

MARKET STUDY

Avocado Market Opportunity Profile

Ministry of Agriculture and Fisheries, Jamaica

January 2024



Author Note

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Executive Summary

- ✓ The Simmonds avocado is the primary variety produced in Jamaica.
- ✓ Polaris Market Research reported that the global avocado market was valued at US\$14.38 billion in 2022 and is expected to grow at a compound annual growth rate (CAGR) of 7.4% over the next 10 years.
- ✓ Mexico is the largest exporter of avocado, exporting and producing primarily the Hass variety. In 2021, Mexico accounted for 39% of value and quantity for the global export market share.
- ✓ The United States of America (USA) is the largest importer of avocado. In 2021, the USA imported a total of 1,213,412.75 tonnes, valued at US\$3.13 billion.
- ✓ While catering to the local Jamaican market may lower operational expense due to the elimination of shipping costs, exporting to global markets such as the USA, UK, Canada, and Europe can be more profitable due to their greater demand and consumption rates.
- ✓ Jamaica's varieties of avocado are demanded in Italy, Germany, and Eastern Europe.
- ✓ Jamaica can increase profits by diversifying the use of avocados beyond traditional side dishes and exploring opportunities such as the development and export of avocado milk.
- ✓ The promotion of commercial avocado production as well as education of international standards of quality are essential to develop the Jamaican avocado industry.

Crop Profile: Avocado

Persea Americana, globally known as ‘avocado’ and commonly called ‘pear’ in Jamaica, is a member of the *Lauaceae* tree family and is widely cultivated in tropical climates. It originated in southern Mexico then later spread to most tropical and subtropical regions with acceptable climatic conditions, including the West Indies, where it was first noted in Jamaica in 1696. (Julia, 1987)

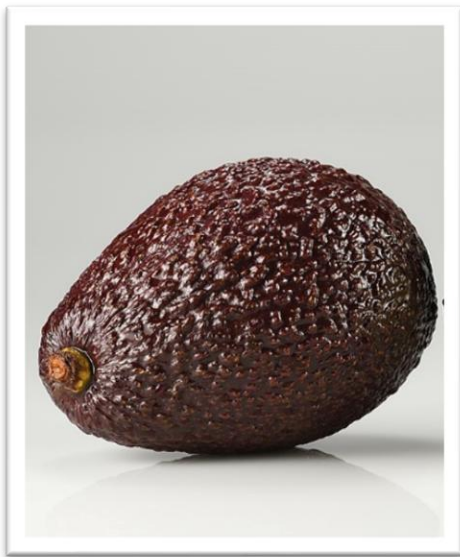
The average height of an avocado tree is 30 to 60 feet, with its trunk measuring 12 to 24 inches in diameter. However, it can also be short, spreading branches near to the ground. The appearance of the fruit ranges from various shades of green to purple. The skin's texture can also vary, from smooth to rough, dull to glossy, thin to leathery, and pliable to granular and brittle. The flesh beneath the skin is thin and soft, with bright-green and pale-yellow hues, offering a buttery or nut-like flavor. It has an ivory-colored, round seed covered by two brown, thin, papery seed coats. (Julia, 1987)

Uses and Health Benefits

Avocado is low in sugar and high in protein, fiber, vitamins A, B, C, and E, potassium, and phosphorus. It contains mono-unsaturated fatty acids that can reduce the risk of coronary heart disease (Vinha, Sousa, Soares, & Barreira, 2020). Avocado oil is made from avocados and has a mild, delicate flavour that enhances other foods. It mixes well with other foods and can withstand high cooking temperatures before breaking down (Bergh, 1992).

Varieties

Avocados varies in appearance and their varieties are classified under three main types, namely West-Indian Race, Mexican Race and Guatemalan Race. The Hass, Fuerte and Pikerton are the most common varieties produced and are of the Guatemalan, and Mexican-Guatemalan Hybrid race respectively. However, the Hass Avocado is the most commercially preferred variety due to its post-harvest resistance, high yield, and rich flavour (Hass Avocado Board, 2019). It is identified by its small body and its rough skin which affords the commodity its post-harvest characteristics. In contrast, Simmonds, the most widely produced variety in Jamaica harvested primarily in May and July, has a large pear like shape with thin green shiny skin which makes it more susceptible to spoilage bruises during transport.



Hass Avocado



Simmonds Avocado

The Hass Avocado is largely produced in a sub-tropical climate with a temperature range of 20C to 25C. The Avocado Institute of Mexico noted that Michoacán, Mexico, the main avocado-

producing area in the world, has been an ideal location for orchards because of its rich volcanic soil, topography, and sub-tropical climate providing consistent rainfall. In addition, a country profile done by the Hass Avocado Board confirmed that the production area in Michoacan is located on Mexico's volcanic belt and provides optimal growing temperatures ranging between 20C to 25C. According to the MET Office UK, Jamaica has an average minimum daily temperature of 22C to a maximum of 31C. Therefore, cultivating the Hass variety of avocados in Jamaica will prove a challenge and may result in low yields and growth deficiencies. According to the Rural Agricultural Development Authority, attempts were made to cultivate the Hass avocado locally. However, producers reported that the plant produced significantly low yields and, in some instances, died due to constant high temperatures.

Planting

The spacing between avocado trees is dependent on the soil characteristics. Cultivating light soil requires spacing of 7.5 x 7.5 meters, while deep, rich soil may require spacing of 9.1 or 10.7 meters for maximum growth. In light soil, the plant will easily spread requiring more space to extend its roots. Holes should be dug at least 0.6 meters (24 inches) deep, and soil should be formed into a mound. Once planted, the tree should be mulched and watered until the roots are well established. Drip irrigation is useful for keeping the soil moist and to provide up to 80% of the plant's fertilizer requirement. (Department of Agriculture Fisheries & Forestry, Republic of South Africa, 2012).

Fertilization.

For young trees, use a balanced fertilizer four times a year, beginning one year after growth. While for older trees, nitrogenous fertilizer should be applied during late winter and early summer.

Giving small amounts of fertilizer every two months is best, gradually increasing the quantity until the tree begins fruiting. Bearing trees require 1.5 to 2 kg of fertilizer three times a year, starting when the tree is making vegetative growth. Fertilizer should not be given during blooming time but after the fruit has been set. Nitrogen is the most important factor influencing tree growth, resistance to cold temperatures, and fruit size and yield. Fertilizer mixtures should be adjusted according to soil type, and foliar sprays usually treat mineral deficiencies. If the leaves turn yellow, it is a sign of iron deficiency (chlorosis) that can be corrected with a chelated foliar spray of trace elements containing iron. Additionally, mature trees may show a zinc deficiency. (Department of Agriculture Fisheries & Forestry, Republic of South Africa, 2012)

Harvesting

The main period for harvesting in Jamaica is from May to August, and the fruit does not fully ripen on the tree but is picked once mature. Harvesting should be done by twisting the pedicel to detach the mature fruit and clipping it to avoid damaging other fruits. Knocking the fruit off the tree is not recommended, as this can cause bruising and bursting. Instead, a bamboo or light wood picking pole with a cloth or crocus bag and a notch with an inner sharpened edge at the end can be used. A maximum of three limbs can be picked depending on the size of the bag. Hand-pickers on ladders can be used for tall trees, while larger farms may use a platform mechanized system to elevate hand-pickers into the trees for efficient harvesting. (Rural Agricultural Development Authority, n.d.)

Local Market Analysis

SWAT & CAME Analysis

Strengths):

- ***Favourable Location-*** Ideal geographical location to supply perishable foods to two of the main markets, United States and Canada, therefore, reducing the cost of goods traveling by ship; this in turn benefits local exporters.
- ***Unique Variety-*** Jamaican West-Indian variety, Simmonds, provides an opportunity for the country to differentiate its avocado offering from other producers in the global market owing to its distinct flavor and texture. Additionally, the unique variety can provide a competitive advantage in regions where there is a demand for non-traditional avocado varieties. For example, Europe has been noted as a region that favors green-skinned avocado varieties, which are not as commonly found in other avocado-producing countries within the industry.
- ***Favourable Climate-*** The avocado tree thrives in tropical and subtropical climates with and Jamaica's climate falls within this category. This means that Jamaican farmers can produce avocados at any time of the year, providing a consistent supply to meet demand.

