

Prospective of Avocado Hass exporter panorama in Colombia for 2030¹

Prospectiva del Panorama Exportador del Aguacate Hass en Colombia para el año 2030

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¹ This article is presented as a degree requirement of the International Business program of Esumer University's International Studies Faculty. This work was advised by Guillermo León Moreno Soto and the methodological coordination of Juan Camilo Mesa Bedoya.

Summary

In recent years, the debate on the export of Hass Avocado in Colombia has presented an interest for the development of the agricultural sector and a great challenge for the government and other sectors involved with this fruit. In this sense, this article carries out a prospective exercise on the export panorama of Hass Avocado in Colombia with a seasonality up to 2030, which through the use of prospective techniques is able to identify and prioritize change factors that allowed the construction of a bet scenario called *Green Boom*, which is characterized by having dynamics in two axes to follow, territorial development and associative sector strengthening. This scenario can be carried out if producers' associations and private sectors are associated and strengthened, together with government assistance, land use and the development of new technologies that evolve the country's logistics infrastructure for exports.

Keywords

Hass Avocado, Prospective, Export, Logistics.

Resumen

En los últimos años el debate sobre la exportación de Aguacate Hass en Colombia ha presentado un interés para el desarrollo del sector agrícola y un gran reto para el gobierno y los demás sectores que se involucran con esta fruta. En este sentido, el presente artículo realiza un ejercicio prospectivo sobre el panorama exportador del Aguacate Hass en Colombia con una temporalidad al año 2030, que a través del uso de técnicas prospectivas se logra identificar y priorizar factores de cambio que permitieron la construcción de un escenario apuesta orientado denominado Boom Verde, el cual se caracteriza por tener dinámica en dos ejes a seguir, el desarrollo territorial y fortalecimiento sectorial asociativo. Dicho escenario puede llevarse a cabo si se logran asociar y fortalecer los gremios productores y sectores privados, junto con la ayuda del gobierno, el aprovechamiento del suelo y el desarrollo de nuevas tecnologías que evolucione la infraestructura logística del país para las exportaciones.

Palabras clave

Aguacate Hass, Prospectiva, Exportación, Logística.

Introduction

According to Procolombia (2020), the country has been consolidating policies and strategies such as certifications to strengthen certain agricultural sectors, including one that has had a significant increase in exports such as the Hass Avocado. By 2018, 241 hectares were certified, rising to approximately 1,000 hectares with Rainforest Alliance certification by 2019, which represents the commitment and sustainability of the sector by the entrepreneurs and farmers who grow it, representing a total of 20 worldwide by 2019.000 hectares, where Colombia was one of the countries with the greatest growth.

Likewise, Analdex (2020) proposes that the country reduce in one week the time needed to carry out an import or export and that the logistic costs be reduced by 50% are the two objectives set by the government in its National Logistic Policy; In turn, the goal is to reduce the logistics times of exports by 2030, which today represent 13.5% of national average sales, reducing them to 9.5% for that year, a figure that would be very similar to the member countries of the Organization for Economic Cooperation and Development (OECD), which is 9%.

There are a series of studies carried out by Mejía and Tobón (2006), Lizarazo (2017), Díaz, Ardila and Guerra (2019), Cruz, Enciso and Gómez (2019), Álvarez and Monsalve (2019), which reveal how the international market is becoming aware of the quality of Hass Avocado, especially the one coming from Colombia, finding a possibility and a field of study for the future, which allows to solve concerns and problems that occur in the planting as the pests, improve production systems and product quality, determining factors for eligibility in an international market. Strengthen and enhance the association of the guild, environmental sustainability, developing technologies and improvements in logistics infrastructure are pillars that will help be much more competitive and prestigious with respect to direct competitors such as Mexico, Peru and Chile.

The accelerated growth and demand that is presenting itself internationally, forces the country to supply the different markets; having as a priority the international one without leaving aside the local one, and taking as a base the productivity at national level through the motivation, technological development, aids and the incentives that the government proposes to cultivate this fruit and to intensify its production for the export in order to take advantage of the opportunities of growth.

It is necessary to take more advantage of the visibility that is being given in the market for this specific product, attracting more foreign investment and looking for new clients to whom to provide this fruit, called "Exotic" in some countries. On the one hand, Colombia has the potential to grow and export Hass Avocado due to one of its comparative advantages, such as the climatic factors that allow harvesting during the year in several regions of the country, all this standing out over direct competition, and on the other hand, there are commercial relations being promoted with different countries such as China and the United States and those already in force with the European Union.

Thus, this article will present a prospective of the export panorama of Hass Avocado in Colombia for 2030, the present of the export panorama will be defined, identifying and prioritizing the determining change factors involved in the whole export process towards different potential markets, and subsequently, identifying the bet scenario that the export sector of Hass Avocado will have.

1. Theoretical framework

The present conceptual framework is based on understanding prospective planning as a central element, which seeks to guide the structuring of a bet scenario. Subsequently, the concepts of export and Hass Avocado are worked on.

