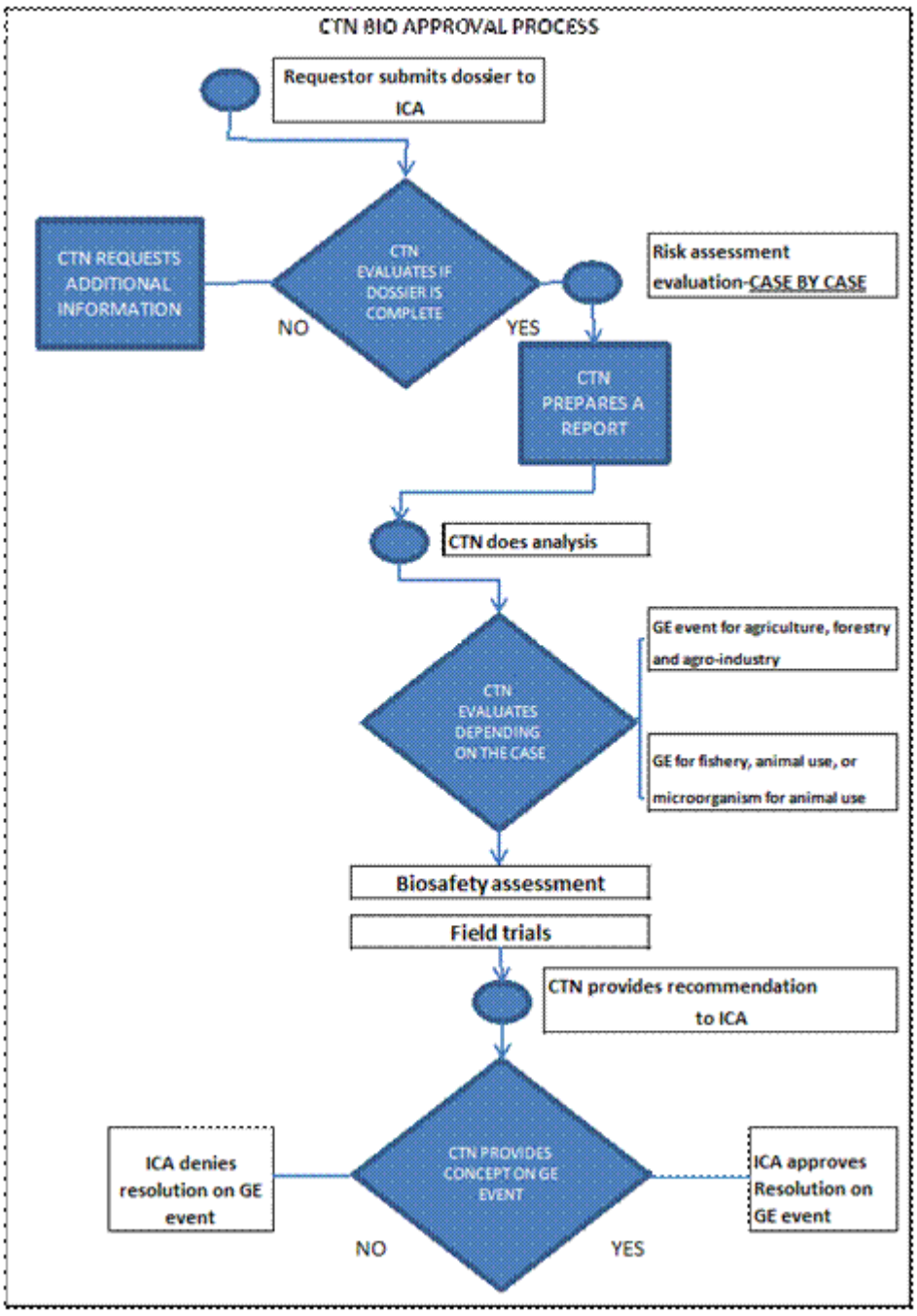
a) Regulatory Framework

The following Ministries are involved in the regulation of agricultural biotechnology production and imports:

- Ministry of the Environment, Housing and Territorial Development (MEHTD);
- Ministry of Health and Social Protection (MHSP);
- Ministry of Agriculture and Rural Development (MARD), through the Colombian Agricultural Institute (ICA);
- Colciencias (Colombian Science and Technology Agency);
- MHSP National Institute for the Surveillance of Food and Medicines (INVIMA);

