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Colombia

Agricultural Biotechnology Annual

Biotechnology Faces Regulatory Challenges in Colombia

Approved By:

Michael Conlon, Agricultural Counselor

Prepared By:

Ben Rau, Agricultural Attaché

Adriana Uribe, Agricultural Specialist

Report Highlights:

Colombia remains open to the adoption of biotech-derived commodities. Area planted of GE (genetically engineered) corn reached its highest adoption rate this past year. However, key biotechnology regulations on low level presence (LLP), GE labeling and innovative technologies have to be finalized to stabilize Colombia's regulatory environment for GE products.

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Section I. Executive Summary:

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 America for U.S. agricultural exports. In 2016, 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 2016.

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 CPB. Since then, several other GOC regulatory measures were published to outline specific requirements and procedures for approving and using GE agricultural 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, especially on low level presence (LLP), labeling and innovative technologies.

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 Ministry of Health and Social Protection (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 has been working on establishing a LLP threshold policy for three years, but internal deliberations continue. 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. Despite the two year deadline to develop mandatory labeling regulations, the GOC has not produced final rules.

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 100,109 hectares in 2016. 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 and local governments in accessing the GE mosquito technology pending assessment on domestic regulatory jurisdiction and pathway.

Section II. Plant and Animal Biotechnology

CHAPTER I: PLANT BIOTECHNOLOGY

PART A: Production and Trade

a) Product Development

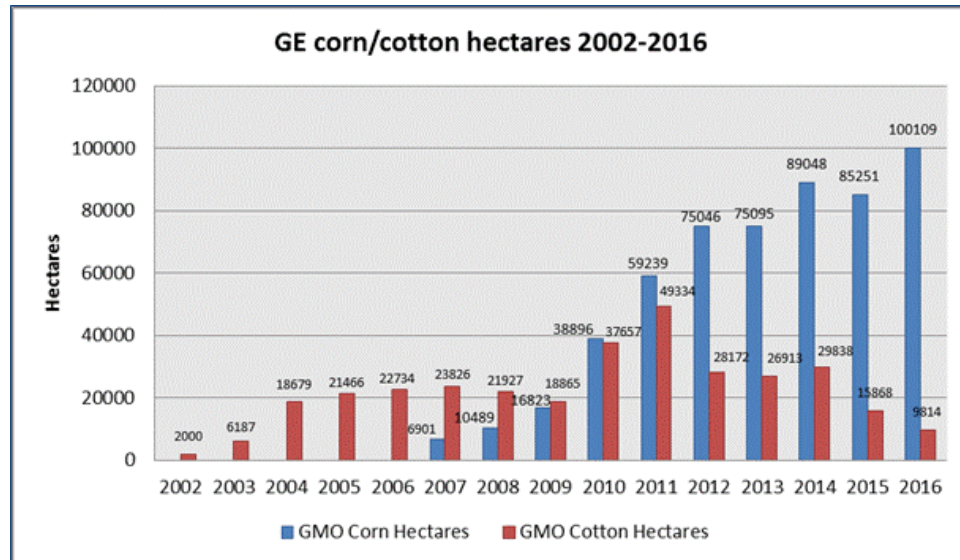
Colombia has not developed any biotechnology crops to date. There are several Colombian organizations conducting specific research projects. The Colombian sugar cane research center (CENICAÑA) is developing a sugar cane variety resistant to the yellow leaf virus. The International Center for Tropical 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 solely for export markets. Total area planted for these ornamental crops is 12 hectares. In 2016, Colombia planted 100,109 and 9,814 hectares of GE corn and cotton, respectively. GE corn reached its highest adoption rate since it was approved in 2007 (see Charts 1, 2, and 3). It represents 21% of the total area planted to corn. GE cotton area planted continued to decrease by 6,054 hectares. However, this was part of an overall decrease in cotton plantings, and GE crops still represent 90% 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	24,169	Tolima	5,281
Cordoba	22,876	Cordoba	3,859
Tolima	18,327	Valle del Cauca	298
Valle del Cauca	15,938	Huila	226
Cesar	4,142	Cundinamarca	120
Vichada	3,008	Cesar	104
Risaralda	1,999	Antioquia	30
Casanare	1,482		
Santander	1,379		
Quindio	1,282		
Huila	1,245		
Cauca	1,153		
Sucre	871		
Antioquia	664		
Caldas	468		
Cundinamarca	427		
Bolivar	298		
Norte de Santander	165		
Arauca	105		
Boyaca	48		
Atlantico	46		
Guajira	14		
Magdalena	3		

Data provided by ICA -Colombian Agricultural Institute
Chart 3



Data provided by ICA -Colombian Agricultural Institute

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 2016 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 from 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 and the lack of a LLP policy 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 and i).

