Opportunities and Challenges for the Colombian Hass Avocado in Countries with Admissibility Processes in progress

The Case of Japan

Stiven Muñoz Isaza

Advisor:
Carolina Ardila López

Master in International Business

EAFIT University

Medellin

2018

Table of Contents

Abstract

Given the Admissibility process that the Colombian Government is conducting in order to open the Japanese market for the Colombian Hass Avocado, this research identifies the main challenges and opportunities that Colombian producers may have in Japan by analyzing the market conditions, such as production and supply chain, current competitors, and consumer behaviors and preferences.

***Key words**: Hass Avocado, Admissibility process, Supply chain and logistics management*

Opportunities and Challenges for the Colombian Hass Avocado in Countries with Admissibility Processes in progress:

The case of Japan

1. Introduction

The Colombian Government is advancing in the process to obtain the admissibility of Hass avocado into the Japanese market. Once the admissibility is granted, Colombian producers and exporters of the fruit will face new opportunities and challenges, due to the possibility to access the fifth avocado largest importer (Colombian Ministry of Agriculture and Rural Development, 2018).

In general terms, there is a positive atmosphere regarding the admissibility. In fact, different experts in the field and stakeholders expect that Colombia may export Hass avocados to Japan during the first semester of 2019. However, most of the Colombian companies that produce and trade avocados are not familiar with the Asian markets, because the international market for this fruit is mainly concentrated in European countries, which account for almost 100% of the total exports of Colombian Hass avocado (ProColombia, 2018b). Thus, the following research aims to identify the internal and external factors associated to the foreign trade of avocado with Japan that could either positively or negatively, impact the Colombian exporters.

This research was elaborated following a qualitative analysis of primary and secondary sources of information, and is divided into eight chapters: Chapter 2 outlines the characteristics of avocado production and consumption in the world, focusing on the characteristics of the production in Colombia and its behavior in foreign markets. Chapter 3 explains the supply chain management from harvest to post-harvest that is required to deliver high quality Colombian

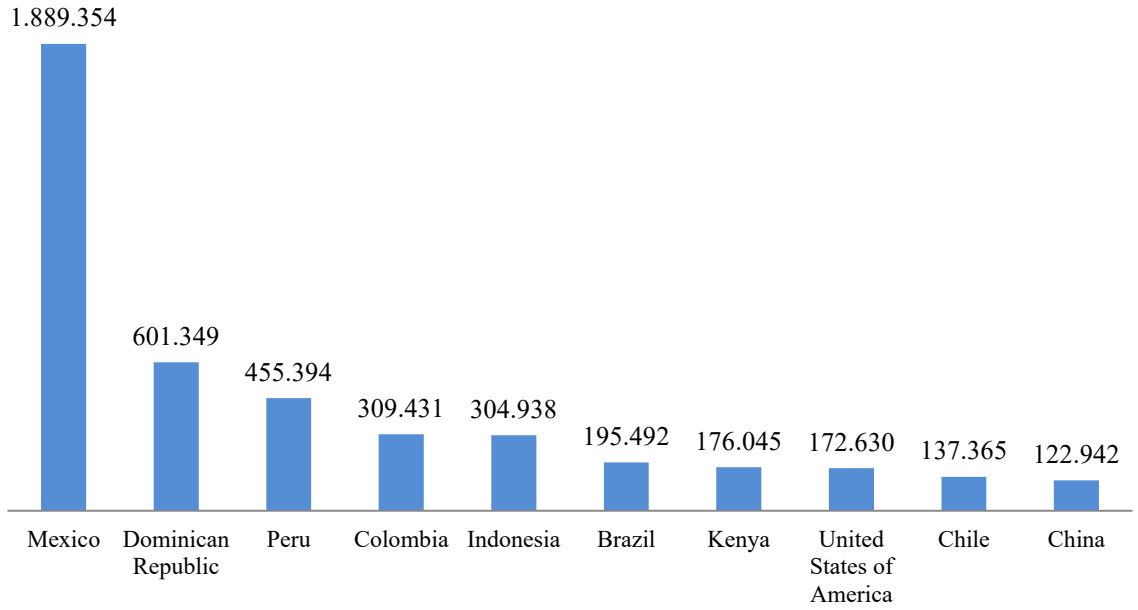
avocados to Japan. Chapter 4 analyzes the general consumer preferences and provides important recommendations that may determine the success in the Japanese market. Chapter 5 outlines the current status of the admissibility process, giving details about the general sanitary and phytosanitary requirements that the Japanese Government demands from Hass avocado importers. Additionally, an analysis of fresh avocados customs duties is provided, and information on the import tariff that Colombian exporters would have to pay. Chapter 6 explains the current composition of the Hass avocado market in Japan and its main suppliers, focusing on Mexico and Peru, which are the largest exporters of this fruit to the Asian country. Chapter 7 provides the SWOT analysis that was built based on the previous literature review and primary sources that were consulted to complete the research. In this chapter, all the internal and external factors that might positively and negatively affect the Colombian exporters are outlined. Finally, Chapter 8 presents the final conclusions, giving especial emphasis on the challenges and opportunities identified throughout the text.

2. Characteristics of avocado production and consumption in the world

Avocado is produced in the five continents, in tropical and subtropical territories. However, most of the production is concentrated in America, being Mexico the major producer worldwide with 34% of the global production, followed by the Dominican Republic (11%), Peru (8%) and Colombia (6%), as exhibited in **Figure 1**. Out of the total avocado trade in the world, Hass avocado is the main variety produced due to its longer shelf life and demand in foreign markets (USDA, 2014).

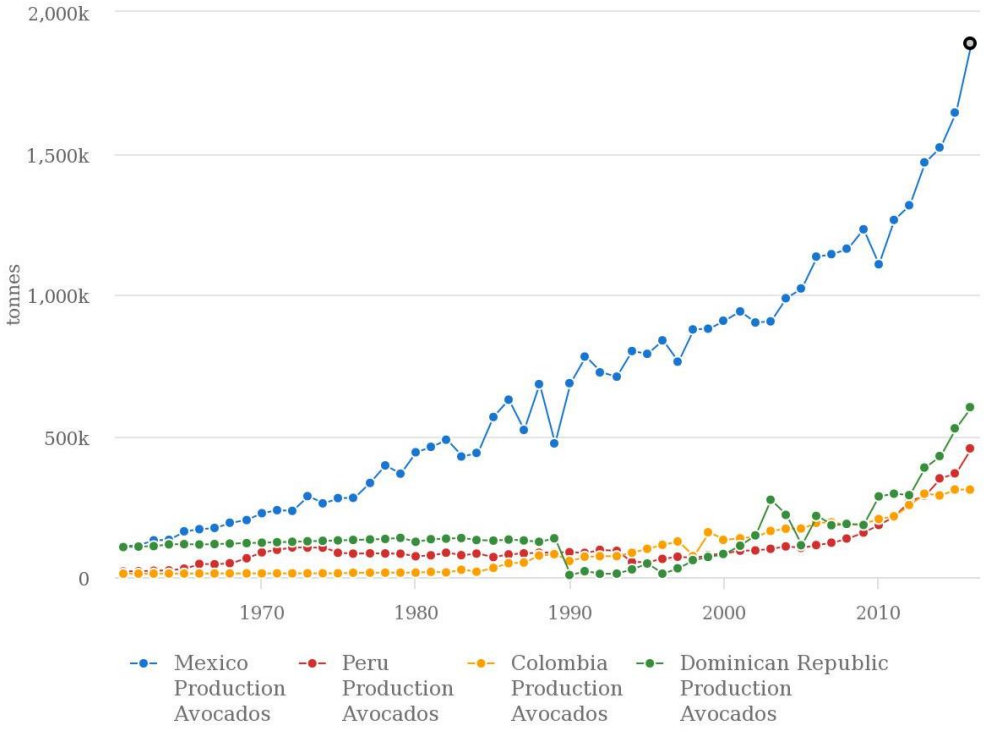
Figure 2 shows the evolution in the production of avocado in the four main avocado growers in the world. As it can be observed, production volumes have rapidly increased over the last 40 years, especially in Mexico.

Figure 1: Top 10 Avocado Producers - 2016
(Tonnes)



Source: (FAOSTAT, 2016)

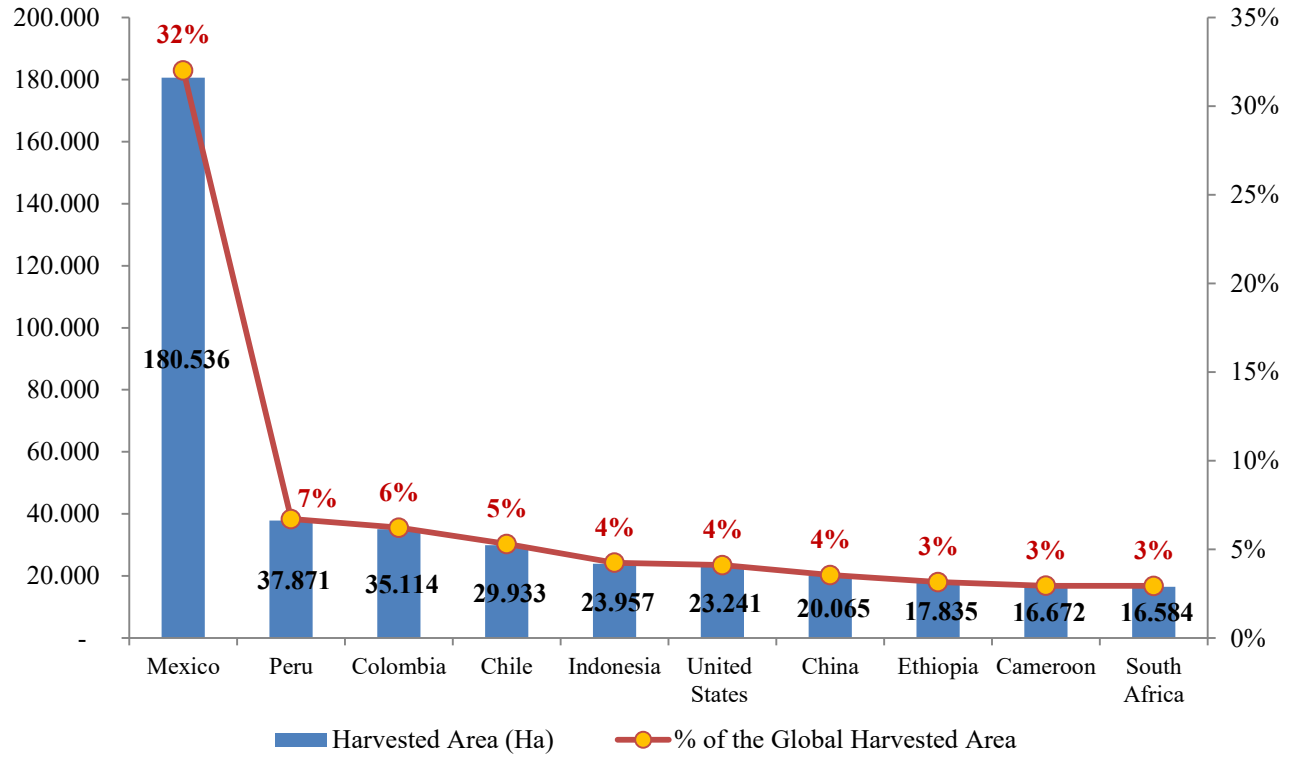
Figure 2: Evolution of Avocado Production in the main 4 Global Producer Countries



Source: (FAOSTAT, 2016)

Colombia is the third country in the world with the largest avocado harvested area, with a participation of 6% over the world's total, exceeded only by Mexico and Peru, with 32% and 7% respectively. As it is shown in **Figure 3**, other countries with important cultivated areas of avocado are Chile, Indonesia, United States, China, Ethiopia, Cameron and South Africa. These 10 countries concentrate 71% of the world's avocado crops.

