

Public-private strategies to establish a successful avocado export cycle: cases from Colombia

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Abstract

Purpose – The purpose of this research is to study the Colombian avocado export industry, identify key insights associated with creating and sustaining the avocado value chain, and to understand the impact of the public policies affecting this industry.

Design/methodology/approach – The approach consists of two case studies to shed light on the opportunities and challenges of developing a sustainable avocado value chain in Colombia. One case deals with a vertically integrated business (Arcángel Miguel) while the other focuses on an association of small growers (Asohass). The analysis was informed by a series of interviews with key actors along the avocado supply chain to uncover the business strategies to move avocados to destination markets. The authors compare and contrast approaches to business development, international expansion, and role of public policies.

Findings – The authors found that the strategies followed by these organizations differ in means but aim for the same objective: maximize profits, improve environmental performance, and enhance the social wellbeing of growers. The authors found that each type of business model requires distinct public policies to succeed and different strategies to appropriately allocate efforts. The findings are relevant to other high-value crops and other Latin American countries with similar geographical and social characteristics.

Research limitations/implications – These insights underscore the need of public policies tailored to the specific needs of the different actors in the value chain. The current emphasis on certifications and export markets works well for large agribusinesses, but smallholder growers need policies tailored to new investments in physical, human, and social capital.

Originality/value – This study contributes to the literature on avocado value chains in Latin America, emphasizing the challenges faced by the emergent Colombia avocado sector, a country that only began exporting this commodity in 2010.

Keywords Avocado value chain, Certifications, Grower associations, Cooperatives, International market, Vertical integration, Policy

Paper type Case study

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Introduction

During the last decade, the international avocado market has grown rapidly, from less than \$1 billion in 2006 to over \$7 billion in 2020 (Figure 1). Emerging trends in food consumption in high income countries have created a ready market for healthy foods like avocados. According to the U.S. Department of Agriculture (USDA) (2020, 2018), per capita avocado consumption in the US has increased from 2.21 to 8.03 pounds between 2000 and 2018. In The European Union, avocado consumption increased from 1.1 to 2.4 pounds per capita between 2013 and 2018 (FruiTrop Online, 2020). Furthermore, China practically tripled the value of its imports between 2015 and 2018 (ITC, 2020). Mexico, Peru, and Chile currently dominate avocado exports. Colombian producers entered export markets in 2010 and have realized rapid increases in sales over the past decade (Figure 2).

The objective of this study is to examine two cases that shade light on the emerging issues facing the avocado value chain in Colombia. The first case considers a large-scale, vertically-

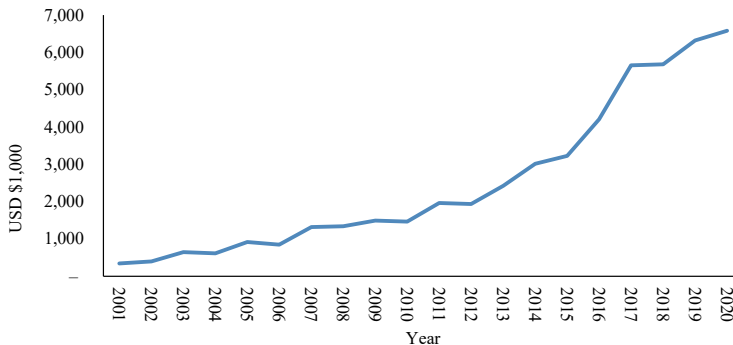


Figure 1.
Value of global
avocado exports,
2001–2020, in
thousands of dollars

Source(s): International Trade Commission (ITC), 2020, and Corpohass

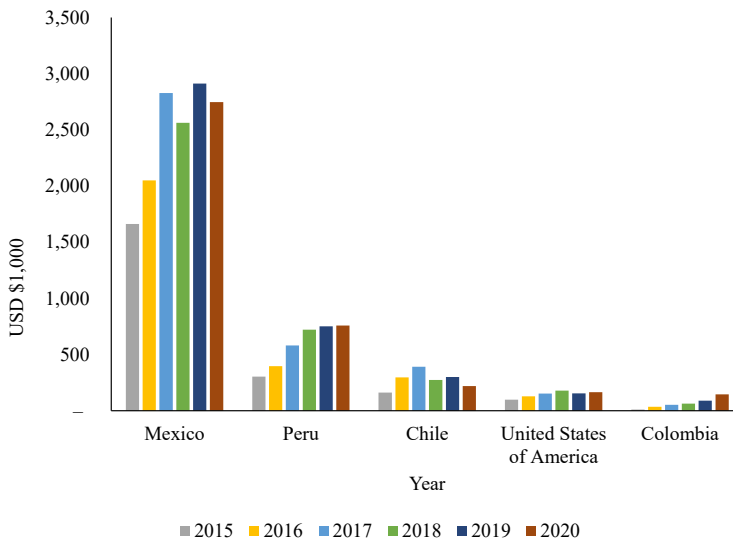


Figure 2.
Value of avocado
exports in selected
countries in the
American Continent,
2015–2020, in
thousands of dollars

Source(s): International Trade Commission (ITC)

integrated company, *Arcángel Miguel*. The second case focuses on *Asohass*, an association of small and medium growers (S&MGs) located in the Colombian coffee region. We first describe the business and the market strategy of these organizations, along with their business models and marketing strategies. Then, we conduct a cross-case comparison to understand the approaches these organizations employed to overcome similar challenges – e.g. penetrating international markets, meeting quality standards, leveraging certifications and sustainability efforts. Finally, we discuss critical factors that helped establish a successful avocado export business in Colombia, the challenges ahead, and the role of public policy to support different kinds of entrepreneurs.

Background

Traditional Colombian agricultural exports include coffee, bananas and cut flowers. For most of the 20th century, coffee dominated agricultural exports. The development of the export coffee value chain paved the way for the resources and infrastructure needed to connect rural areas to international markets. Public policies played a key role in the emergence of coffee S&MGs in international markets. Successful participation in international coffee markets provides valuable insights on the role that avocado production and export could play going forward and the policies that promote this sector as an engine for rural development.

Between 2013 and 2020, Colombian avocado exports increased from US\$1.2 million to more than US\$146 million annually (Figure 3). This dramatic expansion generated more than 54,000 direct jobs between 2014 and 2018 and it is likely to generate a substantial number of new jobs in the coming years (Ministerio de Agricultura, 2018). The Colombian Agricultural Institute (ICA, in its Spanish acronym) registered more than 12,400 avocado-producing farms as of January 2020, with a total of 110,000 registered ha planted to avocados. However, Corpohass, the country’s largest avocado export association, estimates that the number of farms producing avocados is as twice as larger.