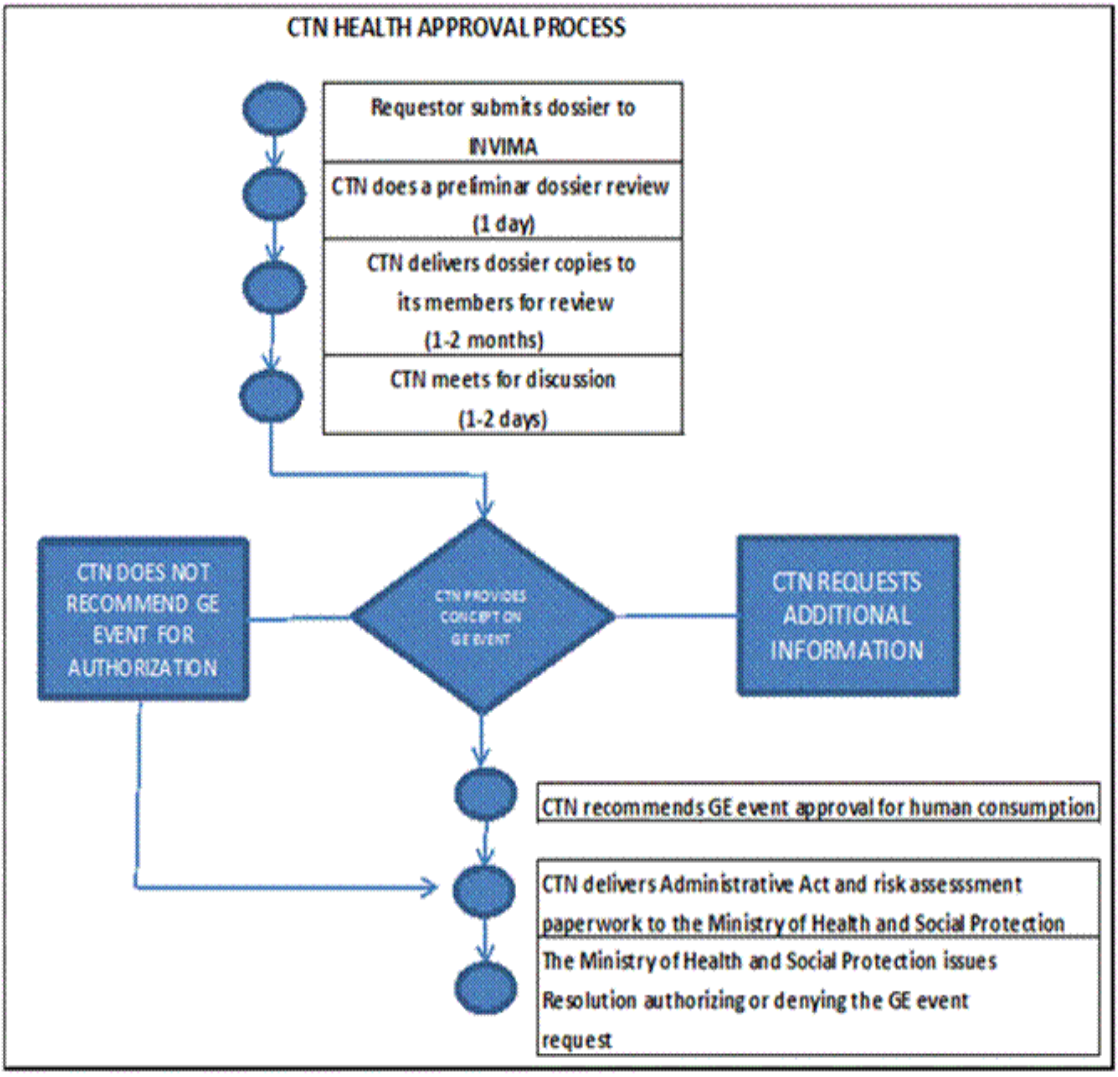
Decree 4525 of December 6, 2005, established three interagency committees composed of the above-mentioned Ministries that are responsible for biosafety issues and the evaluation and approval of biotech events. These committees are the:

National Technical Committee for Agriculture, Fishery, Forestry and Agro-industry (CTN-Bio): CTN-Bio's role is to assess GE events for non-food related GE products. Although the committee has been approving new-to-market GE products, the MEHTD has voiced concerns regarding the environmental impact of events. The time taken to conduct a risk assessment varies since all dissenting concerns by the different ministries must be resolved before a product is approved. The graph below illustrates the CTN-Bio approval process:



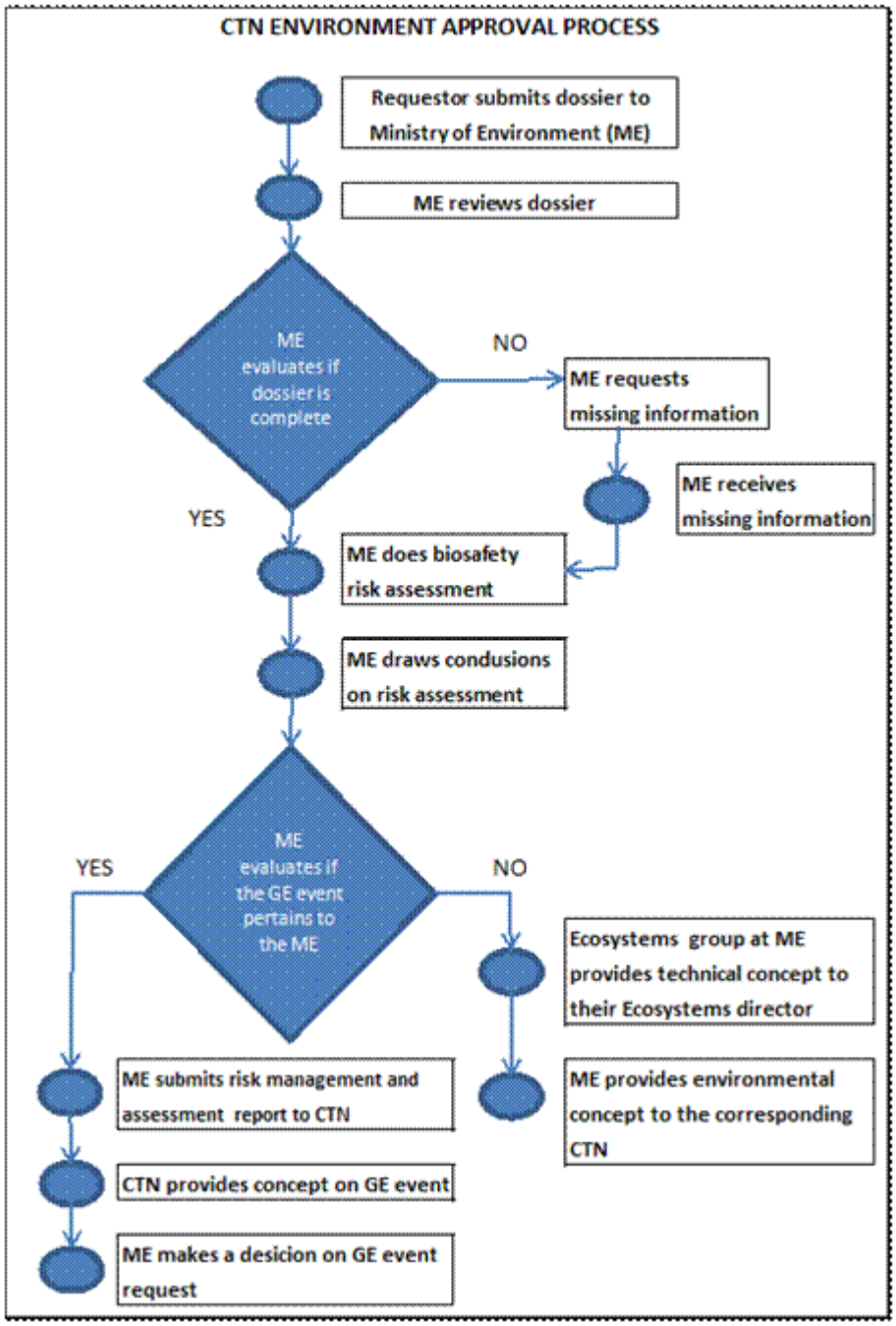
Source: BCH Colombia www.bch.org.co (July 2012)

National Committee for Health and Human Nutrition (CTN-Health): CTN-Health's function is to assess the impact GE products and by-products on human health. On February 1, 2007 the MHSP issued regulatory Resolution 227 to establish the functions of the committee. CTN-Health has submitted a number of recommendations for approval to the MHSP; however, the timeline for approvals is extensive. Colombian industry and the U.S. Government are requesting that the Ministry streamline the approval procedures with predictable timelines. The graph below illustrates the CTN-Health approval process:



Source: BCH Colombia www.bch.org.co (July 2012)

National Technical Committee for Environment (CTN-Environment): This committee's function is to assess GE events that may impact the environment. CTN-Environment has yet to receive any requests for review of GE events. However, in May 2010, the MEHTD issued regulatory Resolution 957 establishing procedures on the information companies must submit for evaluation and the Ministry's procedures of assessing GE events. The graph below illustrates the CTN-Environment approval process:



Source: BCH Colombia www.bch.org.co (July 2012)

b) Approvals

All GE events for commercial cultivation and/or environmental release must be approved by the GOC. All GE events must be approved individually and there is no process to review "stacked" events as a whole. The approval process for GE derived feed and food materials are completed by CTN-Bio and CTN-Health, and the committees' decision timelines are not coordinated. These parallel timelines can result in internal asynchronous approvals (see appendix B).

c) Stacked Events

Regarding "stacked" events, CTN-Bio requires additional or duplicative field testing. Even though the individual events may have already been approved, the "stacked" variety must independently go through the approval process. Stacked events (resistant to some lepidopteran pests and tolerant to Roundup herbicide) continue to be the most popular GE plant products cultivated in Colombia.

d) Field Testing

Colombia allows for field-testing for GE crop cultivation (see appendix A) after a risk assessment is submitted to CTN-Bio for review and subsequent approval.

e) Innovative Biotechnologies

Both academia and research centers have initiated some discussions around innovative technologies. The major challenge is for government officials to decide how these technologies may be regulated and if they should be covered by existing domestic legislation and regulation, or whether they should be considered under the GE umbrella.

f) Coexistence

ICA has carried out an evaluation of cross-pollination on cotton and found that both GE and non-GE crops do coexist. Regardless, farmers actively apply the practice of buffer zones or a natural barrier of fallow terrain between biotechnology and non-biotechnology crops in compliance with ICA resolution 682 of 2009 for cotton and 2894 of 2010 for corn. Both resolutions also require a 300 meter (984 feet) planting distance between GE and non-GE crops.

g) Labeling

There is some degree of uncertainty regarding the impact that GE labeling will have on the current GE regulatory framework, and on the use of GE technology in Colombia. The MHSP issued regulatory Resolution 4254 establishing the requirements for labeling of food derived from modern biotechnology in 2012. The resolution requires labeling information for product health and safety, such as potential allergenicity. Labeling must also address the functionality of the food, as well as the identification of significant differences in the essential characteristics of the food. In addition to Resolution 4254, the Colombian government drafted a Technical Annex to supplement the Resolution, but the Annex is still in internal discussion within the MHSP. There remains no indication when the Annex will be finalized and published/notified.