Maintaining Strengths (M)

To maintain these strengths continuous research and development can be conducted to identify and develop new avocado varieties that can thrive in Jamaica's climate and soil conditions. This will help in diversifying the types of avocados available for export and give Jamaica a competitive advantage.

Weaknesses :

- ***Limited Local Production-*** Limited production limits the amount of supply available for export making it difficult to compete with larger avocado producing countries. It has also led to inconsistencies in supply, which affected the ability of exporters to meet the demands of their customers.
- ***Short shelf life-*** According to RADA, the average shelf life of West Indian Cultivars of Avocado is 3-5 days. The short shelf life of avocados is a weakness because it limits the time in which they can be sold and consumed. This has been a challenge for exporters who need to ensure that the fruit arrives at its destination while still fresh and in good condition. Also, high rates of spoilage and waste have proved costly for producers and exporters alike.

Correcting Weakness €:

To correct the weaknesses, Jamaica needs to employ strategies to increase production through the adoption of proper cultivation practices and the use of high-quality inputs such as seeds and fertilizers. Also, proper handling and storage techniques can help to mitigate the effects of avocado perishability, but it remains an ongoing challenge for the industry.

Opportunities:

- ***Profitable Markets in Europe –***

Introducing Jamaica's "Green-skinned" avocado to Italy and Germany.

As previously mentioned, Europe primarily imports avocados for export, with Hass being the dominant variety. However, there is a growing demand for green-skinned varieties in countries like Italy and Germany. These varieties are preferred due to their firm texture and exotic taste which makes them a popular choice for soups, salads, toasts, and sandwiches. According to

Claudio Scandella, the exotic-ethnic category manager for Spreafico, a wholesale produce distributor in Italy, Italians and Germans tend to prefer green-skinned avocados, while English, French, and Spaniards prefer Hass. Italian consumers particularly favor green avocados weighing between 364-371g. The Centre for the Promotion of Imports from developing countries (CBI) confirmed that Italy and Eastern Europe are the largest markets for green-skinned varieties. These varieties account for 20% of global consumption, indicating a potentially lucrative market. Furthermore, the CARIFORUM-EU Economic Partnership Agreement provides a preferential tariff scheme of 0% for avocados imported to countries within the European Union.

Below are the requirements to export avocados from Jamaica to the European Union:

1. **Registration:** The exporter must be registered with the JAMPRO Trade and Invest Jamaica as well as the European Union's Trade Control and Expert System.
2. **Compliance with Phytosanitary Regulations:** The exporter must ensure that the avocados meet the European Union's phytosanitary requirements, which include freedom from pests and diseases. Avocados must be accompanied by a phytosanitary certificate issued by the Plant Quarantine/Produce Inspection Branch of the Ministry of Agriculture and Fisheries, certifying that the items meet the EU's requirements.
3. **Traceability:** The exporter must be able to trace the avocados back to their origin and provide information on the production and packing processes.
4. **Labeling:** The avocados must be labeled in accordance with EU regulations, including the country of origin, variety, and weight.

It is important that exporters meet all these requirements to avoid any issues with international regulatory bodies. Further information can be found at the Centre for the Promotion of Imports

from developing countries (CBI) website: <https://www.cbi.eu/market-information/fresh-fruit-vegetables/avocados/market-entry#through-what-channels-can-you-get-avocados-on-the-european-market>

- ***Diverse Products-***

Avocado Liquid and Powdered Milk

Avocado milk is a creamy and highly nutritious beverage that is gaining popularity in Asia as consumers seek plant-based alternatives for dairy milk. According to the University of California, Davis, the global market for plant-based milk stood at a value of US\$13 Million in 2021. The plant-based milk market represents an untapped opportunity for avocado milk which could be produced locally and marketed internationally. Moreover, a niche market for the product exists in the Asian-Pacific region, one of the largest consumers of plant-based milk.

Evidently, Starbucks South Korea introduced ‘Frappe Aguacate,’ it’s avocado-based Frappuccino to its product line, according to the periodical Q-pumps. The creamy drink was initially launched in 2015 on a seasonal basis but was later reintroduced as a year-round item due to its popularity (International Communi Cafe, 2018). In conclusion, the local production of avocado milk could create new product lines that appeal to consumers abroad and benefit everyone along the value chain.

Avocado Oil

According to Imarc Group, the global avocado oil market was valued at \$550.7 million in 2022. Malaysia, Indonesia, and China were the top exporters of avocado oil worldwide in 2021, supplying a total value of US\$2.3 billion, US\$848.7 million, and US\$360 million, respectively,

according to Tridge. It's worth noting that Malaysia's avocado production volume is much smaller than Indonesia and China, yet it was the top exporter of avocado oil. This could be an indication that the country imports avocado oil for re-export. Data sourced from Tridge shows that Malaysia was also the top importer of avocado oil in 2021, with a value of US\$429.3 million, along with China as the second highest with a value of US\$ 403.8 million. Comparing their export and import values, Malaysia imports 18% of its avocado oil. Given their low production volume compared to their competitors, this suggests that Malaysia may be importing avocado oil for re-export and possibly importing avocados for oil production. Additionally, China's avocado oil imports is 12% higher than their exports suggesting the country is importing avocado oil mainly for re-export. Exporting avocado oils to these countries are opportunities Jamaican agro-processors and exporters can capitalize on. According to the FAO, the West Indian cultivars of avocados have the lowest oil content of about 8-10%. In contrast, the Hass avocados have an average oil content of up to 30%. Despite this, a manufacturer of avocado oil has been identified. Currently, the company solely produces the oil for use in their products however, production for commercial sale is set to begin in September 2023.

- ***Exports to CARICOM-***

Feasibility of Exporting Avocado to CARICOM

It is feasible to export Jamaican avocado to CARICOM member states due to several factors. First, the island has a tropical climate which has proved suitable for cultivating West Indian varieties. Secondly, Jamaica is a CARICOM member states which therefore allows exporters to benefit from free trade within the region.

Furthermore, exporting the fruit to CARICOM may prove financially feasible due to the proximity to other member states which would result in lower transportation cost Jamaica: Jamaica is one of the largest avocado producers in the Caribbean, and the fruit is a major export crop. The country is known for producing the Hass variety of avocado.

Table 1:

Value and Quantity of Avocados (of HS 080440) imported into the CARICOM Region in 2022

Importers	Value Imported in 2022(USD)	Quantity Imported in 2022 (Tons)
Trinidad and Tobago	\$ 1,244,000	756
Bahamas	\$ 1,044,000	287
Barbados	\$ 389,000	337
Antigua and Barbuda	\$ 385,000	279
St. Lucia	\$ 31,000	5
Grenada	\$ 10,000	3
Guyana	\$ 7,000	9
St. Vincent and the Grenadines	\$ 3,000	0
St. Kitts and Nevis	\$ 2,000	4

Source: International Trade Centre

The aggregate value of avocados (fresh or dried) imported into the Caribbean Region in 2022 was USD 3,120,000. The largest importer by value was Trinidad and Tobago, which imported 756 tons of Avocados in 2022, valued at USD 1,244,000. Similarly, the Bahamas imported 386 tons, valued at USD 1,044,000. Barbados is the Region's third-largest importer and imported 337 tons of avocados valued at USD 389,000 in 2022. Jamaica, Saint Vincent and the Grenadines, and St. Kitts and Nevis have positive trade balances for this commodity; the value of

exports from these countries is greater than the value of their total imports. The main supplying markets for avocados are the United States, the Dominican Republic, and Saint Vincent and the Grenadines, which is also a member of CARICOM. Based on the data presented above it is evident that there is a demand for avocados within CARICOM member states particularly, Trinidad and Tobago, Bahamas, Barbados, and Antigua and Barbuda.