Figure 3: **Harvested Area per Country (Hectares)**



Source: (FAOSTAT, 2016)

According to figures from FAOSTAT (2016), Colombia was ranked in the fifth position in terms of yield rates among the top 10 countries with the largest cultivations of avocado in the world, with a production of 8,8 metric tonnes of avocado per crop hectare (T/Ha). In the same ranking, Peru appears third, with a yield of 12 T/Ha and Mexico is fourth, with 10,4 T/Ha. Dominican Republic occupies the first place, with yields of 44,96 T/Ha, and even though this country is fifteenth in terms of harvested area, the exceptional yield rates locate the Caribbean island as the second largest avocado producer in the world. Therefore, Mexico, Dominican Republic, Peru and Colombia are the lead producers in the international avocado market. Indonesia appears second in terms of yields, but it is ranked fifth in terms of harvested area, thus the country is fifth in the producer's ranking.

Table 1: Yields of the top 10 countries with largest Avocado Harvested Areas

Ranking	Country	Yield (T/Ha)	Harvested Area (Ha)
1	Dominican Republic	44,96	13.375
2	Indonesia	12,73	23.957
3	Peru	12,02	37.871
4	Mexico	10,47	180.536
5	**Colombia**	**8,81**	**35.114**
6	United States	7,43	23.241
7	China	6,13	20.065
8	Chile	4,59	29.933
9	Cameroon	4,19	16.672
10	Ethiopia	3,64	17.835

Source: (FAOSTAT, 2016)

2.1. Characteristics of Hass avocado production in Colombia

According to the Colombian Ministry of Agriculture and Rural Development (2018), in 2017 Colombia produced 375.906 tonnes of avocado, out of which 77.000 tonnes corresponded to Hass avocado (20% of the total national production).

The production of Hass Avocado is concentrated in Antioquia, Tolima, Valle del Cauca and Eje Cafetero regions. In 2017, these regions reached a total area of 14.000 Ha of Hass avocado fields, and exported 30.341 tonnes of Hass avocado to different countries (Instituto Colombiano Agropecuario, 2018).

Due to the high potential of Hass avocado in foreign markets, the Colombian Government established an alliance called “El Agro Exporta”, which pretends to foster the international trade of Colombian avocados and other seven agricultural products in different markets, by co-funding activities of international commercial promotion, such as international fairs, commercial agendas, buyer missions to Colombia, and consulting services of up to USD $10,000 (ProColombia, 2018a).

2.2. Characteristics of the Colombian avocado world trade

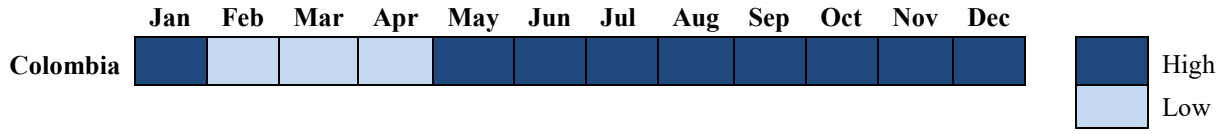
In 2017, Colombia exported 29.579 tonnes of avocado, where 27.212 tonnes corresponded to Hass Avocado (92% of the total exports). During that year, the country shipped the first container to the United States (Instituto Colombiano Agropecuario, 2018).

After coffee and bananas, Hass avocado is the most exported fruit in Colombia, with sales of USD $53 million in 2017. This growth in exports is a remarkable figure, considering that in 2010 foreign sales were only US $108,000 (ProColombia, 2018b).

Currently, the main market for Colombian Hass avocado is Europe. Among the main buyers are Holland, the United Kingdom, Germany, France and Spain, with sales of US $52.2 million in 2017, which account for almost 100% of the Colombian Hass avocado total exports (ProColombia, 2018b).

Regarding the US Market, the admissibility of Hass avocado was granted on September 14th, 2017 (US National Archives and Records Administration, 2017). However, according to Ricardo Uribe Lalinde (2018), Cartama[1] Chief Executive Officer, and Giovanni Andrés Gómez Camelo (2018), ANALDEX Director of Economic Affairs, the export protocol to the United States is very strict. Therefore, exporters prefer more flexible markets, such as Europe. Gomez Camelo (2018) also says that in 2018, the US market would roughly represent 1% of the total exports, and next year, it could rise between 2% and 3%.

Figure 4: Hass Avocado exports availability in Colombia

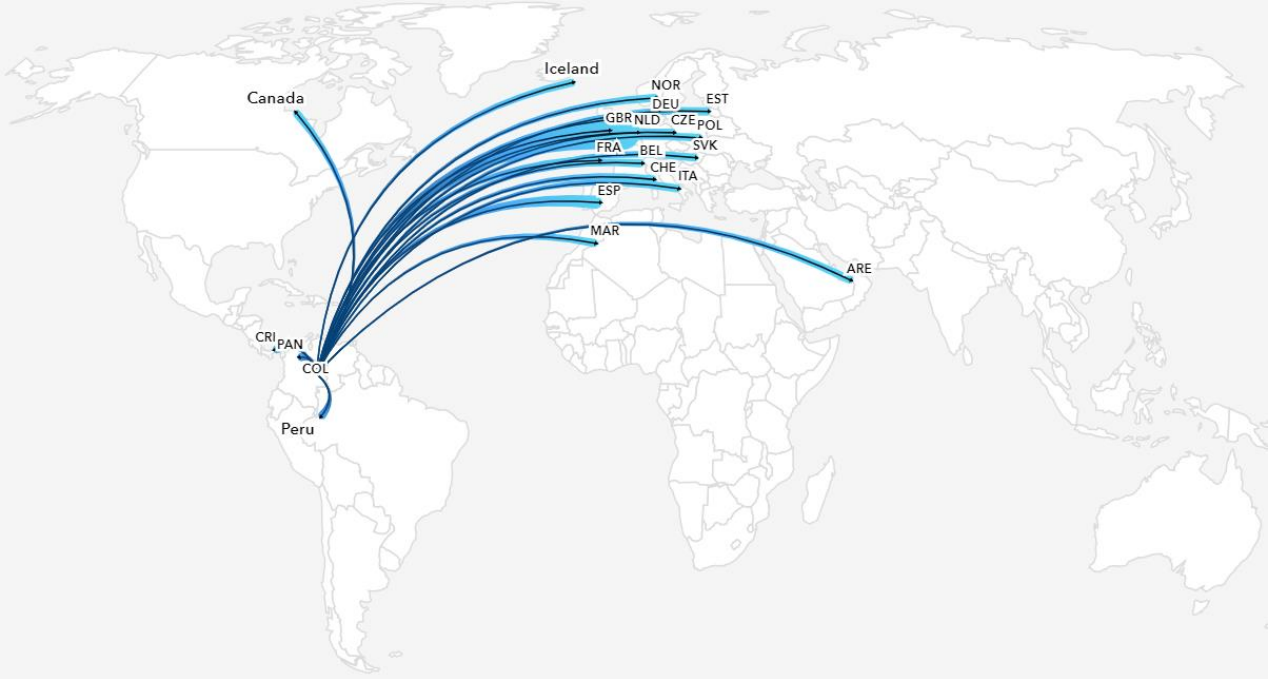


Source: (ProColombia, 2018b)

[1] Cartama is a cluster of Colombian companies that has grown and marketed high quality Hass avocado for the last 15 years (Cartama, 2018). Cartama was the first Colombian company that exported Hass Avocado to the United States in 2017, jointly with Westsole Fruit Colombia (Dinero, 2017)

According to ProColombia (2018), Colombia has a competitive advantage over other Hass avocado producers, because, as it is depicted in **Figure 4**, the country has a first season between May and September, and a second season between October and January. This is confirmed by Uribe Lalinde (2018), who states that due to the Colombian geographical location and subsequent tropical weather, there is Hass avocado production for almost the whole year. In fact, Hiroshi Wago (2018), Director of the ProColombia Office in Japan, during a plenary session about the opportunities for the Colombian agricultural sector, stated that the main two characteristics that the Colombian Hass avocado has to offer to Japan are, first, the capacity to produce the fruit throughout the 12 months of the year, due to the ability of companies such as Cartama to cultivate avocados in regions with different elevations above sea level; and second, the fruit consistency, which allows the promotion of this characteristic as an attribute of the Colombian origin.

Image 1: Colombian avocado export destinations (Tridge, 2016a)



3. Supply Chain Analysis

A correct management of the avocado supply chain is a key factor to deliver a good quality product to the final customer. There are many aspects that determine the quality of the fruit, as stated by Bill et al. (2014):

> Successful maintenance of avocado fruit quality during the supply chain depends on many aspects, including adequate orchard management practices, harvesting practices, packing operations, postharvest treatments, temperature management, transportation and storage conditions, and ripening at destination. […] Management of the supply chain is solely done to provide the fruit with the most favorable conditions to extend storage life, and retain quality and nutritional attributes of the fruit.

3.1. Harvest

Harvest is the stage of commercial exploitation of avocado crops. It takes place when the producer plans, organizes, executes, and supervises all the tasks related to the fruit picking process and its later commercialization in the market. The picking process must be done manually, preferably using scissors to pick the fruit one by one, avoiding to hit them. Avocados must be picked during the early morning, in order to reduce the stress caused by high temperatures and possible losses due to dehydration. Additionally, the fruits must not be wet by dew or rain because excessive moisture causes the avocado to decay (Bernal Estrada et al., 2014)

Unlike most fruits, the avocado maturity does not coincide with its ripeness because an avocado becomes ripe only after it has been picked from the tree (University of California, n.d.). Most avocado varieties, including Hass avocado, can stay on the tree for several months without the abscission and corresponding fall of the fruit. This characteristic is beneficial for the supply chain management of the fruit but it can also be unfavorable. It is advantageous because

producers can accommodate harvest dates according to the market needs. However, it might be risky due to both early harvest (low oil content, presence of fibers in the pulp, wrinkled appearance of the fruit) and late harvest (short shell life, irregular ripening and low taste quality, excessive oil content, germination of the seed) (Bernal Estrada et al., 2014). Thus, identifying the correct maturity level is essential for a good quality and long shell life avocado. In this regards, Galán Saúco, Herrero, & Hormaza (2014) explain that during the development of the fruit, oil concentration increases. However, assessing the oil concentration is expensive and time consuming, because it requires complex laboratory analysis (Bernal Estrada et al., 2014). Therefore, the main parameter used to measure the maturity index and to determine the optimal harvesting time in avocado is the percentage of dry matter content, which is directly related to oil concentration in the fruit (Galán Saúco et al., 2014), and it is low cost and easy to implement in packing plants by using a microwave oven, a heat-proof dish, an analytical scale and a slicer (Bernal Estrada et al., 2014). For further details about the technique to calculate the percentage of dry matter, refer to Annex 6.

