



**UNIVERSIDAD  
DEL AZUAY**

**UNIVERSIDAD DEL AZUAY**

**Faculty of Law**

**School of International Studies**

**PROPOSAL OF EXPORT PLAN FOR THE ECUADORIAN  
PITAHAYA OF PALORA**

**Degree work prior to obtaining the degree of  
Bachelor in International Studies bilingual mention in foreign trade.**

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## **Dedication**

To my parents Diana and Esteban, for allowing me to study the career of my dreams, without their support I would not have made it. To my two little sisters, Vale and José, for their love and for being a light on this path. And to my son Ander, for being my motivation to develop as a professional.

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## **Abstract**

The following research work pretended to know which are the steps and requirements to export the Palora's pitahaya from Ecuador to international markets. The objectives of the thesis are, to know about the exportation of exotic fruits from Ecuador and to understand all the aspects about the production and exportation of Palora's pitahaya abroad. Through a comparative and feasibility analysis the paper will find a target country to send the fruit, also using qualitative methods of data collection. And finally, to elaborate an export plan so that the producers can sell their fruit directly to the appropriate international markets.

# **Chapter I: Analysis of Exotic Fruits and Pitahaya in Ecuador**

## **1.1 Introduction**

Ecuador is a country that has historically managed to export large quantities of fruits over the years, since the banana boom in the 50's until the present day, there has been production and export of different fruits. Ecuador produces and exports more and more fruits, highlighting in recent years the exotic fruits that are highly consumed in foreign markets for their special characteristics. This chapter seeks to expose in a synthesized way the current situation of the exotic fruits of Ecuador. Emphasis will be provided on the fruit of study of this work, the pitahaya. The main countries that buy and sell this product at international level will be analyzed, likewise all the properties and qualities that make this fruit to be recognized at international level will be shown. This is fundamental for the elaboration of the pitahaya export plan, since it is necessary to know the characteristics of the fruit, as well as the international situation of pitahaya for a correct export.

## **1.2 Analysis of exotic fruits from Ecuador**

### **1.2.1 History of exotic fruit exports**

Due to its geographical location and climatic conditions, Ecuador is one of the countries with the greatest diversity and variety in the production and export of fruits. There is a great diversity of these products that are harvested on Ecuadorian soil. According to CORPEI Corporacion de Promocion de Exportaciones e Inversiones (2019) there are about 20 types of fruit that Ecuador exports to the world.

Historically, Ecuador has not been an exporter of exotic fruits. However, fruits such as mango, passion fruit or pineapple for many years were grown in the territory, but only for domestic use. Only during the last twenty years greater importance has been given to the export of these fruits. As we know the country has been a great exporter of bananas since the so-called banana boom in the 1950s, but producers and exporters were only dedicated to that fruit, and therefore the fruit industry in Ecuador did not diversify.

In the last two decades the export of exotic fruits has gained strength, fruits such as baby banana, mango, pineapple, pitahaya or passion fruit have gained strength in international markets, Ecuadorian exporters have taken advantage of this opportunity to position their fruits in the demanding markets. Given these circumstances, Ecuador has managed to generate a plurality when exporting fruits. Before the appearance of these exotic fruits,

Ecuador was only internationally recognized for the export of bananas, which, although it is still the largest exported fruit of the country. Nowadays more fruits have been added to the country's export basket, and among them the already prominent exotic fruits.

During these years, the different exotic fruits have managed to distinguish themselves internationally, for example, mango, besides being positioned in the United States, has already begun to position itself in the European Union market.

According to (Bernardo Malo, 2021) president of the Mango Foundation of Ecuador:

Five years from now, we could think that, if today we allocate 5 percent of production to Europe, in five years we could be at 10 to 12 percent of production, that is what we estimate, especially because of the interest shown by the European market. (para. 23).

The European Union has not only expressed interest in mango, but also in the rest of the so-called exotic fruits exported by our country, it is a market that presents many commercial opportunities that have not yet been considered. It should be taken into account that there are a number of regulations and health records that Ecuadorian fruits must pass to enter these countries, but the important thing is that Ecuadorian exporters already have a presence in these countries, since little by little international buyers are knowing the quality of Ecuadorian fruit.

Year after year, Ecuadorian exports of exotic fruits to the world have been growing. The following table shows the exports of the main exotic fruits from Ecuador in the last five years: baby banana (orito), mango, pineapple, pitahaya and passion fruit. Subsequently, a brief analysis will be made.

#### **Ecuador: Exports of the main exotic fruits to the world**

Año	Fruta exotica									
	Orito		Mango		Piña		Pitahaya		Maracuyá	
	US\$ MIL	TON	US\$ MIL	TON	US\$ MIL	TON	US\$ MIL	TON	US\$ MIL	TON
2016	29318	38224	45246	63177	37474	73989	6952	1735	225	97
2017	248850	316407	44776	58992	44340	83705	11907	2842	610	123
2018	96219	137846	44865	59831	41150	80749	35370	6350	425	109
2019	110299	170265	42708	53117	42694	89002	44048	9899	373	134
2020	296361	465509	44141	60135	41339	84266	66433	18060	261	752

*Table 1 Ecuador: Exports of the main exotic fruits to the world*

Author: Own elaboration

Source: (Central Bank of Ecuador and others, 2021).

As can be seen in the table, the baby banana is the most exported exotic fruit by Ecuador. This is because it is clearly related to the banana, so of this fruit enters in many negotiations. Between 2016 and 2017 it had a growth of about 200 million USD exported, although in the following two years the volume shipped decreased, until in 2020 it broke record of tons exported with approximately 466 thousand tons. Pineapple exports, as well as mango and pitahaya have been growing gradually since 2016 and each year their exports have increased. These fruits are progressively welcomed in international markets. Finally, passion fruit has the lowest values among the rest of the fruits, because it is not yet popularized in international markets. In the last five years it has had a series of ups and downs in its exports. There are more exotic fruits that Ecuador produces, such as tree tomato or passion fruit, but its industry is still small for frequent exports.

As for the main international buyers of Ecuador's exotic fruits, there are a number of countries that over the years have been importing these Ecuadorian fruits for consumption by their population.

The following table will show the main destination country for each fruit and the amount in value USD thousands exported to each country:

**Ecuador: Main destination countries for exotic fruit exports**

Year	Exotic Fruit									
	Banana baby		Mango		Piña		Pitahaya		Maracuyá	
	Country	US\$ K	Country	US\$ K	Country	US\$ K	Country	US\$ K	Country	US\$ K
2016	USA	10057	USA	37791	Chile	11823	HK, China	4140	Netherlands	80
2017	USA	224425	USA	40403	Chile	13885	HK, China	6669	Netherlands	218
2018	USA	58322	USA	39764	Chile	14682	HK, China	20140	France	196
2019	USA	77883	USA	38571	Chile	14461	USA	19115	France	139
2020	USA	257894	USA	36663	Chile	13979	USA	32756	Colombia	92

Table 2 Ecuador: Main destination countries for exotic fruits exports

Author: Own elaboration

Source: (Central Bank of Ecuador and others, 2021).

As can be analyzed, the United States is the largest buyer since 2016 for both baby banana and mango, in the same way, Chile is with pineapple. In the case of pitahaya, the main market from 2016 to 2018 was Hong Kong, China, but after that year the USA went to the top as the main buyer country of this fruit. Finally, the case of passion fruit is somewhat peculiar, since in the last five years the main market has been changing, between 2016 and 2017 the main destination was the Netherlands, then between 2018 and 2019 it was France, and by 2020 it changed again to Colombia.

### 1.2.2 Production locations

As already mentioned, Ecuador is a major producer and exporter of exotic fruits. There are several fruits that could belong to this denomination, however, we want to highlight the five most important exotic fruits that are produced in Ecuador, the most important were considered by the large volume of exports in recent years, these are: baby banana, mango, pineapple, passion fruit and pitahaya. The exports of these fruits will be analyzed, and then a geographical area of the South American country will be studied to find out where are these fruits obtained from.

#### Baby banana:

This fruit known scientifically as *Musa acuminata* AA and internationally like baby banana. It is a fruit similar to a banana of the Cavendish variety, but it has a singularity, its dimension, since it measures one third of the size of a normal banana. This fruit is traditional especially in two places, the first is in Pasaje (El Oro) and in La Maná (Cotopaxi). "It is estimated that there are about 8,000 hectares of baby banana cultivated in the country mainly in the provinces of Guayas, Cotopaxi, Azuay, El Oro, Bolivar, and Chimborazo." (Mise, 2019).

#### Mango:

This important and outstanding fruit has gained strength in recent years in Ecuadorian foreign trade, as it has gradually positioned itself as an attractive fruit in international markets, for example, in addition to being present in the USA, it has reached Canada with an amount 1317 thousand USD exported in the last year, likewise it is sent to countries in Europe in which the Netherlands, Russia and the United Kingdom stand out. Ecuadorian mango has also reached Oceania, in 2020 it was exported 320 thousand USD to New Zealand and 105 to

Australia (Trade Map, 2021).

Similarly, in terms of production areas, as stated by (Guerrero, 2018):

The cultivation of this fruit covers an approximate area of 7,700 ha in which exportable varieties prevail. This area corresponds mainly to the province of Guayas, they are in full production and are registered in the guild as dedicated to export in 84% and the rest dedicated to other markets. (Paragraph 5)

#### Pineapple:

It is widely recognized internationally in the same way for its flavor and nutrients. It is found in several areas of the Ecuadorian country, due to its climate, the pineapple blooms favorably in temperatures around 24 to 27 degrees Celsius approximately and this area of the country has this climate throughout the year. "There are localities especially in the Litoral region in the provinces of Guayas, Santo Domingo de los Tsáchilas, Los Ríos, El Oro, Esmeraldas and Manabí, where the climate, altitude and soil are favorable." (Pinto, 2012)

#### Passion fruit:

It is cultivated in Ecuador, it is considered exotic due to its acid and peculiar flavor, it is in great demand in the United States and in some European countries, especially in the Netherlands. In these countries it has captured the attention of consumers for its extravagant flavor. "In Ecuador it is grown mainly in Manabí, Esmeraldas, Los Ríos and Guayas" (Tapia, 2015).