Colombia possesses several competitive advantages for avocado production. Both soils and moisture levels in the Andean Mountain range (see Figure 4) support avocado trees

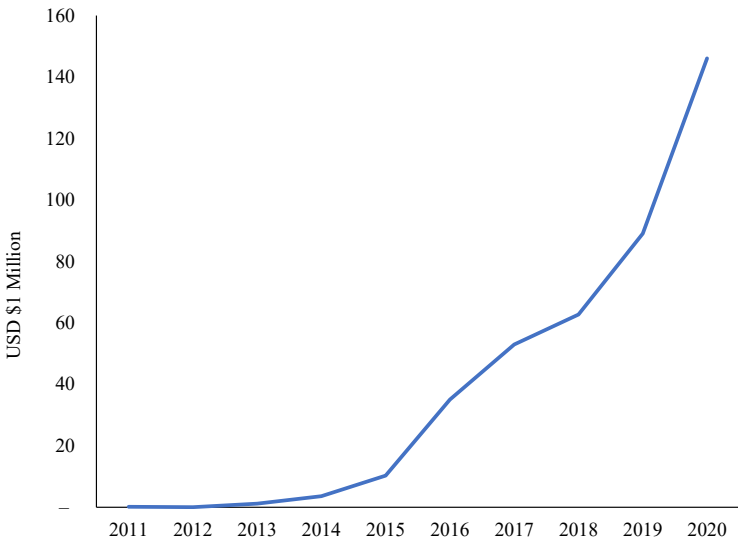
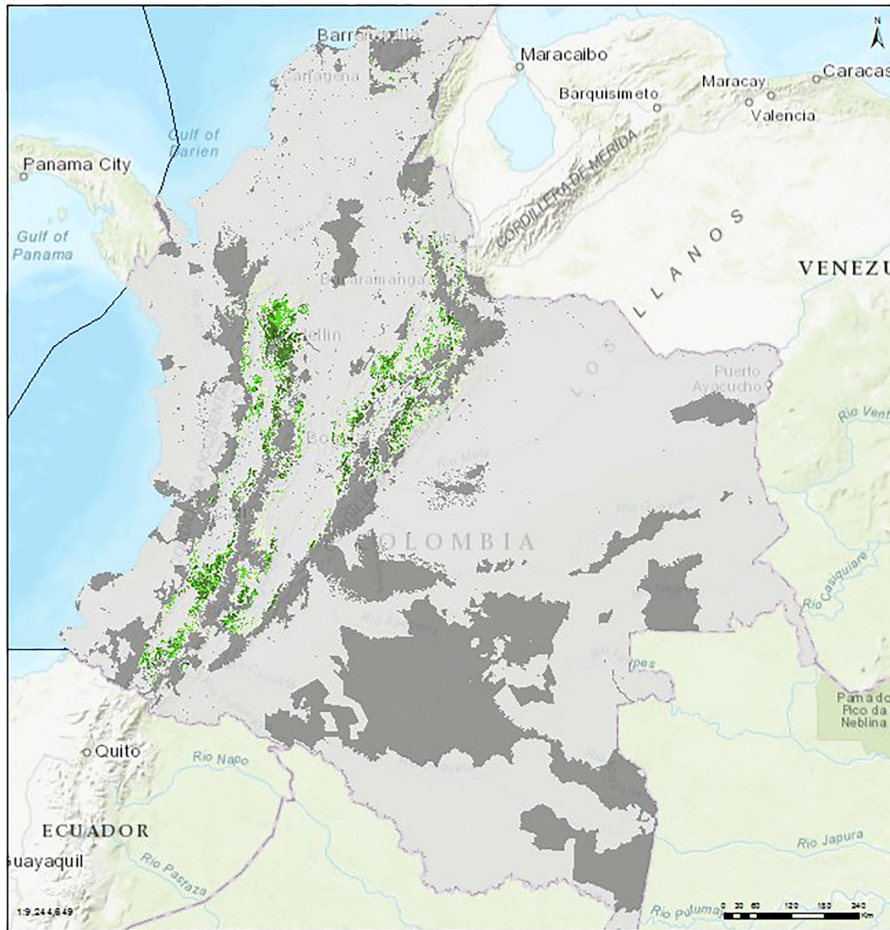


Figure 3.
Value of annual
avocado Colombian
exports, 2011–2020, in
millions of dollars

Source(s): Departamento Nacional de Planeación (DANE), Corpohass



Source(s): Sistema para la Planificación Rural Agropecuaria

Figure 4. Areas with productive potential for Hass avocado (in green). According to the government's analysis, of the 3.3 million ha that are suitable for planting avocados, only 0.75% are planted

with minimal risk of diseases. In addition, this mountain climate advantages growers with only two seasons, rainy and dry. Thus, avocado producers can harvest twice annually (most other avocado exporting countries have only one harvest per year). In addition, the harvest windows (a main harvest is October–November and a secondary harvest in March–May) do not coincide with those for other global players. Finally, Colombia's avocado producing regions receive rainfall in consistent amounts, which allows growers to meet the crop's water requirements, one of the major limitations to its expansion in other countries (Palomo, 2018).

Some argue that avocados could be the engine of Colombian rural development in the twenty-first century, much like coffee was in the 1900s. Public policies played a key role in the successful integration of smallholder coffee growers into international markets, improving the welfare of many rural communities in coffee producing regions.

Similarly, public policies are playing an important role in the development of the avocado value chain. Government assistance has helped growers access important markets including

the US (the world's leading importer with more than 50% of global avocado imports), China (the country with the fastest growth in imports in the last five years), Japan, Peru and Argentina (Gonzalez, 2020). Colombia has several public agencies that support the avocado export value chain. ICA, for example, supports the certification of Colombian growers seeking access to export markets. ICA has worked in coordination with the Colombian Association of Fruits and Vegetables (Asohofrucol) to provide technical support and training for avocado growers selling in international markets. ICA educates and updates growers on acceptable pesticides and their threshold application levels, for each export market along with guidelines on pest and disease management. These range from protocols to control bugs like thrips and *Monilium*, to controls for fungi and rodents. Another important public institution is ProColombia, a government agency that promotes business opportunities in international markets with advice on establishing business relationships in various international markets.

While government policies have focused primarily on promoting large-scale investments, other organizations provide support to S&MGs. Cooperatives and other grower associations play a key role for profitable participation of S&MGs in international markets (Gutiérrez, 2014). These associations coordinate policies to facilitate S&MGs access to physical and social infrastructure (e.g. roads, ports, electricity, connectivity, etc.). Although ICA has been fundamental in the growth of the sector, S&MGs associations argue that additional support to meet international quality standards is needed (we discuss this in more detail in the cases). Since the signing of the peace agreement with a major leftist guerrilla movement (Colombian Revolutionary Army Force, FARC) in 2015, Colombian agriculture has entered an era of greater connectivity, productivity, and expansion. Public policy supporting social and physical infrastructure in avocado-producing areas can contribute to generate investment, job creation, social integration, and sustainable development for rural areas. In a country that is constantly fighting against the production of illegal crops, growing avocados for the international market can contribute to sustainable socioeconomic rural development.

Finally, avocado stakeholders recognize that environmental and social certifications can facilitate access to international markets (Hattam *et al.*, 2012). Guilds like Corpohass (the National Association of Hass Avocado Growers) and Asohofrucol (the Colombian Association of Horticulture) are leading efforts to certify S&MGs clusters [reference?]. According to Corpohass, in 2021, it joined efforts with Agrosavia (the National Institute for Agricultural Research) to assist 76 growers with Global GAP Certification. Similarly, Asohofrucol states it has provided certification support to more than 13,000 S&MGs growers nationally.