Based on the theory of prospective and the possible relationship with foreign trade as it relates to exports of a specific product, Granados, Giraldo and Tejada (2013, p. 6) through the school of Prospective and Business Development of Esumer establish that prospective is defined as:

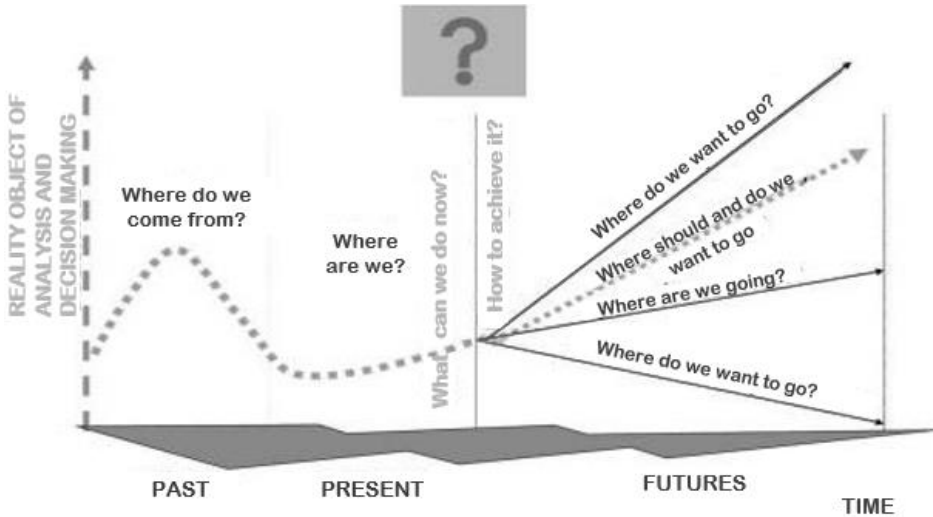
The systematic process of a participatory nature for the construction of a vision of the future that requires joint actions and decisions that are executed and mobilized from the present in order to fulfill the commitment to the future. In other words, it is the analysis and collective decision of the actors and experts to build their probable and desirable future, from an integral conception of development, acting coherently from the present.

Likewise Godet in collaboration with Durance (2007, p 6), states that "Prospective, whatever it may be, constitutes an anticipation (preactive and proactive) to illuminate present actions with the light of possible and desirable futures. Preparing oneself for the anticipated changes does not prevent one from reacting to provoke the desired changes".

From the methodological process, it consists of asking and solving three key questions in the evolution of time: Where do we come from?, where are we?, and where we wish and can go?, which through a series of techniques, instruments and tools for consulting actors, achieves this purpose.

Another definition of prospective is based on the fact that "it is the attitude of the mind towards the problems of the future, and it is dimensioned as a key element of a planning style more in line with current circumstances" (Miklos and Arroyo, 2008, p. 6), being the study of the future centered in three strategies: the long term vision, the holistic coverage and the consensus through these strategies we can choose a path to follow through which we can build the desired future scenarios and propose changes in their evolution to anticipate unfavorable events for our expected result. In accordance with the above, the prospective Harper (2003) quoted by Popper (2008, p. 2) defines it as "the process that involves periods of open reflection, networking, consultation and discussion, leading to a joint and refined vision of future visions [...] this is the discovery of a common space to think about the future". In this sense, prospective leads to the implementation of different techniques of a participatory nature and social construction in order to make a reading of the future that can be illustrated as follows:

Figure 1. Reading the future



Source: Center for Research and Prospective - Esumer 2015, quoted in Moreno y Mesa (2016, p.103)

According to the National Institute of Statistics and Geography (INEGI) (2013), exports of goods and services are understood to be "the sale, barter or donation of goods and services from residents to non-residents; exports take place when the transfer of property between residents and non-residents occurs" a definition that falls short of understanding; for more practical purposes it can be defined as selling nationally produced goods or services to buyers abroad, goods and services which must temporarily or permanently leave the national territory. One of the theories put forward by Adam Smith considered the father of modern economics, is the theory of absolute advantage which refers to "that each country specializes in producing those goods for which it has an absolute advantage, measured by the lower average cost of production in terms of labor with respect to other countries" Rivas and Vazquez (2016, p 10), clearly exposes its relationship with foreign trade making it clear that exports are the result of goods that are more favorable to each of the countries that take advantage of them and benefit from this.

With respect to the Hass Avocado, it is one of the products in which Colombia has developed an absolute advantage. This variety of Avocado was patented in 1935 by Rudolph Hass, in Habra Heights (California), it belongs to the Guatemalan race *Persea nubigena var. guatemalensi* and is adapted to subtropical conditions, temperatures from 5 to 19 °C

and heights between 1,800 and 2,000 meters above sea level (Whiley et al, 2002 cited by the Colombian Agricultural Institute ICA, 2012). On the other hand, Bernal and Diaz (2005) cited by ICA (2012, p. 6) mention that:

It produces spherical, oval fruits with a thick and brittle rind; the pulp is creamy, with excellent flavor and without fiber; the seed is small (well attached to the cavity) and easily peeled. According to the state of maturity, it presents a color that goes from opaque green to dark purple. The fruits are retained in the plant for up to 6 months after physiological maturity, without any marked loss in quality.

Figure 2. Hass Avocado



Source: Exotic Fruit Box 2020

The conceptual elements presented in this section will be the basis to reflect on an export panorama of Hass Avocado in Colombia, supported by the use of prospective methodologies, thus seeking "to conceive a desired future, as well as the necessary means to achieve it" Ackoff (1973) quoted by Godet in collaboration with Monti, Meunier and Roubelat (2000, p 3).

2. Methodology

The present research is of explanatory scope and allows investigating the causes of the events occurred in the object of study, determining the conditions in which the phenomena are founded and thus explaining questions such as: What factors had more influence on the increase of exports from Colombia? What boosted the production of Hass Avocado in the regions? How are the change factors for the future related? The report also expresses the reasons for the current state and how it will be transformed in the future in relation to the results obtained through data collection.

The export scenario of Hass Avocado in Colombia for 2030 based on some identified change factors suggests its possible future behavior, seeking not only to expose characteristics related to the Hass Avocado sector in which the causes and "why" of the current state are evidenced, but also to explain the opportunities that can be taken from the present for the construction of a desired future in the field.