#### Pitahaya:

The internationally known as dragon fruit has been increasing its fame worldwide during the last decade, positioning itself as a booming fruit for export, it is called exotic, for all the varieties of nutrients and proteins it possesses. In Ecuador there are two species of fruit, red and yellow pitahaya. For this study we will emphasize the cultivation of the yellow pitahaya, which is internationally renowned.

As stated by (Vargas et al., 2020)

In the country, there are two eco types of yellow pitahaya, the so-called "Pichincha" or also known as "Nacional" (fruits up to 150 g in weight), which is grown in the northwest of Pichincha, and the "Palora" eco type (fruits up to 350 g in weight), which is grown in Morona Santiago (Palora). (p. 6).

The city of Palora is distinguished from all Ecuador for being an area where yellow Pitahaya

crops predominate, the quality of the pitahaya that occurs in that area of the country is so high that, in 2018, the National Service of Intellectual Rights SENADI, granted the distinction of being a product with denomination of origin and called it: **Pitahaya Amazónica de Palora**. (SENADI, 2018).

Next, it will be shown where the city of Palora is located within the Ecuadorian territory, it is north of the Amazonian province of Morona Santiago.



*Figure 1 Ecuador - Political Map*

Author: Own elaboration

### **1.3 The Pitahaya**

As we have already mentioned, there are a great variety of pitahaya species in the world. For

this thesis we will study specifically the species called *Hylocereus megalanthus* of the *Cactaceae* family. This type of pitahaya is distinguished by having a yellow bark with thorns and inside a white pulp with small black seeds.



Figure 2 *Hylocereus megalanthus*

Author: Own elaboration

### 1.3.1 Origin of the plant

Pitahaya is native to Central America. "Pitahaya (*Selenicereus* sp.) is an exotic fruit native to Central America and part of South America, it was discovered in the wild by the Spanish conquistadors, who gave it the name pitahaya which means scaly fruit" (Vargas et al., 2020). This fruit is commonly found in Central America: Mexico, Costa Rica, Panama, Curacao, Nicaragua and Guatemala. It can also be found in South America: Venezuela, Colombia, Ecuador, Peru and Brazil. In smaller quantities there are cultivated species in Bolivia and Uruguay (Santarrosa, 2013). According to Medina Salazar (2015), the yellow pitahaya (*Hylocereus megalanthus*) that is found in South America. Colombia, Ecuador and Peru is a facultative epiphyte that evolved in the Andean Amazonian foothills of these countries. For all these evolutionary reasons this fruit has a climbing behavior and segmented stem with the ability to emit secondary roots (Manzanero Acevedo et al., 2014).

"Worldwide, the Pitahaya family is made up of about 2000 species distributed throughout



the Americas and Asia" (Jiménez, 2011).

There is production in Asian countries, since it was brought from America by the French at the end of the 19th century (Franco et al., 2020). As of today, it is produced in the countries of: Taiwan, China, Thailand, Malaysia and to a large extent in Vietnam since in this country the climate is ideal for the production of pitahaya.

**Pitahaya plant in Palora - Morona Santiago – Ecuador**



*Figure 3 Dragon fruit plant in Palora - Morona Santiago - Ecuador*

Author: Own elaboration

### 1.3.2 Properties (attributes or qualities) of the fruit.

Pitahaya is not just any fruit, since it has been applied for medicinal purposes in different situations. It has helped to alleviate stomach problems as well as endocrinogenic problems and also to improve the functioning of the digestive tract (Huachi et al., 2015).

"Other of its benefits is its antioxidant power, which favors the generation of collagen, which slows aging" (Verona Ruiz et al., 2020); this characteristic is important given that thanks to it pitahaya has found a great reception in different markets.

According to (Zanin, 2021) nutritionist of the Catholic University of Santos, there are 8 proven benefits of pitahaya, they are the following:

1. Promotes weight loss: Since the fruit contains low amount of carbohydrates, it is a healthy fruit and also rich in fiber, this promotes the feeling of satiety, so that food consumption is lower.
2. Protects the body's cells: Since it has components such as vitamin C, polyphenols, flavonoids, betacyanins; these work as antioxidants and anti-inflammatory that prevent damage caused by free radicals to cells.
3. Strengthens bones: The fruit provides minerals such as calcium, magnesium and phosphorus; essential and valuable for strengthening bones and teeth.
4. Improves digestion: Studies consider pitahaya also as a prebiotic, since the fibers of this fruit are not digested in the intestine. Prebiotics help the intestinal movement and therefore intensify fecal production.
5. Regulates blood sugar: Because it is rich in antioxidants it has anti-diabetic properties. The betacyanin and the fibers it possesses help to reduce insulin resistance and regulate blood sugar.
6. Lowers cholesterol: The intake of pitahaya along with a healthy diet would greatly help lower cholesterol levels. All this thanks to its fiber content, which prevents the absorption of cholesterol in the small intestine.
7. Strengthens the immune system: As it has properties such as Vitamin C and betacyanin, which is an antioxidant, it would help strengthen the immune system.
8. Prevents anemia: Pitahaya has iron, which is an important mineral for the transport of oxygen through the body, thus preventing or improving anemia. Likewise, it contains Vitamin C that helps the absorption of iron at intestinal level.

Likewise, (Lidia Penelo, 2020) stated the following:

Pitahaya is a treasure from the nutritional point of view, it contains antioxidants, mucilage, ascorbic acid, phenols. It is rich in Vitamin C, also contains B vitamins, minerals such as calcium, phosphorus, iron, and has high water content and has vegetable protein and soluble fiber. The seeds, which are edible, contain beneficial fatty acids. And one of its most outstanding properties is its anti-inflammatory and antioxidant action, which is why the WHO recommends its consumption (paragraph 2).

Different scientists, doctors specialized in nutrition, and international organizations dedicated to human health have stated that pitahaya has different properties and ideal characteristics so that the fruit can be included in any diet for its consumption.

### 1.3.3 Botanical description

The pitahaya (*Cereus* sp.) belongs to the kingdom *Plantae*, class *Angiospermae*, subclass *Dicotyledoneae*, order *Opuntiales*, family *Cactaceae*, as for the scientific name is *Cereus* sp. with its variant *Hylocereus* sp. The ideal altitude for this type of plants is between 800 - 1850 masl, with temperatures ranging between 18°C and 25°C, it occurs in warm humid places and reacts positively to light intensity (Huachi et al., 2015).

As mentioned above there are two species that are the most popular within the pitahaya, here is a brief review of each:

- *Hylocereus undatus* (Haw.) Britton & Rose: contains long flowers of up to 29 cm, these are green or greenish-yellow. Its fruit is red-pink and its pulp is white (Santarrosa, 2013).



Figure 4 *Hylocereus undatus*

Photo: (Fuad Morad, 2012)



Figure 5 *Hylocereus undatus*

Photo: (Fuad Morad, 2012)

- *Hylocereus megalanthus*: this species of pitahaya is the one that concerns us in this study, as mentioned above. It is produced in large quantities in the city of Palora in

Ecuador. Its flowers are white and long with an average of 32 to 38 cm. Its fruit is white with edible and juicy black seeds.



*Figure 6 Hylocereus megalanthus of Palora*

Author: Own photography

#### 1.3.4 Uses of pitahaya

As a result of all the properties mentioned above, the main use of pitahaya is for food, it is included in diets as long as its consumption is moderate. In addition, the pulp of this fruit is not only consumed fresh, but it is also used to make jams, jellies or jams. It is also prepared to make juices, yogurts or ice creams.

However, pitahaya and the pitahaya plant have been used for other purposes besides food. According to (Lopez, 1999) in pre-Hispanic times, pitahaya had different uses in different communities. For example, for the Seris Indians who settled in the current Mexican state of Sonora, it was an important fruit, they stored it dry, the seeds were ingested separately and they even ate the flower petals.

On the other hand, the Nahuas, a native people of Central America, used the pitahaya as a ritual, for this people the fruit was a food gift, it worked to make war alliances, they also made a drink of this fruit along with mezcal and gave it to people invited to their villages and neighboring communities.

In the same way, we can include the Cochimíes which is an equally Mexican ethnic group from the state of Baja California. They, on the other hand, used the pitahaya, especially the seeds, to toast them and make flour.

During the time of the Spanish conquest, the first plantations for commercial use were established in Central America.

In addition, the pitahaya plant is used to form fences and the branches are also used as firewood.

#### **1.4 Export countries**

Pitahaya is a fruit, which due to its peculiarity is found in warm climates. As mentioned above, the world production of this fruit is centered in the tropical zones of American and Asian countries. "It is estimated that the world production of pitahaya is more than 2.1 million tons, in an area of 116,836 hectares" (Ministerio de Desarrollo Agrario y Riego [MIDAGRI], 2021).