Methodology

Two case studies were developed to examine the Colombian avocado export value chain. One case considers a vertically integrated business (Arcángel Miguel) while the other focuses on an association of S&MGs (Asohass). We conducted several rounds of semi-structured, in-depth interviews between August 2020 and January 2021 with key individuals in each organization. These interviews focused on company history, market strategies and integration with international customers, future challenges, and perception of the role of the government, among others. In each case study we interviewed the Chief Executive Officer (CEO) or the president of the organization. We also interviewed individuals in government institutions such as ProColombia and ICA and in producer associations (e.g. Corpohass, Asohofrucol) to collect information of policies affecting the avocado supply chain.

Our analysis started with a profile for each company and a description of the context in which the company operates. Each case focused on understanding the business model and determining key elements of success and main challenges. We also conducted a cross-case analysis to understand differences in responses of these organizations to similar challenges –

participating profitably in export value chains, meeting quality standards to sell in international markets, and accessing social and environmental certifications. Finally, we assessed how public policies have affected the two types of business models considered in our cases.

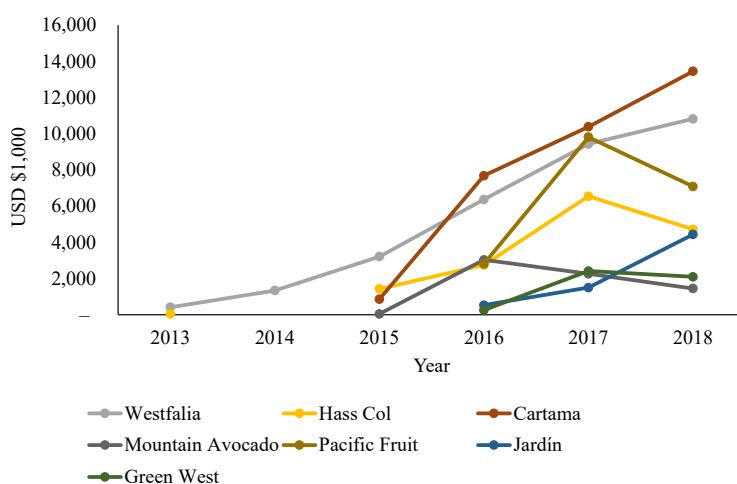
Vertically-integrated business case: Arcángel Miguel

Since its entry into the global avocado market in 2010, Colombia has grown from a country with ten avocado exporting companies and a single avocado packing plant (as stated by Arcángel Miguel leaders interviewed), to have more than 110 different exporting companies operating in 2019 who pack avocado in more than 30 plants distributed nationwide (*Sociedad de Agricultores de Colombia*, 2020). In calendar 2019, ICA registered 43 new avocado farms with more than 1,200 ha planted, and 10 new packing plants. The country's leading exporting companies use an integrated business model and operate their own farms and packing plants and farms (see for example Westfalia, Cartama, Hass Colombia and Pacific Fruit in *Figure 5*). More recently, another business, Arcángel Miguel, was created by drawing on a mix of Colombian and international capital whose investors identified an opportunity in Colombian agriculture. The Arcángel Miguel group was founded in 2017 to produce export-quality Hass avocados. As the market evolved, the company rapidly expanded its operations to include fruit packing and international marketing services, replicating the vertical integration model that has worked well for other leading companies in the sector.

The Arcángel Miguel Group was founded by a private fund that decided to divest from hydrocarbons after prices collapsed in 2009. The fund managers decided to redirect their strategy towards agriculture, acquiring tracts of land in the department (a regional delineation) of Quindío for agricultural production purposes, leveraging some land already controlled by the fund. This region was also attractive due to high land quality and its potential as a producer of avocados for export.

Agropecuaria Arcángel Miguel – sustainable production

Starting with 150 ha in 2017, the company expanded to more than 450 ha distributed among several farms in 2020, with plans to reach 1,000 ha of production in the next 2–3 years. As the



Source(s): DANE / and case interviews

Figure 5.
Value of avocado
exports selected
companies, 2013–2018,
in dollars (FOB)

trees mature, the company expects harvests of over 500 tons of fruit by 2022. All company farms are in altitudes of 1,600–2,150 meters above sea level, giving Arcángel the opportunity to extend their harvest season across several weeks as trees in different altitudes ripen at different times.

While avocado is the main product, Arcángel Miguel has a diversified fruit production portfolio with industrial and export potential, including gulupas, plantains, blackberries and coffee, among others. The passiflora sector, also known as passion flowers, which includes gulupas, granadillas and maracuyas [1], is recognized as a sector with high export potential for Colombian producers (Portal Fruticola, 2017). Arcángel Miguel is part of a private organization, Avance Pasifloras, dedicated to promoting Colombian fruits internationally. Likewise, Arcángel Miguel established a strategic alliance with a plantain processor that buys the harvested fruit and processes it into ready-to-eat products (e.g. patacones) and other added-value products derived from green plantains. Finally, blackberries are usually sold to fruit processors who in turn sell it as pulp for export or for the manufacture of beverages and ice cream in the domestic market.

This strategy of product diversification generated the cash flow required to sustain the business during the three and a half years it takes bring a Hass avocado tree into production [2]. Gulupas and blueberries can be harvested just seven months after planting, while plantains require a year. Coffee trees take about three years to mature the coffee crops already were in place before the avocado project was underway. Secondary crops also provide greater biodiversity and allow farms to remain productive during different seasons of the year. This product diversification strategy also brings more complexity to the business model. For example, recently Arcángel Miguel dropped gulupa crops due to difficulties with disease and is exclusively dedicated to handling the gulupa produced by its independent associated growers.

Arcángel Miguel's production investments are varied. In some cases, Arcángel owns the land and controls production; in other cases, it manages production for landowners or works with allied independent farmers from whom they purchase fruit; and in other cases they are simply investors. These diverse models motivated Arcángel to offer complementary services to growers as part of its business strategy. To its allied farms, which include four companies and other nine independent farms, they provide technical and field support services, as well as support in certification processes and phytosanitary monitoring, among a suite of services. Arcángel is providing these services by leveraging new digital technologies through participation in the *Colombia Emprende e Innova* program [3], which facilitated linking Arcángel Miguel with a development software company. Building on this linkage, Arcángel developed an application that georeferenced individual trees in all its farms (own and allied). Once a tree is registered in the application, it is possible to carry out phytosanitary controls in real time by means of photographs taken in the field, and to monitor the pest control and fertilization on each farm to tightly control production. This application, called *Lectura*, has all the modules required to manage a crop, including production costs, fertilizer and pest control applications, and farm management tools.

Use of technology also facilitates the certification process since it is easier to determine chemical inputs on farms, improve efficiency in pest control becomes more efficient. Costs are reduced, and registration of pest and disease control programs is automated. These certifications include Global GAP (which the plant and most of the farms already have) and Sedex Members Ethical Trade Audit (SMETA). Likewise, most farms are in the process of becoming Rainforest Alliance certified. The company also produces the genetic material that its allied farms use to sow and reseed their crops. These allows Arcángel to have more control on the quality of avocados produced on all farms, whether company owned or allied.