In the meantime, on September 8, 2015, the Constitutional Court ruled in favor of mandatory labeling of GE organisms in response to a lawsuit attacking Consumer Law 1480, Article 24, which refers to labeling, but does not address GE labeling. According to this decision, Congress is required to draft and implement legislation on mandatory labeling of GE organisms within two years to comply with the court's ruling. As of now, GE labeling relies on Resolution 4254. However, challenges may rise once Congress seeks to comply with the Court's ruling late in 2017.

Regarding labeling for imported GE materials (seeds or other plant reproductive materials and animal products), ICA issued regulatory Resolution 946, stating that imported GE derived materials should be labeled as "Genetically Modified Organisms" or, in Spanish, *Organismo Modificado Geneticamente*. This requirement is being justified under "consumer-right-to-know" principles.

h) Monitoring and Testing

In 2009, the GOC issued regulatory Resolution 682 requiring GE seed companies to adopt a life cycle stewardship approach to guide producers, specifically targeting GE cotton production. In September 2012, a resolution was issued for handling GE corn, outlining the regulatory expectations for farmers and GE seed companies. Both resolutions established a production and commercial road map for the two most widely grown GE crops in Colombia. Regarding testing, INVIMA is actively conducting port of entry testing at MHSP laboratories to assess imported GE commodities destined as raw material for food and feed and the potential for asynchronous, unapproved events in shipments. To date, there have been no detections of unapproved events.

i) Low Level Presence (LLP)

Industry and commodity exporters have expressed concerns that not all GE events traded in international commerce have been approved in Colombia. This could potentially delay shipments as a result of asynchronous approvals. The Annex will provide a LLP threshold to address that concern. The Technical Annex will supplement regulatory Resolution 4254 and require approval for all GE derived agricultural imports destined for human consumption. Considering the unpredictable and lengthy timeframe for GE approvals, the GOC has proposed a 5 percent LLP threshold to address asynchronous approvals. The Annex, however, remains in internal discussion/review. After finalizing the Annex internally, the MHSP will submit the regulatory policy for international comments for two months. The LLP threshold will only apply to food-use GE events and not for GE raw materials destined for animal feed.

j) Additional Regulatory Requirements

There are no additional requirements at this time

k) Intellectual Property Rights

Regarding intellectual property rights (IPR), Colombia follows the guidelines provided as a member of the following groups: the Convention for the Protection of Industrial Property, the General Agreement on Tariffs and Trade (GATT), the International Union for the Protection of New Plant Varieties (UPOV), the G3 Mexico, Colombia and Venezuela Agreement, and the Andean Pact. As a member of the Andean Pact, Colombia adopted regulatory Decision 351, *Common Provisions on the Protection of the Rights of Breeders of New Plant Varieties*, and regulatory Decision 391, *Common Regime on Access to Genetic Resources* (Hodson & Carrizosa, 2007).

l) Cartagena Protocol Ratification

As a signatory (and ostensibly the host) to the CPB, Colombia approved the Biosafety Protocol through Law 740 in 2002. To date, the regulations to implement the CPB and supporting laws are outlined in: Decree 4525 of December 6, 2005; ICA resolution 1063 of March 22, 2005; ICA resolution 000946 of April 17, 2006; MHSP resolution 0227 of February1, 2007; and, MEHTD resolution 957 of May 19, 2010.

m) International Treaties/Fora

Colombia plays an active role in the discussions of the CPB Conference of the Parties as a signatory. In addition to the CPB, Colombia is also a signatory to the International Treaty on Plant Genetic resources for Food and Agriculture, the International Plant Protection Convention (IPPC), and attends CODEX meetings to discuss issues on biotechnology. Most recently, Colombia joined the Global Low Level Presence Initiative to develop international approaches to manage LLP.

n) Related Issues

None.

PART C: Marketing

a) Public/Private Opinions

Although Colombia's approach to biotechnology has been favorable, some environmental NGOs are pressuring government officials to reject biotech-derived technologies. In fact, anti-biotech activists have pushed for mandatory GE labeling as well as other regulations, such as Decree 4525, which establishes three interagency committees responsible for biosafety issues and the evaluation and approval of biotech events, to destabilize the regulatory framework.

b) Market Acceptance/Studies

Biotechnology derived commodities have been used in Colombia for about 15 years. Public opinion and media coverage to date has been favorable of biotechnology and consumers have not voiced major concerns about products containing GE derived raw materials. The GOC's structure for biotechnology regulations is science-based for approving or rejecting new biotechnology events. The basic principle of the GOC is to adopt the technologies that may help the economic/social development of rural Colombia. Of the various ministries, the MEHTD has been the most critical of biotechnology approvals. In addition, some indigenous groups have been inspired by non-governmental organizations (NGOs) to oppose the introduction GE crops for cultivation and environmental release based on biodiversity concerns.