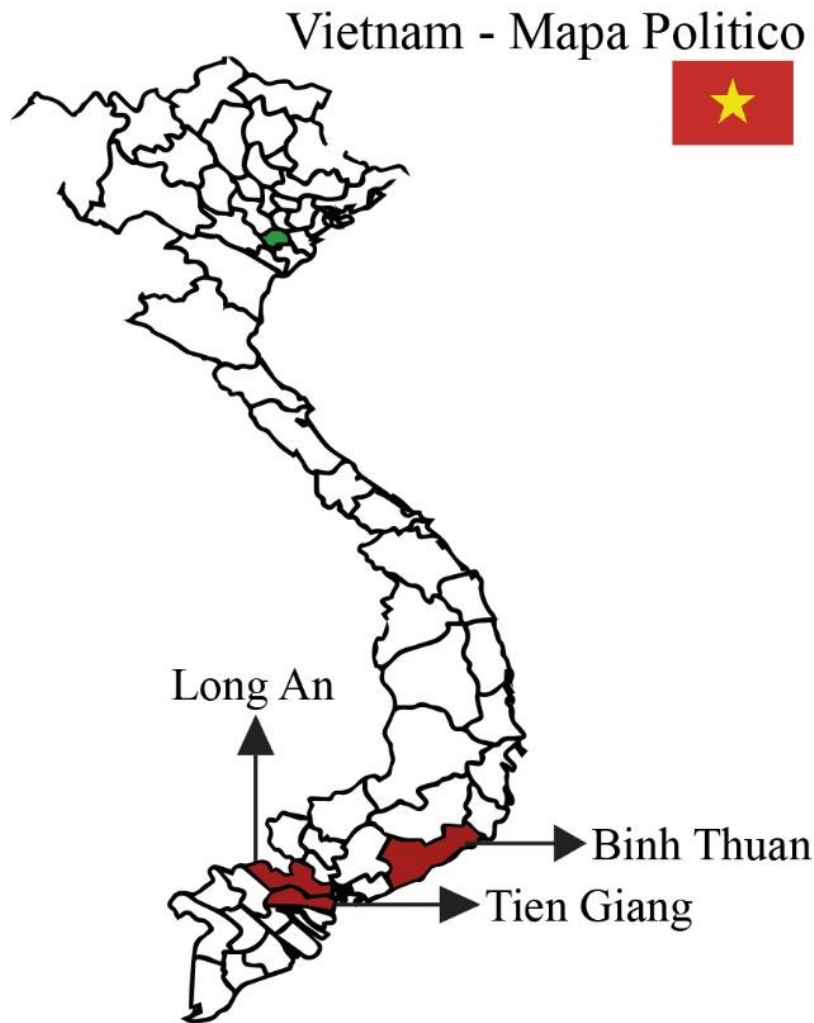
Next, the main exporting countries of this fruit in Asia and the Americas will be analyzed, these are:

##### **1.4.1 Vietnam**

This country located in Southeast Asia is the main producer and exporter of pitahaya in the world, Vietnam exports pitahaya with red skin, known by its scientific name as *Hylocereus undatus*. In Vietnam pitahaya is also consumed locally, it is known as "Thanh Long" (vietnam.com, 2013).

Pitahaya production in this Asian country occurs in almost all provinces of the country, but there is large-scale production in three provinces in particular: Binh Thuan, Tien Giang and Long An. These three provinces account for 92% of the country's pitahaya crops, which in turn supply 96% of the pitahaya produced in Vietnam (Ha et al., 2018).

## Major pitahaya production areas in Vietnam



*Figure 7 Major pitahaya production areas in Vietnam*

Author: Own elaboration

According to Nguyen (2020), in 2017 Vietnam exported approximately 512,00 tons worth 920,000 thousand USD, exports have been growing momentarily since 2013. From 203,000 thousand USD it has grown in 4 years to the 920,000 thousand USD quoted in 2017. These amounts are above the rest of the countries that export pitahaya, for this reason is that Vietnam is the world's largest supplier of this fruit.



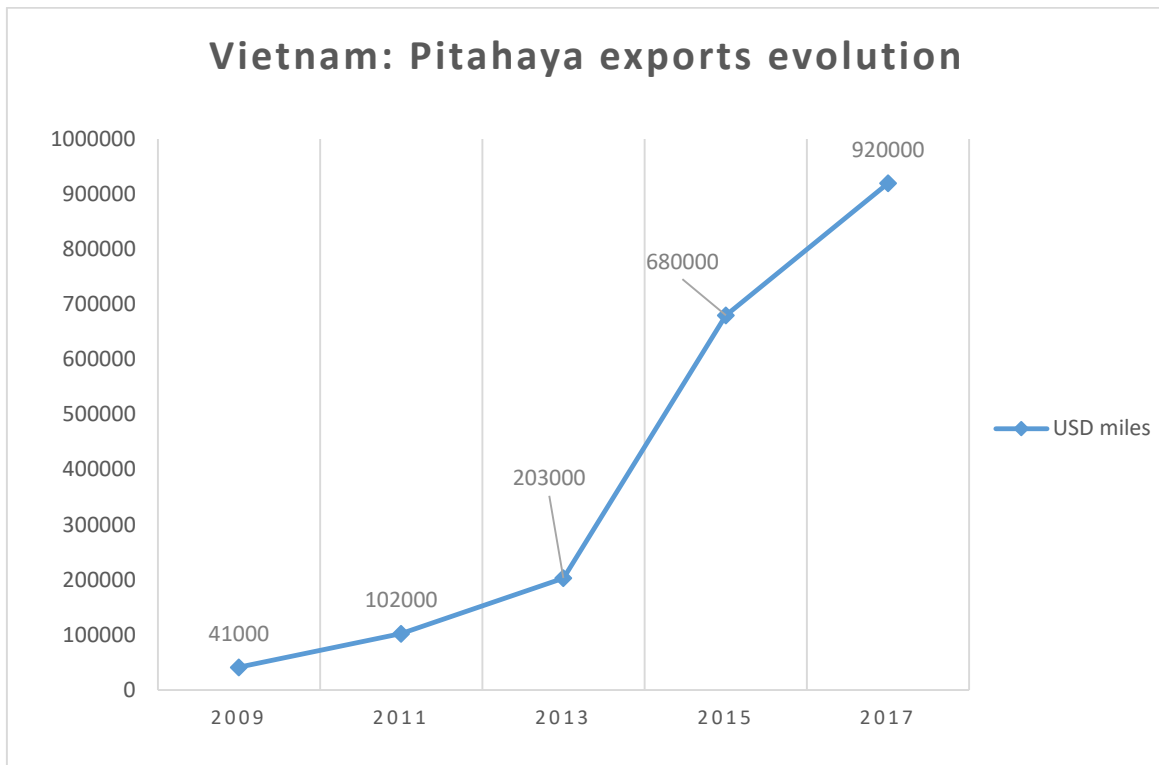


Table 3 Vietnam: Pitahaya exports evolution

Author: Own elaboration

Source: (Nguyen and Trade Map, 2020)

The main buying countries for Vietnamese pitahaya are China, Japan, the United States, Australia and the European Union.

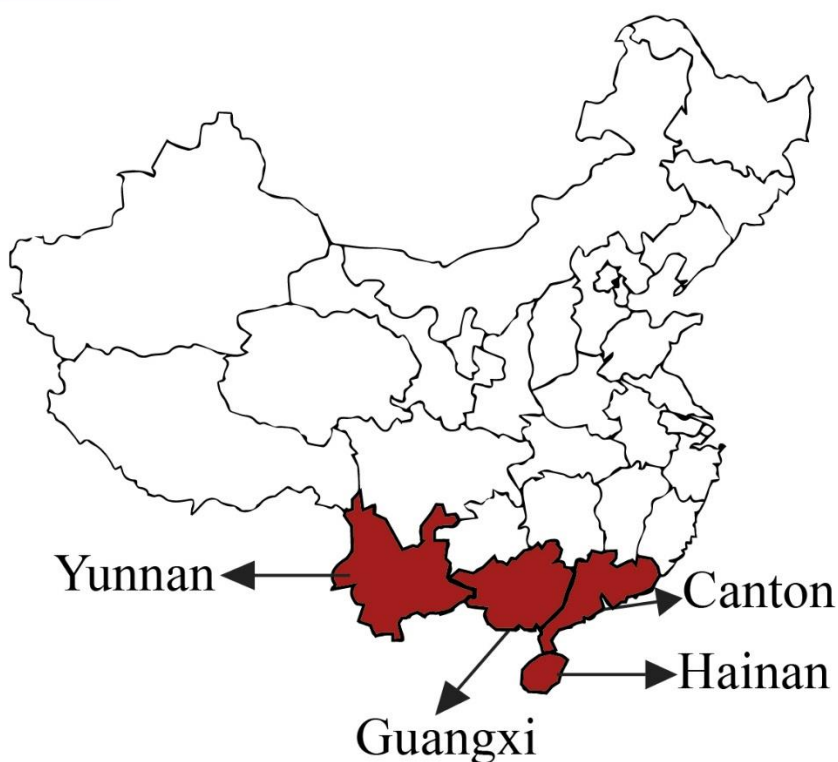
#### 1.4.2 China

In the People's Republic of China, there is production in the south of this country, the pitahaya grown in this area is red-skinned, with the same characteristics as the Vietnamese pitahaya. There is production in the provinces of Hainan, Guangxi, Yunnan and Canton, with the city of Nanning in Guangxi being the largest producer in China (freshplaza.es, 2020).

## Major pitahaya production areas in China



China - Mapa Politico



*Figure 8 Major pitahaya production areas in China*

Author: Own elaboration

During the last five years, pitahaya production in southern China has been growing gradually, due to the progress made by Chinese production companies in automating the fruit selection processes. All these advances are reflected in exports in recent years, which in the last year have reached a sum of 13,161 thousand USD.