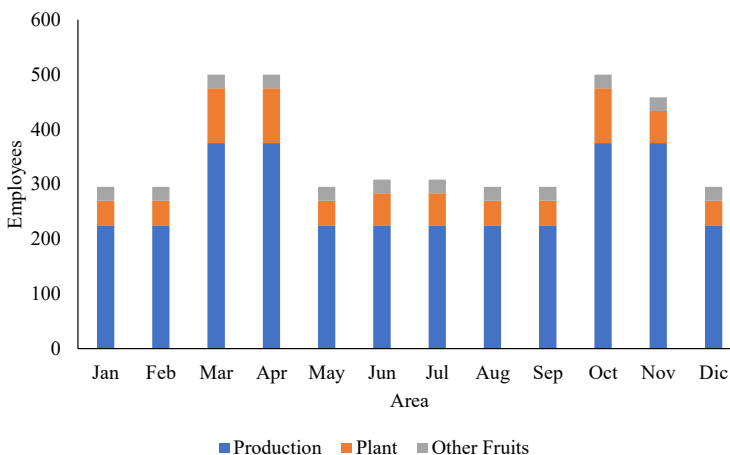
These certifications include guarantees of labor rights to all company workers. The Arcángel Group provides all its employees with social security coverage, formal job

contracts, vacation time, and working conditions that are frequently non-existent in the Colombian agricultural sector. The management team emphasized that the avocado projects has enabled Arcángel to provide income stability and social protection to its people. In comparison, to date, there no provisions for national social security program enrollment in the coffee sector, with many S&MGs having attendant doubts about their future ([Editorial La República S.A.S, 2015](#)). Arcángel leaders calculate that, apart from the specialized teams focused on preparing and caring for the fields, the company employs two workers per hectare, and that during the harvest season between 50 and 150 additional jobs are generated per farm (see [Figure 6](#)).

Avocado producers have had conflicts with environmental advocacy groups in other parts of the country. For example, there is currently a debate in the Cajamarca area, Tolima Department, where avocado is planted in environmentally vulnerable areas by international companies such as AngloGold Ashanti ([El Quindiano, 2020](#)). In contrast, Arcángel Miguel has emphasized sustainable production practices. Trees are planted at relatively low densities per hectare, thus reducing the water demand at each production site and requiring fewer agrochemical inputs [4]. All surface water sources on Arcángel farms are protected with natural buffers of 30 meters wide (15 meters for rivers). Likewise, crop managers let the vegetation between the trees grow freely, thus reducing soil erosion and loss of organic matter. To protect the local fauna and flora, Arcángel Miguel has also designated several biological corridors within the productive zones, and the company limits plantings to land previously used for agricultural activities. Some farms only as little as 50% of their total area in production. The company's leadership believes that future success depends on finding a balance among economic profits, environmental protection and generation of decent employment in rural areas.

Arcángel Miguel International – volume and autonomy

In 2018, the directors of Grupo Arcángel Miguel decided to take vertical integration a step further and launched an avocado packing company called Arcángel Miguel International, thus becoming a vertically integrated business. A packing plant allows greater adaptability to client needs, facilitates the process of coordinating days of packing with harvests. In addition, this facility guarantees a higher level of control over the safety of the product, allows



Source(s): Case interviews

Figure 6.
Estimated calendar
year Grupo Arcángel
Miguel labor demand
including the avocado
packing plant, farm
production labor, and
other fruit labor

direct management of the risk of contamination. Finally, the plant offers the possibility of packing other fruit exports such as passion fruit and Tahiti lime as well as third-party logistics (3PL) operations [5].

Arcángel chose the municipality of La Tebaida to build its packing plant, a town located in a Free Trade Zone (FTZ) [6]. Choosing this location brought several benefits to the company: FTZs pay fewer taxes for imported capital goods and production inputs. This facilitated the import of packaging machinery from Italy and refrigeration equipment from Mexico. Likewise, the packaging is cheaper, and Colombia's 19% value added tax (VAT) is avoided; the tax rate on business income is also reduced from 32% to 20%. Finally, the strict FTZ controls on the exit and entry of transport and materials have helped the company maintain an efficient operation, while facilitating the Business Alliance for Secure Commerce certification process [7].

Packing plant operations began in October 2018, and to date it generates at least 45 full time jobs. In peak harvest season, be it passion fruit, avocado or citrus, these numbers can easily double. Its packing line has a processing capacity of 55 tons per day in double shifts, the equivalent of two containers for export. The Arcángel Group argues that the restrictions of the FTZ regime, mostly focused controls on all materials coming in and out, hinder handling of perishables because the restrictions reduce competitiveness and waste time. For example, the intake of materials is a lot slower when every truck must be checked and accounted for at the gate of the FTZ.

In addition, all the quality controls that the company needs to implement to ensure access to markets are carried out in the plant. This includes ripening tests, records of phytosanitary controls, and traceability monitoring in accordance with the standards required by customers. This includes GAP codes that allow monitoring of the farm where the fruit comes from and the plant where it was packed. The machinery also allows Arcángel to classify the fruit according to color and size parameters, which improved cost efficiencies and facilitates quality controls.

Other fruits packed for export and marketed by the company are also processed at the Tebaida plant. For example, Arcángel exports of Tahiti lime to the US and Europe have become an excellent complement to the avocado business, particularly in the mid-year window in which Peru avocado exports which depresses the price of Colombian avocados in international markets. Avocados represent about 65% of Arcángel's revenues while other fruits represent the remaining 35%. The manager estimates that the plant exported almost one million kilograms in its first year of operations, and in the second year it managed to more than double this volume. Production is expected to double the 2020 volume in 2021 (Figure 7).

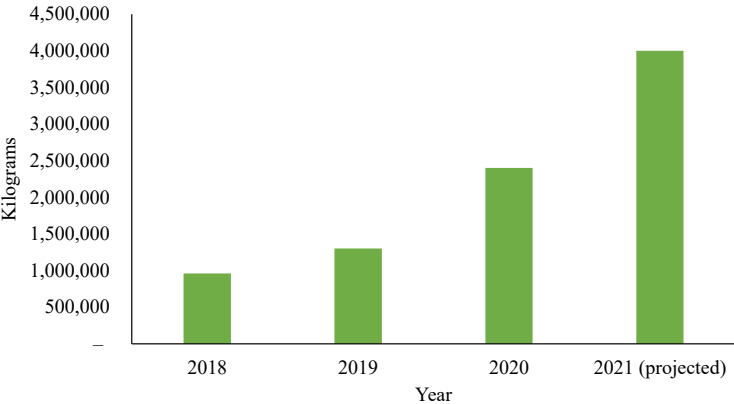


Figure 7.
Volume of avocado
fruit exported by
Arcángel Miguel,
2018–20 with
projections for 2021, in
kilograms

Source(s): Case interviews

The ICA conducts regular audits to verify that all phytosanitary standards are being met, both on farms and in the packing plant. Arcángel believes that the ICA should increase its presence in the industry, given the key role it plays in ensuring the export of high-quality fruit. Likewise, certifying a farm to pack avocados for export has basic requirements (simple infrastructure and material requirements, and specific food safety practices) mitigate risks of cross contamination (chemical or phytosanitary) that, when manifested, negatively impact the price of Colombian fruit in the international market. The ICA has assisted Arcángel by facilitating quicker export processes. However, many additional increases in institutional support are needed to establish clear harvesting parameters and pest control protocols in production areas, along with good production practices in packing and harvesting.