Regarding biotechnology related studies, an IFPRI study (Zambrano et al. 2011) on the economic benefits of cultivating GE cotton for women farmers indicated that they saved both time and money. The study helped highlight the role of women as practitioners and beneficiaries of biotech cotton production.

CHAPTER II: ANIMAL BIOTECHNOLOGY

PART D: Production

a) Product Development

According to GOC officials, there have been some research initiatives by universities on animal biotechnology. However, the high costs of this technology seem to be a key factor in discouraging more widespread adoption. Aquaculture could be a possible area for more animal biotechnology research, in addition to GE cattle, but funding will likely be the primary constraint.

b) Commercial Production

None.

c) Exports

None.

d) Imports

Colombia has focused on importing recombinant vaccines and diagnostic kits for animal diseases (see appendix C). Most recently, a company expressed interest in accessing the Colombian market with GE mosquitoes to control harmful insect populations. The technology will combat the Aedes aegypti, which is a vector of dengue, Zika, chikungunya, yellow fever and other arboviruses and will also assist with crop protection, specifically with medfly, as Colombian fruit exports are being badly hurt by damage from the pest.

e)Trade Barriers

None.

PART E: Policy

a) Regulatory Framework

The GOC regulatory framework for plant biotechnology also applies to animal biotechnology. Per Decree 4525, the CTN-Bio is the interagency committee responsible for the evaluation and approval of GE animal products after a risk evaluation is conducted by ICA.

b) Innovative Biotechnologies

See Part B, section e.

c) Labeling and Traceability

See Part B, section g.

d) Intellectual Property Rights (IPR)

No IPR regulation has been identified at this time.

e) International Treaties/Fora

Colombia is a signatory to the CPB and a member country to the World Trade Organization, International Organization for Animal Health and the Codex Alimentarius Commission. ICA is the point of contact on animal biotechnology issues.

f) Related Issues:

None

PART F: Marketing

a), b) Public/Private Opinions/ Market Acceptance, Studies

Public knowledge of biotechnology is mostly related to plants. Animal biotechnology is not well known and receives little media attention. Animal biotechnology is mostly related to assisted reproductive technologies.

APPENDIX A. COLOMBIA: CURRENT STATUS OF BIOTECHNOLOGY PRODUCTS FOR PLANTING

Crop	Requesting Company	New Characteristics of Biotechnology	Authorized Activity
Carnations ICA resolution 1219	Flores Colombianas Ltda. (Holland)	Blue Carnations	Approved in 2000 for commercial production of cut flowers for exports only (greenhouse conditions).
Carnations ICA resolution 3932 ICA resolution 3858	Flower Development (Holland)	Blue Carnations	Approved in 2008 for commercial production of cut flowers for exports only (greenhouse conditions).
Carnations ICA resolution 231 ICA resolution 3569	Suntory Holdings Limited	Blue Carnations	Approved for commercial production of cut flowers for exports only (greenhouse conditions).
Roses	International	Blue Petal Roses	Approved in 2009 for commercial

ICA resolution 3857 ICA resolution 3786	Flower Development (Holland)		production of cut flowers for exports only (greenhouse conditions).
Chrysanthemum ICA resolution 3785	International Flower Development	Blue Chrysanthemum	Approved for experimental plantings in 2009 (greenhouse conditions).
Chrysanthemum ICA resolution 3570	Suntory Holdings Limited	Blue Chrysanthemum	Approved in 2012 for commercial production of cut flowers for exports only (greenhouse conditions).
LLCotton25 ICA resolution 1037 ICA resolution 1259 ICA resolution 2403 ICA resolution 4137	Bayer CropScience	Tolerant to glufosinate ammonium herbicide.	Approved in 2009 for agronomic field trials in the dry and humid Caribbean regions, upper Magdalena river (Tolima, Huila), Cauca river valley and eastern plains. Approved in 2010 for commercial plantings in the upper Magdalena river (Tolima, Huila) and the humid Caribbean region. Approved in 2014 for commercial plantings in the dry Caribbean region.
Bollgard Cotton-MON 531 ICA resolution 1247 ICA resolution 2202	COACOL-Monsanto (United States)	Resistant to some lepidopterous insects.	Approved for commercial plantings since 2003 in the humid Caribbean region, the upper Magdalena river valley (Tolima and Huila) and Cauca river valley. Approved for commercial plantings in the dry Caribbean region in May, 2004 and eastern plains in 2007.
Roundup Ready Cotton-MON 1445 ICA resolution 1006 ICA resolution 366	COACOL-Monsanto (United States)	Tolerant to Roundup herbicide.	Approved in 2004 for commercial plantings in the dry Caribbean and humid Caribbean regions. Approved in 2007 for commercial plantings in the upper Magdalena river valley(Tolima and Huila) and Cauca river valley.
Bollgard/Roundup Ready Cotton-MON 531XMON 1445 ICA resolution 358 ICA resolution 3852 ICA resolution 2204	COACOL-Monsanto (United States)	Resistant to a wider variety of lepidopterous insects and tolerant to Roundup herbicide.	Approved in 2005 for biosafety assessments in the dry Caribbean and humid Caribbean regions, the upper Magdalena river valley (Tolima and Huila), Cauca river valley and Meta. Approved in 2007 for commercial plantings in the upper Magdalena river valley (Tolima and Huila), Cauca river valley, the dry Caribbean and humid Caribbean regions and Orinoquia.