PART B: Policy

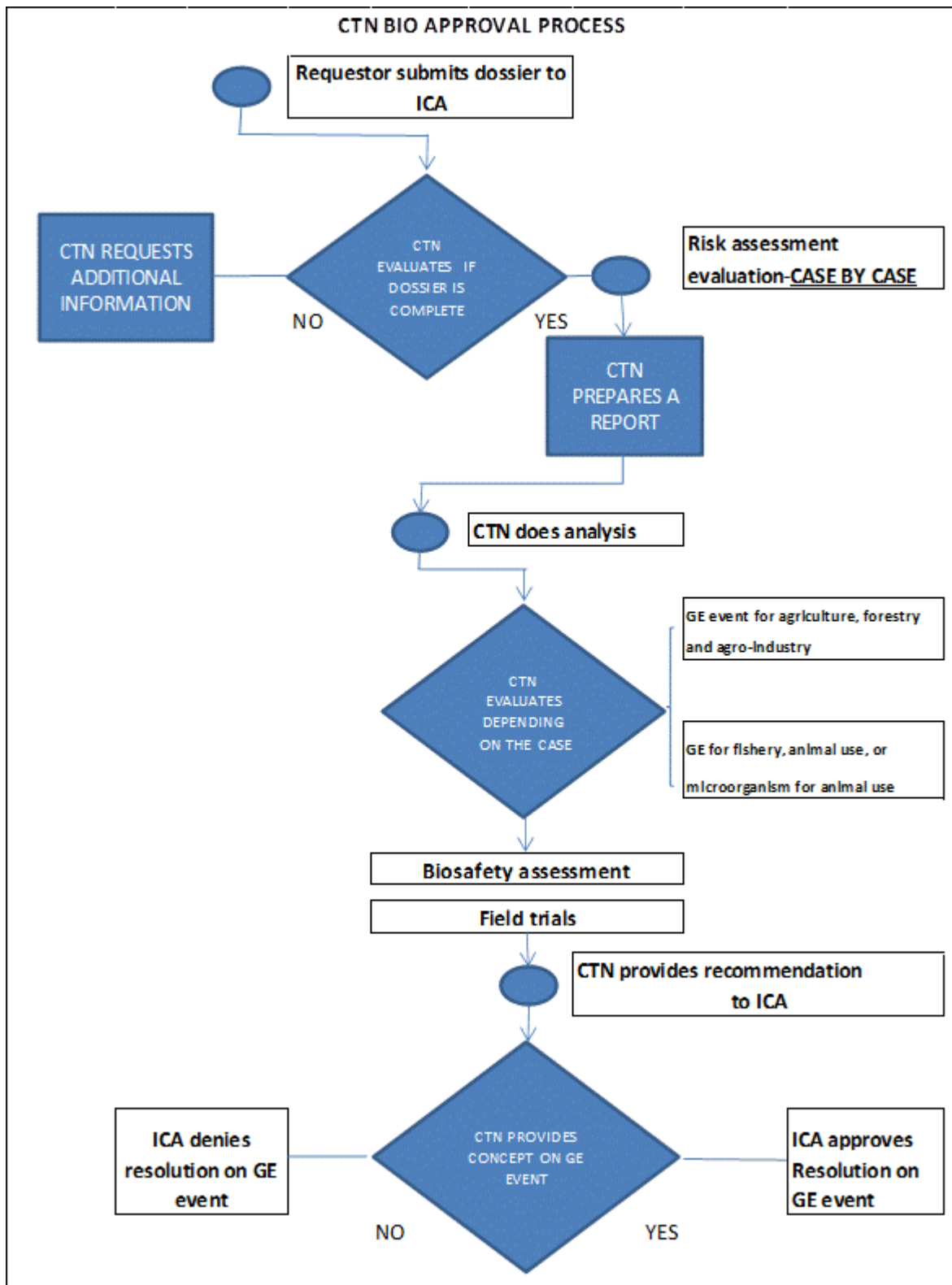
a) Regulatory Framework

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);
- National Institute for the Surveillance of Food and Medicines (INVIMA);

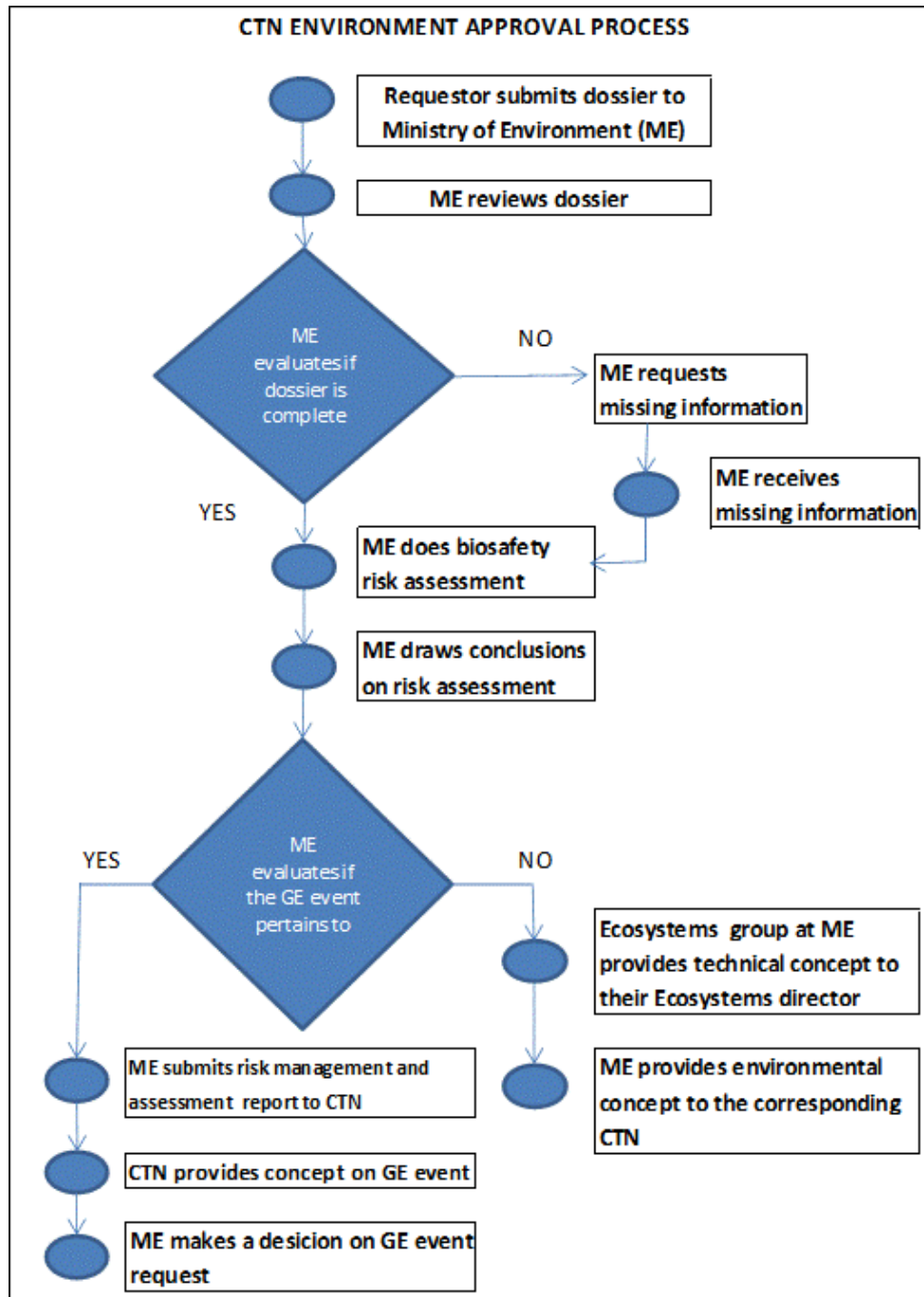
Decree 4525 of December 6, 2005, established three interagency committees composed of the above-mentioned Ministries that are responsible for biosafety issues and the evaluation and approval of biotech events. These committees are the:

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:



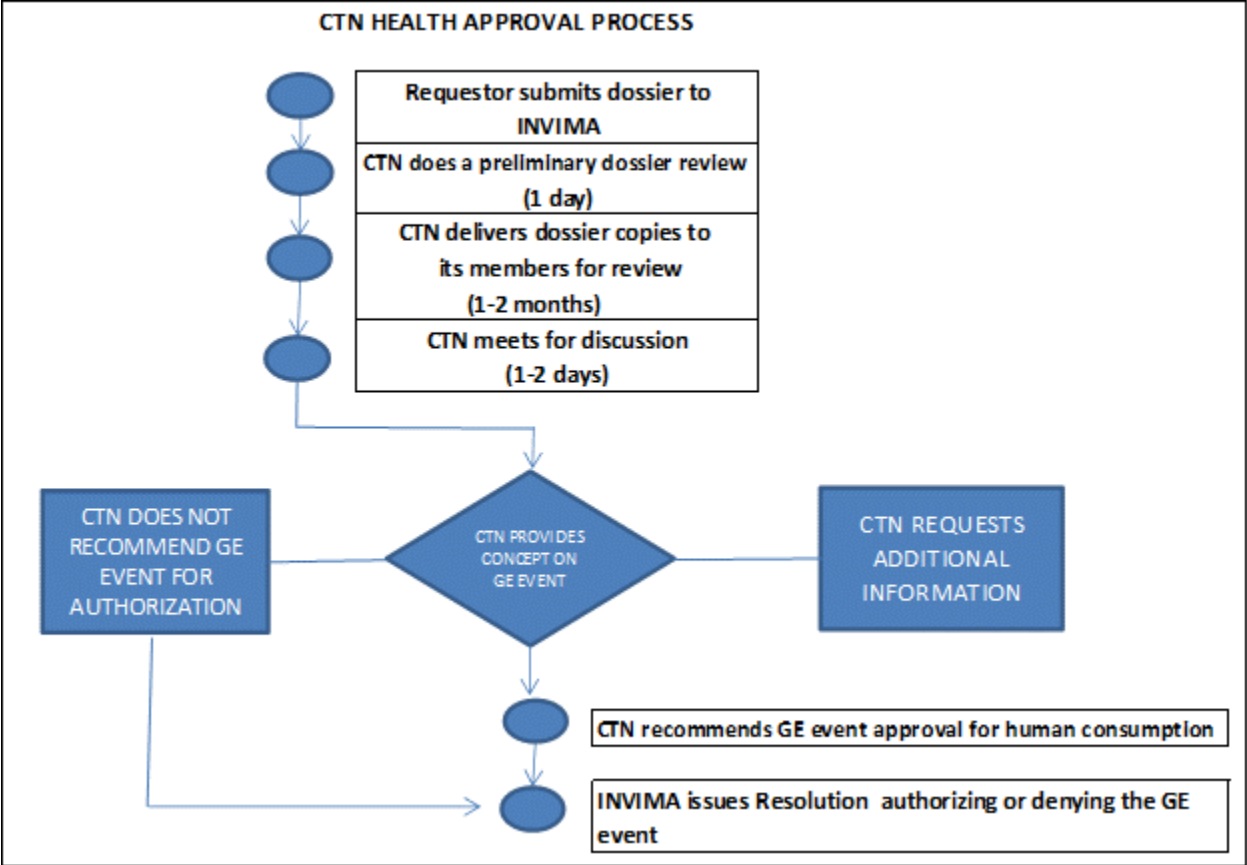
Source: BCH Colombia www.bch.org.co (July 2012)

National 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)

National Committee for Health and Human Nutrition (CTN-Health): CTN-Health's function is to assess the impact of 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 issuing approval regulatory resolutions has been extensive. On July 19, 2017, the MHSP issued resolution 2535, transferring the responsibility of issuing approval regulatory resolutions to INVIMA, which is expected to 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)

b) Approvals

All GE events for commercial cultivation and/or environmental release, food consumption and animal feed must be approved by the GOC. 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). Regarding stacked events, all GE events must be approved individually and there is no process to review "stacked" events as a whole.

c) Stacked Events or Pyramided Event Approvals

Even though the individual events may have already been approved, the "stacked" variety must independently go through the approval process. However, starting August, 2017, the CTN-Health established an internal procedure to facilitate the approval process for stacked events when their single events have already been approved, which is expected to reduce the current approval timeframe and alleviate asynchronous approvals between exporting and importing countries.

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

There are currently two research groups working on genome editing. The CIAT research center is focused on rice resistance to viruses and bacteria, nutritional quality and hybrid seeds, as well as bean nutritional quality. The EAFIT university is doing research on castor bean and sacha inchi oleic content. Regarding regulations, government officials, academia and research centers have continued their discussions around innovative technologies, specifically as to whether these regulations should be product rather than process oriented. 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 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 was required to draft

and implement legislation on mandatory labeling of GE organisms within two years to comply with the court's ruling. Despite the two years deadline, no final rules have been produced and this has the potential to destabilize Colombia's GE labeling regulatory environment depending on how eventual mandatory labeling may be approached. As of now, GE labeling relies on Resolution 4254.

As per resolution 4254, the use of statements such as "GMO free" or "do not contain GMO" is not accepted, unless the manufacturer demonstrates and sustains that the claim is truthful and not misleading. An increased number of imported packaged products entering the Colombian market now bear the "Non GMO Project Verified" or the "Non-GMO/GE Process Verified" legends which, as per current regulation, are perceived as equivalent to "GMO-free" claims. Therefore, manufacturer/importers must provide Colombian authorities proof through laboratory results that products are GMO free, creating considerable issues for importers.

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 Genéticamente*. 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. As for packaged products, INVIMA is also monitoring products that have "Non GMO Project Verified" and "Non-GMO/GE Process Verified" claims requesting importers to show claims are truthful to be able to commercialize those products.

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. Considering the unpredictable and lengthy timeframe for GE approvals, the GOC initially proposed a five percent LLP threshold. Ministry of Health officials have indicated that they are planning to present a draft LLP policy to the Ministry of Commerce, Industry and Trade (MinCIT) and the Ministry of Agriculture by the end of 2017 for their consideration and feedback. While encouraging, internal discussions/review show that the GOC may only support a three percent threshold. After finalizing the draft policy 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 February 1, 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. Last year, Colombia joined the Global Low Level Presence Initiative to develop international approaches to manage LLP.

n) Related Issues

In March 2017, the Minister of Agriculture presented Congress with a draft law that creates the National System for Agricultural Innovation (SNIA). SNIA calls for the establishment of a Council for Agricultural Innovation to advise on biosafety, intellectual property and genetic resource regulations as outlined in the Peace Accord signed with the Revolutionary Armed Forces of Colombia on December 2016. The draft law may empower the council to collect information and make recommendations on existing and proposed biotechnology regulations. Some industry contacts have expressed concern over the potential overregulation of the biotechnology industry. The draft law was presented under the Peace Accord fast track procedures and is pending a final debate before moving to the Presidency for approval.