Exploring Opportunities €:

These opportunities can be explored through an investment in marketing to promote Jamaican avocados to European buyers and buyers within CARICOM. Furthermore, the offering of value-added products can increase Jamaica's profit potential. Finally, capitalizing on the niche market for green-skinned avocados can provide an advantage for Jamaican avocados in the global market.

Threats :

- ***Diseases-*** Avocado diseases such as root rot, anthracnose, and black spot can cause significant damage to trees and fruits, affecting both quality and yield, resulting in losses. *(See Appendix 1 for information on pests and diseases).*
- ***Climate Change-*** Jamaican avocado plants are predominantly rainfed; therefore, changes in temperature and rainfall patterns can have a negative impact on avocado production. Drought periods may decrease yields and lower national export. Also, natural events such as hurricanes and floods can damage avocado trees and disrupt supply chains, leading to loss of income.
- ***Competition from other varieties-*** consumers widely prefer the Hass variety worldwide, which has led to a continuous increase in demand. Consequently, this growing demand for

Hass avocados may present a challenge for West Indian Avocados and may potentially reduce their global market share.

- ***Limited Knowledge of Standards of Quality-*** The limited knowledge to international grades and standards can hinder the ability of exporters to meet the quality requirements of international markets. Consequently, resulting in rejected shipments, loss of revenue, and damage to the reputation of Jamaican avocados.

Adapt to Threats (A):

The implementation of disease management and prevention strategies is essential to protect the industry from potential biological threats. Additionally, the continued climate change mitigation efforts can benefit the cultivators of avocados. Jamaican avocado producers may need to distinguish their produce by putting an emphasis on unique qualities or developing new varieties that can better compete with the Hass. Lastly, there is a need for education and training on international quality standards for avocados, as well as for the development and implementation of systems to ensure consistent compliance with these standards.

Survey Findings on Local Avocado Producers

A survey was conducted among local avocado producers in February 2023 consisting of fifteen respondents. *(See appendix 3 for survey instrument)*

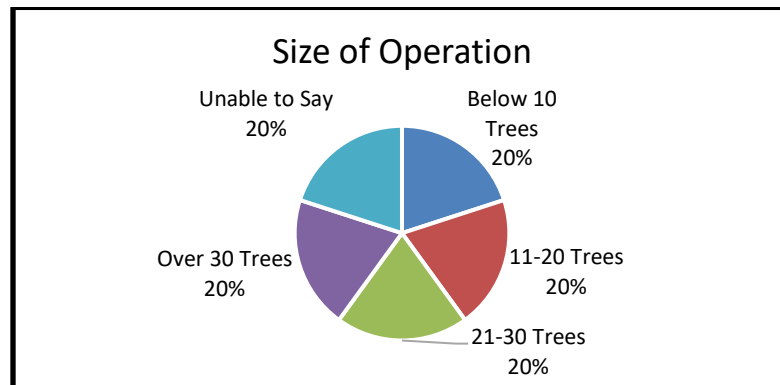
I. Demography Information

Of the respondents, 73% were male and 27% female. 47% of the participants were between the ages 56-65, 33% between 36-45, and 7% between the ages of 26-35 and over 65, respectively. Additionally, 33% indicated that they operated their farm with a partner and 67% responded single

operation. **Years of production-** 20% of the respondents indicated that they had been involved in avocado production for 3-5 years, 13% responded 6-8 years, 53% responded over 12 years and 7% responded 9-11 years. 7% did not respond.

Figure 1

Size of Operation



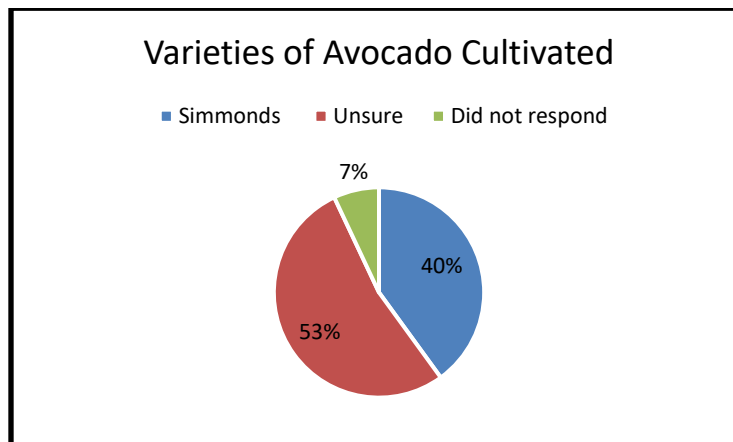
Source: Compiled with data retrieved from survey

Size of Operation- Out of the participants, 20% had below 10 trees, while another 20% had 11-20, 21-30, and over 30 trees each. 20% of farmers were unable to provide this information. None of the respondents practiced monoculture for the production of avocados. Furthermore, two (13%) respondents do not produce avocados for commercial sale, and one participant (6%) mentioned that they recently started cultivating avocados, and their trees were not yet ready to bear fruit.

II. Supply/ Demand

Figure 2

Varieties of Avocado Cultivated

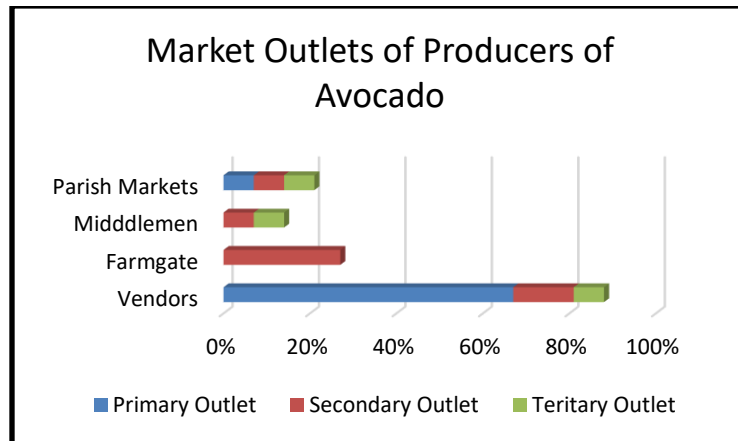


Source: Compiled with data retrieved from survey

Variety- 40% of respondents indicated that they produced the Simmonds variety of avocado, the remaining 53% said they were unsure and 7% did not respond. **Number of Annual Harvests-** Of the producers surveyed, 67% reported harvesting avocado once annually. Meanwhile, 13% reported harvesting 1-2 times, 7% reported 2 times, and another 7% reported 2-3 times a year. Only one respondent, accounting for 7%, said they had not yet started to harvest fruit. **Spoilage-** The majority of the respondents (93%) reported that their fruit spoilage was caused by overripe fruit on the trees, while 7% did not provide a response as their crops were still too young.

Figure 3

Market Outlets of Producers of Avocado



Source: Compiled with data retrieved from survey

Market- Four (27%) participants did not respond. The main market outlets for local producers were vendors and farmgate. Sixty-seven percent of the respondents chose vendors as their number one outlet of that amount 33% only sold to vendors. Twenty-seven percent of the participants indicated that farmgate was their second largest outlet, while 7% said middlemen, parish markets, or vendors as their second or third largest outlet. One respondent (7%) selected parish markets as their primary outlet and vendors as their second. None of the producers who cultivated the fruit for commercial sale established contractual agreements with their purchasers. The majority of respondents (73%) indicated that referral from existing clients and/or community/friends were their main method of sourcing customers. 53% of producers found it moderately difficult to find markets for sale. In terms of local demand, 40% described the demand as high, 33% described it as moderate, 14% said high or low and 13% did not respond. Producers emphasized that demand was limited to the avocado season only.

III. Price

The price of avocados at farmgate ranged from J\$187 per kg (J\$70 per pear) to J\$667 per kg (J\$250 per pear), with the most common price being J\$267 per kg (J\$100 per pear). Twenty-seven percent of the respondents stated that their price was influenced by the local market price, while 20% mentioned that demand alone influenced their price. Additionally, 7% of the respondents stated that both demand and quality impacted their price, 7% mentioned quality only, and 7% indicated size as a factor. One (7%) person mentioned competition as a factor, and 13% did not respond to the question.