3.2. Post-harvest

The post-harvest is the stage of the supply chain that includes all the activities that span from picking to delivery, which seeks to offer a high quality product to the customers. There are a number of procedures that must be executed carefully in order to guarantee a good quality avocado, as explained by Bernal Estrada et al. (2014) and Cerdas Araya, Montero Calderón, & Díaz Cordero (2006):

- **Washing and disinfection**: In Colombia, this practice is not generally used for local market fruits. However, for export markets, this is a necessary step to ensure good quality and to reduce the risk of disease transmission. The process consists in cleaning the avocado,

removing the residues of fungicides, foliar insecticides, fertilizers and dust. For disinfection purposes, the fruit is immersed in a disinfectant solution[2].

- **Selection**: It is the activity where avocados that do not have a uniform color or have scars on the skin, are set aside, since they have been cracked or attacked by pests and cannot be commercialized.
- **Classification**: It is the process where avocado fruits are separated by categories, according to their color intensity and size; which is determined by the market.
- **Warehouse**: The warehouse is a construction located near the crops. In that place, the fruits are selected and conditioned for transport to the packing plant.
- **Local transport**: Transportation of avocados to the packing plants must be done very carefully to avoid damages. If the distance is long, transportation should be done using refrigerated trucks. The trucks must be clean, with no signals of previous animal transportation, and no traces of organic fertilizers or chemical products (Cerdas Araya et al., 2006).
- **Packing and Storage**: The main objective of this activity is to keep the product in good conditions until it reaches its final destination, and to facilitate its handling and commercialization. Only clean, dry, selected and classified avocados must be packed. For foreign markets, corrugated cardboard boxes with a capacity between 2.0 and 2.5 kg and a single lay of fruit are the most common type of packaging (packed at ¾ of the capacity of the box). Once packed, boxes are placed in pallets of three rows and five boxes each, tied with straps to facilitate their transfer to the storage location. An additional consideration for packaging is that it must allow cold air circulation through the boxes, in order to avoid gas

[2] Chlorinated water (100 to 150 ppm) is mainly used for this operation, using sodium or calcium hypochlorite, in an immersion treatment that takes 2 to 3 minutes

accumulation. The technical recommendation is to have elongated ventilation windows of 5% of the packaging area of the corrugated cardboard boxes.

Regarding storage, due to the high vulnerability of avocados to the cold, the recommended temperature for storing avocados produced in Colombia is between 5°C and 12°C, with a relative humidity between 85% and 90% (Bernal Estrada et al., 2014).

- **Shipping**: In order to reach far destinations, Hass avocado must be transported in refrigerated containers. The general aim is to cool green mature fruits at a temperature between 4°C and 5°C. At this temperature, Hass avocado can be stored for about 4 weeks. However, for longer distances, Controlled Atmosphere (CA) conditions must be implemented to extend the storage period for Hass. Queensland Department of Agriculture and Fisheries (2018) mentions that "by reducing the oxygen level to 2% to 5% and maintaining the carbon dioxide level between 4% and 10%, a storage life of up to six weeks can be achieved".
- **Display:** This is the place where the product is exhibited to the customers and is exposed to manipulation. The recommendation is to limit the quantity of exhibited avocados to avoid the effects of manipulation. The display at a temperature of 5°C to 13°C helps to maintain the quality of the fruit for an extended period of time. However, stores and supermarkets exposure to higher temperatures is not critical because the turnover of the inventory is approximately of 1 to 2 days, and warm temperatures favor ripening for consumption. Miguel Allamand (2018), Chairman of the Board of Directors of Subsole S.A., a Chilean company with large experience in Hass avocado exports to Asian markets, explains that end users in Asian and European markets only accept ready-to-eat avocados. Thus, only ripen fruits should be exhibited at the point of sale. ProChile (2017) confirms that a relevant factor

that influences the purchase decision at Japanese stores is the fruit ripening level, and therefore, some supermarkets demand that their suppliers only dispatch ready or almost ready to eat avocados. The same source also mentions that if a customer picks a fruit that has not reached its ripening level, they would likely not buy avocados again. For this reason, Allamand (2018) recommends to develop a display system that allows consumers to easily identify which avocados are ready to eat and which ones will need more days to finish their ripening process.

In Japan, some local importers, such as Farmid, implemented a quality management system to store avocados until they reach the optimal maturity level. When the fruit is ripe, it is transported to the stores in vehicles with centralized temperature control. In each avocado is placed a label, indicating the deadline to be consumed, based on its maturity level (ProChile, 2017).

3.3. Avocado Distribution Channels in Japan

Distribution of vegetable products in Japan is done through importers, who trade with wholesale distributors. They place the fruit with intermediary wholesalers that have stores in large dimension central markets. Finally, and depending on the level of operations, retailers go to primary wholesalers or intermediary wholesalers before reaching their final consumers at their stores (ProChile, 2017).

Some of the main avocado importers in the Japanese market are large companies such as Fresh Del Monte and Dole, which import directly from their commercial partners in the different countries of origin.

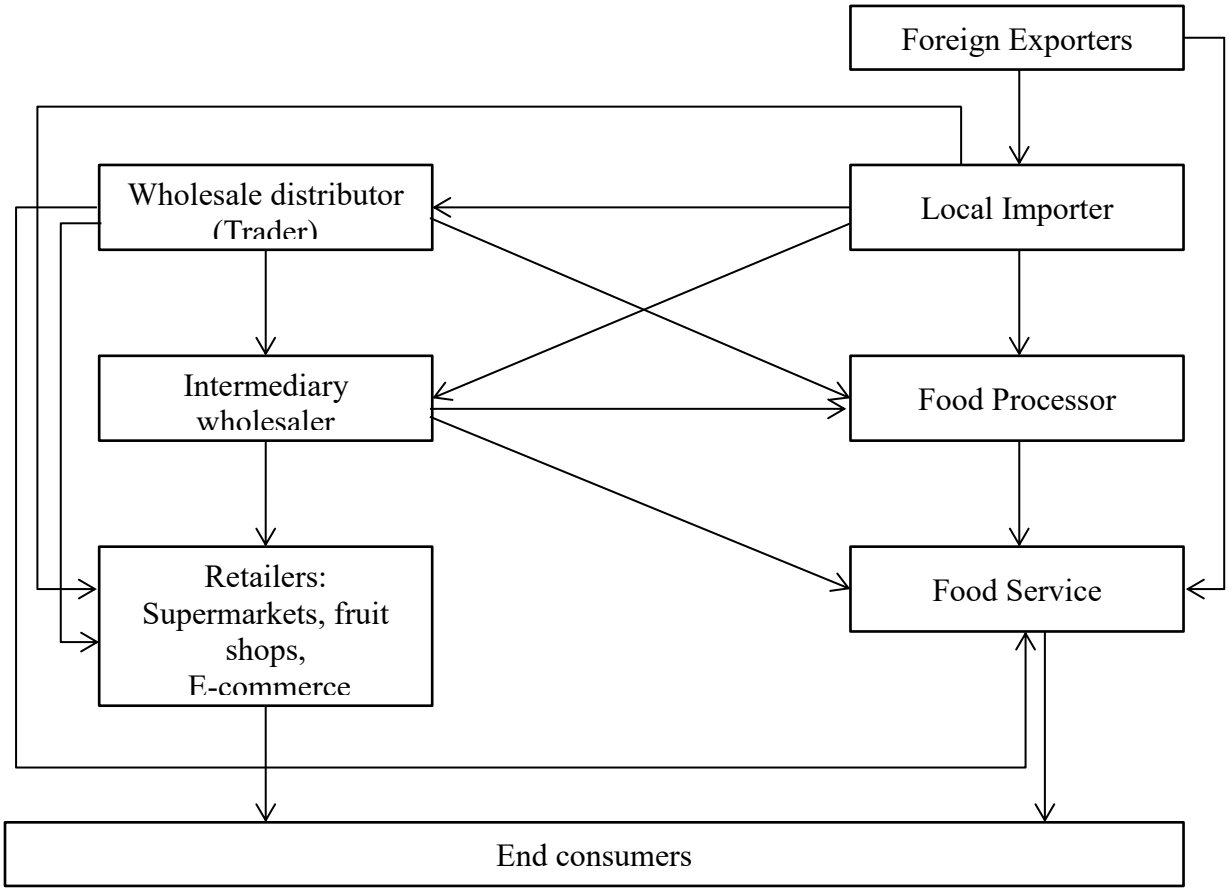
In the retail sector, the main supermarket chain is Seven & I Holdings Co followed by AEON. Foreign retail companies such as Walmart and Costco also have important market

shares. These large companies prefer to import directly from foreign exporters to avoid commission fees from intermediaries.

Ecommerce is an important distribution channel in Japan. Rakuten Inc. is the biggest online store with more than 90 million registered users, followed by Amazon and Yahoo Shopping. In these three online stores, Japanese consumers can buy avocados from different origins.

Finally, the food service industry buys avocados from wholesale distributors (traders) or intermediary wholesalers. Some fast food companies, such as MOSS and Fresh, buy frozen avocados for their hamburgers. The main hotel chains and restaurants in Japan are Imperial Hotel, Hilton Hotel, Westin, Hyatt, Zensho, Skylark, Shidax, among others (ProChile, 2017).

Japanese Distribution Channels Flowchart



Source: (ProChile, 2017)

4. Japan Market Analysis: Consumer Preferences

During the 20th century, Japan was considered one of the fastest growing countries in the production of fresh fruits. However, due to labor shortages and high salaries, the number of hectares dedicated to fresh fruit production decreased considerably, which made the demand exceed the supply (Walker, 1976). This situation created business opportunities for other agricultural-based economies that found this Asian country as a very attractive market.

According to the US International Trade Administration (2017), the following reasons make Japan an attractive market:

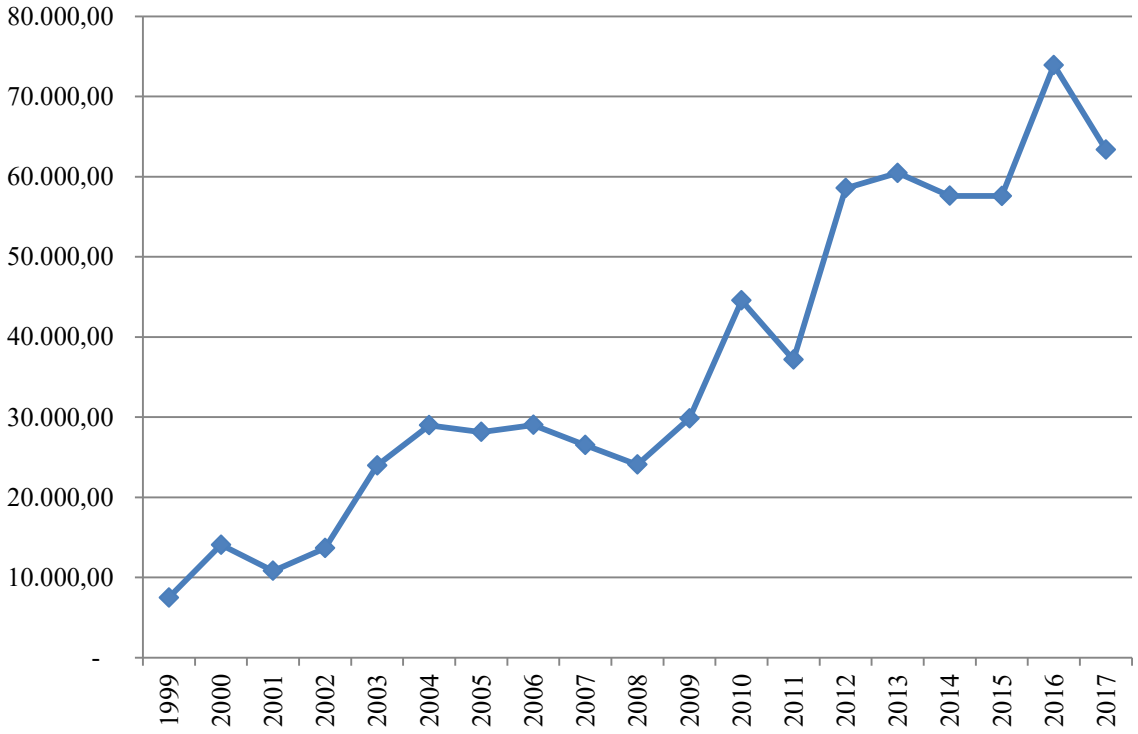
- Japan is the third largest economy in the world after the United States and China, with a GDP of US$ 4.872.136 million[3] (The World Bank, 2017). It is member of the international trade system, and the local government provides strong protection to intellectual and real property rights.
- Japanese middle class drives the economy, with a similar percentage of its middle class population incomes to the ones from the United States. The GDP per capita in Japan for 2017 was US$ 38.428[4] (The World Bank, 2017).
- Japan depends on the import of natural resources, being the net largest buyer of food products in the world.