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. In 2016, the Colombian Association of Agricultural Biotechnology (Agro-Bio) released a study showing biotechnology as a valuable tool for farmers focusing on the benefits for GE crops in Colombia from 2003 to 2015 and the potential they may have on rural development and self-sufficient agriculture.

CHAPTER II: ANIMAL BIOTECHNOLOGY

PART D: Production and Trade

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). Last year, overseas companies and local governments expressed interest in accessing GE insect technology to control harmful insect populations. These technologies will control the population of (1) *Aedes aegypti* mosquito, which is a vector for dengue, Zika, chikungunya, yellow fever and other arboviruses and (2) will also assist with crop protection, specifically with medfly, as Colombian fruit exports are being badly hurt by damage from the pest. Companies' representatives are still assessing the regulatory jurisdiction and path to be able to move forward with their initiative.

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 ICA resolution 3857 ICA resolution 3786	International Flower Development (Holland)	Blue Petal Roses	Approved in 2009 for commercial 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	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

ICA resolution 1247 ICA resolution 2202			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	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

ICA resolution 880 ICA resolution 1258			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 ICA resolution 3053	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 ICA resolution 18599			Approved in 2014 and 2016 for commercial plantings.
Rice ICA resolution 4041	CIAT (Colombia)	Tolerant to draught.	Approved in 2010 for field trials in 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 ICA Resolution 3995	CENICAÑA (Colombia)	Resistant to the yellow leaf syndrome.	Approved in 2005 for restricted research and small-scale plantings in 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 VPro 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	Dupont (United States)	Tolerant to Roundup	Approved in 2008 for controlled

Corn ICA resolution 3739 ICA resolution 1680	States)	herbicide.	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 VPro 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 ICA resolution	Dupont (United States)	Resistant to some lepidopterous insects and tolerant to Roundup herbicide.	Approved for controlled plantings in the humid Caribbean region, Cauca river valley and eastern plains. Approved in 2008 for controlled plantings in the coffee region, the

3745 ICA resolution 878 ICA resolution 1677			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-IR162-4) Corn ICA resolution 1257 ICA resolution	Syngenta (Switzerland)	Resistant to some lepidopterous insects.	Approved on 09/04/2010 for 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

3574 ICA resolution 425 ICA resolution 426			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 resolution 3669 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.

APPENDIX B. COLOMBIA: CURRENT STATUS OF BIOTECHNOLOGY PRODUCT APPLICATIONS FOR FOOD, FEED and HEALTH

Crop	Requesting Company	New Characteristics of Biotechnology	Approved Applications	Approval Date
Bollgard cotton-MON 531 SEABA ACT III ICA resolution 2708	COACOL-Monsanto (United States)	Resistant to some lepidopterous insects,	Raw material for food and feed.	Approved for food and feed in 2003.
Roundup Ready cotton-MON 1445 SEABA ACT V ICA resolution 1063	COACOL-Monsanto (United States)	Tolerant to Roundup herbicide.	Raw material for food and feed.	Approved for food in 2003. Approved for feed in 2004.
Bollgard II cotton-MON 15985 MSP resolution 4587 ICA resolution 310	COACOL-Monsanto (United States)	Resistant to some lepidopterous insects.	Raw material for feed and food.	Approved for food in 2009. Approved for feed in 2008.
Roundup Ready Flex cotton-MON 88913 MSP resolution 4582 ICA resolution 311	COACOL-Monsanto (United States)	Tolerant to Roundup herbicide and to a wider spectrum of weeds.	Raw material for feed and food.	Approved for food in 2009. Approved for feed in 2008.
LL Cotton 25 ICA resolution 307 MSP resolution 1731	Bayer CropScience	Tolerant to Roundup herbicide.	Raw material for feed and food.	Approved for feed in 2008. Approved for food in 2016.
Bollgard II+Roundup Ready Flex cotton-MON 15985XMON 88913 MSP resolution 2390 ICA resolution 2944	COACOL-Monsanto (United States)	Resistant to some lepidopterous insects, tolerant to Roundup herbicide and to a wider spectrum of weeds.	Raw material for feed and food.	Approved for food in 2010. Approved for feed in 2007.
MON 88701 X MON 88913 MSP resolution 3005	COACOL-Monsanto (United States)		Raw material for food.	Approved for food in 2016.
GHB 614 Glytol cotton ICA resolution 3567 MSP resolution 506	Bayer CropScience	Tolerant to herbicide.	Raw material for feed and food.	Approved for feed in 2012. Approved for food in

				2016.
GHB 614 Glytol X Liberty Link cotton ICA resolution 3568 MSP resolution 1454	Bayer CropScience	Tolerant to herbicide.	Raw material for feed and food.	Approved for feed in 2012. Approved for food in 2017.
GHB 614 Glytol x T304 X GHB119 X COT 102 MSP resolution 1453	Bayer CropScience	Tolerant to herbicide.	Raw material for food.	Approved for food in 2017.
Bollgard+Roundup Ready cotton-MON 531XMON 1445 MSP resolution 2179 ICA resolution 2943	COACOL- Monsanto (United States)	Resistant to some lepidopterous insects and tolerant to Roundup herbicide.	Raw material for food and feed.	Approved for food in 2008. Approved for feed in 2007.
COT 102 cotton ICA resolution 4131 MSP resolution 128	Syngenta	Resistant to some lepidopterous insects.	Raw material for feed and food.	Approved for feed in 2014. Approved for food in 2016.
DAS 24236-5 cotton ICA resolution 2660 MSP resolution 4007	Dow Agrosciences		Raw material for feed and food.	Approved for feed in 2015. Approved for food in 2016.
DAS 21023-5 cotton ICA resolution 2664 MSP resolution 5853	Dow Agrosciences		Raw material for feed and food.	Approved for feed in 2015. Approved for food in 2016.
Glytol x Twinlink x COT102 cotton ICA resolution 3922	Bayer		Raw material for feed.	Approved for feed in 2015.
Glytol x Twinlink MSP resolution 1452	Bayer		Raw material for food.	Approved for food in 2017.
T 304-40 cotton MSP resolution 505	Bayer		Raw material for food.	Approved for food in 2016.
MON 88701 cotton MSP resolution 132	COACOL- Monsanto (United States)		Raw material for food.	Approved for food in 2016.
LL cotton25 MSP resolution 1731	Bayer		Raw material for food.	Approved for food in 2016.
GHB 119 cotton MSP resolution 3298	Bayer		Raw material for food.	Approved for food in 2016.
COT 102 x MON15985 X MON88701 MSP resolution 4905	Monsanto		Raw material for food.	Approved for food in 2016.

