Banana value chain profile for Colombia: Production and Fusarium Tropical Race 4 (TR4) at a crossroad

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HIGHLIGHTS

The banana sector is an important part of Colombia's economy, generating approximately 293,648 direct and indirect jobs and contributing to 5.3% of Colombia's agricultural GDP.

Colombia is the world's fifth largest banana exporter. Banana exports are a major source of foreign exchange for the country, helping finance imports of other foods.

Bananas are produced in 23 of Colombia's 32 departments, with Antioquia, Magdalena, and La Guajira focused on international markets. The largest banana-producing department is Antioquia, where most banana production is concentrated within the subregion of Urabá.

The banana value chain is long and complex, involving many different actors, such as producers, state entities, financial institutions, producer associations and cooperatives, research centers, marketing companies, logistical service and input suppliers, and certification firms.

The presence of Fusarium TR4 poses a significant threat to Colombia's banana sector. This fungal disease could have a severe impact on the country's economy and global banana supply.

The Colombian government and banana industry are working together to prevent the spread of TR4. Some measures include strengthening biosecurity plans, conducting risk assessments, continuous monitoring, raising awareness among producers, and trying to develop TR4-resistant varieties of bananas.

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Colombia is the eleventh largest banana producer in the world and the fifth in Latin America, behind Brazil, Ecuador, Guatemala, and Costa Rica (FAOSTAT, 2022).

The most common varieties produced in Colombia are Cavendish and Gros Michel, with the former produced for international markets and the latter for domestic markets. Colombian Cavendish bananas are threatened by the presence of Fusarium Tropical Race 4 (TR4) in the country since the detection of the first plant infected in 2019 in La Guajira (ICA, 2019). Given the importance of bananas for the region and the potential impacts of TR4, in this profile, we examine the banana sector and value chain in Colombia.

The importance of the banana sector for the economy

The agricultural sector, in general, and the banana sector, in particular, play important roles in Colombia's economy. There are two varieties of bananas in Colombia: bananas for export (Cavendish) and bananas for domestic consumption (*banano criollo*). More than 2 million tons of bananas were exported from Colombia in 2021 (FAOSTAT, 2022), corresponding to 86% of its national banana production. Colombia's main export destinations are Belgium, the United Kingdom, Italy, the United States, Germany, the Netherlands, and Slovenia. Exports to these countries account for 89% of Colombia's total banana exports with the remaining 11% exported to 35 other countries (FAOSTAT, 2022). In 2020, the agricultural sector represented 25.3% of total exports, and banana exports were valued at USD 916.2 million, representing 11.6% of the country's agricultural exports (Augura, 2021). Income from banana exports helps finance imports of other foods (FAO, n.d.). The banana sector is also important for employment: it generates approximately 293,648 direct and indirect jobs and has a 5.3% share of Colombia's agricultural GDP (MADR, 2020). On average, each person in Colombia consumes 6.16 kg of bananas and 36.2 kg of plantains per year, which is the highest of any other fruit in the country (FAOSTAT, 2022).

Banana production across the country

Banana production varies across the country. Colombia produced approximately 2.4 million tons of bananas in 2020 (FAOSTAT, 2022). Production is carried out by different types of producers: small and large producers, as well as producers for export and producers for domestic markets. Colombian banana producers grow bananas on five hectares of land, on average (MADR, 2020). There are 35,139 agricultural production units[1] dedicated to banana production in Colombia (MADR, 2020). Small producers can be organized in cooperatives

and associations, especially when they are aiming to sell to international markets since these institutions allow producers to sell bananas together with other producers. The cooperatives and associations assist producers with different production activities, such as providing inputs for harvest and packaging, assisting with pest and disease control, and helping producers obtain the certifications required by international markets. Large producers hire plantation laborers to carry out different activities, such as planting, harvesting, and packaging. It is common to find cases of people managing more than one farm in areas where there are large producers since these producers are part of large banana marketing companies that cover several agricultural production units, as is the case of banana production in the Urabá region in the department of Antioquia.

Bananas are produced in 23 of Colombia's 32 departments, of which three produce for international markets (Figure 1) and 21 for domestic markets. Banana production in Antioquia, Magdalena, and La Guajira is focused mainly on international markets; however, it is common for bananas that do not meet international standards to be sold in local markets. Antioquia is the only department that has farms producing for international trade and farms producing for local markets only.