Passion for fruit – direct access to customers

The next step in its vertical integration process was taken in February 2020, when the company decided to open a marketing company in destination markets: the Passion for Fruit Inc., which was launched in the US to participate in international trade shows (e.g. Produce Marketing Association (PMA) in the US, Fruit Logística in Germany, Fruit Attraction in Europe) and direct relationships with buyers. From the direct contacts established, the company has increased its ability to react to customer requirements, packing fruit according to their needs and even in buyers' branded boxes. This in turn has led to greater penetration of European markets, and improved profit margins by vertically integrating and avoiding dependence on intermediaries.

The future of Arcángel Miguel

The company faces several challenges in terms of ensuring the sustainability of the business, not only considering its use of resources and inputs, but also meeting the demand of consumers that increasingly care about protecting the environment, the water sources, and reducing carbon footprints. This is also a challenge with political connotations, as there are environmental groups that have risen up in the region demanding measures to protect the local ecosystem and influence the decision-making by the Autonomous Corporations [8] in the area. For example, there have been cases of avocado crops in the area (not necessarily associated with Arcángel Miguel) whose presence reaches protected, environmentally vulnerable areas. Likewise, in a neighboring region called Cajamarca, recent deforestation processes have been seen in protected areas, associated with the expansion of Hass avocado cultivation. For these reasons, the company operates only on agricultural or pastureland resources. The directors stated that Colombia must learn from the problems that avocado value chains in countries such as Peru, Chile and Mexico have faced in the recent past, and must build a sustainable industry in the future. The company is also interested in perfecting their mixed fruit production practices. Currently, Arcángel is experimenting with mixing and matching different crops and trees to identify possible synergies.

The company also faces the challenge of expanding its export markets, as experience has shown that relying purely on the European market can lead to commercial difficulties in some periods of the calendar year, particularly when Peru and South Africa are in peak production (from late May through early September). The company must devise strategies to build relationships with clients in the US and Asia, and further certify its products to access these attractive markets. On the other hand, the Arcángel leadership is also starting an avocado oil extraction plant that will allow the company to capitalize on the large volumes of fruit that remain in the country for national consumption and that are difficult to commercialize without economic losses. Initial tests suggest that the best option is to mix avocado extra virgin and refined oil.

A case of avocado associations in Colombia: Asohass [9]

Historically, Colombia has had difficulty in establishing successful agricultural cooperative systems, except for the case of the National Coffee Growers Association. Between the 1960 and 1980s, the government implemented a series of “top-down” policies during the years of the agrarian reforms by forming organizations dependent on government aid, which collapsed when subsidies stopped. [Giraldo and Naranjo \(2019\)](#) argue that the public policy of the Colombian State during these years focused more on large productive projects than on supporting smallholders. In the 1990s and the beginning of the millennium, the government took a laissez-faire position that left small scale rural producers relatively unprotected ([Gutiérrez, 2014](#)). This approach was sustained for most of the period 2000–2010, at which point the government turned its attention to supporting S&MGs through the formation of associations.

According to Asohass, between 2014 and 2020, the percentage of ha of Hass avocado in the hands of S&MGs decreased from 46% to approximately 16% Risaralda department, where the association operates. The growth of avocado acreage in this region (from 1,800 ha in 2014 to 4,530 ha at the end of 2018) has been led by foreign capital investments and large agrobusiness companies. The director of the association stated that the percentage of ha planted with avocado in the coffee region (departments of Risaralda, Caldas and Quindío) belonging to S&MGs is now less than 23% of the total.

In this context of avocado production led by large agribusinesses, Asohass was founded by 24 S&MGs from the village of La Bella, Risaralda, in February 2014. In its 6-year history, Asohass has had a maximum of 62 members in 2017, with more than 120 ha of registered Hass avocados. The association participated in the international fair of Macfrut [10] in Rimini, Italy, as part of a government program to help victims of Colombia's internal civil conflict (some of the members have been displaced by violence). Between 2014 and 2019 the association reported sales valued at about USD \$600,000 derived from sales of more than 840 tons of fresh avocados in the national and international market. The organization is funded by the government (in the form of direct transfers from the government for specific projects, technical support of agronomists provided by public organizations) and a 3% commission for sales paid by the associates based on the fruit sold. These funds are to support the association's operating costs, which include a collection center, quality management and accounting software, and single management position, the only job directly generated by the association.

Initially, the cooperative had government support for leadership training and financial assistance valued at about USD \$ 12,000, all under the Rural Opportunities program of the Ministry of Agriculture. The program started in 2007 and it has covered more than 1,700 projects nationwide, benefiting more than 46,000 rural families and supporting the development of business skills among S&MGs while seeking to integrate farmers into national and international markets ([Vanegas, 2014](#)).

The objective of the association is to support the commercialization of food and agricultural products of its members and to contribute to human development of associates. Thus, the role of the association goes beyond marketing avocados, establishing social objectives as a complement to its efforts. Researchers show that it is precisely this social fabric that allows building more robust organizations with superior results in the medium and long run ([Gutiérrez, 2014](#)).

Structure and decision making

Asohass has a structure that includes a Board of Directors reporting to the General Assembly, and five committees leading the main activities of the organization: special projects, solidarity and social welfare, marketing, technical and environmental issues, and quality management. The association also has a revolving fund currently used only for

emergencies, and for physical infrastructure has a few thousand branded plastic bins to use in operations (to pick and transport the avocado) and a collection center located in La Bella.

The association manages international sales for its members. Proposals by fruit buyers reach the Marketing Committee, which analyzes each company and the terms of the offers. The committee then presents two finalists to the general assembly, which votes for their preferred buyer. Once the buyer is approved, the committee proceeds to negotiate contract terms with association members including payment times, transportation costs, and levels of acceptance of damage to the fruit.

Based on the positive effect that the association has had on the income of its members, Asohass is reforming its bylaws to include the commercialization of other complementary products to avocados that are produced in the area such as onions, plantain and blackberries, among others. This, however, requires additional investments in infrastructure, since managing the risk of cross product contamination requires the construction of a second collection center. The products would then be marketed in Pereira (the capital of the department), the closest urban center to production.