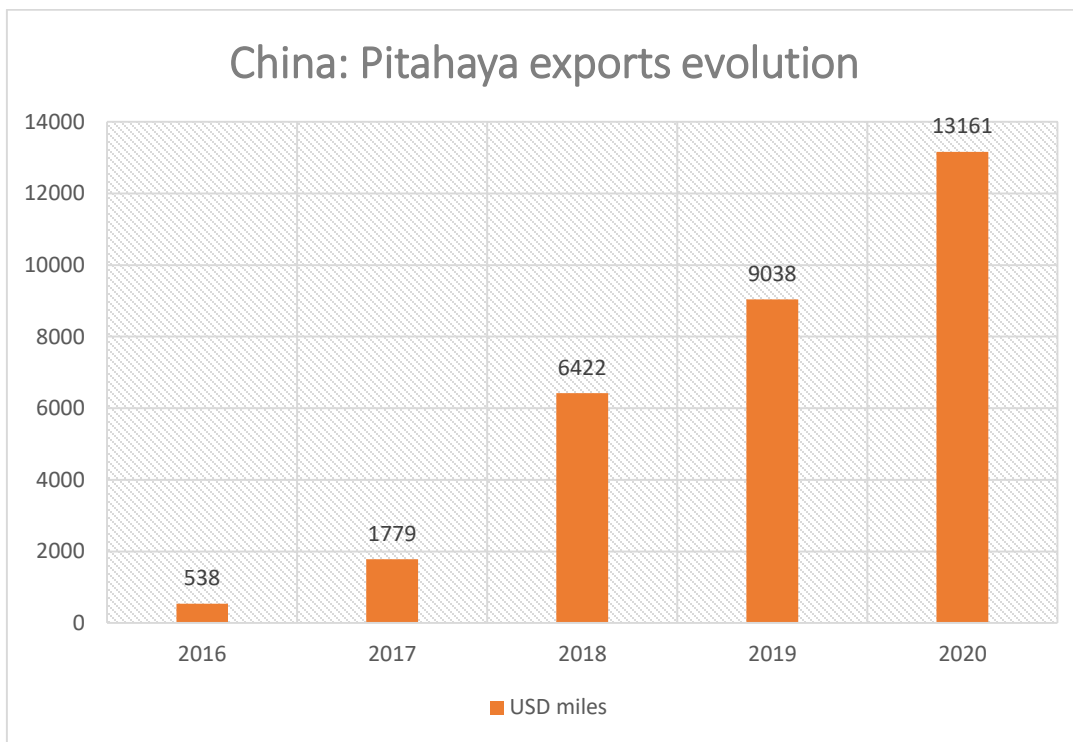


Table 4 China: Pitahaya exports evolution

Author: Own elaboration

Source: (Trade Map, 2021)

The main destination countries for Chinese pitahaya are its neighboring countries in Asia. In 2020, 94.7% of Chinese pitahaya exports were destined to Asian countries, a total of 12466 thousand USD (Trade Map, 2021).

In recent years there has been a series of efforts by Chinese producers to be able to cultivate the other species of pitahaya, the yellow or *Hylocereus megalanthus*, in April 2014 the first batch of yellow pitahaya from Sanya on Hainan Island located south of the country in the South China Sea was given (see figure #8), this first batch was 6.6 hectares cultivated (OCE Beijing, 2019).

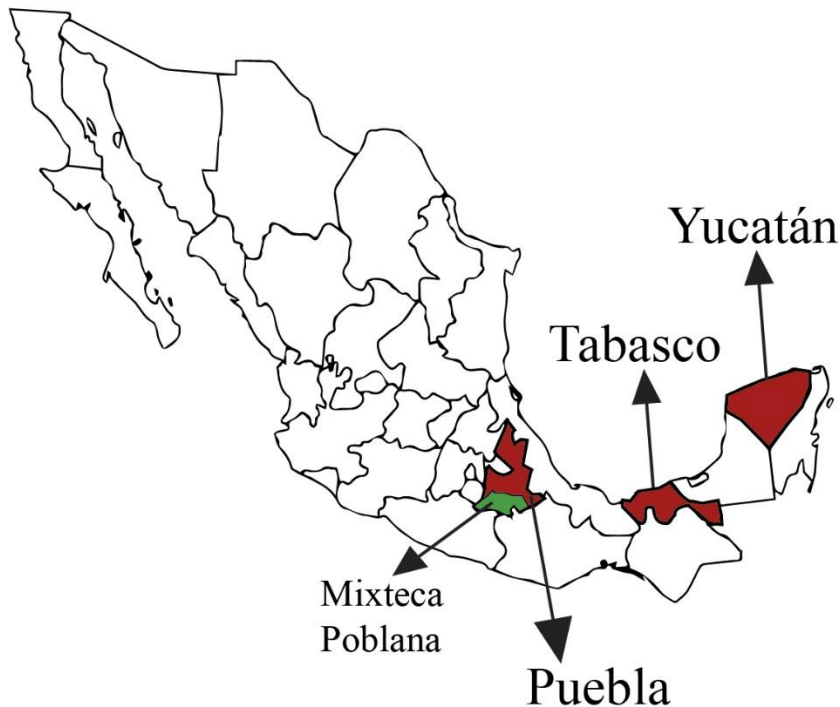
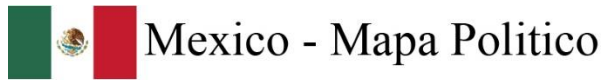
#### 1.4.3 Mexico

In this country belonging to Central America, pitahaya has been cultivated for hundreds of years, as we have described above, different indigenous peoples that were located in this territory, gave different uses to the pitahaya. It was also seen that the fruit is native to this area of the world. Therefore, Mexico has historically been an exporter of the red-skinned pitahaya.

The pitahaya plant occurs in about 20 states in Mexico, but only three are cultivated for

commercial and export purposes, these are: Tabasco, Yucatan and in the Mixteca poblana which is located southwest of the state of Puebla (Ortega et al., 2018).

### Largest pitahaya production areas in Mexico



*Figure 9 Largest pitahaya production areas in Mexico*

Author: Own elaboration

As for exports, since 2014 Mexico has been increasing exports of both pitahaya and different exotic fruits grown in its territory. It had a small decline between the year 2017 and 2018, after the latter year such exports have done nothing but grow until it reached its historical maximum in 2020 with 42,814 thousand USD exported

Mexican pitahaya reaches 9 different countries in the world, where the United States monopolizes 90% of these exports, the remaining 10% are divided between Canada, United Kingdom, Japan, Germany, France, Netherlands, Belize and finally Switzerland (Trade Map, 2021).

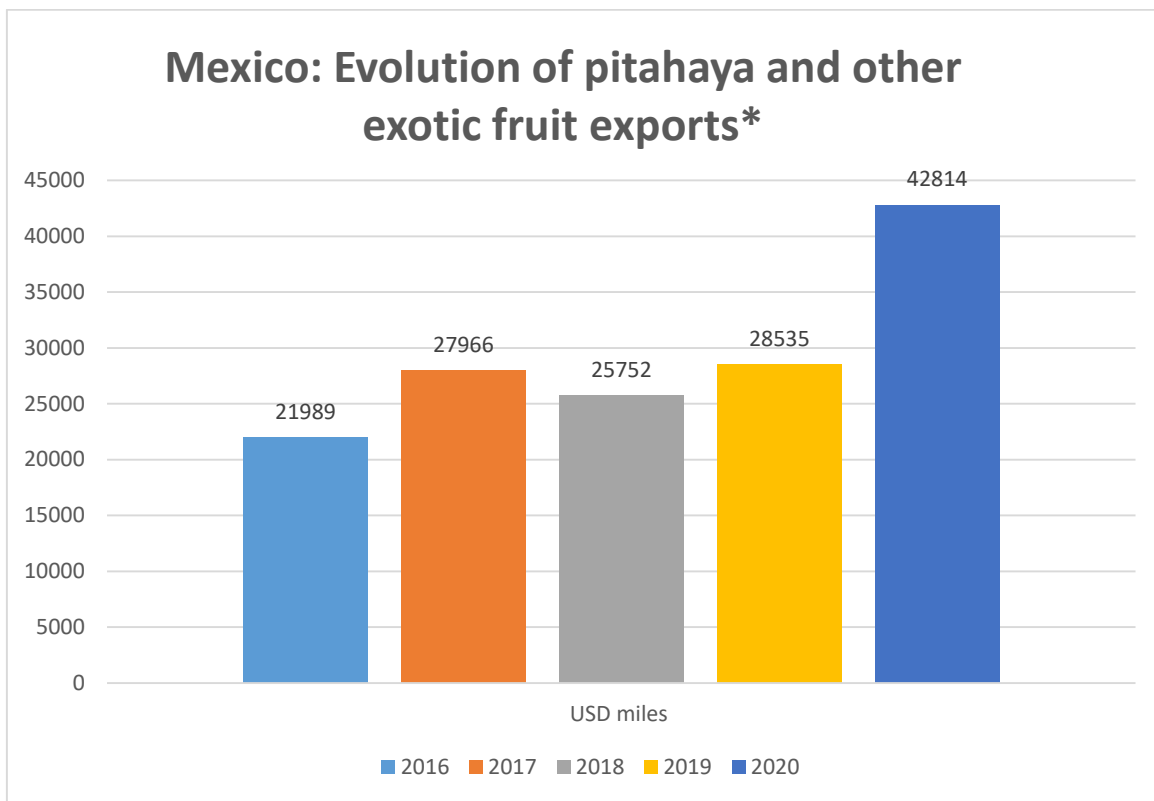


Table 5 Mexico: Evolution of pitahaya and other exotic fruit exports

Author: Own elaboration

Source: (Trade Map, 2021)

\*Note: Tariff heading 081090 is considered.

#### 1.4.4 Colombia

In recent years, Colombia has become one of the leading pitahaya exporters to Asia, Europe and the Middle East. Thanks to the climate in certain areas of the country, Colombian producers can grow yellow pitahaya. It is in demand in different international markets.

In the country located in the northwestern area of South America there are about 350 hectares of yellow pitahaya, these crops are divided in the departments of Valle del Cauca, Boyacá, Quindío and Santander (Instituto Colombiano Agropecuario [ICA], 2019).

## Major pitahaya production areas in Colombia



*Figure 10 Major pitahaya production areas in Colombia*

Author: Own elaboration

In terms of exports, Colombia has had a series of ups and downs. Between 2016 and 2017 it had a slight decrease in exported values, as it went from 2,357 thousand USD to 2,244 thousand USD. In the following two years exports increased until in 2019 it reached 3,133 thousand USD, however, in 2020 Colombian exports of pitahaya suffered a serious decline standing at 2,143 thousand USD. In total in 2020 Colombia exported about 392 tons (Trade Map, 2021). This was the lowest amount in five years, this decline was due to the global pandemic that affected the world, the COVID - 19, this paralyzed world trade for a few months and thus making more difficult exports of both the Colombian pitahaya and most products that move in world trade.

Colombia exports its pitahaya to different parts of the world, the main countries that bought this fruit in 2020 are: Netherlands, Brazil, Hong Kong - China. Spain and United Arab Emirates. The Netherlands is the main buyer with 565,000 USD FOB representing 26.6% of

total exports in 2020 (Trade Map, 2021). It should be noted that this country re-exports different products that it imports in order to place them in European markets.