Regarding imports of Hass Avocado, Japan depends exclusively on imports. Production and exports of this fruit are insignificant in the country (Peruvian Ministry of Foreign Trade and Tourism, 2013). Since 2000, Japan has shown high growth rates, as it can be observed in **Figure 5**. From 2000 to 2017, the compound annual growth rate (CAGR) of Hass avocado

[3] During the same period of time, GDP in Colombia was US$ 309.191 million (The World Bank, 2017)
[4] During the same period of time, GDP per Capita in Colombia was US$ 6.301(The World Bank, 2017)

imports in Japan was of 12.6%, going from 7,491 tonnes in 2000 to 63,366 tonnes in 2017 (FAOSTAT, 2016a; Hass Avocado Board, 2018). Even though the market has suffered short falls, the long term trend shows a positive slope. The most recent drop was in 2017, when the imports of Hass avocado in Japan fell by 14.3%, in contrast to the figures of 2016.

Figure 5: Hass Avocado Imports to Japan (Tonnes)



Source: (FAOSTAT, 2016a; Hass Avocado Board, 2018)

Avocados are known as “forest butter” in Japan, due to their exquisite taste, aroma and high concentration of vegetable fat (ProChile, 2017). The fruit is becoming a staple in the Japanese households, gaining especial popularity among Japanese women who see this fruit as an important source of vitamins and minerals which keeps the skin moist, improves iron deficiencies and lowers blood pressure (Obe, 2017; Peruvian Ministry of Foreign Trade and Tourism, 2013). Obe (2017) states that working women use avocados to prepare salads due

to absence of time to prepare more elaborated dishes. In addition, according to him, "avocados are also on the menus of numerous Japanese restaurants. They are served at one of the country's largest coffee and sandwich chains".

4.1. Recommendations to succeed in the Japanese market

In order to be successful in the Japanese market, the US International Trade Administration (2017) gives the following recommendations to foreign companies interested in doing business in Japan:

- Use of Japanese language is a critical factor to succeed in the Asian country. Labeling requirements are specified by the government and must be written in Japanese.
- Japanese business people appreciate the efforts to even communicate in basic Japanese language. However, professional interpreters are accepted.
- Marketing in Japanese language is essential to communicate with local consumers and business customers, since most of the population does not speak a second language (ProChile, 2017).
- Provide detailed technical specifications, and a website with detailed information about the product characteristics.
- Understand Japanese demands and expectations regarding product quality, appearance, packaging, display, delivery and post-sales services.

In addition, ProChile (2017) recommends to highlight the quality and safety of the products through promotion and advertising campaigns, as Japanese consumers are increasingly looking for healthy and safe products. In this regard, Allamand (2018) reinforces that it is not only about supplying a good quality avocado but also about supplying consistent quality over the time. He

explains that when the market is supplied with poor quality fruits, prices tend to drop and the demand to increase. However, the increase will be temporary and consumption will drop because consumers do not accept poor quality products.

On the other hand, due to the cultural Japanese belief that autumn is the season of harvest and the time to eat well and abundantly, ProChile (2017) also recommends to do the advertising campaigns during this time of the year, taking advantage of harvest welcome festivities.

Professor Adriana Roldan (2018), researcher of the EAFIT University International Business Department, Program Candidate of the PhD in International Studies from Waseda University in Japan and Magister in International Studies from the same University, recommends to design marketing strategies oriented to sell avocados by telling a story, with campaigns, reinforcing for instance, that by buying a Colombian product, they are contributing to peace. She expects this type of campaigns to have a positive impact among the Japanese population, since the number of LOHAS[5] consumers is growing in Japan. This means having a higher number of consumers' purchasing decisions based on accurate information and driven by their values regarding personal, family and community health, environmental sustainability and social justice (Mobium Group Pty Ltd, n.d.).

[5] "LOHAS is an acronym for Lifestyles of Health and Sustainability and is based on the work of US sociologist Paul H. Ray" (Mobium Group Pty Ltd, n.d.)

5. Admissibility Diagnosis

The admissibility is the bilateral process carried out by the National Sanitary and Phytosanitary Authorities which aims to meet agricultural products export requirements, according to the sanitary risk level implied for the local species and human life (Instituto Colombiano Agropecuario, 2015). In Colombia, Instituto Colombiano Agropecuario, ICA, is the authority responsible for the admissibility processes, through the Technical Direction of International Affairs.

Currently, the Colombian government is working to receive the Colombian Hass Avocado admissibility into the Japanese market. In March 2018, the Japanese Ministry of Agriculture, Forestry and Fisheries, MAFF, accepted the phytosanitary export protocol that ICA proposed for the Colombian Hass Avocado (Colombian Ministry of Agriculture and Rural Development, 2018).

The next step to get the admissibility approved is to welcome an inspection visit from MAFF, in order for them to verify that the local producers meet the required standards (Colombian Ministry of Agriculture and Rural Development, 2018). In a personal communication with Ivan Anibal Gutierrez (2018), ICA Technical Director of International Affairs, he confirmed that on July 23rd, 2018 Colombia sent an official invitation to MAFF, where the visit of the Quarantine Inspector was requested for the on-site verification of ICA's approved production farms and packing plants. The proposed date for the visit is between October 20th to 28th 2018, which was confirmed by Uribe Lalinde (2018), who also mentioned that MAFF is planning to visit Cartama's packing plant in Pereira, Risaralda and two of their avocado farms in Caldas.

Uribe Lalinde expects the admissibility process with Japan to be more flexible than the protocol agreed with the United States. He mentioned that Corpohass[6] is working to positively influence the admissibility process with Japan to have a more flexible export protocol than the one from the United States, which he considers to be highly strict.

Gómez Camelo (2018) confirms that the admissibility process with Japan is progressing well, thus he expects that Colombian Hass avocados get access to the Japanese market during the first quarter of 2019. However, he explains that due to the narrow bilateral trade relations between Colombia and Japan, the Hass avocado admissibility process has taken longer than expected. According to Gomez Camelo (2018), Colombia exports few products to Japan, among which are coffee, flowers, coal, oil, ferronickel and bananas. Therefore, the small trade that exists between the two countries could be a challenge for the Colombian exporters. However, Wago (2018) states that Colombian agricultural products have a good reputation in Japan for their quality, especially coffee, which has been exported to Japan for more than 50 years and currently represents 82%[7] of the total agro industrial exports[8]. In fact, Professor Roldan (2018) confirms that agricultural products from Colombia such as coffee, flowers and bananas are perceived as high quality products for the Japanese consumers. She says that the Colombian coffee has gained popularity in the Asian country and currently, coffee exporters such as Colcafé are dabbling in the Premium Coffee market.

As mentioned before, the Japanese market represents a good opportunity for the Colombian Hass avocado producers because Japan is the fifth importer of the product in the

[6] Corpohass is a Colombian Non- profit Private Corporation that orients and fosters the production and commercialization of Hass avocado both in national and international markets. The institution organizes and associates local Hass avocado producers in order to represent them before public and private organizations both nationally and internationally (Corpohass, 2018).

[7] The figure includes green coffee and its derivatives.

[8] In 2017, Colombia exported USD $327 million in agro industrial products to Japan (Wago, 2018).

world, with a total of US $205 million imported during 2017 (Colombian Ministry of Agriculture and Rural Development, 2018). According to Uribe Lalinde (2018), the Colombian producers have many opportunities in the Japanese market because, unlike European consumers, Japanese consumers value small size avocados, such as the varieties produced in Colombian soils. Additionally, prices in Japan are attractive. Therefore, this market represents a diversification opportunity for Colombian exporters when prices in Europe drop, such as it happened in 2018, when an increase in the exports from South Africa and Peru dropped considerably the prices in the European market. He states that even though Colombia needs to improve its roadways, the country has competitive advantages in comparison to other Hass avocado producing countries, such as the tropical weather, a condition that allows to harvest most of the year. Although there is a transit time of approximately 30 days to Japan, he is also confident that Colombian agriculture exporters already know how to ship to the Asian country; for instance, the flower growers that export continuously to Japan (Uribe Lalinde, 2018).

Uribe Lalinde (2018) remarked that to be successful in Japan, exporters must have a deep knowledge on the logistics that are required to transport the avocado (i.e. appropriate technology of the containers, correct mixture of oxygen and carbon dioxide during transportation, shipping times, among others). Also, they must have a full comprehension of the export protocol to comply with all the Japanese government requirements. On the other hand, avocado growers must be familiar with the correct production methods to deliver high quality fruits. Gómez Camelo (2018) also explains that due to the long transit time between Colombia and Japan, local producers must have rigorous quality conditions while delivering a good product to the Asian market.

5.1. Japan general admissibility requirements

After doing an analysis of the export protocol required by the Japanese Health Authority to grant the admissibility of the Peruvian Hass Avocado into its market, it can be concluded that Japan has high standards to accept agricultural products into its territory, especially in terms of pest control. Therefore, one of the most relevant points that the exporter must guarantee is the absence of fruit flies such as *Ceratitis capitate*, *Anastrepha fraterculus* and *Anastrepha striata* in the analyzed product (MAFF, 2014). Additionally, the same source highlights that the exporter country must prove its ability to ensure the compliance of the following conditions:

- Only 'Hass' avocado fruit shall be exported to Japan.
- Overripe fruits must not be mixed in the lots to be exported. Overripe fruits must not be exported to Japan.
- Before granting the access of Avocado from any specific exporter, both the place of production and the packing house must be certified by the National Health Authority, guaranteeing compliance with the protocol.
- Certified places of production and packing houses must prove that their facilities meet the requirements to prevent the entry of fruit flies. In order to give the certification, the National Health Authority shall inspect the conditions of the facilities in accordance to the protocol.
- Fruits fallen from the tree must not be exported to Japan. The producer should remove fallen fruits on a weekly basis.
- The harvested avocados must be placed in trays labeled with the registration code of the production site to ensure the traceability of the products throughout the whole process from the production to the exportation. This information must be also included in the final label of the product.