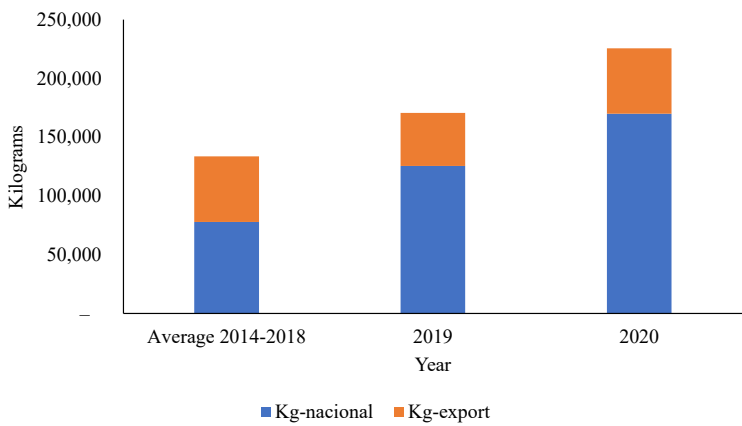
Associates, production and volume

To be an associated producer a farmer must have at least 1 hectare of Hass avocado, be willing to participate in the certification programs promoted by the association and be located in the Risaralda department. The association size has stabilized at 44 associates, producing more than 113 ha of Hass avocado. In addition to having a mix of complementary crops, farmers must also set aside land for conservation of natural resources. This helps them financially, since in Risaralda there is a farm tax exemption for setting land aside for conservation. A few associates have left or have been excluded from the association. The reasons are primarily non-compliance with the norms (selling fruit outside the association) while others decided not to pay the 3% of sales membership fee. According to the directors, the variation in the number of associates is due to incentives from government support to the associates. That is, the government financed planting and maintenance for 1–2 ha of avocado per farmer. The program was designed so that only association members could receive support. However, not all the promised support was delivered and many growers opted out of the association.

Between 2014 and 2018, the association sold more than 668 tons of avocados, generating about USD \$472,000 in sales to the national and export markets, for an annual average of about 134 tons (see [Figures 8 and 9](#)) and an annual revenue exceeding USD \$95,000. During this period, the association focused on the export market, leaving the commercialization in the national market in the hands of third parties and accepting low prices, hoping that the exported volume would compensate for the losses generated by low value sales in the domestic market. In 2019, with additional mature trees, production increased to 170 tons for a value of more than [\[11\]](#) USD \$142,000, an increase of 65% compared to the annual average of the previous 5 years. Furthermore, the association closed the year 2020 with more than 240 tons of fruit for a value that exceeded USD \$ 212,000, marking a milestone in its annual sales. Asohass expects growth to remain high for the foreseeable future.

Two factors explain the rapid increase in sales. First, production has increased because more avocado trees reached maturity in 2019–2020. In addition, the association's sales strategy changed radically in 2019. In that year, the association signed an alliance with a US cash-and-carry retailer with entered in the Colombian market in 2011 and operated 8 stores in 6 Colombian cities by 2020 ([Casa Editorial El Tiempo, 2019](#)). Selling to this retail channel allowed Asohass to establish a domestic fruit sales channel in which their export quality efforts are recognized. Before, Asohass had three options to sell its fruit: export price at an average in 2019 of COP \$ 3,200 per kg (approximately USD \$ 0.88), industrial price at an average COP \$ 1,100 per kg (approximately USD \$ 0.30), and national discards at an average

Figure 8.
Avocado volume
produced and
marketed by Asohass,
by domestic and export
markets



Source(s): Case interviews

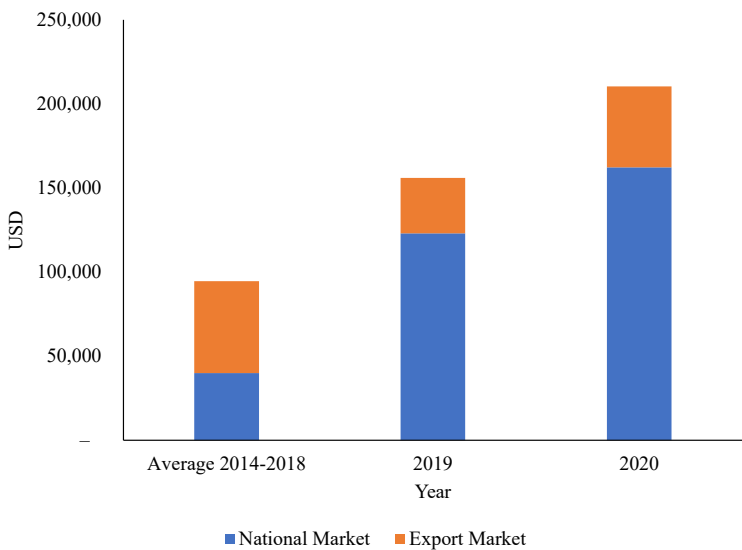


Figure 9.
Sales of Asohass by
market, in USD

Source(s): Case interviews

price between COP \$ 600- \$ 800 per kg (between USD \$ 0.16 and \$ 0.22). We note that in 2020 about one-third of the association’s avocados suffered from lenticel (one of the main enemies of avocado producers in Colombia). This resulted in low average export prices (COP \$ 2,100, or about USD \$ 0.66), two-thirds of the expected average export price, reducing the share of revenue generated by exports (see [Figure 7](#)).

The association then turned its attention to the domestic market: the fruit affected by lenticel suffers less when it does not have to be in a refrigerated container for almost three weeks [\[12\]](#), which allows it to maintain its value in contexts of more immediate consumption such as the national market. When building the alliance, the directors of the association

innovated both in terms of market approach (skipping wholesale intermediaries to reach large supermarkets directly) and in generating income for an association of avocado producers that initially was focused on the export market. In this new channel, the sale price of national fruit was between COP \$ 2,300- \$ 2,600 (between USD \$ 0.63 and \$ 0.71), an increase of 100% with respect to the price for industry, and of almost 300% the price of national discards.

The expansion in this new domestic channel has required additional investments by the association. A warehouse designed to meet the national quality standards to collect the association's avocado production and transport it to the customer was needed. This warehouse, temporarily leased but adapted to meet the standards set by government and expected by the customer, fulfills the triple function of a warehouse, a quality control point, and a location for packing fruit. As discussed previously, a key role of the collection center is to reduce the transport costs for growers (a transport truck costs about USD \$ 200 per shipment of at least 3 tons). Frequently, paying a full truck load per farm is not feasible: and a single grower usually does not have enough fruit to fill a truck by themselves. However, as an association it is possible to take advantage of economies of scale.

Apart from the position of Executive Director, the association estimates that its producers generate a total of eighty jobs directly in avocado crops, plus another ten jobs in complementary crops. The association estimates that about a thousand working days are generated during harvest periods, with each day hovering between COP \$ 60,000 and COP \$ 150,000 (USD \$ 16.48 to \$ 41.21), depending on the skill required and whether growers compete with coffee producers for local labor. In addition, the warehouse generates about 250 working days of quality control related activities, positions traditionally occupied by women (see [Plate 1](#)).

According to the director, part of the success of Asohass traces to low management costs. Administrative costs are about USD \$ 1,150, including salaries and information technology equipment. Likewise, the costs of office space and the lease of the storage center are under USD \$ 1,250 per year. All these costs are covered with the 3% commission on sales received by the association, and a monthly fee paid by each associate of about USD \$ 8.50.