Through the reading and documental revision in academic and official media related to the agricultural sector, among them, some of the main and most outstanding are the newspapers and official documents of entities and/or government resources such as Procolombia, Analdex, Legiscomex, DIAN, DANE, Ministry of Commerce, Industry and Tourism; which publish real and reliable data on indicators related to exports, in addition to these sources, publications of degree works and data granted by companies directly related to the Hass Avocado sector, on how they live their day-to-day management of their productive processes; and exporters, such as CORPOHASS, FRUTY GREEN, HASSDIAMOND, among others. The above made it possible to problematize and approach a characterization of the current state of the sector in Colombia and its relationship with some Latin American countries in particular. For the construction of scenarios, it was fundamental to rely on the prospective methodology, which consisted of identifying and prioritizing change factors, with the use of the following techniques:

2.1 Regnier Abacus

The purpose of this technique is to prioritize change factors based on the comparison of system elements, reduce uncertainty, gather expert opinion, analyze data and discuss results. It uses colors similar to those of the traffic light (red, pink, green, light green, orange, yellow, black and white)⁴ to represent the experts' opinion. Francisco Mojica (2005) describes this technique as a multipurpose or master key that can open different locks, since it can be used to prioritize the choice of key factors, to recognize the conflicts of social actors or to prioritize the actions needed to achieve the desired scenario.

Regnier's Abacus technique was applied with a selective selection to 20 experts in the topics of this research, which are characterized by being specialists in prospective, environment, corporations and institutions associated to the trade, and graduates who dealt with the subject of Hass Avocado; Through a virtual consultation with the subject *"Prospective consultation of the export scenario of Hass Avocado in Colombia for 2030"*, the respective prioritization of the 24 most determining change factors was obtained to guide the best scenario of Hass Avocado in Colombia as follows:

- The following list illustrates the 24 change factors, please name each one as you see it: "RED" if you think it is a high priority, "YELLOW" if you think it is a medium priority, and "GREEN" if you think it is a low priority.
- Of the total for each appointment, you must qualify from the following amount: Red = 7 Yellow = 10 Green = 7

With a response rate of 85% of respondents, i.e. 17 experts, the following scores are obtained:

⁴ For the qualification of the present work, the colors of the traffic light were taken: Red, Yellow and Green.

Table 1: Score Change Factors

Change Factor	Total
Strengthening of Producers (Farmers).	50
Logistic infrastructure.	48
Product quality.	46
Certifications.	43
Phytosanitary permits.	40
Innovation.	39
Partnerships.	38
Technological developments.	37
Admissibility.	35
Soil availability.	32
Supply.	32
Expenses/Costs of export.	32
Institutionality.	32
Partnerships.	31
Pests.	31
Demand.	30
Foreign Investment.	30
Expenses/Costs of production.	30
Consumer Profile.	29
Competitiveness.	29
Climate change.	28
FTA.	28
Comparative advantage.	27
Geopolitics.	22

Source: Own elaboration

The previous results are the result of each expert rating the respective colors, from his expertise, is assigned the number 3 to Red, 2 to Yellow and 3 to Green, adding horizontally all the ratings, thus obtaining a total for each change factor. In this way, the results can be analyzed through a reading of colors, as well as summed results and then ordered from the highest to the lowest score.

Explaining the change factors as unpredictable driving forces, uncertain phenomena with respect to their future evolution, minimal signs because of their present dimension but immense because of their potentialities and consequences, great surprises that are difficult to anticipate because they have little probability of occurrence, but with great impact (Dirección de planificación, 2017, p 30) and giving an understanding of their behavior through the different positions that are the scenarios in which the study can be immersed.

2.2 Schwartz axes

The construction of the scenarios is made from the representation of the results obtained in the applied technique, allowing the description of diverse possible futures and the way to reach them. The scenario construction process was carried out with the Schwartz axis technique, it is characterized by allowing the construction of objective scenarios by identifying a focus, the key forces and trends in the environment, in this way it is possible to elaborate useful scenarios to define possible decision and contingency schemes, the choice of the "bet scenario" will be the way to go from the present to the future (Montoya, Aguirre, Arango and Zuluaga, 2017).

3. Results and/or findings

The results and/or findings presented below are structured in 3 topics. The first one consists in carrying out a characterization or current state of the export of Hass Avocado in Colombia, revealing problematic and challenging issues for the Government and producers; the second one identifies the strategic stakes; and third one builds possible future scenarios in which the object of study may be immersed.

3.1. Current status of Colombian Hass Avocado

When the commercialization of this type of Avocado started, there were unnoticed figures such as the export of 20 tons between 2008 and 2009, then it increased considerably, going on to export 3,800 tons in 2014 and 2015. Due to the planting, the departments of Antioquia, Risaralda, Caldas, Tolima, Valle, Quindío and Cauca stand out, which represented approximately 95% of the planted area of the country.