Bollgard II and Roundup Ready Flex Cotton- MON 15985XMON 88913 ICA resolution 3851 ICA resolution 2203	COACOL-Monsanto (United States)	Resistant to a wider variety of lepidopterous insects and completely tolerant to Roundup herbicide.	Approved in 2005 for biosafety assessments in the dry Caribbean and humid Caribbean regions, the upper Magdalena river valley (Tolima and Huila), Cauca river valley and Meta. Approved in 2003 for commercial plantings in the dry Caribbean and humid Caribbean regions and Orinoquia. Approved in 2007 for commercial plantings in the upper Magdalena river valley (Tolima and Huila) and Cauca river valley.
Bollgard x Roundup Ready Flex Cotton- MON 531XMON 88913 ICA resolution 1726	COACOL-Monsanto (United States)	Resistant to a wider variety of lepidopterous insects and completely tolerant to Roundup herbicide.	Approved in 2007 for commercial plantings.
Bollgard II and Roundup Ready Flex Cotton- MON 15985XMON 88913 ICA resolution 1681	Bayer CropScience	Resistant to a wider variety of lepidopterous insects and completely tolerant to Roundup herbicide.	Approved in 2008 for commercial plantings in the dry Caribbean and humid Caribbean regions, the upper Magdalena river valley (Tolima and Huila), and Orinoquia.
Roundup Ready Flex MON 88913 cotton ICA resolution 880 ICA resolution 1258	COACOL-Monsanto (United States)	Tolerant to Round Up herbicide.	Approved for biosafety assessment in 2008 in dry and humid Caribbean regions, Cauca river valley, upper Magdalena river valley and Orinoquia. Approved on 04/09/10 for commercial plantings for dry and humid Caribbean regions, Cauca river valley, upper Magdalena river valley and Orinoquia.
Glytol and Liberty Link cotton ICA resolution 226 ICA resolution 4133	Bayer Cropscience	Tolerant to Round Up and ammonium herbicide.	Approved in 2012 for field trials in dry and humid Caribbean regions, Cauca river valley, upper Magdalena river valley and Orinoquia. Approved in 2014 for commercial plantings in the dry and humid Caribbean regions.
Glytol and Twilink cotton ICA resolution 4304			Approved in 2014 for commercial plantings.
Rice	CIAT (Colombia)	Tolerant to draught.	Approved in 2010 for field trials in

ICA resolution 4041			Villavicencio, Meta
Rice	CIAT (Colombia)	Resistant to White Leaf virus.	Approved in 2000 for restricted research and small-scale plantings in open fields, in accordance with risk assessment.
Rice	CIAT (Colombia)	Resistant to White Leaf virus.	Approved in 2008 for restricted research.
Cassava	CIAT (Colombia)	Resistant to the borer of stem/stalk.	Approved in 2000 for small-scale plantings in open fields per risk assessment.
Cassava	CIAT (Colombia)	Modification of cytokine production.	Approved in 2000 for restricted research per risk assessment.
Cassava	CIAT (Colombia)	Modification of amilopectin production.	Approved in 2000 for restricted research per risk assessment.
Cassava	CIAT (Colombia)	Modification of cyanide content.	Approved in 2000 for restricted research per risk assessment.
Cassava ICA resolution 3854	CIAT (Colombia)		Approved in 2005 for restricted research per risk assessment.
Cassava ICA resolution 858	CIAT (Colombia)		Approved in 2008 for restricted research per risk assessment.
Brachiaria (grass)	CIAT (Colombia)	"frog hopper" resistant.	Approved in 2000 for restricted research per risk assessment.
Coffee	CENICAFE (Colombia)	Borer resistant.	Approved in 2000 for restricted research per risk assessment.
Potatoes ICA resolution 4469 ICA resolution 1628 ICA resolution 4040	Corporacion de Investigaciones Biologicas (CIB) (Colombia)	Resistant to Tecia solanivora).	Approved for field trials in Rio Negro, Antioquia in 2010.
Tobacco ICA Resolution 2492	CENICAFE (Colombia)		Approved in 2010 for confined research.
Fungus ICA Resolution 2492	CENICAFE (Colombia)		Approved in 2010 for confined research.
Coffee plants "coffee Arabica" ICA Resolution 2492	CENICAFE (Colombia)		Approved in 2010 for confined research.
Sugar cane	CENICAÑA (Colombia)	Resistant to the yellow leaf	Approved in 2005 for restricted research and small-scale plantings in