Figure 1 shows production information for departments that export bananas. These departments are the only ones with yields greater than 20 tons/ha. Indeed, departments dedicated to international production have higher yields. The national average yield (23.6 tons/ha) is greater than the average yield in La Guajira (21 tons/ha) because the highest yields are in the largest banana-producing departments (Antioquia and Magdalena, with average yields of 33 tons/ha and 39.6 tons/ha, respectively, which account for 83% of the country's total banana production).

Figure 2 compares planted areas and production in the domestic producing and exporting departments. The figure provides us with an idea of how intensive banana production is in the areas that produce for international markets, as they produce 84% of the bananas produced in Colombia and allocate 57% of their agricultural land for this crop. The largest banana-producing department is Antioquia where most banana production is concentrated within the subregion of Urabá in the municipalities of Apartadó, Carepa, Chigorodó, and Turbo. Antioquia represents 53% of the country's production and 38% of the land dedicated to banana production (MADR, 2022).

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[1] An agricultural production unit is a unit used in Colombia. It refers to a farm dedicated to agricultural production and can be a fraction, one, or more fields, but has just one owner who is responsible for the farm agricultural production (Franco et al., 2021).

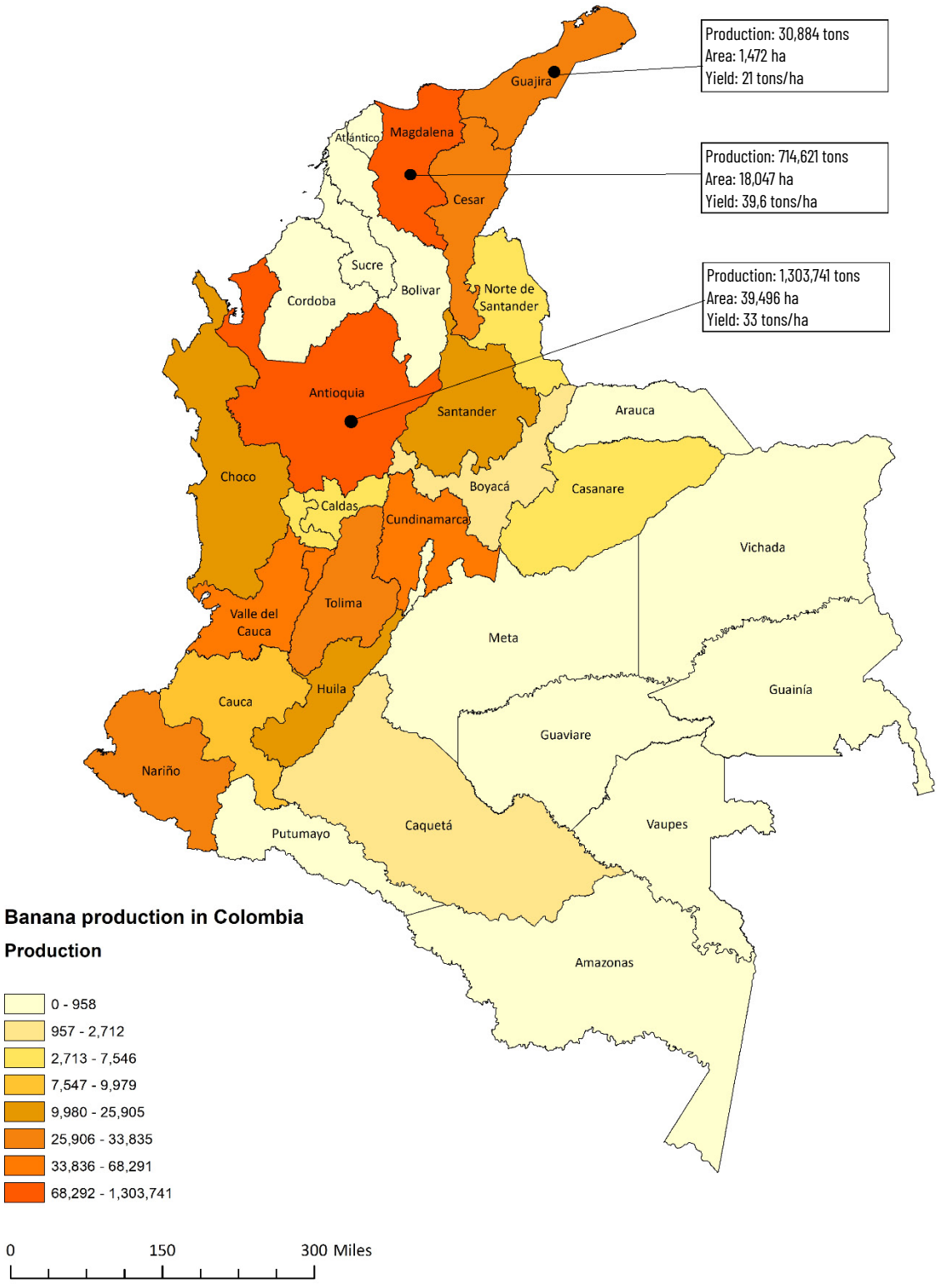

Figure 1 Banana-producing departments for international markets

Source: Own elaboration using data from MADR (2022)

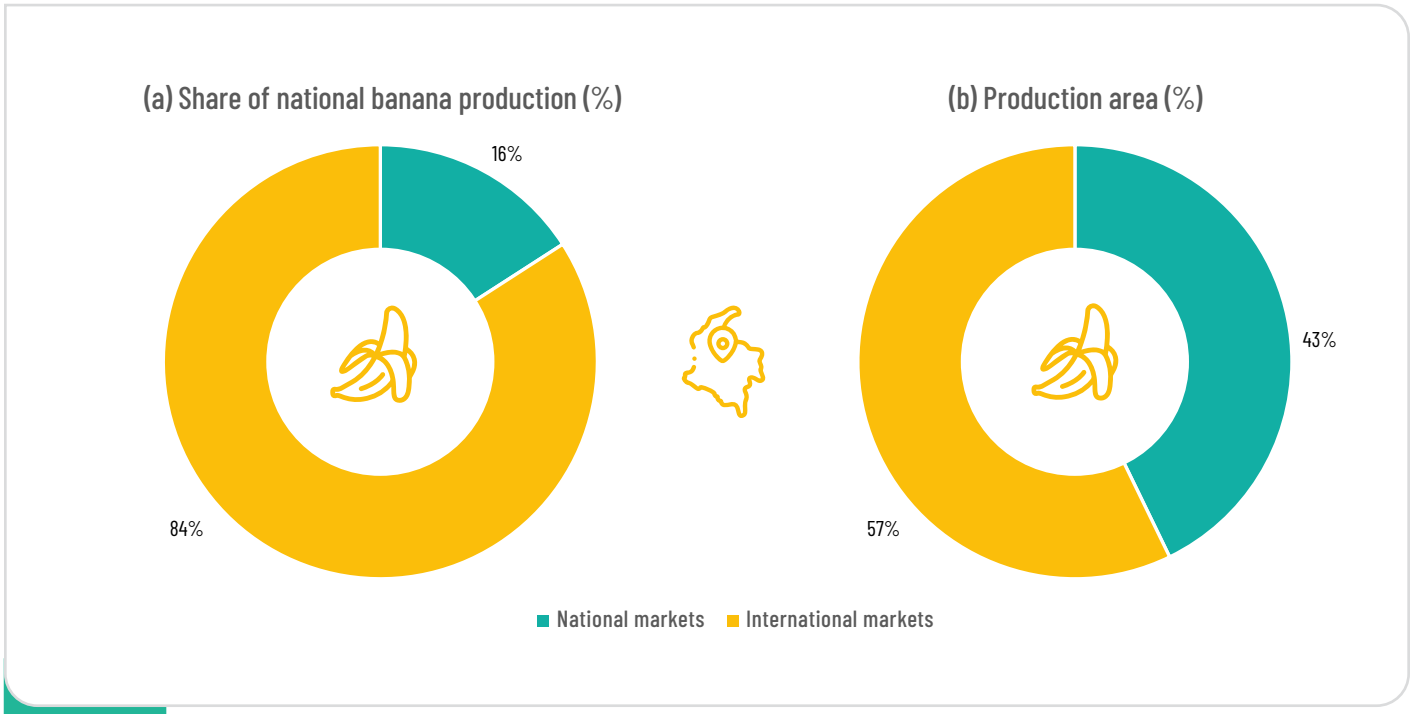

Figure 2 Share of national banana production and production area in Colombia

Source: Own elaboration – data from MADR (2022)