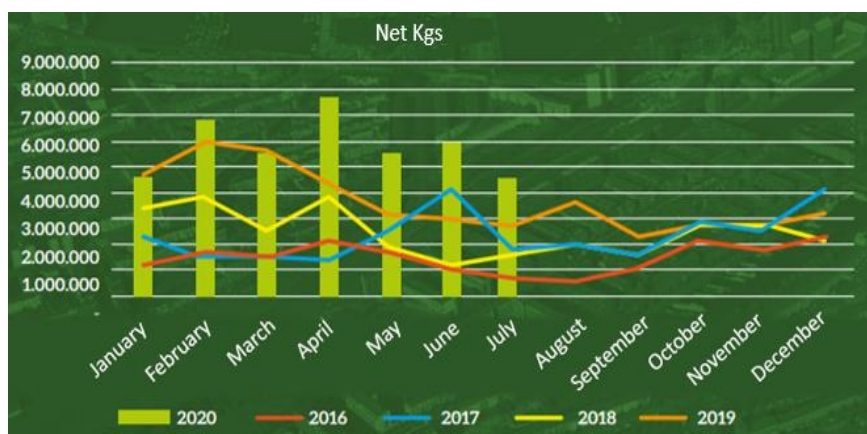
These hectares only reached their productive peak of 60% and the rest were in young and establishment ages where by the year 2014 they already had an approximate production of more than 40,000 tons (Mejía and Hernández, 2015). Considering that negotiations with countries such as China were being closed since 2019, which is one of the most demanding markets in the world, in addition to having the United Arab Emirates as a great candidate for export, the above figures are of great potential to close new business.

From the beginning, strategic alliances were sought to increase the commercialization of this product, and this took place with the opening to the American market in 2017 with 34 tons of Avocado (Ministerio de Agricultura, 2017); today, the company has presence in countries such as the United Kingdom, the Netherlands, Spain, Belgium, France, Germany, Japan and China, this last country according to Portfolio (2020) had its first arrival of 23 tons of the product in July 2020, and the government is projecting to exceed the sales goal of US\$110 million this year, thanks to the growth of 26.4% presented between January and May (US\$61 million), where 34,344 tons were sold abroad compared to the same period in 2019.

Such is the growth and importance of Hass Avocado in Colombia today to the world that the National Government through decree 1085 of August 3th, 2020, adopted the recommendation of the Committee on Tariff Affairs and Foreign Trade to split the tariff item **0804.40.00.00** that identified Avocados before the world, to create tariff subheadings **0804.40.00.10 for the Hass variety** and 0804.40.00.90 for the rest; bringing as benefits the improvement of credits for the promotion of the product's export, detailed identification of the export potential, efficiency in the management of statistical figures for future decision-making, request and create commercial defenses if necessary, and regarding the detailed knowledge of international and national behavior of Hass Avocado to increase the productive efficiency of the sector. (Corpohass, 2020).

The evolution of Hass Avocado exports in Colombia since 2016 has increased, noting in each year a strong participation in the first 6 months of each year until 2020. Taking into account the pandemic presented by COVID-19, this year's figures were also higher than previous years in which very interesting figures for the sector were also presented, suggesting that it is strongly consolidating and with promising trends in view of the future.

Figure 3. Exports Evolution 2016 to 2020



Source: Corpohass 2020, p. 19

Table 2. Top 5 Hass Avocado Exporters of Colombia January- July 2020

EXPORTER	NET KG	PERCENTAGE
AVOFRUIT SAS	7.831.053	19%
WESTFALIA FRUIT COLOMBIA SAS	6.682.128	16%
HASS COLOMBIA	4.407.082	11%
FRUTY GREEN PACKING SAS JARDIN EXOTICS SA	2.820.576	7%
GARDEN EXOTICS SA	2.726.912	7%
TOTAL	24.467.751	60%

Source: Own elaboration, based on Corpohass 2020 data

Knowing the growth percentages in 2020, with respect to the previous year, in the routes where Hass Avocado is exported, exports by sea are always predominant, presenting higher tonnage flows during the year, which is pertinent to affirm by recognizing this route as the main means of goods transportation, air exports of the fruit do not lose ground in participation, since they also continue to increase and the general figures of these two means of transportation show percentages that encourage the sector and its export flows in the routes used, as observed:

Figure 4: Export Paths of Hass Avocado January-July 2020



Source: Corpohass 2020, p. 19

Colombia needs to return to the path of productive potential, and it is the private sector and entrepreneurs who are called upon to be the protagonists in generating employment and well-being for millions of Colombians in urban and rural areas. For this reason, technological change, innovation, productivity and environmental sustainability are very important factors for the acceleration of the country's growth, as indicated by the Global Entrepreneurship Development Institute in the National Development Plan 2018-2022: Pact for Colombia, Pact for Equity, (Dirección Nacional de Planeación (DNP), 2019, p. 137), which in turn shows that Colombia is at a comparative disadvantage with respect to the member countries of the Pacific Alliance, where there are direct competitors for the export of Hass Avocado such as Chile, Peru and Mexico, despite the fact that there are still challenges and the economic impact of development in significant advances in infrastructure issues such as 4G roads, even though progress has been made in transportation infrastructure (DNP, 2019, p. 665).

3.2 Identification of strategic bets.

The results in table 3 show that for each factor some experts agree on their point of view and that for some discrepancies or less importance is found in a highlighted agreement such as the strengthening of producers, logistic infrastructure, associativity, certifications and product quality; However, this does not mean that it is not important, meaning that one of the strategic stakes can be focused on how to improve and strengthen the main actors who are close to the fruit, such as farmers, and to work hand in hand with them to achieve a product of high standards that is competitive and internationally accepted.

Most of the discrepancy is in factors such as pests, FTAs, supply and institutions as participants for some considered important and for others not so important, as well as production and export costs, demand and climate change which, despite the many changes that have occurred on the planet in recent decades, a minor consensus can be seen in these areas.