Yieldgard+Roundup Ready corn-MON 810XNK 603 MSP resolution 4583 ICA resolution 1365	COACOL-Monsanto (United States)	Resistant to some lepidopterous insects and tolerant to Roundup herbicide.	Raw material for feed and food.	Approved for feed in 2007. Approved for food in 2009.
Bt Herculex I corn-DAS 01507-1 SEABA ACT V ICA resolution 3745	Dupont (United States)	Resistant to some lepidopterous insects.	Raw material for food and feed.	Approved for food and feed in 2006.
Yieldgard corn-MON 810 SEABA ACT V ICA resolution 3746	COACOL-Monsanto (United States)	Resistant to some lepidopterous insects.	Raw material for food and feed.	Approved for food in 2003. Approved for feed in 2006
Herculex I X Roundup Ready corn-TC 1507XNK 603 ICA resolution 3083 MSP resolution 506	Dupont (United States)	Resistant to some lepidopterous insects and tolerant to Roundup herbicide.	Raw material for feed and food.	Approved for feed in 2009. Approved for food in 2010.
Herculex RW corn-DAS 59122 ICA resolution 4473 MSP resolution 1708	Dupont (United States)	Resistant to some lepidopterous insects.	Raw material for feed and food.	Approved for feed in 2010. Approved for food in 2011.
Yieldgard+Lysine corn-MON 810X LY 038	COACOL-Monsanto (United States)	Resistant to some lepidopterous insects. High lysine content.	Raw material for feed.	Pending for food approval as the request was withdrawn.
Yieldgard VPro -MON 89034 corn MSP resolution 2394 ICA resolution 2367	COACOL-Monsanto (United States)	Resistant to a wider variety of lepidopterous insects.	Raw material for feed and food.	Approved for food in 2010. Approved for feed in 2007.
MON VT Triple PRO (VT3P) (MON 89034 X MON 88017) corn MSP resolution 1710 ICA resolution 3661	COACOL-Monsanto (United States)	Resistant to a wider variety of lepidopterous insects.	Raw material for food and feed.	Approved for food and feed in 2011.
Yieldgard VPro Corn X Roundup Ready 2-MON 89034 X NK 603 ICA resolution 3659 MSP resolution 2395	COACOL-Monsanto (United States)	Resistant to a wider variety of lepidopterous insects and tolerant to Roundup	Raw material for feed and food.	Approved for feed in 2011. Approved for food in 2010.

		herbicide.		
CCR corn-MON 88017 MSP resolution 1712 ICA resolution 1254	COACOL-Monsanto (United States)	Resistant to some lepidopterous insects and tolerant to Roundup herbicide.	Raw material for food and feed.	Approved for food in 2011. Approved for feed in 2010.
Yieldgard+CCR corn-MON 810X MON 88017 MSP resolution 1904 ICA resolution 3667	COACOL-Monsanto (United States)	Resistant to some lepidopterous insects, rootworm and tolerant to Roundup herbicide.	Raw material for food and feed.	Approved for food and feed in 2011.
Lysine corn-LY p38 MSP resolution 4585 ICA resolution 2405	COACOL-Monsanto (United States)	High lysine content.	Raw material for food and feed.	Approved for food in 2009. Approved for feed in 2010.
Bt 11 corn MSP resolution 1078 ICA resolution 309	Syngenta (Switzerland)	Resistant to some lepidopterous insects.	Raw material for food and feed.	Approved for food in 2009. Approved for feed in 2008.
GA 21 corn ICA resolution 2402 MSP resolution 1692	Syngenta (Switzerland)	Tolerant to Roundup herbicide	Raw material for feed and food.	Approved for food in 2012. Approved for feed in 2010.
Bt 11 X GA 21 corn ICA resolution 4474 MSP resolution 1695	Syngenta (Switzerland)	Resistant to some lepidopterous insects and tolerant to Roundup herbicide.	Raw material for feed and food.	Approved for feed in 2010. Approved for food in 2012.
Smartstax corn -Mon 89034 X TC1507 X MON 88017 X DAS59122-7 MSP resolution 2393 ICA resolution 3662	COACOL-Monsanto (United States) and Dow Agrosiences	Resistant to some lepidopterous insects, to root worm and tolerant to Roundup herbicide and to glufosinate.	Raw material for food and feed.	Approved for food in 2010. Approved for feed in 2011.
MIR 162 corn ICA resolution 4471 MSP resolution 1693	Syngenta (Switzerland)	Resistant to some lepidopterous insects.	Raw material for feed and food.	Approved for food in 2012. Approved for feed in 2010.
BT 11xMIR 162xGA21 corn	Syngenta	Resistant to	Raw	Approved

ICA resolution 2407 MSP resolution 1694	(Switzerland)	some lepidopterous insects and tolerant to herbicides.	material for feed and food.	for feed in 2010. Approved for food in 2012.
MON 87460 corn MSP resolution 1709 ICA resolution 224	COACOL-Monsanto (United States)	Tolerant to drought.	Raw material for food and feed.	Approved for food in 2011. Approved for feed in 2012
MON 87460 X NK 603 corn ICA resolution 422 MSP resolution 777	COACOL-Monsanto (United States)	Tolerant to drought and herbicides.	Raw material for feed and food.	Approved for feed and food in 2014.
MON 87460 X MON 89034 X MON 88017 corn ICA resolution 423 MSP resolution 778	COACOL-Monsanto (United States)	Resistant to some lepidopterous insects, tolerant to herbicides and drought.	Raw material for feed and food.	Approved for feed and food in 2014.
MON 863-5 corn ICA resolution 4475 MSP resolution 1711	COACOL-Monsanto (United States)	Resistant to some lepidopterous insects.	Raw material for feed and food.	Approved for feed in 2010. Approved for food in 2011.
BT 11 X MIR 162X MIR 604X GA 21 corn MSP resolution 119 ICA resolution 232	Syngenta (Switzerland)	Root worm resistant and tolerant to herbicides.	Raw material for food and feed.	Approved for feed and food in 2012.
MIR 604 corn MSP resolution 118 ICA resolution 229	Syngenta (Switzerland)	Root worm resistant.	Raw material for food and feed.	Approved for feed and food in 2012.
MIR 604 X GA 21 corn ICA resolution 230 MSP resolution 769	Syngenta (Switzerland)	Resistant to some lepidopterous insects and tolerant to herbicide.	Raw material for feed and feed.	Approved for feed in 2012. Approved for food in 2014.
BT 11XMIR 604X GA 21 corn ICA resolution 3046 MSP resolution 775	Syngenta (Switzerland)	Resistant to some lepidopterous insects and tolerant to herbicide.	Raw material for feed and food.	Approved for feed in 2012. Approved for food in 2014.
Liberty Link corn-T25 MSP resolution 121 ICA resolution 3666	Bayer Cropscience (United States)	Tolerant to Roundup herbicide.	Raw material for food and feed.	Approved for food in 2012. Approved for feed in 2011.
T25 XMON 810 corn	Bayer Cropscience (United States)	Resistant to some lepidopterous	Raw material for food.	Approved for food in 2012.