*Note: *Departments producing for international markets are Antioquia, Magdalena, and La Guajira*

Actors in the banana value chain

Bananas pass through many stages and hands in the value chain before arriving at their destination, the consumer. Figure 3 shows the wide range of actors involved in the banana value chain. State entities affect different links in the value chain since they are not only responsible for designing and implementing agricultural laws, but also for allocating resources, subsidies, loans, and phytosanitary regulations and assistance. These actors include the Colombian Agricultural Institute (ICA) and Agrosavia. Agrosavia is the national institution of science, technology, and innovation that contributes to technical change to improve the productivity and competitiveness of the agricultural sector in Colombia. ICA is the national plant protection organization in Colombia, overseeing, designing, and executing strategies and regulations for preserving the plant health. Financial institutions play a role in the value chain by providing financing to producers so they can establish agricultural production. The machinery and equipment manufacturers, as well as agrochemical producers, participate in the value chain by fabricating and supplying inputs. Some producer associations and cooperatives also provide inputs for bananas, such as fertilizers or packaging materials, to their banana-producing members. The cooperatives are key for small producers in the banana value chain that aim to produce for international markets since they produce small quantities individually, but pooling their production together in cooperatives allows them to contribute significant volumes for markets.

After harvest, and as part of post-harvest activities, produce is transported to domestic markets or international markets. One of the largest Colombian transport companies is Serteba S.A., which transports bananas from packaging sites at farms to the port in Santa Marta for delivery to international markets. This company also provides other logistical services, such as storage according to required temperature and humidity conditions. Marketing companies act as intermediaries between producers and international consumers. They also support other activities in the value chain, such as by providing fungicides to producers so they can prevent Black Sigatoka (a fungal disease that affects banana plants) from entering their farms.

Certification firms ensure that production meets different standards. Production in Antioquia, Magdalena, and La Guajira follows the Voluntary Sustainability Standards established by the United Nations Conference on Trade and Development. These standards strive to increase the ability of countries to boost their exports and improve their market access to more profitable markets while requiring products to meet economic, social, and environmental sustainability metrics (UNCTAD, n.d.). In the

Colombian banana sector, the most important Voluntary Sustainability Standards are Global G.A.P., Rainforest Alliance, Fairtrade, and USDA-Organic. Banana production is labeled and certified when standards are successfully met. As mentioned above, cooperatives help producers obtain these certifications and meet the requirements they entail.

At the end of the value chain are consumers. Bananas are exported to international and domestic markets. In addition to consumers who purchase bananas, other consumers are households who grow bananas for their own consumption. Bananas are important for food security through the income to consumption pathway, as well as through the production to consumption pathway. Bananas are a widely consumed staple food in Colombia: the average banana consumption per capita in 2018 was 14 kilograms, which is 2 kilograms more than the worldwide average (FAOSTAT, 2022).