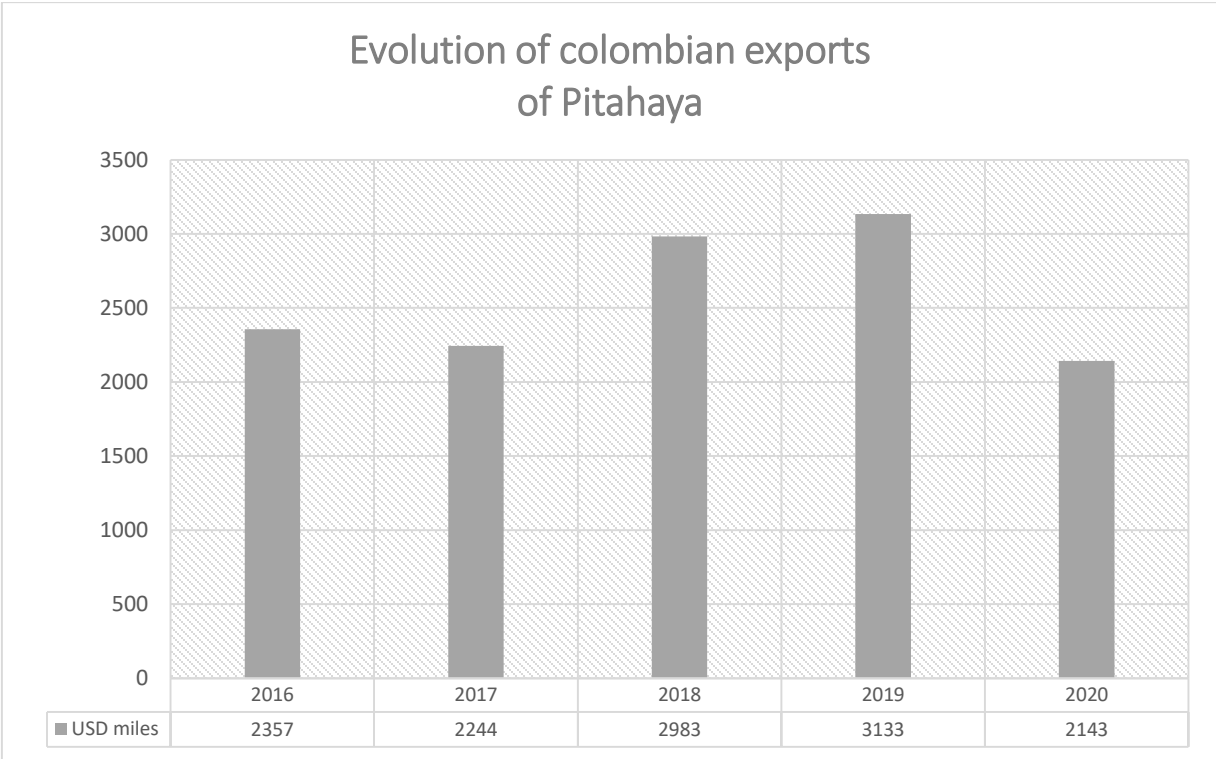


Table 6 Evolution of colombian exports

Author: Own elaboration

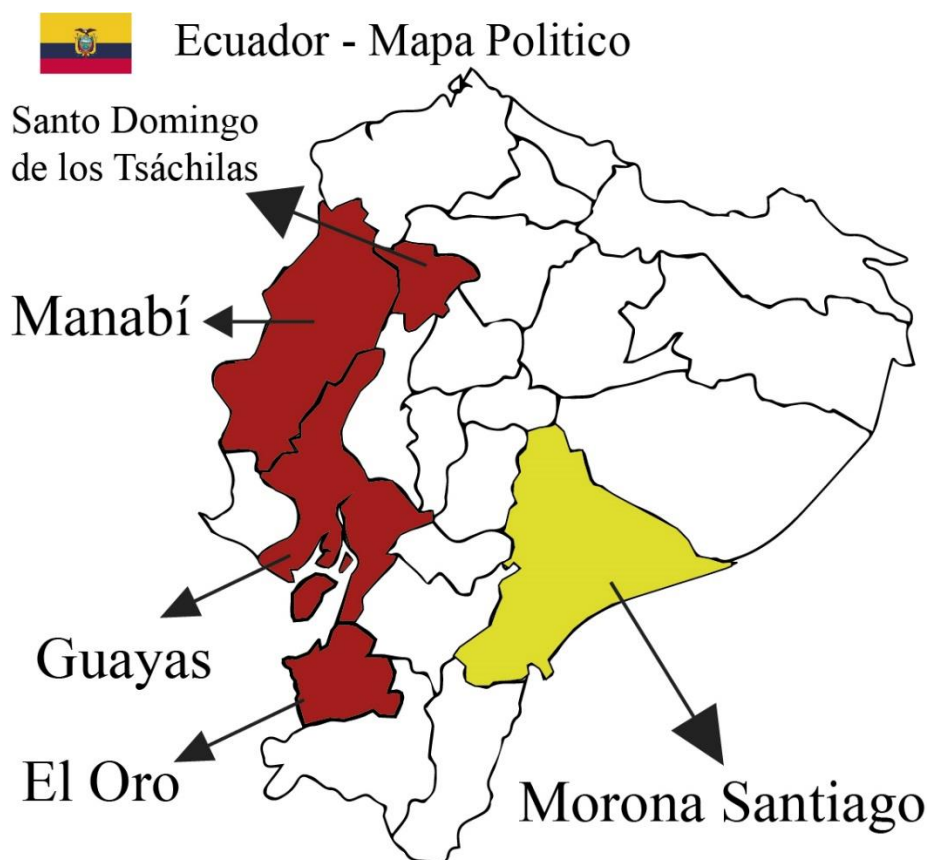
Source: (Trade Map, 2021)

1.4.5 Ecuador

Undoubtedly, Ecuador in recent years has experienced a great growth in pitahaya production, this is reflected in both the amount of USD FOB exported and the quantities in tons. The two best known types of pitahayas, the red-skinned (*Hylocereus undatus*) and the yellow-skinned (*Hylocereus megalanthus*), are found in Ecuador.

In Ecuador, pitahaya is grown in the following provinces: Guayas, Morona Santiago, Manabí, Santo Domingo de los Tsáchilas and a few crops in El Oro (Ministerio de Agricultura y Ganaderia , 2018). Red pitahaya is produced in almost all provinces, except in the province of Morona Santiago which has an Amazonian climate in which the cultivation of yellow pitahaya is favorable, there the city of Palora stands out as a production reference both locally, as well as internationally. As described above, Palora's yellow pitahaya has a designation of origin and is in demand on the international market.

## Pitahaya production areas in Ecuador



*Figure 11 Pitahaya production areas in Ecuador*

Author: Own elaboration

"Pitahaya is one of the fastest growing non-traditional fruits in Ecuador. It went from exporting 6 million dollars in 2016 to approximately 60 million dollars in 2020" (Portal Portuario , 2021). To be exact Ecuador despite the logistical problems in 2020 due to the COVID - 19 pandemic exported 66,433,000 USD FOB (Trade Map, 2021). A record amount for the country, positioning itself as a major player in the region in terms of pitahaya exports. Since 2016 the country has done nothing but grow in exports of this food, which today is positioned as an important non-traditional fruit in Ecuadorian foreign trade. It should be noted that this increase in exports is largely thanks to the joint work of both the public and private sectors.



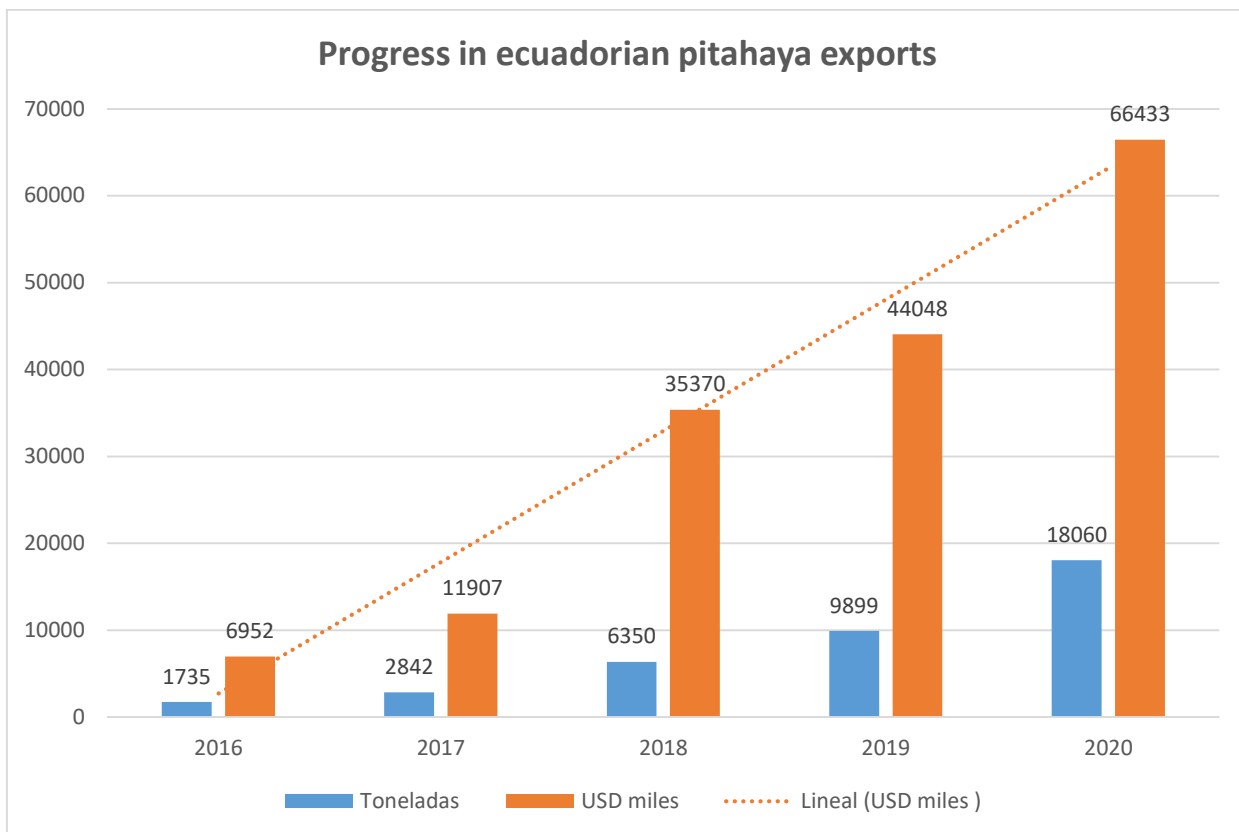


Table 7 Progress in ecuadorian pitahaya exports

Author: Own elaboration

Source: (Central Bank of Ecuador and Trade Map, 2021).