- Harvested Hass avocados should be transported to the certified packing houses within three hours after harvest. In case this is not done, fruits must be protected with an insect-proof screen (tarpaulin) to avoid fruit flies contamination.
- During the harvest, transportation and packing process, Hass avocado must not be mixed with any other variety. Also, it must remain separate from Hass avocados coming from any other certified place of production.
- Packing houses must be cleaned and sterilized if an operation with a different variety was conducted before processing Hass avocado.
- Export inspections must be done to approximately 5% of the number of boxes to be shipped to Japan by the Health Authority. All the fruits subject to inspection must be visually verified to ensure that no fruit apart from Hass avocado will be shipped, no fly fruit is attached, and no fruit is suspected to be overripe.

According to Wago (2018), one of the major challenges for the Colombian avocado producers and exporters is to ensure traceability of large quantities of fruit, because he considers that local growers still have difficulties to track the product along the whole supply chain and guarantee its quality.

5.2. Japan Import Tariffs for Hass avocados

Under the nomenclature of the Harmonized Commodity Description and Coding System (HS Code), fresh Hass avocados are classified with the number 0804.40.010. There are four different import tariff modalities for fresh Hass avocado in Japan, as shown in **Table 2**:

I. The general tariff corresponds to 6% and applies to all the imports coming from countries that do not enjoy either a preferential or most favored nation (MFN) treatment. This is the highest customs duty that a Hass avocado importer would have to pay.

II. The most favored nation[9] (MFN) tariff is 3% for both fresh and dried avocados. This tariff rate applies to countries that do not have any free trade agreement with Japan or any other benefit such as the Generalized System of Preferences (GSP).

III. The Generalized System of Preferences (GSP) tariff allows free access to the countries that are covered by this benefit.

IV. The Economic Partnership Agreement (EPA) tariff also allows free access of Hass avocado to all the countries that have signed the agreement with Japan.

Table 2: Import Tariffs for Hass Avocado in Japan

Statistical Code		Description	Tariff rate			Tariff rate (EPA)		
H.S Code			General	WTO	GSP	Mexico	Peru	Chile
0804.40		Avocados	6%		Free			
	010	Fresh		3%		Free	Free	Free
	090	Dried		3%		Free	Free	Free

Source: (Japan Customs and Tariff Bureau, 2018)

According to the UNCTAD (2017), Colombia is classified as a beneficiary of the Japanese Generalized System of Preferences, GSP. Therefore, as explained above, countries benefited from the GPS can import avocados to Japan exempt from import tariffs. In order to gain access to the free tariff benefit, Colombian exporters would have to submit the Certificate of Origin and comply with all the requirements explained in Annex 1.

Regarding Economic Partnership Agreement, Professor Roldan (2018) explains that Colombia has been negotiating the Agreement with Japan since 2012 and they have agreed on 16 chapters but there are still 2 chapters remaining, one about rules of origin and the other one about market access.

[9] It means that "if a country improves the benefits that it gives to one trading partner, it has to give the same 'best' treatment to all the other WTO members so that they all remain 'most-favored'" (World Trade Organization, 2018)

6. Current Japanese avocado suppliers

Mexico is the main exporter of avocado to Japan, with total exports of 57.924 tonnes in 2017 followed by Peru, with total exports of 3.357 tonnes on the same year (Hass Avocado Board, 2018). **Figure 6** shows the number of tonnes exported to Japan by the top five suppliers of Hass avocado between 2016 and 2017. It also indicates the percentage variation from one year to the other.

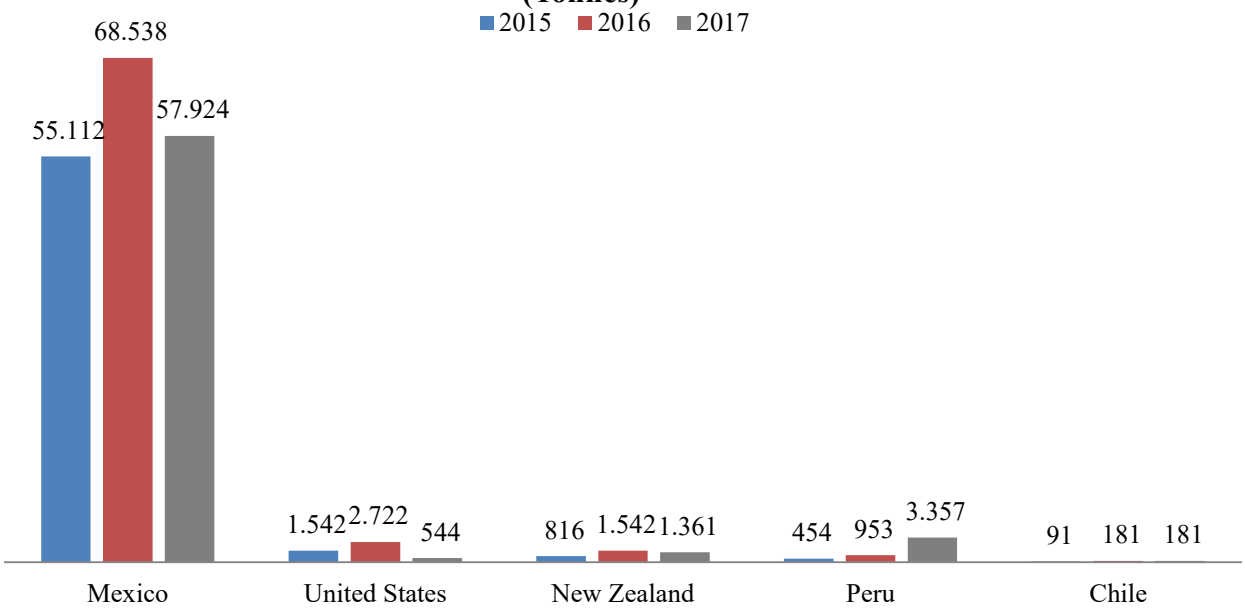
Table 3: Percentage behavior of exports to Japan between 2015 and 2017

Country	2016	2017
Mexico	24%	-15%
United States	76%	-80%
New Zealand	89%	-12%
Peru	110%	252%
Chile	100%	0%

Source: (Hass Avocado Board, 2018)

As it can be seen in **Figure 6**, all of the main exporters of Hass avocado to Japan increased their volumes in 2016, with an average growth rate of 27%, compared to 2015. However, in 2017, the only country that increased its sales to Japan was Peru, with an increase of over 250% compared to 2016. Mexico and the United States decreased the number of tonnes exported to that country by 15% and 80% respectively, in comparison to the increase percentages of 24% and 76% that these countries achieved in 2016. In general terms, the imports of Hass avocado fell by 14% in Japan in 2017.

Figure 6: Imports to Japan 2015 - 2017 (Tonnes)



Source: (Hass Avocado Board, 2018)

The increase in imports from Mexico and the United States (US) to Japan in 2016, and the fall in 2017 might be explained by the fact that, according to InexBox (2017), even though in 2016 the US market grew in US Dollars due to higher prices of avocado in North America, in terms of number of tonnes, the market decreased by 8% having a negative effect of 5,4% on imports to United States (UN Data, 2017). This reduction in the internal US avocado market could have motivated Mexican and American exporters to find new destinations for their products, such as Japan and South Korea, which are also attractive markets for their avocados. The scenario in 2017 was very different, due to the US market recovery, which increased by 13% the total number of tonnes imported (UN Data, 2017), making it more attractive for Mexican and US producers to supply the North American market, instead of exporting to Asia. Additionally,

during 2017, avocados in Japan experienced a high increase in prices, as stated by a staff writer of The Nikkei[10], Mitsuru Obe (2017):

> Japanese avocado lovers are feeling the pinch. Prices for the guacamole fruit are hitting record levels due to reduced harvests in Mexico and other major producers. Swelling demand in China and the U.S. is also at play. Wholesalers say they've never seen avocado prices reach such heights. […] At supermarkets in Japan, avocado sales have dropped 10% to 20% in the past couple of months[11] because of the high prices. But wholesalers say that decline is small considering how much prices have risen.

6.1.Mexico

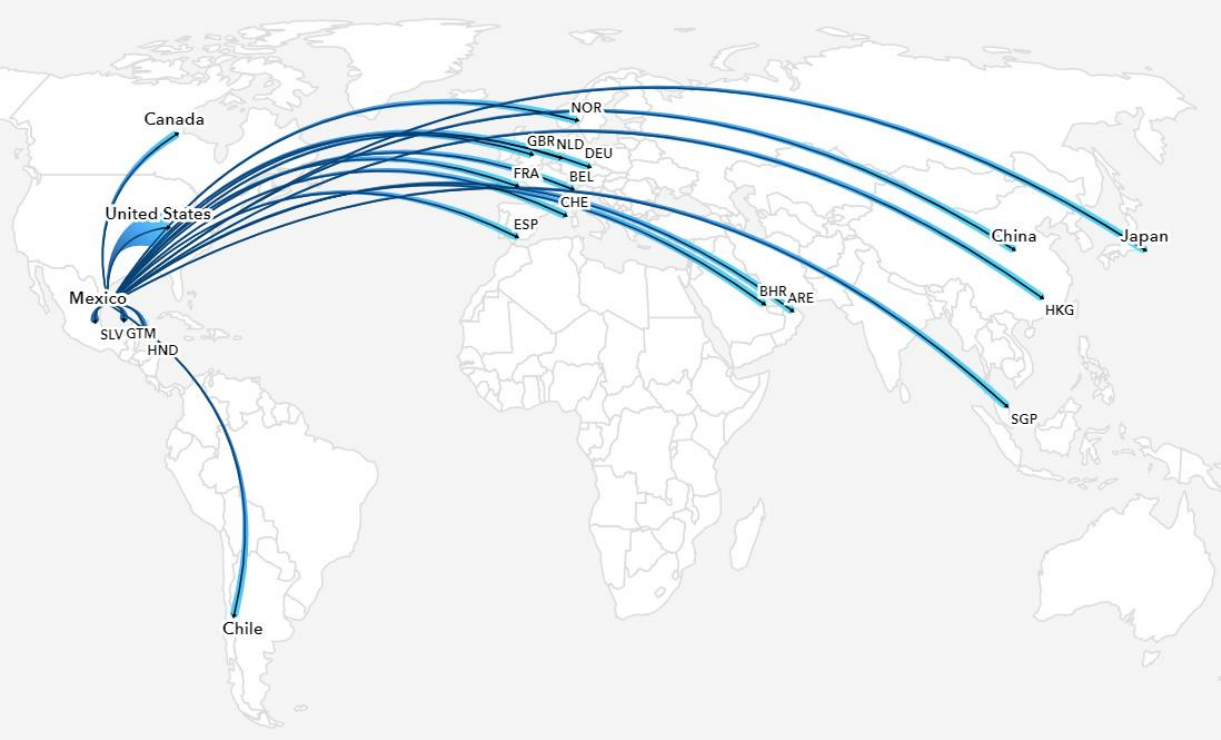
As mentioned above, Mexico is the main producer of Hass Avocado in the world and the main exporter to Japan, with a total market share of 92% in 2016. For Mexico, Japan represents the second largest market, selling 8% of its total exports (Tridge, 2016d).