IV. Competition

Thirty-three percent of respondents commented that the local market was a little competitive, 13% moderate, 7% somewhat competitive, 7% extremely competitive, 7% not competitive at all, 13% did not know and 13% did not respond.

V. Cost of Inputs

Sixty percent of respondents ranked fertilizers and other chemicals as their highest cost of input. One (7%) respondent explained that their costs were relatively low due to the use of organic matter for fertilization. Thirty-three percent indicated labour, equipment, and transportation as their highest cost. Other high input costs identified were land preparation, and equipment rental.

VI. Challenges

Producers found avocado to be an easy crop to cultivate and did not face significant difficulties. However, some mentioned issues with animals from neighboring farms destroying

their avocado transplants. Additionally, harvesting was noted as a challenge due to the high rate of spoilage.

VII. Storage

No respondent had access to storage for harvested avocado. In fact, it was expressed that avocados are usually reaped around the time of sale.

VIII. Other Comments

Participants expressed that they would greatly benefit from a subsidization of fertilizer prices, the provision of seedlings, export market linkages, and technical assistance. They also emphasized that the local avocado industry could grow if the government promoted commercial production of the fruit for export.

Survey Finding for Local Avocado Exporters

A survey was conducted among 11 avocado exporters in March 2023. Of that amount, 10 completed the survey and one (1) exporter mentioned they had stopped exporting for the last five (5) years due to quality issues. (See appendix 3 for survey instrument)

I. Supply/ Demand

Figure 4

Market Outlets of Producers of Avocado

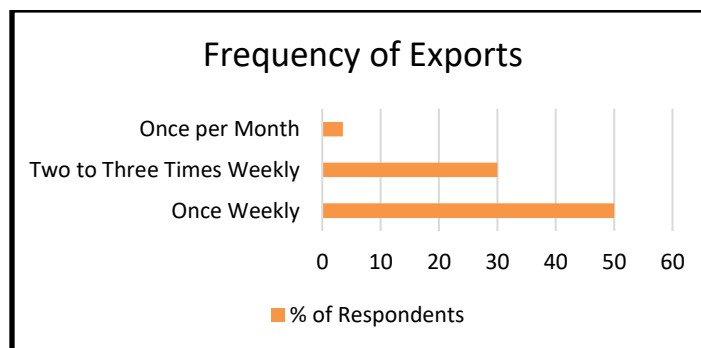


Source: Compiled with data retrieved from survey

Suppliers- 60% of exporters selected farmers and middlemen as their main avocado suppliers while the remaining 40% source their avocados solely from farmers. Furthermore, 50% of respondents stated that local production has never satisfied their demand, 40% reported occasional satisfaction and 10% said their volume of demand has always been satisfied. Moreover, 70% expressed difficulties sourcing avocados. Those exporters sighted the lack of dedicated production areas which resulted in them travelling the island to scout producers. On the other hand, 30% of participants found sourcing the fruit easy. **Quality of produce-** 50% of surveyed individuals had neutral opinions on the quality of the local supply, 30% were dissatisfied and 20% were satisfied.

Figure 5

Frequency of Exports



Source: Compiled with data retrieved from survey

Frequency of exports- The majority (50%) of respondents reported that they export avocados once per week when the fruit is in season. 30% indicated two to three times per week in season and the remaining 20% indicated once per month during season.

Selection Criteria- The survey discovered that exporters were unaware of the Codex Alimentarius, which outlines the international standards for the exportation of fresh avocados. However, exporters reported that the size, taste, oblong shape, smooth skin, and maturity were the criteria used to select avocados for export.

II. Price

The average export price of avocados was US\$2.24 @ J\$154 = J\$344.96 per kg.

III. International Markets

The main export markets reported were USA, Canada, and the United Kingdom. None of the respondents exported to CARICOM member states. Additionally, 70% of the respondents easily found export markets for avocados while 30% thought it was moderately difficult. Moreover, exporters also reported that consignees have expressed that the Jamaican avocado is

highly demanded in comparison to other green varieties from other Caribbean members. They noted that consumers prefer Jamaican avocado due to its large size and taste. Additionally, consignees were quite impressed that Jamaican avocados are organically grown, which can be used as a selling point to command higher prices. However, some consignees are hesitant to contract Jamaican exporters for the supply for avocados due to the inconsistency of the supplies.

IV. Competition

Major competitors- Mexico, Dominican Republic, Florida, Belize, and Costa Rica were named as major competitors within the market.

V. Challenges

Surveyed participants cited spoilage, low export prices, lack of variety, lack of consistent supply, poor quality, airline delays and limited cargo space as challenges experienced while exporting avocado.

VI. Other Comments

Exporters expressed a need for the Ministry to promote the production of avocado, specifically monoculture avocado cultivation, in order to meet the demands of international consumers. It was also said that scientific research should be conducted to develop a year-round variety that is post-harvest resistant.

Profitability of Supplying the Local Market vs the Export Market

The profitability of supplying the local Jamaican market versus the export market for avocados can be affected by several factors. Firstly, Jamaicans predominately consume avocados when in season, and it is generally used in one way, as a side dish. On the other hand, countries such as the USA, UK, Canada, and Europe consume avocados in many different forms, such as guacamole, in shakes, in sandwiches, etc. Also, many international consumers consume avocados daily, unlike Jamaicans. Although supplying the local market may be profitable based on low transport costs, supplying the international market may prove more beneficial, especially as consignees are constantly demanding the fruit even when out of season.

Table 2

Local Market vs Export Market Profitability

Cost of Production per kg	Average Farmgate Price per kg	Profitability	Average Export Market Price per kg	Profitability
J\$85	J\$267	214%	US\$2.24 @ J\$154 = J\$344.96	306%

Source: Agricultural Marketing Information Division

The table above displays the profitability of supplying the local market in comparison to the export market. With a cost of production of J\$85 (*See appendix 2*) and an average farmgate price of J\$267 per kg, supplying the local market yields a 214% profit. On the other hand, supplying the export market with an average export price of J\$344.96 per kg, excluding operating costs, yields 306% profit, providing evidence that supplying the export market may result in more profitable returns.

Table 3*Jamaica's Export of Avocado Fresh or Naturally Dried by Destination Country 2017- 2022*

Jamaica's Export of Avocado Fresh or Naturally Dried by Destination Country 2017- 2021 (kg)						
Destination	2017	2018	2019	2020	2021	Average
United States	19,684	38,059	27,277	24,662	22,687	26,474
Canada	67,027	53,900	55,139	30,546	52,037	51,730
United Kingdom	40,772	54,832	40,675	37,832	72,609	49,344
Cayman Islands	3,454	2,689	557	11,259	9,394	5,471
St. Maarten	604	183	248	35	-	214
Congo	-	-	-	1,915	-	1,915
Cambodia	-	-	-	113	-	113
Guadeloupe	-	-	-	138	-	138
Sudan	-	-	-	198	-	198
Total	131,540	149,663	123,896	106,698	156,728	

Source: STATIN

The table indicates that the United States, Canada, and the United Kingdom are the main markets for Jamaican avocado exports. Over the years, Canada accounted for the most export with an average volume of 51,730kg, followed by the United Kingdom with 49,344kg and the United States with 26,474kg. While Jamaica experienced increases in export volumes to the UK, exports to the US declined over the period. However, it is important to reiterate that buyers in the US are interested in purchasing more Jamaican avocados but are discouraged due to the inconsistent supply of the fruit, which is a possible reason for the decline in exports to the US. Cayman Islands was the fourth main destination with an average export volume of 5,471kg. The export to St. Maarten, Congo, Cambodia, Guadeloupe, and Sudan were relatively small and recorded only in 2020. It is worth noting that in 2022, the country did not export any avocados.

Global Overview

The consumption of avocados has been on the rise in recent years as consumers have become more health-conscious and aware of the fruit's nutritional value. As a result, the global avocado market has become increasingly competitive as suppliers strive to gain market share. According to Polaris Market Research, the global avocado market was valued at US\$14.83 billion in 2022 and is expected to grow at a compound annual growth rate of 7.4% over the next 10 years.