Certifications

Despite limited expansion in planted area, cooperatives are betting on the export market: out of 453 Global GAP codes currently active in Colombia for avocados, 247 are associations/group codes. This covers two arrangements: multiple farms under one management party, and groups of farmers that get certified under one code. The change of focus from the export to the domestic market is also reflected in the certification programs pursued by the cooperative. Between 2014 and 2017, the association certified 26 growers with using funds provided by the government. The majority of the annual certification cost per grower (over USD \$1,500) was covered by the government subsidy and a small portion by the coop membership fees. However, the Global GAP certification effort became unsustainable. On the one hand, certified farms had mostly young trees which had not reached the production stage. Profits from the higher prices received by Global GAP-certified avocado were relatively small. To illustrate, with the price premium of certified product of USD \$ 0.10 per kg and the average annual yield per hectare is around 9.7 tons, a grower has to export at least half of these 9.7 tons to cover the costs of this certification. Moreover, in 2017, government subsidy decreased substantially, so the growers had to start covering most of the certification costs to reach international markets requiring Global GAP.

The reduction in government support, combined with the lack of income of growers, led to financial problems. The revolving fund was unable to pay debts to certification agencies leading Asohass to a financial crisis that took it three years to recover from. With a debt of COP \$ 40'000,000 (about USD \$ 13,000 in 2017), the association operated at a loss the next three years while covering the liability created by GAP certification efforts. Finally, at the end



Plate 1.
Asohass collection
center, located in La
Bella, Risaralda

Source(s): Authors' visit

of 2019, with the success of the new strategy focusing on the dynamic growth of domestic retail sector, the association returned to profitability. The association is looking for opportunities to strengthen financially and continue growing now that it has covered its debt.

Given the shift in distribution strategy, the association changed its quality assurance and certification strategy. It is encouraging members to obtain two less-expensive domestic certifications controlled by the ICA: The *Predio Exportador* [13], which defines the basic requirements for exporting fruit. It is the minimum requirement for sales to the European Union and various Asian countries, and *Buenas Practicas Agrícolas* (BPA) [14] which guarantees food safety, production risk management, appropriate harvesting practices. Currently, there are 22 and 24 members certified with *Predio Exportador* and BPA, respectively, a certification with a cost that goes from USD \$10 for smallholders to USD \$230 for farms beyond 60 ha. The ICA makes regular visits to all registered export and BPA-certified farms to ensure they are meeting the certification requirements. The objective is to ensure that all coop members obtain these two certifications and access international markets while guaranteeing quality fruit for the domestic retailer. Nevertheless, Asohass has not abandoned the Global GAP certification because it can open attractive markets. Currently

there are a few Global GAP-certified members (four growers with more than 6 ha in full production). In 2021 Asohass started working with Asohofrucol to recertify 17 producers in Global GAP to reinstate the government support that ceased in 2018.

Technology and innovation

The association's core innovation success has been the development of supply chain infrastructure that allows S&MGs participate in profitable domestic and international markets. Investments in postharvest and transport infrastructure were mobilized – in the form of a collection center – to create economies of scale and the quality standards required to serve the domestic market while preparing growers to sell internationally going forward. The Asohass model is paving the way for other associations of small growers around the country to improve the income of their members without losing sight of the international market.

Challenges ahead

The future of avocado production in Colombia is promising, but success is not guaranteed for all stakeholders. In the case of S&MGs associations such as Asohass, the main challenge is to remain competitive in a sector led by large-scale agribusiness that is advantaged by substantial foreign capital investments. The management recognizes that Asohass must improve fruit quality and integrate vertically to remain competitive. This includes exploring options to reach end customers in the international market directly instead of relying on intermediaries. This requires capital to support the expansion and corresponding adaptation of the current collection center to become a modern packing house. The association is also studying the possibility of making a second attempt at obtaining Global GAP certifications at the end of 2021, this time with a group code that has lower costs and that would allow certification of the association rather than of individual growers.

The cooperative expects to reach total production of over 400 tons of fruit in 2021, which would represent an increase of 50% in income (exceeding USD \$ 330,000) with respect to 2020. The leadership is optimistic that higher income (coming from more trees reaching production stage) will facilitate making contribution payments to the association and expanding certifications programs.

Cross case analysis

Business strategies: associativity vs capital

In this study we examined two distinct business models to approach the international avocado market. One consists of agri-businesses with enough financial muscle to integrate vertically along the value chain such as Arcángel Miguel, a company that could be considered to have been born-global (Losilla *et al.*, 2019). These businesses focus on becoming reliable suppliers to their customers by controlling all nodes of the supply chain to guarantee high product quality, thus capturing a large portion of value and profits in the supply chain. They primarily sell in international markets and add value to fruit that does not meet export quality standards (e.g. avocado oil). These companies are leading the development of the export avocado sector in Colombia, providing jobs to thousands of people; making substantial investments in technology, machinery and infrastructure; and accompanying government efforts to open international avocado markets for Colombian avocados. These large agrobusiness are taking significant steps to implement corporate social responsibility (CSR) to maintain positive relations with the communities in which they operate, avoiding situations such as the agricultural sector strike in Peru at the end of 2019. For Latin American agribusinesses, practicing CSR is a critical factor to sustain participation in the global supply chain (Mello *et al.*, 2021).

The other business model consists of S&MG associations, which tend to be more labor intensive and focus on the profitable integration of growers to markets while strengthening social capital and development in rural areas. The Asohass case illustrates the opportunities and challenges for this type of organizations. The association realizes the importance of diversifying distribution channels in domestic and international markets when integrating S&MGs to markets of high-value agricultural products requiring high quality standards. The Asohass case provides further evidence that, in Colombia, S&MG associations cannot depend on government support for success, but rather on their business model and the social fabric that unites its members. The Asohass case shows that, when associations have the appropriate combination of leadership and common objectives and accountability across members, it is possible to improve S&MG incomes, production and postharvest practices, as well as social integration. In the case of Colombia, given the internal conflict that affected rural areas for so many years, the government must play a key role to encourage participation of S&MGs in the avocado market through associations like Asohass. The government can contribute to stronger social ties among farmers and to re-establish a sense of community, which were lost in many rural areas due to the internal conflict. Large agribusinesses can establish their own extension and outreach programs, but most S&MG associations lack the resources to implement the same strategies and thus require government support.

The cases also highlight some similarities between these two business models. Both types focus on economic, environmental and social objectives. Arcángel Miguel leaders understand that maximizing profits go hand in hand with positive environmental and social outcomes to sustain the business in the future. This is also true in the Asohass case, as one of the cornerstones of the association is to promote social wellbeing for their members and their families. Like Arcángel Miguel, Asohass understands that maximizing profits is not enough and that social and environmental objectives synergistic with economic outcomes. Both organizations leverage the adoption of social and environmental certification programs to capture the value of efforts to improve the wellbeing of communities where they operate.

Certifications and the international market

Technical assistance is key for the growing Colombian avocado export sector. Arcángel Miguel provides technical assistance to growers in both own and allied farms, while Asohass depends primarily on government to provide such technical assistance. The key role of certifications to access attractive markets drives the type of technical assistance provided to growers. While Arcángel Miguel focuses on expanding certifications (e.g. Global GAP) to access high-value export markets, Asohass is setting a baseline certification system (e.g. Predio Exportador, BPA) managed by a public institution (ICA) to guarantee minimum export standards and ensure elevated quality to access to the rising domestic modern retail marketing channel. As a result, businesses like Arcángel Miguel are further expanding exports, whereas associations like Asohass are diversifying their market channels by combining exports with domestic sales.