Image 2 shows the export destination of Mexican avocados in 2016. Mexico exported to a total of 51 countries in the world, being the United States, Japan, Canada, France and the Netherlands the top five destinations (Tridge, 2016b).

[10] According to The Wall Street Journal (2015) , The Nikkei is Japan's top business newspaper.

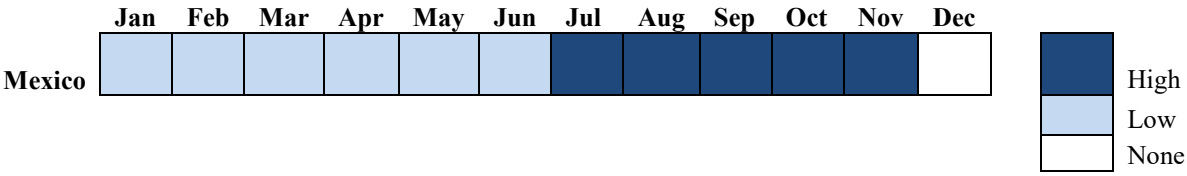
[11] The article was written in May 3rd, 2017.

Image 2: Mexican avocado export destinations (Tridge, 2016b)



As exhibited in **Figure 7**, Mexico has a high Hass avocado season during almost the whole year, with high production peaks between July and November, lower levels from January to June, and almost no production in December.

Figure 7: Hass Avocado Seasons in Mexico



Source: (Tridge, 2016d)

Mexican fresh Hass avocado are free of import tariffs as they benefit from the Economic Partnership Agreement (EPA) that Japan and Mexico signed in 2005, by submitting their

Certificates of Origin (Japan Customs and Tariff Bureau, 2018; ProChile, 2017; Roldán Pérez, 2018).

Regarding ocean freight, Mexico has the lowest rate in comparison to Chile, Colombia and Peru, with an average cost of US$ 3,211[12] as exhibited in **Table 4**. Additionally, it has the shortest transit time, which gives Mexico a competitive advantage in supply chain management.

Table 4: Ocean Freight and Transit Time Comparison[13]

Country	Transit Time**	Ocean Freight*	Origin Costs*	Destination Costs*	Total
Chile	**31**	$5,680	$55	$561	**$6,296**
Colombia	**33**	$3,680	$50	$561	**$4,291**
Mexico[14]	**19**	$2,580	$70	$561	**$3,211**
Peru	**24**	$3,980		$561	**$4,541**

*Costs in US Dollars **Transit time in days

Source:(APL, 2018; Maersk Line, 2018d, 2018a, 2018b, 2018c)

6.2. Peru

As it is observed in **Figures 1 and 3**, Peru is the third largest producer of avocado in the world and has the second largest harvested area with this fruit. Additionally, as exhibited in **Figure 6**, it was the second major exporter of Hass avocado to Japan after Mexico in 2017, exceeding the United States, which was ranked second in 2016. Peru has managed to position its avocados in the Japanese market over a very short period of time. Only in March 2015, the Japanese government accepted the sanitary protocol that allowed Hass avocado from Peru to be imported to its market, and in August of the same year, a Peruvian company called "Agrícola Hoja Redonda" sent the first container with 21 tonnes of Hass avocado to that country (PromPeru, 2018).

[12] The cost includes ocean freight, origin costs and destination cost. For further details, refer to Annex 3
[13] The comparison is done based on 40 feet refrigerated container. For further details, refer to the Annex section
[14] Transit time from Mexico consulted in APL Shipping Line, from Lazaro Cardenas Port to Yokohama Port

Image 3: Peruvian avocado export destinations (Tridge, 2016c)

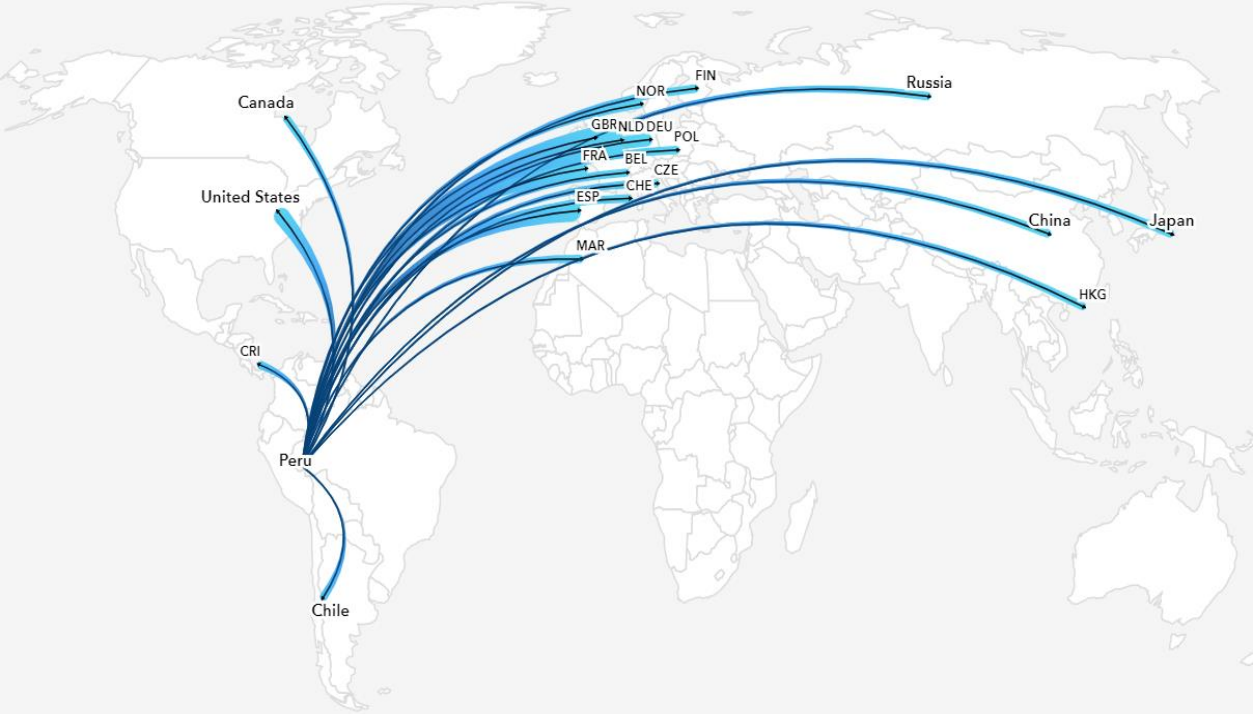


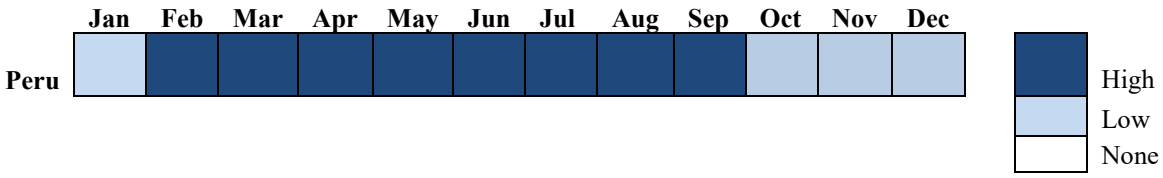
Image 3 shows the export destination of Peruvian avocados in 2016. Peru exported to a total of 53 countries in the world, being the Netherlands, Spain, France, the United States and Germany the top 5 destinations. Japan was ranked in place 18th (Tridge, 2016c).

Peru also has production of avocados for almost the whole year, as it can be seen in **Figure 8**. However, its season period starts in February and finishes in September (PromPeru, 2018).

The transportation of avocado from Peru to Japan is done by sea, with an estimated transit time of 24 days. The approximate ocean freight cost of a 40" refrigerated container from Callao port to Tokyo Port is US $4,541[15].

[15] The cost includes ocean freight, origin costs and destination cost. For further details, refer to Annex 4

Figure 8: Hass Avocado exports availability in Peru



Source: (PromPeru, 2018)

Peruvian fresh Hass avocados are also free of import tariffs under the Economic Partnership Agreement between Japan and Peru that came into effect in 2012, by submitting Certificate of Origin (Japan Customs and Tariff Bureau, 2018; ProChile, 2017; PromPeru, 2018; Roldán Pérez, 2018).

7. SWOT Analysis

The table below summarizes the main internal and external factors that might positively and negatively affect the Colombian producers and exporters that are interested in trading Hass avocado in Japan. The information exhibited is the result of the analysis that has been conducted in this research. Moreover, it was complemented with a study that was published by ProChile (2017) in order to identify opportunities and challenges for Chilean avocados in Japan, and with primary sources from Uribe Lalinde (2018), Gómez Camelo (2018), and Roldán Pérez (2018).

Table 5: Colombian Hass Avocado SWOT Analysis

	STRENGTHS	WEAKNESSES
Internal	▪ Avocado is available almost the whole year round. ▪ Asian markets value small avocado sizes as the ones produced in Colombia. ▪ Increase in the number of avocado growers and harvested area. ▪ Hass avocado is among the 8 agricultural products that the Colombian Government is promoting through "El Agro Exporta" program. ▪ Colombian coffee is well-recognized for its high quality in Japan. Other products such as flowers and bananas also have a good reputation.	▪ Few commercial relationships between Colombia and Japan. ▪ Colombian agricultural products are almost unknown in Japan. ▪ Lack of experience of most Colombian avocado exporters in Asian markets. ▪ Infrastructure deficiencies and high costs to transport avocado from farms and packing houses to sea ports. ▪ Long transit time from Colombia to Japan (30 days or more). ▪ Potential deficiencies of local producers to meet Japanese traceability requirements.
	OPPORTUNITIES	**THREATS**
External	▪ Japan production of avocado is almost nonexistent and imports of the fruit have increased rapidly in the last 20 years. ▪ Colombian Hass avocado would access Japan free of import tariffs. ▪ Mexico has had problems with excessive pesticide residues. ▪ Increasing awareness of avocados nutritional benefits among Japanese consumers. ▪ High per-capita income in Japanese consumers. ▪ Hass avocado prices are increasing due to a growing demand in China. ▪ Japanese importers are constantly seeking new suppliers to diversify the risk associated to depend only on Mexico. ▪ Japan represents a diversification alternative for Colombia, whose Hass avocado market is highly concentrated in Europe.	▪ Other competitor countries also have 0% import tariffs (Mexico, Peru, and Chile). ▪ Mexico has a market share of over 90% in Japan. ▪ Peruvian avocados are gaining market share at a rapid rate in Japan. ▪ Mexico has a shorter transit time to Japan (Lower than 20 days) ▪ Japanese consumers explicitly demand high quality and safe products. Thus, only producers with enough experience in international markets should export to Japan while Colombian avocados are well positioned. ▪ If the consumer has a negative experience with non-ripe avocados, it is likely that they will not buy anymore.

8. Conclusions

Admissibility of the Colombian Hass avocado to Japan is at its final stage, with high probabilities of obtaining access during the first quarter of 2019. This new market represents important opportunities for local producers and exporters but also important challenges, as outlined below:

Opportunities

- Diversification for the Colombian exporters whose foreign market is highly concentrated in Europe, with the risk associated to depend on few customers, where variables such as supply increase and price reduction may negatively affect the national industry.
- Japan is the fifth importer of Hass avocado in the world and has a large middle class population. Moreover, production of this fruit in Japan is almost non-existent. Therefore, there is a growing demand for the product and consumers with purchasing power will pay for healthy and safe products.
- Colombia produces small-size varieties of Hass avocados. However, Asian consumers value small sizes. Thus, if some sizes do not meet the European requirements, they could be sold to Japan at good prices.
- Even though Mexico has most of the Hass avocado market, Japanese importers and wholesalers are interested in finding new suppliers to reduce the risk generated by having only one origin of the product.
- Due to the tropical weather conditions in Colombia, local growers have the capacity to harvest avocado almost during the whole year.