While consumer demand is the primary driver of market competition, trade agreements and disputes also play a significant role in market share and fluctuating market activity. For example, in March 2023, Australia and India signed a new trade agreement that allows the export of avocados to India with tariffs reducing to 0% by 2030 (Cooper & Claughton, 2023). This agreement gives Australia the opportunity to expand its customer base, considering that the Indian population is the largest growing year over year. Similarly, in February 2022, the temporary suspension of Mexican Hass avocado imports by the USA due to a threat received by a US plant inspector in Mexico highlighted the impact of trade disputes on market activities (The Associated Press, 2022). Although the ban was lifted a week later, it threatened Mexico's US\$3 billion annual export and raised the possibility of price increases for US consumers.

Another trend observed in the avocado market is premiumization, driven by consumers' willingness to pay more for specific varieties and high-quality organic avocados. The Mexican avocado industry, the largest worldwide, has successfully premiumized its Hass avocado through the implementation of effective marketing and advertising promoting the health benefits of the fruit. With this strategy, the industry positioned Mexican avocados as a premium product in the US market and were able to increase demand and reap economic benefits for the supply chain

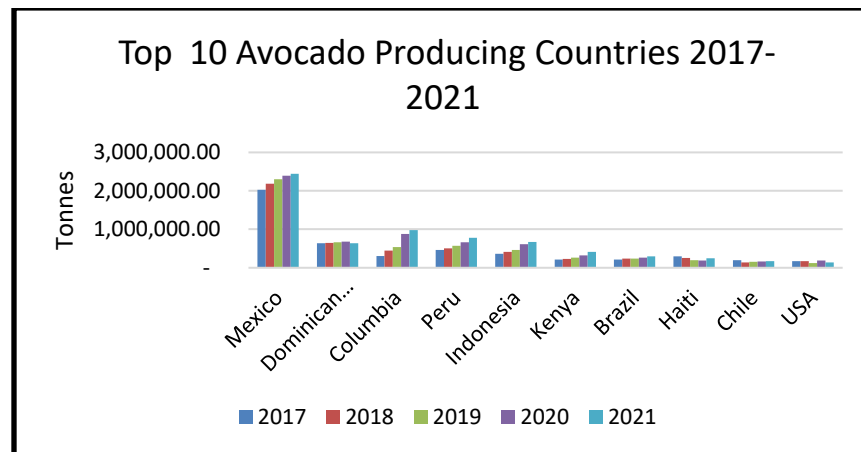
(Avocado Institute of Mexico, 2020). Furthermore, Europeans are willing to pay 25% to 40% more for organic avocados than conventional retail ones (Rodriquez, 2021). Additionally, the use of internet platforms as a tool to build brand awareness, loyalty, and boost sales has become another growing trend. ‘Rethinking Retail: Avocado Shopper Segmentation,’ a study conducted by the Hass Avocado Board, revealed that the Internet has become the fastest-growing sales channel for avocados since 2017. The study further discovered that the internet as a sales channel for avocados has demonstrated over 300% growth between 2017-2021. As the internet expands and consumer interest in healthy lifestyles continues to increase, the use of premiumization and internet channels is expected to continue to grow.

Production

According to data sourced from the Food and Agriculture Organization (FAO), the global avocado production grew 38% over a five-year period from 2017-2021, dominated by the Latin American region. Additionally, global avocado production levels are projected to reach a high of twelve metric tonnes by 2030, expanding more than three times the level recorded in 2010. (OECD/FAO, 2021).

Figure 6

Top Ten Avocado Producing (2017-2021)



Source: Food and Agriculture Organization

Based on figure 1 above, the Latin American region, accounts for 50% of the top 10 producers. This indicates a comparative advantage in avocado production within Latin American territories, particularly Mexico which accounts for 31% of global production and has consistently increased annual production levels from 2017-2021. According to Agustin Escobar et al, Mexico possesses an advantage in agricultural production of some fruits and vegetables due to its climate, low labour costs, and use of protected culture or plastic-covered hoop structures that reduce pests and raise yields. Escobar et al. also noted that Mexico has large farms dedicated to agriculture, often involving a partnership of the US, which provides production and marketing assistance.

Despite being located outside Latin American territories, Dominican Republic, a Caribbean country, ranked second largest avocado producer and accounted for 8% of world production throughout the period. The island's climate, and nutrient-rich volcanic soil provide the optimal environment for year-round production. (Specialty Produce, n.d.) Therefore, suggesting that other countries within the Caribbean region may also possess the potential to produce at larger capacities

given their advantageous climatic conditions, which, if capitalized on can potentially increase the level of output within the region.

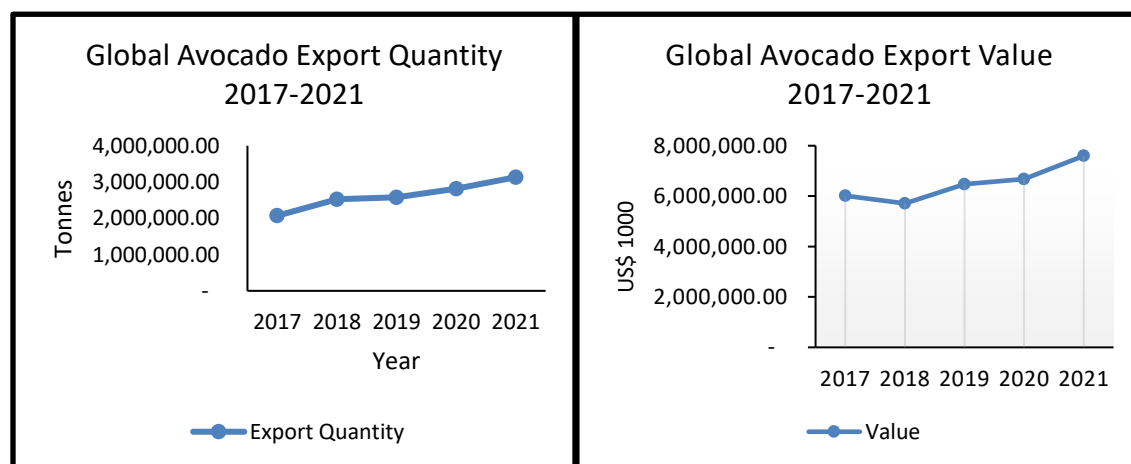
While other countries recorded increases ranging from 20% to 91%, Columbia recorded the largest production growth at 218%. It should be emphasized that Colombia experienced a strong upward trend due to a 64% surge in output from 2019 to 2020, resulting from a 24% rise in yield from 82,410 hg/ha to 104,431 hg/ha. The favourable weather conditions and expansion investment in the Colombian avocado industry were identified as contributing factors, according to OECD/FAO.

Kenya, Peru, Indonesia, and Brazil also recorded annual production increases over the period. In contrast, the remaining countries, namely Haiti, Chile, and the USA, had varying levels of production over the years. Overall, the production output suggests high demand for the fruit and producers' willingness to invest to meet global demand.