ICA Resolution 3995		syndrome.	open fields per risk assessment.
Yieldgard Corn Mon 810 ICA resolution 3850 ICA resolution 3743 ICA resolution 465 ICA resolution 1727	COACOL-Monsanto (United States)	Resistant to some lepidopterous insects.	Approved in 2005 for biosafety assessments in the humid Caribbean region, upper Magdalena river (Tolima, Huila), Cauca river. Approved in 2007 for controlled plantings in the humid Caribbean region, upper Magdalena river (Tolima, Huila), Cauca river valley and eastern plains. Approved in 2008 for controlled plantings in the dry Caribbean, upper Magdalena river (Tolima, Huila), Cauca river, eastern plains and the Coffee region.
Yieldgard Corn ICA resolution 3742 ICA resolution 646	Dupont (United States)	Resistant to some lepidopterous insects.	Approved in 2008 for controlled plantings in the dry and humid, Caribbean and the Coffee region.
Yieldgard 2 Corn	COACOL-Monsanto (United States)	Resistant to some lepidopterous insects and tolerant to Roundup herbicide.	Risk assessment since 2005.
Yieldgard VTPro Corn MON 89034 ICA resolution 881	COACOL-Monsanto (United States)	Resistant to a wider variety of lepidopterous insects.	Approved in 2007 for biosafety field trials in the dry and humid Caribbean regions, the Coffee region, upper Magdalena river valley (Tolima, Huila), Cauca river valley and eastern plains.
Roundup Ready Corn (RR 2 corn) ICA resolution 1728 ICA resolution 3849 ICA resolution 3740	COACOL-Monsanto (United States)	Tolerant to Roundup herbicide.	Approved in 2005 for biosafety assessments the humid Caribbean region (Cordoba), upper Magdalena river valley (Tolima, Huila), Cauca river valley and eastern plains. Approved in 2007 for controlled plantings in the humid Caribbean region (Cordoba), upper Magdalena river valley (Tolima, Huila), Cauca river valley and eastern plains. Approved in 2008 for controlled plantings in the dry Caribbean and the coffee region.
Roundup Ready Corn ICA resolution 3739 ICA resolution 1680	Dupont (United States)	Tolerant to Roundup herbicide.	Approved in 2008 for controlled plantings in the dry Caribbean and the coffee region. Approved in 2007 for controlled plantings in the humid Caribbean region, upper Magdalena river, Cauca river valley and eastern plains.

Yieldgard VTPro X Roundup Ready 2 corn- MON 89034 X NK 603 ICA resolution 3784 ICA resolution 1851 ICA resolution 225 ICA resolution 233	COACOL-Monsanto (United States)	Resistant to a wider variety of lepidopterous insects and tolerant to Roundup herbicide.	Approved in 2009 for controlled plantings in the coffee region. Approved in 2011 for controlled plantings in the dry and humid Caribbean regions, upper Magdalena river valley (Tolima, Huila), Cauca river valley and eastern plains. Approved in 2012 for controlled plantings in the coffee region.
Yieldgard X Roundup Ready Corn ICA resolution 2201 ICA resolution 3744	COACOL-Monsanto (United States)	Resistant to some lepidopterous insects and tolerant to Roundup herbicide.	Approved in 2007 for controlled plantings in the humid Caribbean region (Cordoba), upper Magdalena river valley (Tolima, Huila), Cauca river valley and eastern plains. Approved for biosafety assessments in 2007 in the dry Caribbean region and the coffee region. Approved in 2008 for controlled plantings in the dry Caribbean and the Coffee region.
Herculex I Corn ICA resolution 1729 ICA resolution 3853 ICA resolution 3741 ICA resolution 3575 ICA resolution 464 ICA resolution 3351	Dupont (United States)	Resistant to some lepidopterous insects.	Approved for biosafety assessments in 2005 in the humid Caribbean region (Cordoba), upper Magdalena river valley (Tolima, Huila), and Cauca river valley. Approved for biosafety assessments in 2007 in the dry Caribbean region and the coffee region. Approved in 2007 for controlled plantings in the humid Caribbean region (Cordoba), upper Magdalena river valley (Tolima, Huila), Cauca river valley and eastern plains. Approved in 2008 for controlled plantings in the coffee region and the upper Magdalena river. Approved in 2012 for controlled plantings in the Dry Caribbean.
Herculex I ICA resolution 859	Dow AgroSciences		Approved for biosafety assessments in 2008 in the dry and humid Caribbean region, Cauca river valley, the coffee region, the upper Magdalena river, and eastern plains.
Herculex I X Roundup Ready corn	Dupont (United States)	Resistant to some lepidopterous insects and tolerant to	Approved for controlled plantings in the humid Caribbean region, Cauca river valley and eastern plains.