- Colombian coffee, bananas and flowers are recognized in the Japanese market for its quality. Thus, avocado exporters can take advantage of this good reputation to advertise avocados as a product of Colombian origin.
- LOHAS is a concept used for consumers that make their purchasing decisions with enough information and based on their values regarding personal, family and community health, environmental sustainability and social justice. In Japan, LOHAS consumers are growing. Therefore, Colombian exporters may take advantage of the current social transformation that is taking place in Colombia to promote avocados as allies in this cultural and social change.
- Demand for avocados in China is growing rapidly, generating the price in Japan to increase. Thus, if Colombia manages to deliver a good quality product, it could benefit from the higher prices in the market.
- Colombia benefits from the Japanese Generalized System of Preferences, which means that Colombian Hass avocados can access the Japanese Market free of import tariffs.
- The admissibility of Colombian Hass avocados to the Japanese market will be important to comply with ongoing admissibility processes with other Asian countries, such as China.

Challenges:

- Mexico is the major producer and exporter of avocados in the world. In Japan, it has 92% of the market share. Thus, market penetration is a challenge, mainly because most of the importers, traders and final consumers only know Mexican avocados.
- Transit time from Mexico to Japan is shorter than from Colombia to Japan. Thus, Colombian exporters must have a deep knowledge about the logistics to transport avocados at the correct temperature and modified atmosphere in order to ensure the delivery of a product with high quality standards.

- Peru obtained access to sell its avocados in Japan since 2015. Over these few years, the country has managed to rapidly increase its exports to Japan, and to be ranked in the second position in terms of exports of avocados to the Asian market.
- Some Colombian producers have deficiencies to ensure the traceability of large quantities of the fruit from the production stage until the export stage. This issue must be solved, because it is a requirement from the Japanese Government to grant access to its market.
- A consistent quality must be guaranteed to build long-term customer loyalty. Additionally, a joint work must be done with retailers to ensure that the displayed avocados are indeed "ready-to-eat".
- Due to the aging population in Japan and to the proliferation of the LOHAS culture, consumers increasingly demand products that meet their quality, health and safety standards. If some exporters do not comply with the standards, the market for other Colombian exporters would be jeopardized.

Finally, Colombian producers and exporters must be aware of the importance of knowing and understanding the Japanese culture and expectations in order to succeed in the Asian country. Therefore, points such as labeling, advertising and making the effort to communicate in Japanese language, providing accurate technical information about the product, understanding and meeting quality, display and packaging expectations, and providing post-sale timely support, are determinant factors to build customer loyalty.

References

Allamand, M. (2018). El caso de los Aguacates Chilenos en Asia. Medellín. Retrieved from https://www.youtube.com/watch?v=sDFjzqXe5sI&feature=youtu.be

APL. (2018). Shipping Schedules. Retrieved September 29, 2018, from https://www.apl.com/wps/portal/apl/apl-home/services/routefinder

Bernal Estrada, J. A., Díaz Diez, C. A., Osorio Toro, C., Tamayo Vélez, Á., Osorio Vega en Suelos, W. I., Córdoba Gaona, O., … Londoño Bonilla, M. (2014). *Actualización Tecnológica y Buenas Prácticas Agrícolas (BPA) en el Cultivo de Aguacate* (Second). Medellin. Retrieved from https://conectarural.org/sitio/sites/default/files/documentos/Manual Actualizacion Tecnologica y BPA Cultivo de Aguacate_GOBERNACION PDF BAJA con caratulas.pdf

Bill, M., Sivakumar, D., Thompson, A. K., & Korsten, L. (2014). Avocado Fruit Quality Management during the Postharvest Supply Chain. *Food Reviews International*. https://doi.org/10.1080/87559129.2014.907304

Cartama. (2018). Cartama. Retrieved from http://cartama.com.co/index.php

Cerdas Araya, M. del M., Montero Calderón, M., & Díaz Cordero, E. (2006). *Manual de manejo pre y poscosecha de aguacate (Persea americana)* . San Jose, Costa Rica.

Colombian Ministry of Agriculture and Rural Development. (2018). Aguacate hass tendrá permiso para entrar a Japón en el primer semestre de este año. Retrieved from https://www.minagricultura.gov.co/noticias/Paginas/aguacate-hass-tendra-permiso-para-entrar-a-japon-en-el-primer-semestre-de-este-año.aspx

Corpohass. (2018). Corpohass: Quiénes somos. Retrieved September 15, 2018, from https://www.corpohass.com/quienessomos

Dinero. (2017). Colombia Envía Primer Cargamento de Aguacate Hass a EEUU. Retrieved September 15, 2018, from https://www.dinero.com/opinion/columnistas/articulo/realizar-ventas-rentables-por-juan-sanclemente/262096

FAOSTAT. (2016a). FAOSTAT: Compare Data. Retrieved August 4, 2018, from http://www.fao.org/faostat/en/#compare

FAOSTAT. (2016b). FAOSTAT. Crops. Retrieved July 29, 2018, from http://www.fao.org/faostat/en/#data/QC

Galán Saúco, V., Herrero, M., & Hormaza, J. I. (2014). Tropical and Subtropical Fruits. In Geoffrey R. Dixon & David E. Aldous (Eds.), *Horticulture: Plants for People and Places. Volume 1* (pp. 140–157). Springer, Dordrecht. https://doi.org/10.1007/978-94-017-8578-5

Gómez Camelo, G. A. (2018). Personal Communication.

Gutierrez Fontalvo Ivan Anibal. (2018). Personal Communication. Bogota.

Hass Avocado Board. (2018). *Avocado Global Trade Reports 2018*. Retrieved from https://www.hassavocadoboard.com/sites/default/files/pdf/global-trade-reports/global_trade_report_united_states_q1_2018.pdf

IndexBox. (2017). *Avocados - Market Report. Analysis and Forecast to 2025*.

Instituto Colombiano Agropecuario. (2015). Adminisbilidad Sanitaria y Fitosanitaria de Productos Agropecuarios. Retrieved August 4, 2018, from

http://www.ica.gov.co/multimedia/Admisibilidad/Productos/index.html

Instituto Colombiano Agropecuario. (2018). Colombia a un Paso de Exportar Aguacate Hass a Japón. Retrieved from https://www.ica.gov.co/Noticias/Colombia-exportacion-aguacateHass-Japon-ICA.aspx

Japan Customs and Tariff Bureau. (2018). Japan's Tariff Schedule as of January 4 2018. Retrieved September 16, 2018, from http://www.customs.go.jp/english/tariff/2018_4/data/e_08.htm

Maersk Line. (2018a). Quote Number QT-MAEU-31534788-5: Chile to Japan.

Maersk Line. (2018b). Quote Number QT-MAEU-31537241-5: Colombia to Japan.

Maersk Line. (2018c). Quote Number QT-MAEU-31537257-5: Peru to Japan.

Maersk Line. (2018d). Quote Number T-MAEU-31537226-9: Mexico to Japan.

MAFF. (2014). *Propoosal of Protocol for Exportation of Avocado (Persea Americana P. Mill.) Fruits Variety "Hass" from Peru to Japan (Draft Prepared by Japanese Side)*.

Mobium Group Pty Ltd. (n.d.). What is LOHAS? Retrieved October 7, 2018, from http://www.lohas.com.au/what-lohas

Obe, M. (2017). China Crowding Japan out of Avocado Market. *Nikkei Asian Review*. Retrieved from https://asia.nikkei.com/Business/Trends/China-crowding-Japan-out-of-avocado-market?page=2

OECD. (2004). *International Standardisation of Fruits and Vegetables: Avocado*. Retrieved from https://www.oecd-ilibrary.org/docserver/9789264019805-en-

fr.pdf?expires=1537741575&id=id&accname=guest&checksum=8ADF5178DCAA738707E440ED7A010D8D

Peruvian Ministry of Foreign Trade and Tourism. (2013). PDM Japón: Palta fresca. Retrieved September 16, 2018, from https://www.mincetur.gob.pe/wp-content/uploads/documentos/comercio_exterior/plan_exportador/Penx_2025/PDM/Japon/perfil_palta.html

ProChile. (2017). *Estudio de Mercado Palta en Japón*. Retrieved from https://www.prochile.gob.cl/wp-content/uploads/2018/02/pmp_palta_japon.pdf

ProColombia. (2018a). El Agro Exporta. Retrieved September 30, 2018, from http://www.procolombia.co/convocatoria-agroexporta/

ProColombia. (2018b). El aguacate Hass, Segundo Fruto más Exportado de Colombia. Retrieved September 23, 2018, from http://www.colombiatrade.com.co/noticias/el-aguacate-hass-segundo-fruto-mas-exportado-de-colombia

PromPeru. (2018). *Paltas a Japón*. Retrieved from http://www.siicex.gob.pe/siicex/documentosportal/758514098rad71353.pdf

Queensland Department of Agriculture and Fisheries. (2018). Avocado Cooling and Storage. Retrieved from https://www.daf.qld.gov.au/business-priorities/plants/fruit-and-vegetables/fruit-and-nuts/avocados/cooling-and-storage

Roldán Pérez, A. (2018). Personal Communication.

The Wall Street Journal. (2015). 5 Things to Know About Nikkei. Retrieved September 16, 2018, from https://blogs.wsj.com/briefly/2015/07/23/5-things-to-know-about-nikkei-after-

financial-times-deal/

The World Bank. (2017). DataBank. Retrieved August 12, 2018, from https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?locations=CO-JP&year_high_desc=true

Tridge. (2016a). Avocado Export from Colombia. Retrieved September 23, 2018, from https://www.tridge.com/intelligences/avocado/CO/export

Tridge. (2016b). Avocados, fresh or dried: Export from Mexico. Retrieved September 22, 2018, from https://www.tridge.com/hs-codes/080440-avocados-fresh-or-dried/MX/export

Tridge. (2016c). Avocados, Fresh or Dried: Export from Peru. Retrieved September 22, 2018, from https://www.tridge.com/hs-codes/080440-avocados-fresh-or-dried/PE/export

Tridge. (2016d). Avocados, fresh or dried | Import from Japan. Retrieved September 1, 2018, from https://www.tridge.com/hs-codes/080440-avocados-fresh-or-dried/JP/import

UN Data. (2017). UN Data. Retrieved September 1, 2018, from http://data.un.org/

UNCTAD. (2017). *Generalized System of Preferences Generalized System of Preferences: Handbook in the Scheme of Japan*.

University of California. (n.d.). Avocado Dry Matter. Retrieved September 23, 2018, from http://ucavo.ucr.edu/General/DryWeight.html

Uribe Lalinde, R. (2018). Personal Communication. Medellin.