Exports

Figure 7

Global Avocado Export Quantity and Value (2017-2021)

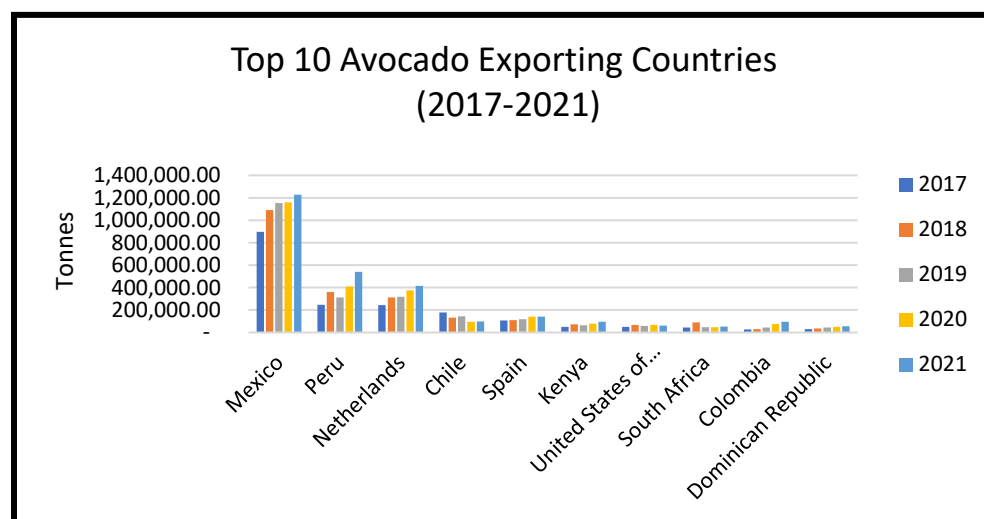


Source: Food and Agriculture Organization

The charts (figure 3) presented displays a steady upward trend in Avocado exports. According to data from the FAO, the quantity of exports increased by 34% from 2,070,629.38 tonnes in 2017 to 3,132,233.97 tonnes in 2021. Hence, the value of exports grew significantly, with the market realizing an export value of 7,598,070,000, a 26% increase from its 2017 value. These numbers demonstrate the industry's development, driven by high consumption levels. Notably, the average price per tonne during this period was US\$ 2,500, indicating the lucrative nature of the industry.

Figure 8

Top 10 Avocado Exporting Countries (2017-2021)



Source: Food and Agriculture Organization

The chart above presents Mexico, Peru, Netherlands, Chile, Spain, Kenya, USA, South Africa, Colombia, and Dominican Republic respectively, as the top ten exporting countries for the 2017-2021 period. It is worth noting that Peru, Chile, and Dominican Republic ranked the 2nd, 4th, and 9th dominant exporters despite ranking 4th, 9th, and 3rd as producers, respectively. Mexico, Peru, and Chile's dominance is a result of strongly established trade partnerships which afford easy access to international markets. These countries have established Free Trade Agreements with

major import territories namely, USA, the Europe Union and China which provides a 0% tariff on avocados. (Gonzalez, 2016). Additionally, Dominican Republic also possess trade agreements with their major trading partner USA; however, majority of its production is domestically consumed, limiting the quantity available for export.

Interestingly, Netherlands, a non-producing country, ranked the third largest quantity of exports. The Netherlands is a major export hub within Europe due to its central location and well-developed infrastructure for handling and distribution. (Holland International Distribution Council, n.d.). Furthermore, many of the avocados that are exported through the Netherlands are sourced from countries like Chile, which have implemented strict quality control measures to ensure that their produce meets international standards. According to Sergio Gonzalez, Chile is known for having high standards of quality in comparison to its competitors. This has helped the Netherlands to establish a reputation as a reliable exporter of high-quality avocados. Also, this reinforces the importance of meeting international food export requirements to solidify a country's place within international markets and increase export profitability.

Table 4

Exporting Countries (2021)

Exporting Country (2021)	Quantity (Tonnes)	Value (USD 1000)	Average Price (USD1000)	Quantity Share %	Value Share %
Mexico	1,227,070.18	\$2,975,960	2.43	39%	39%
Peru	541,519.27	\$1,271,332	2.35	17%	17%
Netherlands	414,654.40	\$1,048,300	2.53	13%	14%
Chile	98,028.99	\$290,031	2.96	3%	4%
Spain	140,618.92	\$462,826	3.29	4%	6%
Kenya	95,036.10	\$140,117	1.47	3%	2%
United States of America	61,627.02	\$157,485	2.56	2%	2%
South Africa	52,795.22	\$110,591	2.09	2%	1%
Colombia	96,903.91	\$204,590	2.11	3%	3%

Dominican Republic	56,456.18	\$77,986	1.38	2%	1%
New Zealand	51,022.87	\$199,076	3.90	2%	3%
Rest of the World	296,500.91	\$659,774	2.23	9%	9%

Source: Food and Agriculture Organization

Based on the table above, it is evident that the avocado export market is highly concentrated, with the top ten major players accounting for over 80% of the market share. Mexico, the dominant exporter, was responsible for 39% of global exports in terms of both quantity and value, followed by Peru at 17% and the Netherlands at 13% in 2021. The average price for most countries ranges from US\$2000 to US\$3900 per tonne, while the Dominican Republic and Kenya fall below that range at US\$1380 and US\$1470 per tonne, respectively. Notably, Spain, Chile, and New Zealand, which are countries recognized for their high food safety standards, commanded the highest prices for their avocados. This serves as additional evidence that economic advantages can be achieved through the implementation of well-established food safety systems.

Imports

Table 5

Importing Countries (2021)

Importing Country (2021)	Quantity (Tonnes)	Value (USD 1000)	Average Price (USD 1000)	Quantity Share %	Value Share %
United States of America	1,213,412.75	\$ 3,138,786	2.59	38%	37%
Netherlands	457,172.45	\$ 1,209,007	2.64	14%	14%
France	181,291.52	\$ 531,461	2.93	6%	6%
Spain	213,907.07	\$ 480,986	2.25	7%	6%
United Kingdom of Great Britain and Northern Ireland	114,272.52	\$ 312,219	2.73	4%	4%
Germany	121,647.35	\$ 391,355	3.22	4%	5%
Canada	109,601.80	251,688	2.30	3%	3%
Japan	76,694.26	\$ 222,219	2.90	2%	3%
Russian Federation	53,995.52	\$ 132,672	2.46	2%	2%
China, mainland	41,328.45	\$ 109,714	2.65	1%	1%

Belgium	39,276.73	\$ 118,388	3.01	1%	1%
Rest of the World	590,842.75	\$ 1,513,770	2.56	18%	18%

Source: Food and Agriculture Organization

In terms of value and quantity, the United States tops the list as the largest global avocado importer, recording 38% of imported quantity and 37% of imported value in 2021. The Netherlands followed with 14% of imported quantity and value. Despite the Netherlands importing such high volumes of avocado, only approximately 9% of it is consumed; the difference between the export and import quantities. Additionally, the Netherlands is known for its well-established transportation infrastructure, with railroads connected to mainland China. This suggests that exporters may use the Netherlands as a route to transport avocados throughout Europe and Asia. In addition, it is important to note that Asia and North America are also high volume and value importers, suggesting a significant demand for the produce in those regions. According to a March 2023 report from Fresh Plaza, China's avocado consumption will result in increased imports. Mexico, New Zealand, Chile, and Peru are the main suppliers of avocados to the Chinese market; however, Kenya and Tanzania have recently been allowed access due to China's expanding market. The report indicated that Kenya is expected to supply 20,000 metric tons of avocados this year, which could make them a stable supplier to fill the gap in supplies from existing markets. It is worth noting that China is also cultivating local avocados in provinces such as Guangdong, Yunnan, Sichuan, and Fujian, and promoting its production. A Yunnan producer interviewed by Fresh Plaza mentioned that the domestic avocado production season in China is from mid-October to the end of March, and the region benefits from high rainfalls sufficient for irrigation. The producer also noted that new varieties with earlier harvest periods had been developed and will be revealed in the future. With China's scientific advancements, which have awarded them dominance

in other global markets, it is possible that they may become a major producer and possible exporter in the global avocado market in the coming years.

International Grades and Standards for the Export of Fresh Avocado

According to the Codex Alimentarius, the below standards apply to commercial varieties of avocados grown to be supplied fresh to consumers, after preparation and packaging.

Avocados must be clean, whole, free of any visible foreign matter, pests, damage caused by low or high temperatures, and abnormal external moisture. They must also have a stalk not more than 10mm in length, which must be cut off cleanly. However, its absence is not considered a defect if the place of the stalk attachment is dry and whole. The avocados must have reached a stage of physiological development that will ensure the completion of the ripening process, and the mature fruit should be free of bitterness. Additionally, the variety Hass must have a minimum dry matter content of 21%, while varieties like Torres, Fuerte, Pinkerton, Edranol, and Reed must have a minimum dry matter content of 20%. It is important to note that other varieties, such as the West Indian, may show a lower dry matter content. Finally, the avocados must be able to withstand transport and handling and arrive at the place of destination in satisfactory condition.