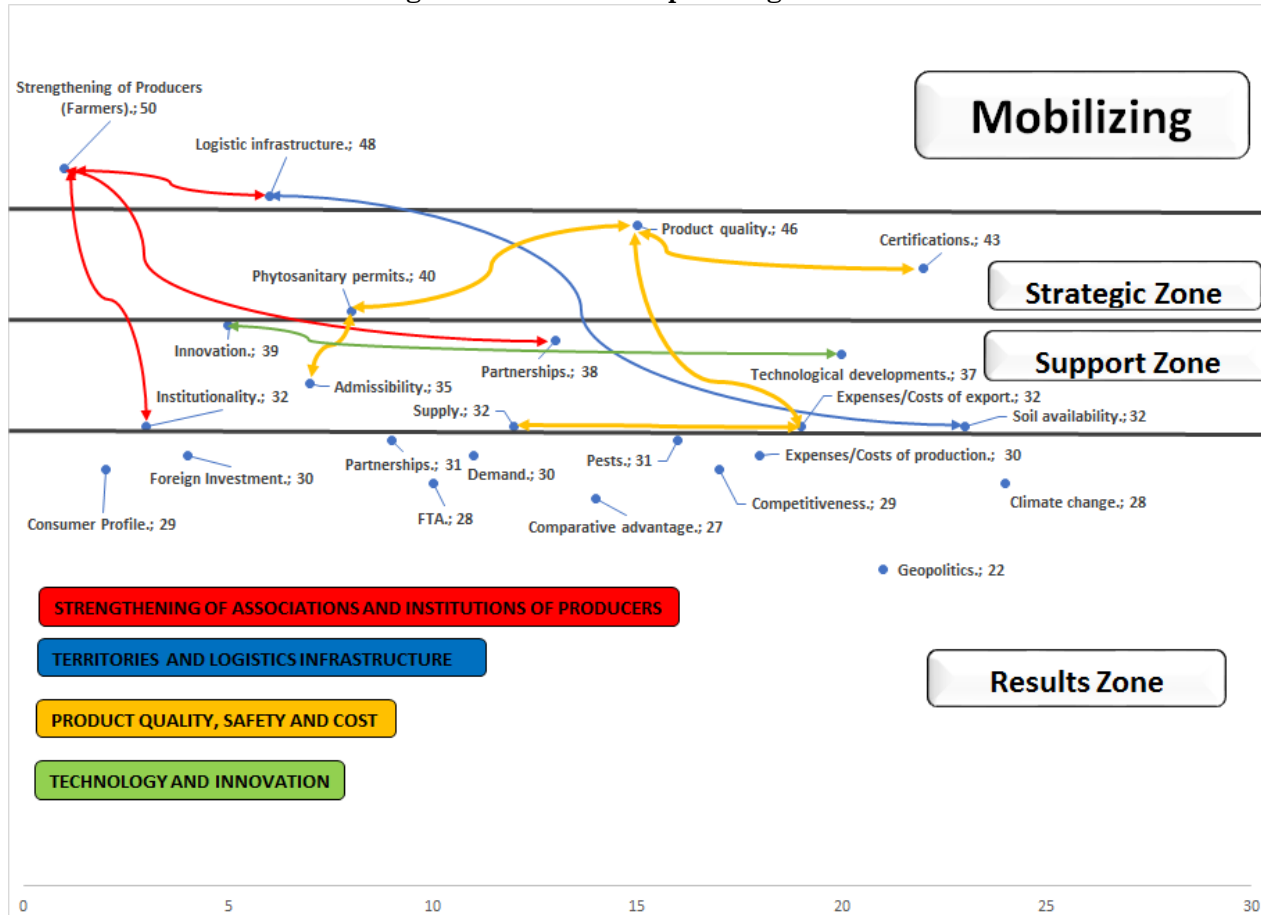
Without a doubt, there are change factors that are closely related and without these the object of study would lack meaning for its normal development and sustainability over time. This relationship is identified as the strategic bets due to its component of importance and potential; without leaving aside those considered less important in the previous qualification, which are results that will impact in little measure, but impact the exports of the product.

Table 3: Color Map

Change Factor	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
Strengthening of Producers (Farmers).	RED	RED	RED	RED	RED	RED	RED	RED	RED	RED	RED	RED	RED	RED	RED	RED	RED	YELLOW
Logistic infrastructure.	RED	RED	RED	RED	RED	RED	RED	RED	RED	RED	RED	RED	RED	RED	RED	YELLOW	YELLOW	YELLOW
Product quality.	RED	RED	RED	RED	RED	RED	RED	RED	RED	RED	RED	RED	RED	YELLOW	YELLOW	YELLOW	YELLOW	GREEN
Certifications.	RED	RED	RED	RED	RED	RED	RED	RED	RED	RED	RED	YELLOW	YELLOW	YELLOW	YELLOW	GREEN	GREEN	
Phytosanitary permits.	RED	RED	RED	RED	RED	RED	RED	RED	RED	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	GREEN	GREEN	
Innovation.	RED	RED	RED	RED	RED	RED	RED	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	GREEN	GREEN	
Partnerships.	RED	RED	RED	RED	RED	RED	RED	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	GREEN	GREEN	
Technological developments.	RED	RED	RED	RED	RED	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	GREEN	GREEN
Admissibility.	RED	RED	RED	RED	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	GREEN	GREEN	GREEN
Soil availability.	RED	RED	RED	RED	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	GREEN	GREEN	GREEN	GREEN	GREEN	GREEN	GREEN
Supply.	RED	RED	RED	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	GREEN	GREEN	GREEN	GREEN	GREEN	GREEN
Expenses/Costs of export.	RED	RED	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	GREEN	GREEN	GREEN	GREEN
Institutionality.	RED	RED	RED	RED	RED	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	GREEN	GREEN	GREEN	GREEN	GREEN	GREEN	GREEN	GREEN
Partnerships.	RED	RED	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	GREEN	GREEN	GREEN	GREEN	GREEN	GREEN
Pests.	RED	RED	RED	RED	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	GREEN	GREEN	GREEN	GREEN	GREEN	GREEN	GREEN	GREEN
Demand.	RED	RED	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	GREEN	GREEN	GREEN	GREEN	GREEN	GREEN	GREEN
Foreign Investment.	RED	RED	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	GREEN	GREEN	GREEN	GREEN	GREEN	GREEN	GREEN
Expenses/Costs of production.	RED	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	GREEN	GREEN	GREEN	GREEN	GREEN	GREEN
Consumer Profile.	RED	RED	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	GREEN	GREEN	GREEN	GREEN	GREEN	GREEN	GREEN	GREEN
Competitiveness.	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	GREEN	GREEN	GREEN	GREEN	GREEN	GREEN
FTA.	RED	RED	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	GREEN	GREEN	GREEN	GREEN	GREEN	GREEN	GREEN	GREEN	GREEN
Climate change.	RED	RED	RED	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	GREEN	GREEN	GREEN	GREEN	GREEN	GREEN	GREEN	GREEN	GREEN	GREEN
Comparative advantage.	RED	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	YELLOW	GREEN	GREEN	GREEN	GREEN	GREEN	GREEN	GREEN	GREEN	GREEN
Geopolitics.	RED	YELLOW	YELLOW	YELLOW	GREEN	GREEN	GREEN	GREEN	GREEN	GREEN	GREEN	GREEN	GREEN	GREEN	GREEN	GREEN	GREEN	GREEN