ICA resolution 3745 ICA resolution 878 ICA resolution 1677		Roundup herbicide.	Approved in 2008 for controlled plantings in the coffee region, the Upper Magdalena river, Cauca river valley and eastern plains.
Herculex RW corn ICA resolution 4469	Dupont (United States)	Tolerant to glufosinate.	Approved in 2010 for biosafety and agronomic trials in the humid and dry Caribbean region, Upper Magdalena river valley, Cauca river valley, Orinoquia and the coffee region, Cauca river valley and eastern plains.
Herculex I X Roundup Ready corn ICA resolution 3738	Dow AgroSciences de Colombia S.A.	Resistant to some lepidopterous insects and tolerant to Roundup herbicide.	Approved in 2008 for controlled plantings in the coffee region, the humid Caribbean region, the upper Magdalena river.
Bt 11 corn ICA resolution 3848 ICA resolution 1679 ICA resolution 3787	Syngenta (Switzerland)	Resistant to some lepidopterous insects.	Approved for biosafety assessments in 2005 in the humid Caribbean region, Upper Magdalena river valley, Cauca river valley and Orinoquia. Approved in 2008 for controlled plantings in the humid Caribbean region and Cauca river valley. Approved in 2009 for controlled plantings in Magdalena river valley and eastern plains.
CCR corn-MON 88017	COACOL-Monsanto (United States)	Tolerant to Roundup herbicide and resistant to rootworm.	Approved for biosafety trials.
GA 21 corn ICA resolution 2936 ICA resolution 877	Syngenta (Switzerland)	Tolerant to Roundup gene epsps.	Approved for biosafety trials in the dry and humid Caribbean region, Cauca river valley, upper Magdalena river, coffee region and Orinoquia. Approved in 2010 for controlled plantings in the humid and dry Caribbean region, Upper Magdalena river valley, Cauca river valley and Orinoquia.
Bt 11 X GA 21 corn ICA resolution 3915	Syngenta (Switzerland)	Resistant to some lepidopterous insects and tolerant to Roundup herbicide.	Approved in 2010 for controlled plantings in the humid Caribbean region, Upper Magdalena river valley, Cauca river valley and Orinoquia.
MON 89034-3 x MON 00603-6 corn ICA resolution 1036	COACOL-Monsanto (United States)	Tolerant to Roundup herbicide, resistant to some lepidopterous insects.	Approved on 03/16/09 for biosafety field trials in the humid and dry Caribbean region, Upper Magdalena river valley, Cauca river valley and Orinoquia.
MIR162 (SYN-	Syngenta	Resistant to some	Approved on 09/04/2010 for

IR162-4) Corn ICA resolution 1257 ICA resolution 3574 ICA resolution 425 ICA resolution 426	(Switzerland)	lepidopterous insects.	biosafety trials and agronomic assessment in the dry and humid Caribbean regions, upper Magdalena river valley (Tolima, Huila), Cauca river valley, Orinoquia Approved on 09/28/12 for controlled plantings for humid Caribbean regions, and Orinoquia. Approved in 2014 for controlled plantings in the Cauca river valley, upper Magdalena river and dry Caribbean.
MON VT Triple PRO (VT3P) (MON 89034 X MON 88017) corn ICA resolution 1260	COACOL-Monsanto (United States)	Tolerant to Roundup herbicide, resistant to rootworm.	Approved on 03/16/09 for biosafety field trials in the humid and dry Caribbean region, Magdalena river valley, Cauca river valley and Orinoquia.
Bt11x MIR162 x MIR604 x GA21 corn ICA resolution 3572	Syngenta (Switzerland)	Tolerant to herbicide and resistant to insects.	Approved on 09/28/2012 for biosafety trials and agronomic assessment in the dry and humid Caribbean regions, upper Magdalena river valley (Tolima, Huila), Cauca river valley, Orinoquia and coffee region.
DAS 59122-7xTC1507xNK603 corn ICA resolution 1419 ICA resolution 3664	Dupont (United States)	Resistance to coleopteran and lepidopteran pests, and glyphosate and glufosinate ammonium tolerance.	Approved on 03/18/2011 for biosafety trials and agronomic assessment in the dry and humid Caribbean regions, upper Magdalena river valley (Tolima, Huila), Cauca river valley, Orinoquia and coffee region.
MON 89034x TC 1507xNK603 corn ICA resolution 3049	Dow AgroSciences de Colombia S.A.		Approved for controlled planting in 2013.
BT11 X MIR 162 X MIR 604 X TC 1507 X SYN 5307 X GA 21 corn ICA resolution 4134			Approved for biosafety trials.
Roundup Ready soybean ICA resolution 1035 ICA resolution 2404 ICA resolution 227	COACOL-Monsanto (United States)	Tolerant to Roundup herbicide.	Approved in 2009 for biosafety field trials in the dry and humid Caribbean regions, upper Magdalena river valley (Tolima, Huila), and Cauca river valley. Approved for commercial plantings on 07/19/2010

			in Orinoquia and on 02/02/2012 in Cauca river valley.
Round Up ready 2 Yield soybean ICA resolution3669 ICA resolution 3660	COACOL-Monsanto (United States)		Approved in 2011 for biosafety assessment in the dry and humid Caribbean regions, upper Magdalena river valley (Tolima, Huila), Cauca river valley and Orinoquia.
Liberty link soybean A5547-127 ICA resolution 4136			Approved in 2014 for biosafety field trials.