Table 6

Grades and Standards for Fresh Avocado

Characteristics	Grade 1	Grade 2	Grade 3
Size	There can be a 10% difference in the weight of avocados that indicated on the package.	There can be a 10% difference in the weight of avocados that indicated on the package.	There can be a 10% difference in the weight of avocados that indicated on the package.
Color	free of defects in coloring	slight defects in coloring	defects in coloring
Shape	slight superficial defects	slight defects in shape	defects in shape

Firmness	The defects must not, in any case, affect the flesh of the fruit	The defects must not, in any case, affect the flesh of the fruit	The defects must not, in any case, affect the flesh of the fruit.
Appearance	They must be free of defects, except for very slight superficial defects.	Slight skin defects (corkiness, healed lenticels) and sunburn; the maximum total area should not exceed 4 cm ² .	Skin defects (corkiness, healed lenticels) and sunburn; the maximum total area should not exceed 6 cm ² .

Source: Codex Alimentarius

Recommendations

- ***Implement initiatives to further promote and incentivize the development of the avocado industry.***

The Jamaican Avocado Industry has a lot of potential for growth and profitability, but it is currently facing several challenges that need to be addressed. Avocados are predominantly produced on a small scale, which has led to a lack of prioritization and the use of improper farming techniques. Most producers grow avocados for personal consumption, rather than for sale, or inherited the trees on their property. Consequently, the yielding potential of the trees are not maximized. Also, farmers are neither aware of the varieties they produce nor the types which exist globally.

However, one of the biggest setbacks to expanding our customer base is the lack of awareness about international standards for commercial avocados. Therefore, it is essential to educate both exporters and farmers on these standards to ensure compliance and maintain a good reputation in the global market. To promote the production of avocado for commercial export, there is a need to raise awareness of the lucrative nature of the industry indicated by the consignees' willing to purchase all available quantities.

- ***Capitalize on the niche market for 'Green Skinned' Avocados by increasing exports to the North American Region and explore exports to Europe.***

The Hass avocado is the preferred commercial variety and climatic conditions are not favourable for its cultivation. However, there are established niche markets for the 'Green Skinned' varieties of avocado Jamaica produces. As previously mentioned, survey findings have revealed that the demand for Jamaican avocados in the North American market specifically the

USA has not been fully satisfied by local production. This presents an opportunity for the Jamaican Avocado Industry to capitalize on this market by increasing exports to this region. Additionally, there is also an untapped opportunity in the European market which may be worth exploring. By leveraging 'Brand Jamaica' the country can position itself as a major player in the market.

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Appendices

Appendix 1

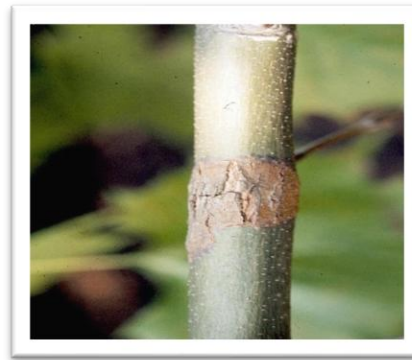
Pest, Diseases & Methods of Control

- *Western avocado leafroller*



According to the University of California Integrated Pest Management Program, The Western avocado leafroller, a member of the Tortricidae family, is a major pest of the avocado and can cause serious damage to fruit. It is also known as the Amorbia, which damages citrus. The Amorbia's eggs are laid in a flat mass, and the larvae develop through five stages, consuming leaves, and fruit. The damage is often apparent when the fruit is downgraded or culled. Healthy trees can tolerate some loss of chewed foliage and blossoms, but extensive defoliation can lead to sunburned fruit and twigs. To manage this pest, it is important to avoid applying broad-spectrum or persistent insecticides and limit pesticide application to the most infested spots.

- ***Algal leaf spot (Cephaleuros virescens)***



According to Clemson University, College of Agriculture, Forestry and Life Sciences, Algal leaf spot disease affects over two hundred plant species and primarily impacts plants with leathery leaves, like the avocado tree. The symptoms of this disease include circular or blotchy spots that may vary in color from gray green to greenish-brown, or even velvety, red brown in the summer. It thrives in wet weather and on plants that are already weakened but can be managed by removing affected leaves and branches and improving growing conditions. Severe cases may require the use of copper fungicides, but caution must be exercised to avoid damaging plants.

- ***Anthracnose (Glomerella cingulate)***



According to Scot Nelson, a plant pathologist at the University of Hawaii at Manoa College of Tropical Agriculture and Human Resources, Anthracnose is caused by a fungus, and

it can damage the fruit, leaves, and stems of the plant. It causes dark, sunken lesions on the fruit skin that can quickly spread and cause rot. It is prevalent in cultivation areas with high rainfall and can be a major problem for fruit growers. Often times the fungus may not be visible on unripe avocados, but symptoms can develop as the it ripens, and anti-fungal compounds diminish. It is important for growers to take preventative measures and control the spread of the disease to avoid significant losses during marketing and storage.

To control anthracnose in avocado, good cultural practices as well as proper post-harvesting management, should be observed. University Of California Agriculture and Natural Resource website article stated that low tree limbs and dead wood should be pruned to improve air circulation and reduce humidity in tree canopies. It also noted that harvesting and pruning should only be under dry conditions to avoid spreading the disease and injury to the plant. Furthermore, cooling avocados to 41°F as soon as possible after harvest is crucial to prevent post-harvest decay. In addition, chemical control methods include the use of Copper Hydroxide and Azoxystrobin.

- ***Phytophthora Root Rot (Phytophthora cinnamomic)***



According to the University of California Agriculture and Natural Resources, root rot is a disease that can affect avocado trees at all levels of maturity. It thrives in soils with high moisture and poor drainage. Root rot spreads easily through contaminated equipment, shoes, or by the movement of moist soil by people or animals. The disease can also spread through water moving over or through the soil. Symptoms include pale green or yellowish leaves, wilted foliage, and sparse new growth. Small branches in the tree top die back, and fruit production declines. The disease can cause trees to decline and often die either rapidly or slowly.

Steps such as using healthy seedlings and planting them in deep, well-drained soil can be used to prevent root rot. Also, proper irrigation and fertilization practices should be employed as well as applying gypsum or limestone soil amendments. Additionally, potassium phosphite, phosphorous acid, metalaxyl, and aluminum fosetyl are chemicals that can be used to the disease. Another approach is to add organic compost such as mulch to the soil to encourage the growth of beneficial microorganisms that can help control the disease (Rodrigues Da Silva, Cantuarias-Avilés, Neto, De Assis Alves Mourão Filho, & Bordignon Medina, 2016).

Appendix 2

Crop	Avocado	
Crop Maturity	3 Years	
Planting Distance (l x w)	cm	450 x 450
	Inches	360 x 360
Plant Population	48	
Terrain	Relatively Flat Land Farm	
Land Preparation	Manual	
Irrigated/Rain fed	Irrigated	
Area	0.4 hectare	0.4 hectare
Man-day Charge (excluding lunch)	\$3,000	
Projected Marketable Yield (kg)	20,000	
Cost of Production (\$/kg)	\$85	

DRAFT

CROP ESTABLISHMENT		Unit	No. of Units	Cost/Unit	Cost/Unit	Cost/Unit	Cost/Unit	Cost/Unit	Cost/Unit	Cost/Unit	Cost/Unit	Cost/Unit	Cost/Unit
Labour Operations													
				Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Soil Analysis	Job		1	3,500									
Land preparation	Job		1	75,000									
Establishing Trenches	Job		1	20,000									
Line & peg	MD		2	6,000									
Dig holes	ea		50	5,000									
Apply manure	MD		1	3,000									
Irrigation Installation	MD		3	9,000									
Transport Plant	MD		1	3,000									
Head & drop plants	MD		1	3,000									
Plant & stake	MD		1	3,000									
Apply fertilizer	Job		1	3,000									
Supply seedlings	MD		1	3,000									
Lunch			500	5,000									
SUBTOTAL				141,500	-	-	-	-	-	-	-	-	-