Source: Own elaboration

Figure 5: Relationship Change factors



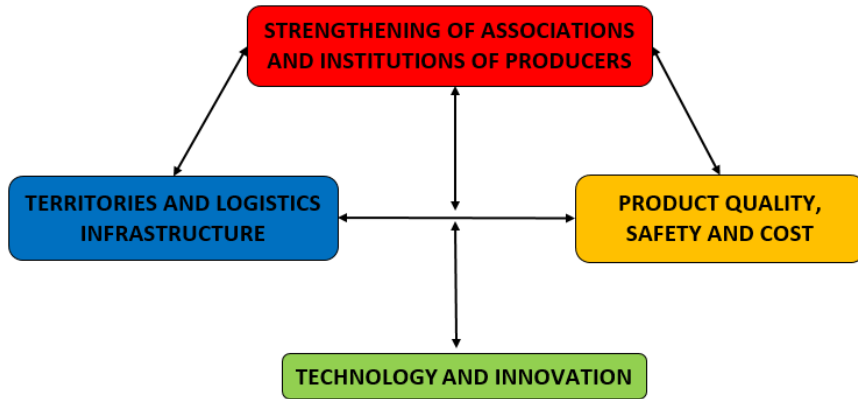
Source: Own elaboration

3.2.1 Establishment of relationship system

In figure 5, the analysis of strategic relationships can be seen from the prioritization, which is supported by the theory of systems thinking, which seeks to understand the correlation between all the parts, not seeing one as an elemental unit, but as a complex unit, as a whole that is the product of the sum or interaction of the other constituent parts (Morin, 1994), we manage to establish four strategic lines which are illustrated below in the logical syntax.

The strengthening and association of peasants representing the producing sector was located in the mobilizing zone, together with the institutional support as the main strategic line, which will be the result of the set of other actions that in the future will define a consolidated growth of Hass Avocado exports in the international market, by passing through a strategic area composed of quality, safety and optimal costs of the product, make it a strategic entity along with the territories and the logistics infrastructure of the entire supply chain, make them key factors to generate an offer, eligibility, costs and expenses in the ideal and sustainable exports for the new business of the future. The evolution in science, technology and innovation that we are experiencing is not alien to this sector, and this is the area that will support and promote everything mentioned above; the technological, dynamic and versatile boom that brings the day to day generates the challenges necessary to face and overcome them successfully, without forgetting that there is still a long way to go for this to happen because at an international level the competition is high.

Figure 6: Relationship system



Source: Own elaboration

Next, the characterization of strategic lines is carried out, these propose the political and academic setting that, from the process of the prioritization of change factors, give to each one of them the own identity of the work.

The *line strengthening of associations and institutions of producers* is oriented towards the reading of Hass Avocado growers who, as the first link in the supply chain of this fruit, are the main key to export success, thanks to their knowledge transmitted from generation to generation, experience and improvements in crops, the trajectory and constancy through time to guarantee products of international size and demand in which, thanks to the assistance and injection of the public and private sectors, significant progress has been achieved in terms of planting, production and quality, as a strategic action it is imperative the **strengthening** and **association** of all producers and entrepreneurs that with excellent bases that offer sustainability of the sector by private and **government** entities, can promote and ensure efficient **logistics** throughout the supply chain, thus achieving reductions in export times and costs, which will help improve the country's competitiveness and gain position in this market.

By means of the *line territories and logistic infrastructure*, we expect to focus on the **availability** and use of soils in cultivation areas, potentializing the capacity of available hectares in which Hass Avocado can be planted. Our comparative advantage is to be able to produce this fruit in different areas of the country during the whole year, that is why we must encourage cultivation in areas where crops are not present and strengthen those already existing in order to increase production capacity. The soils, besides being available for cultivation, must be treated correctly in order to preserve their nutrients in the soil, guaranteeing basic conditions that are essential for the cultivation of the fruit. This way of strengthening the availability of the soils must go hand in hand with an efficient **logistic infrastructure** which is focused and directed to support the structures that intervene both in the production chain and in national and international distribution, increasing the production rates and improving the logistic conditions which lead to obtaining a solid base to act in an outstanding way in the market.