	States)	insects and tolerant to Roundup herbicide.		
T25 X NK 603 corn MSP resolution 115 ICA resolution 228	COACOL-Monsanto (United States)	Tolerant to herbicide.	Raw material for food and feed.	Approved for feed and food in 2012.
DAS 1507XMON 810 corn MSP resolution 1487 ICA resolution 3573	DUPONT	Resistant to some lepidopterous insects.	Raw material for food and feed.	Approved for feed and food in 2012.
DAS 1507XMON 810X MON 603 corn MSP resolution 1488 ICA resolution 3571	DUPONT	Resistant to some lepidopterous insects and tolerant to herbicide.	Raw material for food and feed.	Approved for feed and food in 2012.
DAS 1507X DAS 59122X MON 603 corn MSP resolution 1486 ICA resolution 3578	DUPONT	Resistant to some lepidopterous insects and tolerant to herbicide.	Raw material for food and feed.	Approved for feed and food in 2012.
TC 1507X MON 810 X MIR 604 X NK 603 corn MSP resolution 5856	Dupont	Resistant to some lepidopterous insects and tolerant to herbicide.	Raw material for food.	Approved for food in 2016.
TC 1507X MON 810 X MIR 162X NK 603 corn MSP resolution 3118	Dupont	Resistant to some lepidopterous insects and tolerant to herbicide.	Raw material for food.	Approved for food in 2015.
MON 89034 X DAS 1507X NK 603 corn ICA resolution 3050 MSP resolution 1861	COACOL-Monsanto (United States)	Resistant to some lepidopterous insects and tolerant to herbicide.	Raw material for feed and food.	Approved for feed in 2013. Approved for food in 2014.
BT11 X MIR604 corn MSP resolution 120 ICA resolution 3048	Syngenta	Resistant to some lepidopterous insects and tolerant to herbicide.	Raw material for feed and food.	Approved for feed in 2013. Approved for food in 2012.
BT11 X MIR162 corn MSP resolution 249	Syngenta	Resistant to some lepidopterous insects and	Raw material for food.	Approved for food in 2016.

		tolerant to herbicide.		
SYN E3272-5 corn ICA resolution 3043 MSP resolution 127	Syngenta	Modified amylase for ethanol production.	Raw material for feed and food.	Approved for feed in 2013. Approved for food in 2016.
SYN E5307-1 corn MSP resolution 5632	Syngenta		Raw material for feed and food.	Approved for feed in 2013. Approved for food in 2014.
DAS 40278-9 corn ICA resolution 3052 MSP resolution 774	Dow Agrosience	Herbicide tolerant.	Raw material for feed and food.	Approved for feed in 2013. Approved for food in 2014.
MON 87427 X MON 89034 X MON 88017 corn MSP resolution 3488 ICA resolution 3047	COACOL-Monsanto (United States)	Resistant to some lepidopterous insects and tolerant to herbicide.	Raw material for food and feed.	Approved for food and feed in 2014.
MON 87427 X MON 89034 X NK 603 corn MSP resolution 3705 ICA resolution 3048	COACOL-Monsanto (United States)	Resistant to some lepidopterous insects and tolerant to herbicide.	Raw material for food and feed.	Approved for food and feed in 2014.
MON 87427 X MON 89034 X TC 1507 X MON 88017 X DAS 59122 corn MSP resolution 3489 ICA resolution 3043	COACOL-Monsanto (United States)	Resistant to some lepidopterous insects and tolerant to herbicide.	Raw material for food and feed.	Approved for food and feed in 2014.
DAS-40278-9 X NK 603 corn MSP resolution 3487 ICA resolution 3044	Dow Agrosiences	Resistant to some lepidopterous insects and tolerant to herbicide.	Raw material for food and feed.	Approved for food and feed in 2014.
MON 87427 corn ICA resolution 424 MSP resolution 1862	COACOL-Monsanto (United States)	Tolerant to herbicide.	Raw material for feed and food.	Approved for food and feed in 2014.
MON 87460 X MON 89034 X NK 603 corn ICA resolution 427 MSP resolution 776	COACOL-Monsanto (United States)	Resistant to some lepidopterous insects and tolerant to herbicides.	Raw material for feed and food.	Approved for food and feed in 2014.

MON 89034 X TC 1507 X NK 603 X DAS 40278-9 corn ICA resolution 4135 MSP resolution 4904	Dow Agrosiences	Tolerant to herbicide.	Raw material for feed and food.	Approved for feed in 2014. Approved for food in 2016.
TC 1507 X MON 810 X MIR 162 X NK 603 corn ICA resolution 002	Dupont (United States)	Resistant to some lepidopterous insects and tolerant to herbicides.	Raw material for feed.	Approved for feed in 2015.
DP 4114 corn MSP resolution 123	Dupont (United States)		Raw material for food.	Approved for food in 2016.
DP 4114 x MON 810 x MIR 604 X NK 603 corn MSP resolution 3297	Dupont (United States)		Raw material for food.	Approved for food in 2016.
TC 1507 x 59122 X MON 810 x MIR 604 X NK 603 corn MSP resolution 5857	Dupont (United States)		Raw material for food.	Approved for food in 2016.
BT11xMIR162xTC1507xGA21 corn MSP resolution 124	Syngenta		Raw material for food.	Approved for food in 2016.
BT11xDAS59122XMIR604XTC1507xGA21 corn MSP resolution 126	Syngenta		Raw material for food.	Approved for food in 2016.
SYN3272 corn MSP resolution 127	Syngenta		Raw material for food.	Approved for food in 2016.
BT11xMIR162XMIR604XTC1507XSYN5307xGA21 corn MSP resolution 129	Syngenta		Raw material for food.	Approved for food in 2016.
MIR604XTC1507XMON810 corn MSP resolution 130	Dupont		Raw material for food.	Approved for food in 2016.
SYN3272XBT11XMIR604XGA21 corn MSP resolution 2463	Syngenta		Raw material for food.	Approved for food in 2016.
MON 87411 corn MSP resolution 5850	Syngenta		Raw material for food.	Approved for food in 2016.
MON 87427 X MON 89034 X MIR 162 X NK 603 corn MSP resolution 250	Syngenta		Raw material for food.	Approved for food in 2017.
MON 89034 X TC 1507 X MON 88017 X	Dow		Raw	Approved