Material Input													
Planting Material	Seedling		50	2,400									
Pegs	ea		48	3,840									
Water	Gallon		1,83	572									
Fertilizer:													
Manure	lb		2	480									
D.A.P.	50 kg		14,350	8,550									
Insecticide:													
Deadline	600 g		3,550	3,550									
Herbicide:													
Furilade	litre		8,140	8,140									
SUBTOTAL				15,842	-	-	-	-	-	-	-	-	-

CROP MAINTENANCE		Unit	Unit Cost	Cost/Activity	Cost/Activity	Cost/Activity	Cost/Activity	Cost/Activity	Cost/Activity	Cost/Activity	Cost/Activity	Cost/Activity	Cost/Activity
Labour Operations													
				Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Trench Maintenance	MD	2		-	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000
Pruning & Training plants	MD	3000		3,000	3,000	6,000	6,000	6,000	9,000	9,000	9,000	12,000	12,000
Weed Control	MD	3000		6,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000
Insecticide Application	MD	3000		6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000
Fungicide Application	MD	3000				24,000	24,000	24,000	24,000	24,000	24,000	24,000	24,000
Fertilizer Application	MD	3000		3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000
Harvesting	MD	3000				6,000	9,000	9,000	12,000	12,000	15,000	15,000	15,000
Lunch		500		3,000	5,000	10,500	11,000	11,000	12,000	12,000	12,500	13,000	13,000
SUBTOTAL				21,000	35,000	73,500	77,000	77,000	84,000	84,000	87,500	91,000	91,000

Material Input													
Water	Cubic Metre		1,83		731	960	1,455	1,932	2,414	2,889	3,364	3,838	4,312
Fertilizer:													
NPK 14-28-14	50 kg		13,500		27,000	27,000							
NPK 15-5-35	50 kg		13,450				53,800	53,800	53,800	53,800	53,800	53,800	53,800
Insecticide:													
Malathion	250 ml		550	4,400	4,400	4,400	4,400	4,400	4,400	4,400	4,400	4,400	4,400
Fungicide:													
Sulcox	500 g		1,650			16,500	16,500	16,500	16,500	16,500	16,500	16,500	16,500
Herbicide:													
Furilade	litre		8,140		8,140	8,140	8,140	8,140	8,140	8,140	8,140	8,140	8,140
SUBTOTAL				4,400	40,271	57,000	84,295	84,772	85,254	85,729	86,204	86,678	87,152

Other Costs													
**Tools discounted for 5 years			125,000		18,750		18,750	62,500		18,750		18,750	
Irrigation Equipment			350,000			50,000			50,000			50,000	
Land Charges per crop cycle			10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000	10,000
Supervision (15 percent of labour and material)			27,411	11,291	39,575	24,194	24,266	25,388	25,459	26,056	26,652	26,723	
Transportation			2,034	4,077	5,700	8,429	8,477	8,525	8,573	8,620	8,668	8,715	
SUBTOTAL			512,411	21,291	48,325	84,194	53,016	97,888	85,459	54,806	36,652	105,473	
TOTAL			685,153	36,562	178,825	245,469	214,788	267,142	255,168	228,569	214,529	283,625	

Note: This Model shows a seven year cycle to reflect the reaping period of the crop.

Initial land clearing cost are not included given the wide variations present

Appendix 3

Avocado Market Research Questionnaire (Producers)

I. Demographic Information

Name_____

Contact_____

Parish_____

Sex:
☐ Male
☐ Female

Please indicate your age range.

☐ Below 26 ☐ 26-35 ☐ 36-45 ☐ 46-55 ☐ 56-65 ☐ over 65

1. Type of farming operation:

☐ Single Operator ☐ Partnership ☐ Farmers Group ☐ Company

2. How long have you been involved in the production of avocados?

☐ Below 2 years ☐ 3-5 years ☐ 6-8 years ☐ 9-11 years ☐ Over 12 years

3. What is the size of your operation? (dedicated to avocado production)

3b. Do you practice monoculture for avocado production?

☐ Yes ☐ No

II. Supply/Demand

4. Which varieties of avocado do you plant?

5. How many times do you harvest per year?

6. Give a breakdown of your annual avocado harvest.

Avocado Variety	Sold (Each)	Spoil (Each)	Other (Each)	Total (Each)
1.				
2.				
3.				
4.				
5.				
Total				

(Other means produce given as gifts & those use for household consumptions)

6b. What are the factors that account for your spoilage?

7. What is your main market outlet? (Rank from 1-3, starting with the main market 1st)

Customers	Rank
Vendors/Higglers	
Parish Markets	
Coronation Market	
Exporters	
Retailers/Supermarkets	
Wholesalers/Middleman	
Agro-Processors	
Farmgate	

Other _____

8. How do you source your customers? (Select all that apply)

Source	Tick
Market linkages through the government	
Referrals from existing clients	
Referrals from community/ friends & family	

Other _____

9. Do you form contractual agreements with your customers?

☐ Yes ☐ No

10. How difficult is it to find markets for your produce?

Very Easy	Easy	Moderate	Difficult	Very Difficult

11. How would you describe the demand for avocado in Jamaica?

Very Low	Low	Moderate	High	Very High	I do not know

12. Are you able to satisfy the demands of your customers?

☐ Always ☐ Most of the time ☐ Occasionally ☐ Never

Explain.

III. Price

13. What is the current farmgate price that you are getting for your avocado?

IV. Competition

14. How would you rate competition within the local avocado market?

Very Competitive	Somewhat Competitive	Moderate	A Little Competitive	Not Competitive at all	I do not know

15. Which factor influences your price the most?

Factor	Tick one (1)
Competition	
Market Price	
Demand	
Cost of Production	

Other

V. Cost of Inputs

16. What is your highest costing input? *(Rank highest input cost from 1-3 with 1 being the highest)*

Customers	Rank
Irrigation / irrigation equipment	
Other Tools & Equipment	
Fertilizers & other chemicals	
Equipment rental	
Labour	
Land Preparation/Acquisition of Land	
Transportation/Delivery	

Other

17. What are the main challenges experienced while trying in the production of avocado?

18. What was your average start-up cost?

VI. Storage

19. Do you have access to storage facilities for your avocado?

☐ Yes ☐ No

19b. If yes, is it owned or rented? _____

VII. Comments

20. How can the Ministry be of assistance to you?

Avocado Market Research Questionnaire (Exporters)

VIII. Demographic Information

Company_____

Name of Respondent_____

Title _____

Contact_____

Parish_____

IX. Supply/Demand

1. What is your main source of avocado supply? (Rank from 1-3 main source of avocado suppliers, with the main supplier 1st)

Customers	Rank
Local Farmers	
Imports (for Re-exports)	
Own Farm	
Municipal Markets	
Purveyors/Middleman	

Other_____

- 1b. Please indicate whether you are satisfied with the quality of avocado attained from your suppliers.

Extremely Satisfied	Satisfied	Neutral	Dissatisfied	Extremely Dissatisfied

2. How often do you export avocado?

3. Is your demand for avocado being satisfied by local producers?

☐ Always ☐ Most of the time ☐ Occasionally ☐ Never

Comments

4. How difficult is it to find local suppliers?

Very Easy	Easy	Moderate	Difficult	Very Difficult

5. What are the criteria used to select the avocado that you purchase?

X. Price

6. What is the current selling price for your avocado?

XI. International Markets

7. Where do you export avocado?

☐ CARICOM ☐ Outside of CARICOM ☐ Both

7b. Which countries are your major customers?

8. How difficult is it to find international markets for your avocado?

Territory	Very Easy	Easy	Moderate	Difficult	Very Difficult
CARICOM					
Outside of CARICOM					

XII. Competition

9. How competitive is the international market for avocado?

Very Competitive	Somewhat Competitive	Moderate	A Little Competitive	Not Competitive at all	I don't know

10. Who are your major competitors in the international market?

11. Are you aware of any produce which is a substitute or a potential substitute for avocado?

XIII. Challenges

12. What are some challenges experienced while exporting avocado?

XIV. Comments

13. How can the Ministry be of assistance to you?