In 2020, Ecuadorian pitahayas were purchased by 21 different countries. The main destination of this fruit was the United States of America, which cornered 50.8% of total exports, followed by Hong Kong, China with 25.7% and the remaining 23.5% of exports are divided between Singapore, Canada, Netherlands, Malaysia, France, United Arab Emirates, Spain, Cambodia, Belgium, Colombia, Russia, United Kingdom, Italy, Germany, Philippines, Switzerland, China and Macao-China respectively (Trade Map, 2021), (Banco Central del Ecuador , 2021 ).

### **Destination of Ecuador's pitahaya exports in 2020**

País	Toneladas	Valor USD miles	Porcentaje en valor
<b>Estados Unidos</b>	9.328	47.078	<b>50,8%</b>
<b>Hong Kong, China</b>	4.707	23.811	<b>25,7%</b>
<b>Singapur</b>	551	4.742	<b>5,1%</b>
<b>Canadá</b>	590	4.582	<b>4,9%</b>
<b>Países Bajos</b>	767	2.948	<b>3,2%</b>
<b>Malasia</b>	272	2.880	<b>3,1%</b>
<b>Francia</b>	380	2.630	<b>2,8%</b>
<b>Emiratos Árabes</b>	161	1.946	<b>2,1%</b>
<b>España</b>	230	1.231	<b>1,3%</b>
<b>Camboya</b>	13	242	<b>0,3%</b>
<b>Bélgica</b>	256	131	<b>0,1%</b>
<b>Colombia</b>	742	119	<b>0,1%</b>
<b>Rusia</b>	11	63	<b>0,1%</b>
<b>Reino Unido</b>	4	63	<b>0,1%</b>
<b>Italia</b>	16	59	<b>0,1%</b>
<b>Alemania</b>	8	50	<b>0,1%</b>
<b>Filipinas</b>	8	41	-
<b>Suiza</b>	13	32	-
<b>China</b>	2	15	-
<b>Macao, China</b>	1	15	-
<b>Total</b>	18.060	66.433	<b>100%</b>

*Table 8 Destination of Ecuador's pitahaya exports in 2020*

Author: Own elaboration

Source: (Central Bank of Ecuador and Trade Map, 2021).

#### 1.4.5.1 Palora – Analysis of the current pitahaya export situation

For the study of this export plan, we have taken into account the situation in which the producers of the canton of Palora in the province of Morona Santiago, located in the Ecuadorian Amazon, have been delimited in this particular place, first because this area is the most important in terms of production of yellow pitahaya in Ecuador and also because

we have had contacts with different producers in the area who have expressed their positions and conditions they are going through with the different buyers and exporters of yellow pitahaya.

### **Pitahaya plantation in La Unión farm - San Luis – Palora**



*Figure 12 Pitahaya plantation in La Unión farm - San Luis – Palora*

Author: Own photography

#### 1.4.5.2 Prices

In this section, according to Heredia (2022), producer and owner of pitahaya plantations in the canton of Palora, the price of pitahaya varies daily, or even seasonally. There are two different prices for pitahaya, a higher price is given to the fruit that is destined for export, this fruit is usually larger in volume, also has slightly stains that are almost imperceptible in the skin, in March 2022, the price of pitahaya export is USD 3 per kilo. On the other hand, there is the pitahaya known as national, this fruit is smaller than the export and contains some spots on its shell that are clearly visible, in the first quarter of 2022 this fruit was at USD 1 per kilo. It should be noted that these prices are the amount of money that Palora producers receive.

**Pitahaya from Palora for export**



*Figure 13 Pitahaya from Palora for export*

Author: Own photography

## National Pitahaya of Palora



*Figure 14 National Pitahaya of Palora*

Author: Own photography

### 1.4.5.3 Negotiation Conditions

The negotiation conditions are somewhat controversial because, according to Morales (2022), a producer in the San Luis area of Palora, there are a number of irregularities with the exporters that buy the fruit. The situation is that at the time of negotiation a price per kilo of pitahaya is fixed, the producers deliver the fruit to the exporters with the assurance that after the export is completed, they can collect the agreed amount, however, this is not the case. Consequently, exporters present a series of arguments and end up paying less than

agreed, even the amounts received by producers in some cases are less than half of what was agreed at the beginning of the negotiation, it is a complicated situation for producers.

As for the fruit sold for the domestic market, the above-mentioned situation does not occur, because the producers sell this fruit in cash.

#### 1.4.5.4 Labor conditions

The working conditions of day laborers and pitahaya producers in Palora are in accordance with the law, given that according to the labor code that governs Ecuador, Article 47 states that the maximum working day is 8 hours a day, and should not exceed forty hours a week (Codigo de Trabajo Ecuador, 2012). People per day earn an amount of USD 15, and when it is harvest time, the value increases to USD 20. Working hours on the plantations range from 8:00 am to 4:00 pm, with a short lunch break.

#### 1.4.5.5 Instruments and materials used

The tools and materials used in the pitahaya plantations in Palora vary according to the season in which the fruit is grown. First of all, the plants are fumigated and pumps are used, both motorized and manual, so that the soil of the plantations is always clean, a scythe is used to remove different types of bushes that occur in the crop. Every two months the soil is supplied with both organic and chemical fertilizer. Finally, for harvesting, scissors are used, a brush to remove the different thorns from the peel and drawers with sponges to separate the exportable fruit from the national fruit (Heredia, Field study in Palora - Morona Santiago, 2022).

#### 1.4.5.6 Production of yellow Pitahaya from Palora (Morona Santiago, EC)

The production in the yellow pitahaya plantations in Palora are slightly changing, there are times when the harvests are good due to the good care of the plantation and that the climate has been adequate for the flowering is adequate, likewise there are times when production falls mainly due to different climatic factors in the area. On average, one hectare of yellow pitahaya in Palora generates about 10,000 kilos of fruit; of this amount, the producers emphasize that approximately 50% of the production is pitahaya for export and the other 50% is domestic pitahaya. Also, there is a harvest every 4 months on average. It should be clarified that these values are referential and the same amount is not always produced (Heredia & Morales, 2022).

## 1.5 Major importing countries

Pitahaya is a fruit that has a number of benefits for human health, besides that the pulp is juicy and appetizing taste for people. For these reasons it is in high demand worldwide. The product is sought after and appreciated in Asia, Europe and the Middle East.

In Asia the biggest buyer of pitahaya is China, in this country the fruit is considered good luck, they use it for different cultural purposes. This country is the main buyer worldwide. To a lesser extent pitahaya is sent to Japan or South Korea, in this case it is necessary that the fruit has some added value to be more competitive in these markets.

In Europe the fruit stands out for its benefits and nutritional properties that makes more and more people in this continent know the pitahaya and add it to their diet. The Netherlands is the main buyer, it acquires both the red pitahaya from Vietnam and the yellow pitahaya that it buys from Ecuador. As previously mentioned, not all imports from the Netherlands stay in that country; different companies re-export the product and place it in retail stores in different European countries.

And in America we have the United States as the main purchaser of pitahaya, to meet the demand of the large U.S. population, different importers buy this fruit from both Ecuador and Vietnam.

### Imports of pitahaya and other exotic fruits in the world in 2020\*

Country	Thousands de USD
China	1.176.770
Países Bajos	244.786
Estados Unidos	243.936
Arabia Saudita	188.301

*Table 9 Imports of pitahaya and other exotic fruits in the world in 2020*

Author: Own elaboration

Source: (Trade Map, 2021)

\*Note: Tariff heading 081090 is considered.

The following is a specific list of the world's largest importers of pitahaya:

#### 1.5.1 China

It is the largest demander of pitahaya in the world. It has a population of approximately

1,402,000,000 people (World Bank, 2020). Chinese inhabitants acquire the fruit throughout the year, as mentioned above, in Chinese culture they consider this fruit of good luck, they also use it as an offering to the different gods or to the spirits of their ancestors. In China in its great majority arrives the red pitahaya that is produced in Vietnam, which is distributed throughout the country, but there is a great interest and demand for the yellow-skinned pitahaya. According to Vallejo (2014), yellow pitahaya has a great reception in the Chinese market, given that its pulp is juicier and sweeter than the red one, in addition there is interest from local Chinese companies on its importation given the large consumption that exists. Since 2016 there was a growth in Chinese imports of pitahaya, with a slight decrease between 2018 and 2019, however, in 2020 imports increased and China was positioned with 552 million USD imported with an amount of about 620,000 tons.