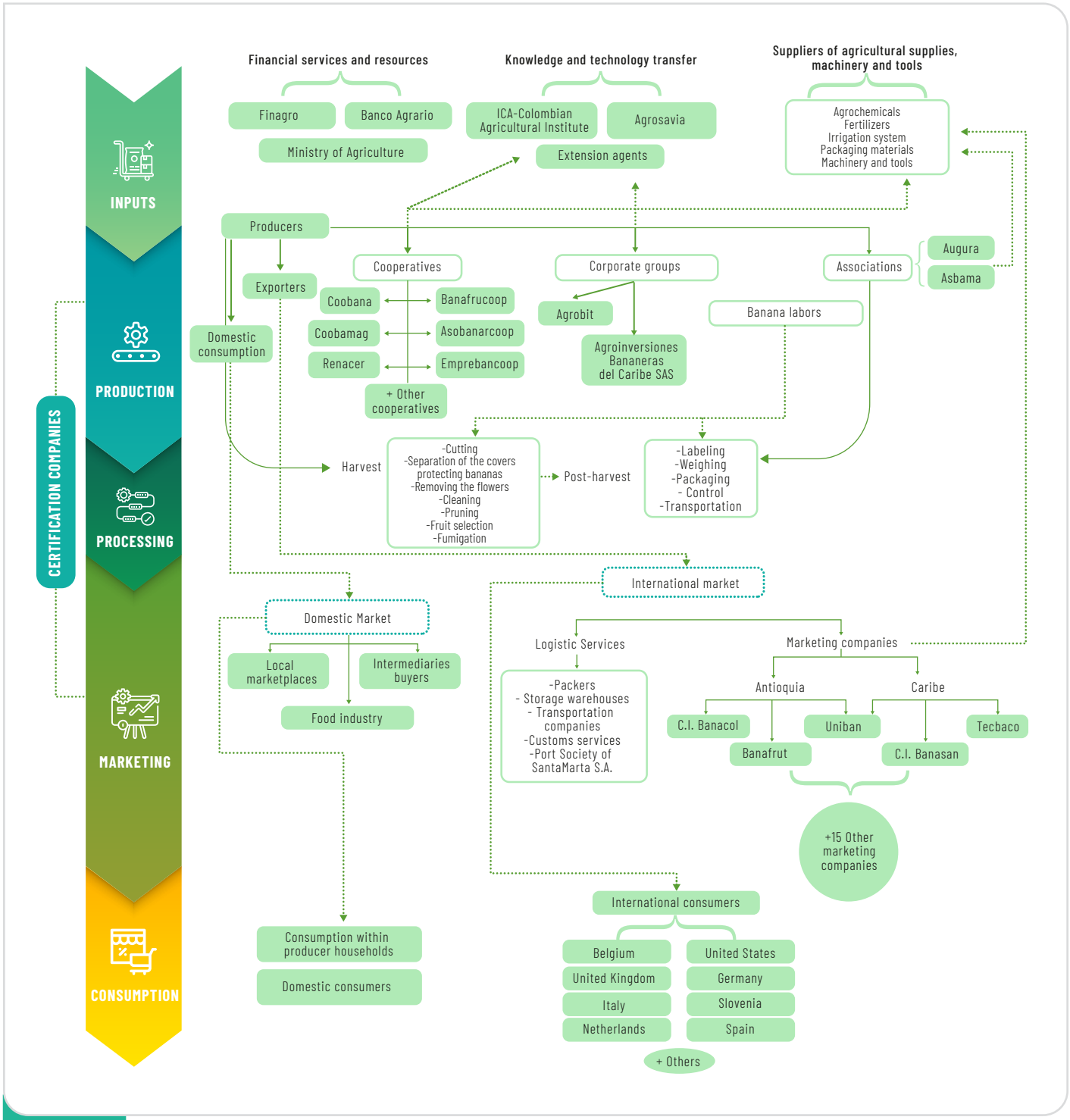

Figure 3 Actors in the banana value chain

Source: Own elaboration

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Fusarium Tropical Race 4 (TR4)

Banana production in Colombia is threatened by the recent arrival of Fusarium Tropical Race 4 (TR4). TR4 is a fungus that affects the vascular system of the plant, constricting the transport of water and nutrients, which kills the host tissue and might lead to the death of infected plants (Pegg et al., 2019). Pegg et al. (2019) reviewed different studies that analyzed TR4 survival and found that this soil-borne fungus can stay alive in the soil for more than 50 years. TR4 is a major concern for banana production, not only in Colombia, but throughout the world since there is no effective treatment against it, it leads to complete yield loss, and there are no commercial varieties resistant to this long-lasting disease.

ICA has been working to keep TR4 out of the country since 2013. By 2015, this fungus was declared a "quarantine pest." In 2017, ICA conducted risk assessments regarding the possible entry of Fusarium into Colombia. However, in June 2019, the first symptoms of TR4 were identified in two banana farms in the department of La Guajira. Pathogenicity tests confirmed that TR4 had arrived in Colombia. In 2019, the declaration regarding TR4 changed and, to date, it is officially considered a "phytosanitary emergency" as declared by ICA – the Colombian national plant protection organization – (ICA, 2023). As of May 25th, 2023, TR4 has been confirmed on 17 farms in Colombia, resulting in on 3,176.54 hectares under quarantine (6 farms in Magdalena and 11 in La Guajira) (ICA, 2023).