DAS 59122 X DAS 40278 corn MSP resolution 4903	Agroscience		material for food.	for food in 2016.
GA21 X T25 corn MSP resolution 5849	Syngenta		Raw material for food.	Approved for food in 2016.
Roundup Ready wheat *1-MON 71800 SEABA ACT II	COACOL-Monsanto (United States)	Tolerant to Roundup herbicide.	Raw material for food.	Approved for food in 2004.
Roundup Ready soybeans-MON 04032-6/GTS 40302 SEABA ACT VII ICA resolution 2942	COACOL-Monsanto (United States)	Tolerant to Roundup herbicide.	Raw material for food and feed.	Approved for food in 2005. Approved for feed in 2007.
Roundup Ready 2Yield soybeans-MON 89788 ICA resolution 1256 MSP resolution 2391	COACOL-Monsanto (United States)	Tolerant to Roundup herbicide.	Raw material for feed and food.	Approved for food and feed in 2010.
GAT Soybeans- DP 356043 MSP resolution 2392 ICA resolution 2406	Dupont (United States)	Tolerant to herbicide.	Raw material for food and feed.	Approved for food and feed in 2010.
MON 87701X MON 89788 soybeans MSP resolution 116 ICA resolution 3663	COACOL-Monsanto (United States)	Resistant to some lepidopterous insects and tolerant to Roundup herbicide	Raw material for food and feed.	Approved for food in 2012. Approved for feed in 2011.
Glycine Max soybean-CV 127 MSP resolution 117 ICA resolution 3668	Basf Inc	Tolerant to Roundup herbicide.	Raw material for food and feed.	Approved for food in 2012. Approved for feed in 2011.
MON 87705 soybean ICA resolution 3566 MSP resolution 338	COACOL-Monsanto (United States)	Tolerant to Roundup herbicide.	Raw material for feed and food.	Approved for feed in 2012. Approved for food in 2014.
MON 87769 soybean ICA resolution 3565 MSP resolution 339	COACOL-Monsanto (United States)	Tolerant to Roundup herbicide.	Raw material for feed and food.	Approved for feed in 2012. Approved for food in 2014.
A5547 soybean ICA resolution 3564 MSP resolution 3486	Bayer CropScience	Tolerant to herbicide.	Raw material for feed and food.	Approved for feed in 2012. Approved

				for food in 2014.
A2704 soybean ICA resolution 3579 MSP resolution 4083	Bayer CropScience	Tolerant to herbicide.	Raw material for feed and food.	Approved for feed in 2012. Approved for food in 2014.
DAS68416-4 soybean ICA resolution 3051 MSP resolution 131	Dow Agroscience	Tolernant to herbicide.	Raw material for feed and food.	Approved for feed in 2013. Approved for food in 2016.
MON 87708 X MON 89788 soybean ICA resolution 420 MSP resolution 1257	Monsanto	Tolerant to herbicide.	Raw material for feed and food.	Approved for feed in 2014. Approved for food in 2015.
MON 87708 soybean MSP resolution 1259	Monsanto	Tolerant to herbicide.	Raw material for food.	Approved for food in 2015.
MON 87705 X MON 89788 soybean ICA resolution 131 MSP resolution 1258	COACOL- Monsanto (United States)	Tolerant to Roundup herbicide.	Raw material for feed and food.	Approved for feed and food in 2015.
MON 87769 X MON 89788 soybean ICA resolution 132 MSP resolution 1256	COACOL- Monsanto (United States)	Tolerant to Roundup herbicide.	Raw material for feed and food.	Approved for feed and food in 2015.
DAS 44406 soybean ICA resolution 134 MSP resolution 125	Dow Agroscience	Tolerant to herbicide.	Raw material for feed and food.	Approved for feed in 2015. Approved for food in 2016.
DAS 68416-4 x MON 89788-1 soybean ICA resolution 2665 MSP resolution 3006	Dow Agroscience	Tolerant to herbicide.	Raw material for feed and food.	Approved for feed in 2015. Approved for food in 2016.
ACS-GM006-4 soybean MSP resolution 3486	Bayer CropScience (United States)	Tolerant to herbicide.	Raw material for food.	Approved for food in 2014.
ACS-GM005-3 soybean MSP resolution 4083	Bayer CropScience (United States)	Tolerant to herbicide.	Raw material for food.	Approved for food in 2014.
SYHT0H2 soybean ICA resolution 2661 MSP resolution 307	Syngenta and Bayer		Raw material for feed and food.	Approved for feed in 2015. Approved for food in

				2017.
FG72(MST-FG072-2) soybean ICA resolution 4001 MHS resolution 2464	Bayer		Raw material for food and feed.	Approved for food and feed in 2016.
DAS-68416XMON89788 soybean ICA resolution 3998 MSP resolution 5851	Dow Agrosience		Raw material for feed and food.	Approved for feed and food in 2016.
FG72 x A5547-27 soybean ICA resolution 18597 MSP resolution 5854	Bayer		Raw material for food and feed.	Approved for food and feed in 2016.
DP 305423 soybean MSP resolution 5855	Dupont		Raw material for food.	Approved for food in 2016.
DP 305423 X MON 040326 soybean MSP resolution 702	Dupont		Raw material for food.	Approved for food in 2017.
DAS 81419 X DAS 44406 soybean ICA resolution 18595	Dupont		Raw material for feed.	Approved for feed in 2017.
MON 87751 soybean MSP resolution 251	Dupont		Raw material for food.	Approved for food in 2017.
Roundup Ready sugar beet-H7-1/KM 0071 ICA resolution 1255 SEABA ACT VII	COACOL-Monsanto (United States)	Tolerant to Roundup herbicide.	Raw material for food and feed.	Approved on for food in 2005. Approved for feed in 2010.
Liberty-link rice LLRice62 MSP resolution 5333 ICA resolution 308	Bayer CropScience (United States)	Tolerant to herbicide.	Raw material for food and feed.	Approved for food and feed in 2008.
LLRice601 MSP resolution 3674	Bayer CropScience (United States)	Tolerant to herbicide.	Raw material for food and feed.	Approved for food and feed in 2008.
MON 88302-9 canola ICA resolution 421 MSP resolution 5806	COACOL-Monsanto (United States)	Tolerant to herbicide.	Raw material for feed and food.	Approved for feed and food in 2014.
RF3 canola MSP resolution 1607	Bayer	Tolerant to herbicide.	Raw material for food.	Approved for food in 2017.
Mice 3XTg AD MSP resolution 2836	Universidad de Antioquia		Controlled health research.	Approved in 2008.
Mice ApoE-/- 6 Apoe "knock out" MSP resolution 2835	Universidad de Antioquia		Controlled health research.	Approved in 2008.