US International Trade Administration. (2017). Japan Country Commercial Guide. Retrieved August 12, 2018, from https://www.export.gov/article?id=Japan-Market-Overview

US National Archives and Records Administration. (2017). Importation of Hass Avocados from Colombia. Retrieved September 23, 2018, from https://www.federalregister.gov/documents/2017/08/15/2017-17211/importation-of-hass-avocados-from-colombia

USDA. (2014). *Mexico Avocado Annual Report: Mexican Avocado Exports Continue to Grow*. Retrieved from https://gain.fas.usda.gov/recent gain publications/avocado annual_mexico city_mexico_11-26-2014.pdf

Wago, H. (2018). Plenaria: Oportunidades del Sector Agrícola Colombiano en China, Corea del Sur, Japón, Indonesia y Singapur. Eafit University. Retrieved from https://www.youtube.com/watch?v=PjybsgZAdG8&feature=youtu.be

Walker, C. (1976). Japan as potential Market for Avocados. In *Proceedings of the First International Tropical Fruit Short Course: The Avocado* (pp. 122–126). Retrieved from http://www.avocadosource.com/Journals/ITFSC/PROC_1976_PG_122-126.pdf

World Trade Organization. (2018). Understanding the WTO Principles of the Trading System. Retrieved October 7, 2018, from https://www.wto.org/english/thewto_e/whatis_e/tif_e/fact2_e.htm

Annexes

Annex 1

How to benefit from the Preferential Tariff Scheme of Japan

The following checklist is provided by the United Nations Conference on Trade and Development, UNCTAD (2017) as a guide for those countries that are benefited from the Generalized System of Preferences (GSP), under the Japanese scheme:

1. **Establish product tariff classification:** Determine the correct tariff classification (Harmonized System item number) of the product intended for export to Japan.
2. **Verify product coverage:** Determine whether the product is eligible for preference under the preferential tariff scheme of Japan, by examining the product lists of the preferential tariff scheme in relation to the specific tariff classification and product description.
3. **Assess preferential margin:** If the product is eligible for preferential treatment under the preferential tariff scheme of Japan, assess the preferential margin to determine the price that may be offered to buyers and/or importers.
4. **Comply with origin criteria:** Ensure that the product complies with the origin criteria set by Japan. Each scheme establishes its own origin criteria.
5. **Verify consignment conditions:** Ensure that the specified consignment conditions are met.
6. **Prepare documentary evidence:** Prepare a combined declaration and certificate of origin, required as documentary evidence under the preferential tariff scheme of Japan. Additional certificates may be required as necessary.

Annex 2

Ocean Freight and Transit Time from Chile to Japan

MAERSK LINE

Your promise. Delivered.

Offer 2-1					
Scheduled Route	San Antonio Terminal Int. (STI), Chile --> Balboa Port Terminal, Panama --> Maersk Yokohama Terminal, Kanagawa, Japan				
Mode of Transport	Ocean > Ocean				
Place of Receipt	San Antonio, Chile		**Rate Validity**	From 01-Oct-2018 to 31-Oct-2018	
Place of Delivery	Yokohama, Kanagawa, Japan		**Service Mode**	CY / CY	
Last Acceptance Date	01-Oct-2018		**Commodity**	CHILLED - AVOCADO	
Transit Time	31 day(s)		**Quoted for weight**	18.0 TONS	
Surcharge Name		**Basis**	**Currency**	**40HREF**	**Surcharge Type**
Basic Ocean Freight		Container	USD	5500	Freight
Congestion Fee Origin		Container	USD	0	Freight
Peak Season Surcharge		Container	USD	0	Freight
Emergency Bunker Fee		Container	USD	180	Freight
Emergency Risk Surcharge		Container	USD	0	Freight
Congestion Fee Destination		Container	USD	0	Freight
Total for Freight			**USD**	**5680**	
Documentation Fee Origin		Bill of Lading	USD	55	Origin
Export Service		Container	USD	0	Origin
Total for Origin			**USD**	**55**	
Documentation fee - Destination		Bill of Lading	JPY	3000	Destination
Terminal Handling Service - Destination		Container	JPY	60000	Destination
Total for Destination			**USD**	**561**	

Source: (Maersk Line, 2018a)

Total cost: US$ 6,296

Annex 3

Ocean Freight and Transit Time from Colombia to Japan

MAERSK LINE

Your promise. Delivered.

Offer 2-1					
Scheduled Route	TCBUEN, Colombia --> Maersk Yokohama Terminal, Kanagawa, Japan				
Mode of Transport	Ocean				
Place of Receipt	Buenaventura, Colombia		**Rate Validity**	From 01-Oct-2018 to 31-Oct-2018	
Place of Delivery	Yokohama, Kanagawa, Japan		**Service Mode**	CY / CY	
Last Acceptance Date	01-Oct-2018		**Commodity**	CHILLED - AVOCADO	
Transit Time	33 day(s)		**Quoted for weight**	18.0 TONS	
Surcharge Name		**Basis**	**Currency**	**40HREF**	**Surcharge Type**
Basic Ocean Freight		Container	USD	3500	Freight
Congestion Fee Origin		Container	USD	0	Freight
Peak Season Surcharge		Container	USD	0	Freight
Emergency Bunker Fee		Container	USD	180	Freight
Emergency Risk Surcharge		Container	USD	0	Freight
Congestion Fee Destination		Container	USD	0	Freight
Total for Freight			**USD**	**3680**	
Documentation Fee Origin		Bill of Lading	USD	50	Origin
Total for Origin			**USD**	**50**	
Documentation fee - Destination		Bill of Lading	JPY	3000	Destination
Terminal Handling Service - Destination		Container	JPY	60000	Destination
Total for Destination			**USD**	**561**	

Source: (Maersk Line, 2018b)

Total cost: US$ 4,291

Annex 4

Ocean Freight and Transit Time from Mexico to Japan

MAERSK LINE — Your promise. Delivered.

Offer 2-1			
Scheduled Route	APM Terminals Lazaro Cardenas, Michoacan de Ocampo, Mexico --> Maersk Yokohama Terminal, Kanagawa, Japan		
Mode of Transport	Ocean		
Place of Receipt	Lazaro Cardenas, Michoacan de Ocampo, Mexico	**Rate Validity**	From 01-Oct-2018 to 31-Oct-2018
Place of Delivery	Yokohama, Kanagawa, Japan	**Service Mode**	CY / CY
Last Acceptance Date	01-Oct-2018	**Commodity**	CHILLED - AVOCADO

Surcharge Name	Basis	Currency	40HREF	Surcharge Type
Basic Ocean Freight	Container	USD	2400	Freight
Congestion Fee Origin	Container	USD	0	Freight
Peak Season Surcharge	Container	USD	0	Freight
Emergency Bunker Fee	Container	USD	180	Freight
Emergency Risk Surcharge	Container	USD	0	Freight
Congestion Fee Destination	Container	USD	0	Freight
Total for Freight		**USD**	**2580**	
Documentation Fee Origin	Bill of Lading	USD	70	Origin
Reefer Monitoring/Plug-in Service–Export	Container	USD	0	Origin
Export Service	Container	USD	0	Origin
Total for Origin		**USD**	**70**	
Documentation fee - Destination	Bill of Lading	JPY	3000	Destination
Terminal Handling Service - Destination	Container	JPY	60000	Destination
Total for Destination		**USD**	**561**	

Source: (Maersk Line, 2018d)

Total cost: US$ 3.211

Transit Time

Departure Date / Arrival Date	Origin/ Load Port/ Relay/ Discharge Port/ Destination	Service	Vessel Load / Vessel Discharge	Voyage	Cutoff	Transit Time
Mon,Oct 22 (D) Sat,Nov 10 (A)	LAZARO CARDENAS, LAZARO CARDENAS PT DE CONTENEDOR (LLZ) YOKOHAMA, YOKOHAMA / HONMOKU D-4 TERMINAL (YOK)	CDX	CMA CGM TIGRIS	816	Fri,Oct 19, 0900 hrs	19 Days Book on HomePort

Source:(APL, 2018)

Annex 5: Ocean Freight and Transit Time from Peru to Japan

MAERSK LINE

Your promise. Delivered.

Offer 2-1					
Scheduled Route	APM Terminals in Callao Port, Peru --> Maersk Yokohama Terminal, Kanagawa, Japan				
Mode of Transport	Ocean				
Place of Receipt	Callao, Peru		**Rate Validity**	From 01-Oct-2018 to 31-Oct-2018	
Place of Delivery	Yokohama, Kanagawa, Japan		**Service Mode**	CY / CY	
Last Acceptance Date	01-Oct-2018		**Commodity**	CHILLED - AVOCADO	
Transit Time	24 day(s)		**Quoted for weight**	18.0 TONS	
Surcharge Name		**Basis**	**Currency**	**40HREF**	**Surcharge Type**
Basic Ocean Freight		Container	USD	3800	Freight
Congestion Fee Origin		Container	USD	0	Freight
Peak Season Surcharge		Container	USD	0	Freight
Emergency Bunker Fee		Container	USD	180	Freight
Emergency Risk Surcharge		Container	USD	0	Freight
Congestion Fee Destination		Container	USD	0	Freight
Total for Freight			**USD**	**3980**	
Documentation fee - Destination		Bill of Lading	JPY	3000	Destination
Terminal Handling Service - Destination		Container	JPY	60000	Destination
Total for Destination			**USD**	**561**	

Source: (Maersk Line, 2018c)

Total Cost: US$ 4,541

Annex 6

Method of determination of the dry matter content in avocado

The following method was extracted from the report "International Standardisation of Fruit and Vegetables: Avocados" written by OECD (2004):

1. Application

This method allows to determine the loss of mass during the process of desiccation of the avocado.

2. Materials and instruments

- Analytical scale with gradation of 0.010 mg
- Microwave oven, capable of reaching a power of 800 W
- Glass slides 8 cm in diameter
- Pocket knife or knife
- Slicer

3. Procedure

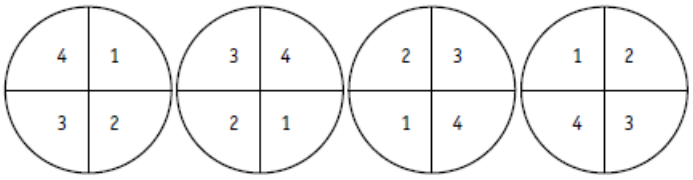
Each time that samples are weighed, they must be controlled until the nearest centigram.

3.1. Weigh each glass slide and take note of the weight (P_0)

3.2. Cut the fruit longitudinally in two parts, eliminating the seed and the seminal tegument.

3.3. From one of the parts of the fruit, four 1.5 mm-thick slices must be cut with the help of the slicer.

3.4. Slices must be divided into four portions, cutting the diameters from largest to smallest. Then, deposit the four portions of the 4 slices without overlap, on four numbered glass-slides, according to the following schema of the slices divided in four and the number of the glass-slide where you are setting each quarter:



3.5. Weigh each glass-slide which contains the sample and record the weight (P_1).

3.6. Put the glass-slides into the microwave oven. It must be checked beforehand, for this thickness of the sample slice, that the desiccation is constant and that no brown coloration due to burning will appear. Establish a power of 800 W and after 4 minutes, weigh the sample directly, without allowing it to cool in the desiccator. Return the sample into the microwave for 1 minute and weigh it again. Repeat the process until the weight is constant or the difference of the mass between two consecutive weighing is not greater than 0.5 mg. The total time of desiccation ranges between 4 and 7 minutes. The final weight will be P_2.

3.7. Calculate the dried extract as following:

$$\%\ Dried\ Extact = \frac{P_2 - P_0}{P_1 - P_0} \times 100$$