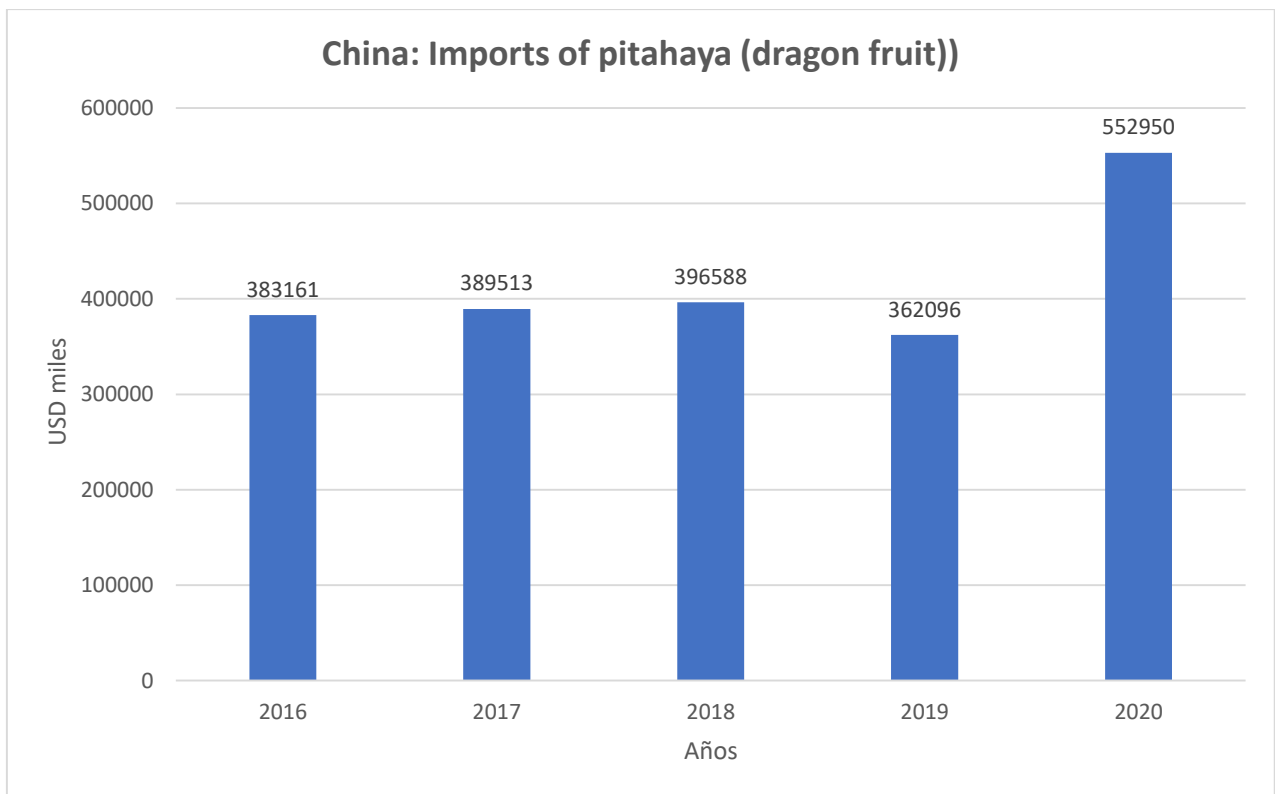


Table 10 China: Imports of pitahaya (dragon fruit)

Author: Own elaboration

Source: (Trade Map, 2021)

### 1.5.2 Netherlands

The pitahaya is valued and appreciated in Europe, in this continent for some time they know



of the qualities of the fruit and make efforts to get it among the different world suppliers. The main importer of pitahaya in Europe is the Netherlands.

According to (Méndez Martín, 2020), pitahaya is a differentiating product in the European market, since there is a high demand and a scarce supply. This is known to importers in the Netherlands, who for several years have made efforts to capture and purchase this coveted fruit in order to place it on the shelves of European supermarkets.

During the last few years, the interest in exotic fruits and therefore in pitahaya has been growing, and this is reflected in the numbers of imports from the Netherlands in the last five years. From 47 million USD imported in 2016 it went to more than 80 million USD. At the same time, the tons increased from 11,600 in 2016 to 19,300 in 2020.

Imports from the Netherlands since 2016 are presented below, in USD million value and volume in tons. Taking into account tariff heading No. 08109020.

#### **Imports of pitahaya and other exotic fruits from Netherlands**

Countries	Values (USD millions)					Volume (Tons)				
	2016	2017	2018	2019	2020	2016	2017	2018	2019	2020
Colombia	22,6	24,1	27,1	38,2	40,1	5100	5200	5900	8400	8600
Vietnam	6,8	7,3	6,1	8,1	8,1	1600	1700	1500	1700	1500
South Africa	3,8	4,7	2,2	4,7	5,5	1300	1500	800	1800	1400
Belgium	0,6	0,8	0,8	1,2	5,2	159	149	135	258	1650
Others	13,2	12	14,2	17,3	22,4	3441	3051	4365	5242	6150
<b>Total</b>	<b>47</b>	<b>48,9</b>	<b>50,4</b>	<b>69,5</b>	<b>81,3</b>	<b>11600</b>	<b>11600</b>	<b>12700</b>	<b>17400</b>	<b>19300</b>

*Table 11 Imports of pitahaya and other exotic fruits from Netherlands*

Author: Own elaboration

Source: (Trade Map, 2021)

#### 1.5.3 United States of America

As already mentioned, pitahaya is a fruit that has been growing in popularity globally, and this is also evident in the U.S. market, where the demand for exotic fruits and therefore pitahaya has grown.

Historically, in this country the Asian communities were the ones who demanded and consumed pitahaya, but nowadays it is not only consumed by these communities, but also by

the general population. Likewise, pitahaya could be found in Chinese and Asian markets; nowadays, pitahaya can be found in different retail stores.

The United States, as the main buyers of pitahaya in the world, has been increasing its imports of this fruit and other exotic fruits throughout these five years. It ended the year 2020 with an import of 243 million USD.

Below is the evolution of imports of exotic fruits including pitahaya, since this fruit does not have a differentiated tariff heading in this country, we will take the tariff heading No. 081090.

### **Progress on imports of pitahaya and other exotic fruits from the United States of America**

<b>Year</b>	<b>USD millions</b>	<b>Tons</b>
<b>2016</b>	160,5	173.686
<b>2017</b>	192,7	187.446
<b>2018</b>	220,4	204.224
<b>2019</b>	216	222.378
<b>2020</b>	243,9	252.077

*Table 12 Progress on imports of pitahaya and other exotic fruits from the United States of America*

Author: Own elaboration

Source: (Trade Map, 2021)

#### **1.5.4 Saudi Arabia**

This country located in the Middle East follows in the footsteps of the rest of the states that lead the import of pitahaya. Exotic fruits have had an accelerated growth in recent years and along with pitahaya. Saudi importers have opted for countries in the Americas to buy these fruits. This is reflected in the list of the main countries that sell exotic fruits to Saudi Arabia, which are Ecuador and Costa Rica.

In Saudi Arabia and in different countries of the world, consumers have become more conscious in choosing their food, which is why the demand for pitahaya has grown in the country for all the aforementioned health benefits that this fruit contains.

In terms of imports, Saudi Arabia has seen a significant increase in this area. It had a great increase between the years 2017 and 2018, since it went from USD 49 million in 2017 to 111

million in 2018, ended the year 2020 surpassing USD 288 million imported, this confirming once again the increase that has had the global sale of pitahaya and exotic fruits in the last five years.

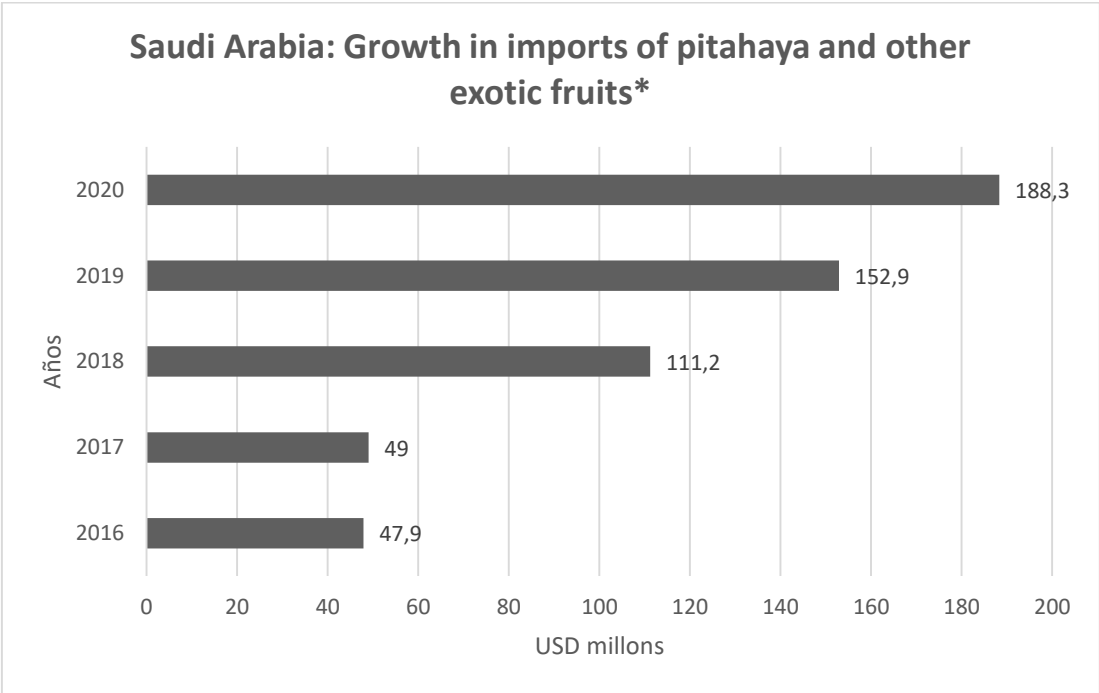


Table 13 Saudi Arabia: Growth in imports of pitahaya and other exotic Fruits

Author: Own elaboration

Source: (Trade Map, 2021)

\*Note: Tariff heading 081090 is considered.

### 1.6 Conclusion

Finally, it is important to note that exports of exotic fruits from Ecuador in most cases have been on the rise in recent years. Likewise, it has been pointed out the importance of the properties contained in pitahaya, the nutritional value that this fruit can give to any diet is fundamental for its commercialization. On the other hand, there are a number of countries that export pitahaya in addition to Ecuador, the main country is Vietnam, which is the largest supplier of pitahaya in the world, but we cannot forget countries like China, Mexico or Colombia. In addition, the most recurrent destination countries for pitahaya are China, since its local production does not satisfy all the demand generated by the country, also the United States, the Netherlands, which is the gateway to Europe, and finally Saudi Arabia in the Middle East.