The *product quality, safety and cost* are necessary for the standards of Hass Avocado to be excellent. Starting from the **quality of the crops**, we can guarantee the fruit's acceptability to our international consumers and at the same time make them be 100% satisfied with the product, which must meet and exceed their expectations since it is a very versatile fruit that can be consumed in different ways. The processes in which it is immersed in its production chain must be taken into account in order to guarantee the best quality and consumption standards to be offered to final customers of international stature. For this purpose, all the **phytosanitary permits** linked to **certifications** must be specified and guaranteed, both of them contemplated in the inspections carried out to soils, pest controls, fruit quality and environmental conditions of its soils and/or crops, without forgetting the different specific standards related to Hass Avocado, which are of vital importance. All this with the purpose of having a quality **offer** under the best standards and achieving the client's satisfaction through time and allowing us to attract new clients in different markets.

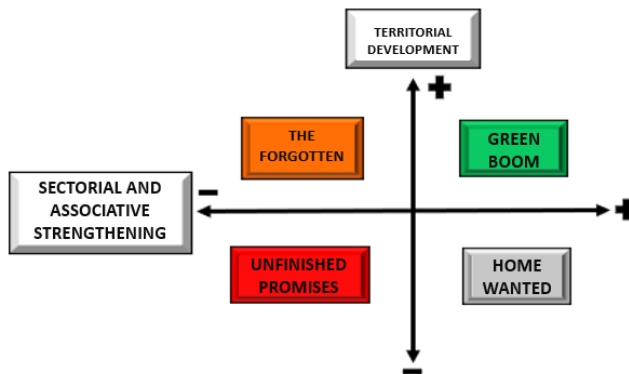
In the end, the *technology and innovation strategic line* seeks to focus on improving the processes related to the crops, an important factor throughout the production chain, since through **technological developments** it is expected to improve the times with which the processes related to the crops are carried out, from their sowing, through drip systems for efficient irrigation, to the correct application of insecticides and fertilizers seeking to improve the safety of workers and reduce the risks in which they may be immersed when carrying out their productive activities, through the **innovation** of new technologies and their proper implementation is expected to reduce environmental and ecological impacts preserving resources, making

better use of them to care for the land, besides being in search of the effectiveness in the management and harvesting of crops, thus speeding up production times and delivery of the fruit.

3.3 Definition of scenarios.

By applying the Schwartz Axes technique, two axes can be seen: **Territorial Development** and **Sectorial and associative strengthening**. These axes determined four possible scenarios, one of which is optimistic and confident, the other pessimistic and two contrasting. Returning to Godet (2000), he states that "...A scenario is a set formed by the description of a future situation and a path of events that allow us to move from an original situation to a future one".

Figure 7: Possible scenarios⁵



Source: Own elaboration

⁵ Due to the extent and scope of the research, two scenarios will be narrated.

GREEN BOOM SCENARIO

Today, in 2030, Colombia managed to consolidate the export scenario of Hass Avocado becoming an international reference with great acceptance thanks to its quality and credibility that has been forged throughout its history. Since the beginning of exports in 2008, until now, this scenario is of constant growth and evolution. This transformation was achieved thanks to the active participation of farmers, private entities associated with the producer's guild and the National Government, where the exports of this fruit in international trade have boosted the market and the country's export offer. In the process of consolidation of Hass Avocado exports to what we know today, four strategies or implementation models were necessary and key: 1) associative and institutional strengthening of producers, 2) territories and logistic infrastructure, 3) quality, safety and cost of the product and 4) technology and innovation.

The **strengthening of associations and institutions of producers** was carried out through a whole work of gearing and adjusting the factors where the Government from its Ministries of Agriculture, Trade, Industry and Tourism, governmental entities such as Procolombia and Analdex and in the private sector institutions such as Corpohass, Fruty Green and Hassdiamond, saw how Hass Avocado was gaining trust and credibility in the international economy. Such adjustment or connection was focused on associating the producing society and farmers, and then strengthening them with workshops, seminars, training, certifications and resources, giving them an effective and bold start for their logistic infrastructure; supported and intertwined by the National Government from its national development plans and private entities with contributions to small entrepreneurs and enterprises, they achieved a transformation and business dynamization of the producing and exporting sector of Hass Avocado.

As for the **territories and logistical infrastructure**, the necessary conditions were generated in regulatory issues and sustainability around the availability and use of the soils supported by the potential and capacity to plant the entire national territory, the programs of land restitution allowed the return of many peasants thus achieving to plow the land for this product; The demobilized combatants played an important role in respecting and complying with the peace accords, taking advantage of the available land and increasing the levels of national production to meet international and local demand, where the adoption of new logistical trends could guarantee territorial development and the strengthening of the sectors, This in turn with the development of the country's logistics infrastructure, in advances such as the modernization of ports under the direction of the Superintendence of Transport, foreign trade operations and the systematization of customs processes by the DIAN, reduced travel times between cities and major

ports in the country obtaining a significant decrease in export costs.

The **product quality, safety and cost** are related to factors such as certifications and phytosanitary permits played a very important role ICA, enters directly into the regulation of production processes, was able to obtain products with high quality standards for eligibility in different markets, important factor for the entry of an agricultural product to any foreign market; where it gained international recognition for the certifications granted by the processes to control pests and soil management, the articulation generated between the government and the productive sector by the research on production process improvement helped most of the companies producing Hass Avocado and its crops to be regulated and certified in their processes and to be totally reliable and of excellent quality, providing reliability to the people who consume this product internationally, encouraging them and thus attracting more foreign investment.