The cases show that certification costs are an important hurdle for Asohass but not for Arcángel Miguel. This is because the costs of certifying a large farm are not that different from those of certifying a smaller one. Most certification expenses are related to basic infrastructure and paying the certification company for labor, and these are mostly fixed no matter the size of the operation. Therefore, the increased revenue for a larger operation (on average, Arcángel farms are 15 times larger than Asohass farms) makes certification a profitable investment, while this is not always the case smaller growers. There are ways to reduce these costs for S&MGs, which seem to be the greatest constraint growers face when determining whether or not to get certified (Quartey *et al.*, 2021). For example, group certifications in which some of the expenses are shared evenly across participants tend to

incentivize S&MG participation. This is precisely the new strategy that Asohass is pursuing to promote Global GAP certifications among its members. In addition, appropriate government support via financing farm-level fixed investments (e.g. constriction of water reservoirs and tanks) can help increase S&MG participation in certification programs.

Policy and institutions

Institutions like ProColombia and ICA have played a key role in supporting the development of the export avocado supply chain in Colombia. However, some avocado sector stakeholders argue that this support has overemphasized access to international markets, largely ignoring policies to support S&MGs via improving farm-level productivity and facilitating participation in certification programs. The Colombian government has negotiated the access of avocado products to many international markets, but meeting their phytosanitary parameters is taxing for growers both socially and financially. Public support for small farmers is key, primarily by supporting associations and cooperatives of S&MGs (Devaux *et al.*, 2018). Similarly, it is necessary to provide ICA with the necessary resources to implement extension services to help growers elevate quality standards and to support certification efforts of the Predio Exportador program. In cases like the US, requirements are such that growers could use some public support to smooth out communal efforts around pest control, particularly in establishing the farm-level buffer zones required for export to the US (establishing buffer zones is not a requirement for exports to the EU).

There are other ways to strengthen S&MG associations. While Corpohass exports and makes alliances with international organizations dedicated to promoting Colombian Hass avocado consumption, the Association of Avocado Producers of Colombia emphasizes the need to coordinate the existing 60 regional associations under its umbrella and work in coordination with Asohofrucol to improve access of S&MGs to domestic and international markets. Here, the government can lead market participation efforts, like the support it provided to the coffee sector in the past. Corpohass and Asohofrucol, for their part, can guide the design and implementation of public policies to support S&MGs.

Concluding remarks

The cases discussed here indicate that the avocado sector has the potential improve the well-being of the rural populations Colombia, similar to the role that coffee played in the 1900s (Palacios, 2002). The similarities between coffee and avocado are clear: production is located in the same regions, the product has huge export market potential, and Colombia has clear competitive advantages. Policies for coffee sector improved social welfare, promoted investments in physical and social capital, developed a country brand, and elevated quality standards, among others (Gonzalez-Perez and Gutierrez-Viana, 2012). The government implemented programs emphasizing entrepreneurship and productivity, while the National Coffee Growers Federation implemented programs promoting human development in coffee regions. The coffee sector overcame challenges similar to those the avocado sector is facing today: negative environmental impacts, lack of a welfare system to support workers, and weak integration of S&MGs to international markets. In sum, the country can learn from the coffee experience to sustain the growth of the avocado sector.

Our study suggests that vertically integrated agribusiness companies with sufficient capital can use the comparative advantage to compete international markets when other exporting countries are not harvesting (November–January, and March–May). The case of Arcángel Miguel underscores the positive impacts that large agribusiness to grow the industry and to promote rural development, when appropriate government policies (e.g. Free Trade Zones, trade agreements, etc.) are in place. However, policies emphasizing participation of large agribusinesses in the export market can prevent S&MGs to benefit from the growing

avocado industry. Therefore, policies should also focus on empowering S&MGs and on improving rural development indicators (Nigh, 1999). In addition, alliances between large agribusinesses and S&MG association can be a win-win strategy for all. In Colombia, for example, some large businesses are partnering with smallholders to cover the costs of shipping containers to share profits, whereas others large companies are making alliances with S&MG associations (e.g. Westfalia in Peru and Colombia) to increase exports. Further integrating and coordinating efforts of large agribusinesses and S&MGs is a must.

The study underscores that for both, large agribusinesses, and small grower associations, ensuring sustainable use of resources is key to success. Our case studies indicate that large and small players are making efforts to use resources (e.g. water, land) more efficiently and protecting biodiversity. Our study also shows that all avocado businesses, regardless of the size, are implementing mixed production systems that allow them to manage market risks by diversifying production. Nevertheless, additional efforts to ensure sustainability of the industry are needed. Strategies should be explored to expand and improve current services for the collection of toxic waste in the productive properties, from plastic packaging to managing inputs to improve water quality. Specifically, further analysis is required to understand the effects of using chemicals, like friponil, to combat insect pests like monalonium as it has a negative impact on local bee populations. Also, efforts should be allocated to management of vegetable waste derived from packing and commercialization, as well as ways to reuse or process the water used in the packing and fruit. The government must learn from the problems of water management and protected areas in other countries and reaffirm its commitment to protect natural areas from invasive expansions. This poses challenges when it comes to establishing incentive systems that lead producers to align their interests with environmental efforts.

Finally, our cases underscore the importance of social and environmental certifications for the development of the avocado value chain. While many certification efforts are managed by private businesses, public policy designed to help S&MGs meet international quality standards remains key to promote the development of export value chain for avocados. Although the government's reach is limited, guilds and other public-private organizations like associations and cooperatives can also offer support to S&MGs as they participate in certification processes.

Our study focused on avocado, but the findings are relevant to other high-value crops experiencing demand in international markets and to Latin American countries similar geographical and social characteristics to Colombia.

Notes

1. All variants of the *Passiflora* genus. Gulupa is small and purple, granadilla is orange and fist-sized. Maracuya is yellow and large.
2. That is, from the first seedling development to the first harvest. Avocado trees reach maximum productivity at eight years of age.
3. Program website: <https://innpulsacolombia.com/ColombiaEmprendeInnova/>
4. According to our interviews lower, it is possible that lower planting density also diminishes the negative effect of the lenticel.
5. Third party logistics usually include packing, storage and cross-docking services.
6. Free Trade Zones are areas with special tax regimes. They offer lower taxes and hiring advantages to companies willing to bring employment to certain areas.
7. More information about this organization can be found at <https://www.wbasco.org/es>

8. The Autonomous Corporation of Quindío is the entity in charge of defining the use of land and natural resources in the department. It can block or even destroy crops that are against its guidelines.
9. Here, the terms cooperatives and associations are equivalent.
10. <https://www.macfrut.com/en/>
11. From case interviews, the average direct cost of production of a kilogram of Hass avocado can be between USD \$0.40 and \$0.50.
12. On average, a container takes about 18 total days of transport between the packing plant and the destination in Europe, and to this we must add the transport times at the destination.
13. For more details consult <https://www.ica.gov.co/noticias/ica-registro-predio-exportador-mundo-mercados>
14. For additional detail consult <https://www.ica.gov.co/areas/agricola-pecuaria/bpa-bpg.aspx>

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