Since TR4 entered Colombia, a united front has been created among different actors in the banana value chain to prevent the spread of the disease. Producers, ICA, Agrosavia, the Ministry of Agriculture, producer associations (such as ASBAMA and AUGURA), and other institutions are working together in public-private partnerships to articulate efforts to contain the disease. For instance, an agreement signed by ICA and AUGURA with 5.8 billion Colombian Pesos (equivalent to about USD 1.2 million) in funding aims at strengthening biosecurity plans, continuing epidemiologic surveillance, raising awareness, and sensitizing producers on the prevention and control of TR4 (ICA, 2022). A total of 1,340 producers (of which 69% are small producers) have been beneficiaries of these public-private partnerships (ICA, 2023). In parallel, Agrosavia has been working on finding and developing TR4-resistant varieties.

Although national production and exports are not yet affected according to statistics, data on planted areas and production in La Guajira suggests an influence of the TR4 outbreak on production. Figure 4 shows the trends for this department from 2016 to 2020. Peak production and areas of bananas were observed in 2018, one year before the outbreak. Since then, areas have been reduced by 51.8% and production has significantly decreased by 73.7% by 2020. Fusarium was first confirmed in Magdalena in 2021 (ICA, 2021);, however, due to data availability, we are unable to see any changes in this department yet.

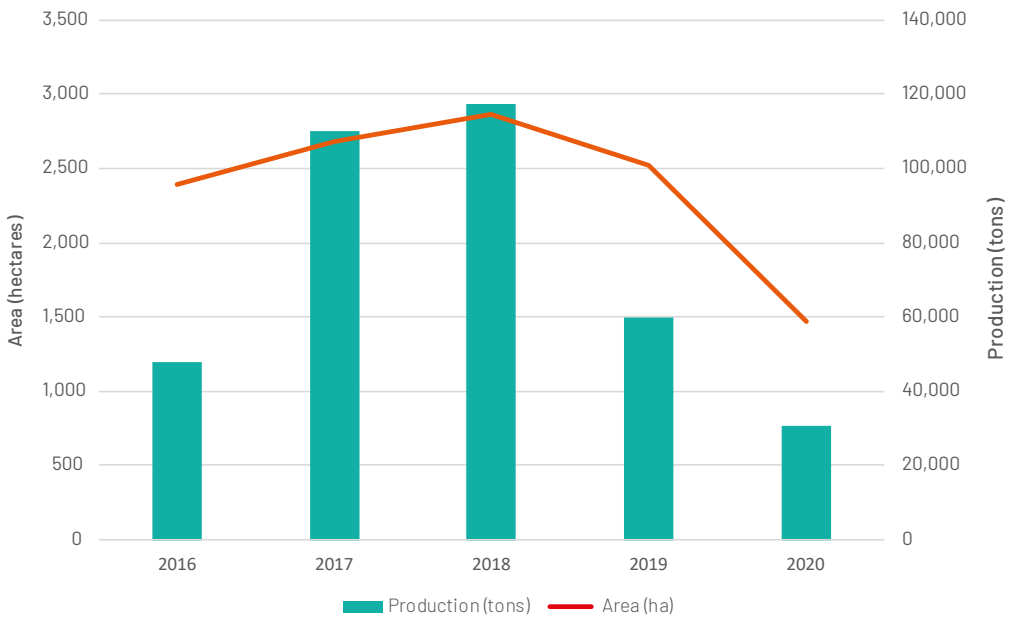

Figure 4

Produced area and production in La Guajira (2016-2020)
Source: Own elaboration based on data from MADR (2022)

Given that Fusarium has already been in Colombia for more than three years, it is imperative to conduct socioeconomic and cost-benefit analysis studies to better understand the effects of measures taken to prevent and contain TR4. Results from these studies can quantify and compare the effectiveness of different mitigation strategies and would allow stakeholders to make better informed, evidence-based decisions to tackle the consequences of the presence of TR4 not only in Colombia, but in other countries as well.

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