Likewise, **technology and innovation** were the strategic line of support since, thanks to the promotion of technological infrastructure and research, the sector was further strengthened. The appropriation of knowledge transferred from generation to generation achieved the necessary and required dissemination to associate the sector and develop the territory. The advances in science and technology that we see today in the sector are articulated works of the Government, Universities, the SENA and the private sector for the benefit of the neediest communities. The research capacities were expanded and helped in the decision-making process at key moments of the technological advance. Finally, the great advance in innovation of the sector energized the locomotives of development and fed the institutional framework through novel and sustainable market visions, thus achieving positive social and environmental changes for all Colombians and consumers of Avocado.

Today in 2030, Hass Avocado exports are still a market with too much potential and expectations, which has enough means to achieve a performance that provides not only reliability but also safety in all the processes involved in the supply chain, since this is the basis for maintaining and growing this market is durable and sustainable, Today is a market and a powerful sector, important and internationalized that is acquired in different countries without any problem, and that seeks to be better day after day so that more people enjoy this delicious fruit and preserve this "green boom."

PESSIMISTIC SCENARIO UNFINISHED PROMISES

In 2030 the export of Hass Avocado was not achieved in the country of Colombia, which leaves the production of this fruit very disqualified and badly referenced at international level and increasingly worsens its image in the foreign market. The scarce production does not even cover the national demand and its production is very limited, considering the good figures presented since the first steps of Hass Avocado export to international markets, these have been short and almost unrecognizable in a country that looked very promising in its export, this scenario occurs due to the lack of intervention and protection to national producers, who are very vulnerable due to the bad performance of governments and limited support among producers. The main factors that led to this unwanted scenario were identified as follows: 1) Institutional and associative strengthening of producers, 2) Territories and logistic infrastructure, 3) Quality, safety and cost of the product and 4) Technology and innovation.

The lack of **strengthening of associations and institutions of producers** has led to a reduction in the role of farmers in the establishment of alliances between the private sector and the government. Entities such as Minagricultura, Mincit and Procolombia have underestimated the importance of strengthening companies in the sector, such as Corpohass, Fruty Green, Hassdiamond and Cartama, among others, Even knowing that this associative relationship promised to be significant in previous years in order to strengthen the bases with a view to international markets, the lack of incentives and support to the producing sector almost succeeded in eradicating the production of Hass Avocado because it did not comply with the requirements and agreements offered to this agricultural sector.

The **territories and logistic infrastructure** were also the cause of the scenario we live in today, being the cultivation areas not very favored, which were replaced by other types of businesses and were not taken advantage of in the best way for the sector. In another scenario, these cultivation territories were invaded by illegal guerrilla groups such as the FARC and ELN dissidents, installing their illegal crops and thus leaving the possibility of cultivating more Hass Avocado very closed, avoiding the capacity to expand the crops to new national production territories. The logistic management of the fruit became irregular knowing that the infrastructure of the country was not developed in the correct way. The Colombian Ministry of Transport did not worry about improving the state of roads and access to the production areas, and DIAN did not emphasize the modernization of the tools for the logistic development of the country, which makes the export of this fruit very limited and expensive.

As for the **product quality, safety and costs**, it is known that, having limited resources for the cultivation of Hass Avocado, it is not fulfilling all the standards and care required for a product with export quality. ICA and entities such as Procolombia have little concern in supporting the sector for the promotion of this fruit, which did not generate the minimum interest of consumption in foreign markets. The cultivation of this fruit becomes somewhat heavy and, on many occasions, due to lack of quality and care in the processes, entire crops are lost which are discarded and not suitable for human consumption.

Along with the factors mentioned above, also **technology and innovation**, there is little interest in improving some of the few technologies implemented in the fruit growing processes, and in comparison with previous years this incentive that was very helpful for the implementation and development of the crops has been decreasing in participation, making evident the lack of innovation for the sustainability of the product over time.

In conclusion, nowadays the production of Hass Avocado is very forced and limited with a greater tendency to disappear due to the low priority given to it through the processes involved both in its cultivation and in its handling and distribution. Currently, Colombia is not in conditions to compete or reach international markets due to quality and infrastructure issues which overshadowed the potential that this product once had.

4. Conclusions

Due to its great evolution, the Hass Avocado has had an important influence in the economic development of Colombia, becoming a potential producing and guiding path to lead the country again to that qualification of power as it once was in the coffee guild. It is clear that this path is full of obstacles and adversities, some of them have been overcome with great success and impact, thanks to the product certifications and the splitting of the tariff heading a new era in exports is marked for the future, one of these adversities is the logistic infrastructure; the times in making an export are high compared to other Avocado producing countries, the connection with the rural areas is difficult and the costs of logistic transportation to the ports are increased in order to have a satisfactory export.

It is possible that Colombia considers Hass Avocado exports as an economic proposal for the future. To achieve this, it is imperative and necessary to work on the development of territories and strengthening among producers, associations and government entities, which with a joint work to strengthen territories and an adequate logistic infrastructure throughout the supply chain, would achieve an efficient progress in the production and quality of the fruit; meeting the minimum and necessary requirements for acceptance in the countries where they want to reach, also in turn the proper implementation of logistical resources will optimize production and export costs, all supported by the strategic implementation of science, technology and innovation, ensuring the proper use of environmental resources and sustainability.

However, the above may fail if the strategic lines are not worked on and if the most important change factors, which complement and depend on each other, are not considered, giving importance to another productive sector of the country would greatly reduce the possible and trend growth of Hass Avocado exports and would be relegated to other levels, generating affectation to the peasants, medium and big businessmen that until today with great effort have managed to position this product, the lack of private and public support to the sector would trigger in a setback of the logistic infrastructures and its quality, essential factors for the survival of the product at local level and to gain the positioning and prestige at international level.

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