APPENDIX C. COLOMBIA: CURRENT STATUS OF BIOTECHNOLOGY PRODUCT APPLICATIONS FOR ANIMAL USE

Description	Requesting Company	Species	Approved Applications	Approval Date
Small pox vaccine- Vectomune FP-LT ICA resolution 3739	Vetiplus Ltda	Poultry	Small pox	2006
Small pox vaccine- Vectomune FP-MG ICA resolution 561	Vetiplus Ltda	Poultry	Small pox	2007
Vaxxitek HVT+IBD ICA resolution 2946	Carval de Colombia	Poultry	Marek and bursal disease.	2007
Newxxitek HVT+ND vaccine	Carval de Colombia	Poultry	Marek disease and Newcastle disease.	2017
Innovax ND-SB Virus Serotypes 2 and 3. Poultry recombinant vaccine ICA resolution 1250	Intervet Colombia Ltda	Poultry	Marek disease and Newcastle disease.	2010
Poultry Anigen AIV Ab Elisa Kit ICA Resolution 1251	Annar DiagnostICA Import S.A.S	Poultry	Avian Influenza	2010
Poulvac E. Coli poultry inactivated subunit vaccine ICA resolution 1252	Wyeth Inc	Poultry	Avian Colibacillosis	2010
Innovax ILT poultry recombinant vaccine ICA resolution 1253	Intervet Colombia Ltda	Poultry	Marek's disease and Laryngotracheitis.	2010
Poultry recombinant vaccine ICA resolution 2399	Vetiplus S.A.	Poultry	Marek and Gumboro disease.	2010
Poultry recombinant vaccine ICA resolution 2400	Vetiplus S.A.	Poultry	Marek and Newcastle disease.	2010
Innofusion ND ICA resolution 5990	Intervet Colombia Ltda	Poultry	Marek and Newcastle disease.	2012
Vectormune FP-LT-EC Vaccine	Vetiplus S.A.	Poultry	Laryngotracheitis and smallpox.	2011

ICA resolution 4125				
Vectorvac FP-LT ICA resolution 5988	Amerivet SAS	Poultry	Laryngotracheitis and smallpox.	2012
Vectormune ND	Ceva Animal Health	Poultry	Newcastle and Marek disease.	2017
ProtequFlu-Te	Merial	Equine	Influenza and tetanus.	2017
AGID diagnostic kit		Equine	Equine Infectious Anemia Virus.	2017
Ingelvac-CircoFlex ICA resolution 2945	Boehringer-Ingelheim	Swine	Circovirus type 2.	2007
Vaccine	Suvaxyn PCV2	Swine	Circovirus type 1.	2008
ICA resolution 3318				
Porcillis inactivated subunit vaccine	Intervet Colombia Ltda	Swine	Circovirus type 2.	2009
ICA resolution 1227				
Porcillis porcoli DF vaccine	Intervet Colombia Ltda	Swine	Neonatal enterotoxigenic.	2010
ICA resolution 4472				
Porcillis PCV	Intervet Colombia Ltda	Swine		2012
ICA resolution 5987				
Circumvent PCV M	Intervet Colombia Ltda	Swine	Protection for both circovirus and Mycoplasma hyopneumoniae.	2012
ICA resolution 5989				
Porcillis AR-T DF	Intervet Colombia Ltda	Swine		2011
ICA resolution 4130				
Relsure PCV MH combination vaccine	Zoetis Colombia S.A.S.	Swine	Protects swine from porcine circovirus-associated disease (PCVAD) and enzootic pneumonia.	2017
Anigen Rapid E. diagnostic kit	Annar Diagnostica Import S.A.S	Canine	Immunochromatography diagnostic kit.	2010
ICA resolution 4470				
Recombitek C4	Carval de Colombia	Canine	Distemper, adenovirus, hepatitis, parainfluenza and parvovirus vaccine.	
Anigen Rapid Leishmania diagnostic kit	Annar Diagnostica Import S.A.S	Canine	Detection of Leishmania antibody.	2017
Recombitek C6 vaccine	Merial	Canine	Distemper virus, parvovirus, adenovirus type 1 (hepatitis), adenovirus type 2 (respiratory disease complex), parainfluenza virus, and the bacteria L. canicola and L. icterohaemorrhagiae.	2017
Feline immunodeficiency	Annar Diagnostica	Felines	Feline immunodeficiency and leukemia virus.	2010

and leukemia virus diagnostic kit	Import S.A.S			
ICA resolution 2401				
Leucogen	Virbac Colombia Ltda.	Felines	Leukemia	2011
ICA resolution 4126				
Purevax FeLV vaccine	Merial	Felines	Leukemia	2017
Synbiotics La-EZ/EIA	ADN Internacional S.A.	Equines	Equine infectious anemia.	2012
Elisa diagnostic kit				
Ingezim PRRS America	ADN Internacional S.A.	Swine	Porcine reproductive and respiratory syndrome virus.	
Elisa diagnostic kit				
Priocheck Ab CSFV 2.0	ADN Internacional S.A.	Swine	Swine fever virus.	
Elisa diagnostic kit				
SensPERT FELV Ag/FIV Ab	Gabrica S.A.	Feline	Feline immunodeficiency virus.	2012
ICA resolution 3976				
SensPERT FIV Ab	Gabrica S.A.	Feline	Feline Immunodeficiency Virus.	2012
Elisa diagnostic kit				
ICA resolution 3973				
Recombitek C3	Carval de Colombia	Canine	Distemper, adenovirus, and parvovirus vaccine.	
Ingezim Corona Diferencial 2.0	ADN Internacional S.A.	Swine	Transmissible Gastroenteritis and Porcine Respiratory Corona Virus.	
Elisa diagnostic kit				
Priocheck BTB	ADN Internacional S.A.	Cattle	Blue tongue vaccine.	
Elisa diagnostic kit				
Mycobacterium bovis	AquaLab S.A.	Cattle		2017
Elisa diagnostic kit				
Innofusion ND	Intervet Colombia Ltda.	Poultry	Marek Newcastle poultry vaccine.	
Porcilis Coliclos	Intervet Colombia Ltda	Swine	Infections caused by <i>E. coli</i> .	
Virbagen Omega	Virbac Colombia Ltda.	Feline	Recombinant interferon omega vaccine.	
Farmune HVY-IBDV-LT	Amerivet SAS	Poultry	Laryngotracheitis, Gumboro and Marek disease.	
HerdCheck PRRS X 3	AquaLab SAS	Swine	Porcine Reproductive and Respiratory Syndrome.	

Elisa diagnostic kit				
Rhiniseng	Hipra	Swine	Atrophic rhinitis.	
ICA resolution 3042				2014