## **Chapter II: "Analysis of the exotic fruit industry with focus on pitahaya"**

### **2.1 Introduction**

The following chapter will analyze the exotic fruit and pitahaya industry of the different countries that are competitors of Ecuador in terms of exports of these fruits, studying different aspects to know the situation of the industry both in Ecuador and in the competing countries. Likewise, a comparison between the competing countries in the world export of pitahaya will be presented. Then, a series of pitahaya destination countries will be presented, and to conclude, the destination country for the export plan of the yellow pitahaya of Palora will be chosen.

### **2.2 Main pitahaya producing countries**

Pitahaya is a fruit that grows in different areas of the planet earth, but there are certain places located in different countries where production is higher than in other areas, either because of a suitable climate or because that country has improved the production industry of this fruit, then, the following countries will be analyzed: Vietnam and China.

### **2.3 PESTLE Analysis**

The PESTLE analysis is a fundamental tool to examine the external environment in which a company or in this case a country finds itself and then be able to compare it with another or others. It is a useful mechanism to know the growth or decrease of the market, the position in which the country is, the direction and fundamentally the potential it has in different areas. The following factors are analyzed: political, in which issues such as subsidies, state aid, public policies and international agreements are taken into account; economic, macroeconomic values such as GDP are considered in general, and above all the exports of the sector or product to be emphasized; social, a relationship is given to the industry studied with the jobs it generates, how it trains employees, among other things; Technological, an important topic in which it is studied what mechanisms with added value or technology the industry uses; environmental, how the companies of the industry in question are related to the environmental issue and what policies are implemented to care for it; and finally the legal topic, which considers everything related to laws and statutes that the country requires the industry to be studied.

## **2.4 PESTLE Analysis of Ecuador**

### **2.4.1 Political**

Officially known as the Republic of Ecuador, this South American country according to Article 1 of its constitution is defined as a constitutional state of rights and justice, social, democratic, sovereign, independent, unitary, intercultural, plurinational and secular (Constitution of the Republic of Ecuador, 2008). The power of the Ecuadorian state is divided into five functions: executive, legislative, judicial, electoral and transparency and social control. Currently the president of the republic who is head of state and government is Guillermo Lasso Mendoza, who took office in May 2021. His predecessor was Lenin Moreno who himself had become president in 2017.

As for subsidies, the different governments that have passed through the country have maintained the subsidy on fuel and electricity. These fuel subsidies are given thanks to the fact that the country is an oil exporter, since in the seventies there was a period of oil bonanza, these oil fields were located mainly in the Amazon region. According to El Universo (2021), the fuel subsidy budget in 2020 was USD 1,966 million.

Similarly, there are a series of public policies implemented over the years for the development of the Ecuadorian fruit industry, which have benefited many producers and traders in this industry, including pitahaya producers in Ecuador. Several years ago, the Ecuadorian government created the Instituto de Investigaciones Agropecuarias (INIAP) that through the Programa Nacional de Fruticultura "generates and provides technology and services for the improvement of fruit growing in Ecuador, also seeks to form and expand collections, evaluate and select germplasm for the generation of new varieties of fruit, with better quality and yield" (INIAP, n.d.).

Likewise, in Ecuador there is a public bank called BanEcuador that, among other functions, is responsible for providing low-interest loans to different productive sectors of the country, including the fruit industry. In March 2020, after the fall in the price of fruit at the international level, the board of this entity met with a representative of the Asociacion de Pitahayeros de Pastaza to provide support and financial solutions so that these producers do not have to go through economic problems (BanEcuador, 2020).

After the above, it can be seen that the government of Ecuador has different mechanisms for the support and development of the fruit industry in the country,

On the subject of International Agreements, Ecuador maintained for several years relations and approaches with the European Union, were a total of four rounds of negotiations to conclude the so-called Multiparty Agreement Ecuador - European Union that came into force on January 1, 2017. According to (Rosales & De La Cruz, 2019) state the following:

The effect of the application of the agreement, in terms of exports from the European Union to Ecuador, can be seen from the first year, when there was an increase of 25.6%, due to the elimination of safeguards by Ecuador (paragraph 4).

This agreement helps the Ecuadorian consumer to have access to quality European products at lower prices, it also gives an opportunity to Ecuadorian producers and exporters to enter a market of 27 countries. This international agreement also helped the productive and fruit sector in the country, "the multiparty agreement that Ecuador signed with the EU allows the entry of palm oil, cocoa, coffee, cereals, chocolate, margarines, jams, palm heart, vegetables, roses, tropical fruit juices and confectionery, among other products" (MCEI, 2017, as cited in Mesías, 2019, p. 100), before the arrival of this agreement it was difficult to enter certain products to the EU, with this agreement has benefited both Ecuadorian producers because it has more possibilities to sell to other countries, as well as European consumers who have within their reach a greater variety of products that they can purchase.

Similarly, in recent years, Ecuador has been negotiating its entry as a full member of the Pacific Alliance, a trade bloc formed by Mexico, Colombia, Chile and Peru. The objective of this regional integration is "the progressive establishment of an area of deep integration, with free circulation of goods, services, capital and people, in the Latin American Pacific region" (SELA, 2021). With its possible entry, Ecuador seeks close trade integration with its neighboring countries in the Pacific region, as well as the possibility of being closer to other important trade blocs in the world. Ecuador's entry into this trade bloc will facilitate trade relations with other blocs, given that through this Alliance the country will be able to do business with other countries; this will help the fruit and pitahaya industries, given that they will have more scope thanks to the international treaties that can be reached through the Pacific Alliance.

Likewise, Ecuador has a series of international agreements with different countries so that Ecuadorian fruit can enter more easily into other countries. For example, there are products such as bananas or mangoes that could increase their presence in the U.S. market thanks to

the new agreement between that country and Ecuador that was signed in early December 2020. In total, around 350 new Ecuadorian products could have access to the United States (El Universo, 2020).

#### 2.4.2 Economic

In the year 2020 Ecuador had a GDP at current prices of 98,808 million USD, had a decrease of 7.8% compared to 2019, this caused mainly by the pandemic generated by COVID - 19 that slowed the economy. It has a GDP per capita of 5,600 USD given that its current population exceeds 17.5 million people. As for the agriculture sector where the fruit industry is located, in 2020 it represented about 10% of the total GDP of Ecuador with a total of 9686 million USD (World Bank, 2021). The fruit sector is an essential part of Ecuador's agriculture, there is a fruit industry that has been consolidated in the country for many years, this is the banana industry, which is the main fruit exported by Ecuador, however, there are other fruits that over recent years have been positioning themselves in the Ecuadorian fruit industry, we can highlight the mango and pitahaya, the latter getting a large increase in their exported values.

On the subject of exports, Ecuador stood with a total of 20,226 million USD exported in 2020, in the same way were about 2,000 million less compared to 2019 (Trade Map , 2021). Ecuador stands out for decades for being an exporter of fuels, which is its largest exported product with about 5,000 million USD in 2020, followed by fish and fruits, within these sections stand out products such as shrimp, tuna, bananas, which are recognized internationally. The largest buyers of Ecuadorian products worldwide are the United States, China and Panama (Trade Map, 2021).

The fruit sector in Ecuador represents about 20% of the country's total exports with about 4 billion USD exported in 2020 (Trade Map , 2021). Within the fruit section, in addition to bananas, which is historically Ecuador's largest exportable fruit, there is pitahaya which has had an increase in exports in recent years, it is called a non-traditional fruit in the country and in 2020 exported 66 million USD. It should be noted that the fruit industry is valuable and important for the country, its numbers endorse it as an influential industry that has been growing over the years, it has also diversified and Ecuador no longer only exports bananas and their derivatives as in previous years, but also other fruits thanks to the fact that the country has different climatic zones that are conducive to the production of other fruits.

At the end of 2020, and with all the logistical problems that occurred in that year, Ecuador has a positive trade balance, because the number of exports was greater than imports. Food and unprocessed products continue to stand out in Ecuadorian exports and, consequently, value-added products in imports, but it is important to highlight the efforts of Ecuadorian producers and exporters who, despite the health crisis and the difficulties in international trade, were able to survive and continue with their commercial activity.

#### 2.4.3 Social

As previously mentioned, the fruit industry is a representative sector in several areas in Ecuador, and it could not be absent in the social sector. As a developed industry in the country, it generates many jobs that benefit Ecuadorian families. According to the National Survey of Employment, Unemployment and Underemployment - ENEMDU (2021), conducted by the National Institute of Statistics and Census, in the last quarter of 2021, 32% of people who have a job in Ecuador, are from the agriculture and mining sector, where the fruit industry is located. Likewise, this report reveals that the average monthly income in this sector is USD 176.3. As expected, people in rural areas are the ones who are dedicated to agriculture in Ecuador, 72.3% of the people employed in rural areas work in the agriculture and mining sector. It should be noted that in the country there is a large amount of underemployment, in all productive sectors of the country can be perceived that this labor situation originates, and the fruit sector is not left behind, there are many day laborers in the fields of fruit production who work full time and in the end their remuneration is less than the minimum wage stipulated by law. However, the fruit sector generates a large number of jobs for Ecuadorians and foreigners, thanks to these jobs workers have a better quality of life. Similarly, as agriculture and fruit production is vital to the Ecuadorian economy, from time to time through the Ministry of Agriculture, Livestock and Fisheries (MAGAP), training is provided for producers in the country, with these instructions people working in this industry can acquire new concepts that will be of vital importance for the development of their crops and the improvement of different agricultural practices. For example, in the Dirección Provincial Agropecuaria de Chimborazo a total of seventy-three producers were trained in the operational management of agricultural mechanization control, this course was given by specialized technicians in the field (MAGAP, n.d.).



#### 2.4.4 Technological

Information and Communication Technologies (ICT) today and with a globalized world are essential for human beings, which is why Ecuador has advanced in this area, every day more Ecuadorians have access to the internet, according to the Ministry of Telecommunications and Information Society (MINTEL, 2012) in 2006 only 6 out of 100 Ecuadorians had internet access, for the year 2012 were 60 out of 100 who could connect to the internet. Similarly, mobile telephony has increased in recent years, mobile plans are accessible to the people of Ecuador and coverage is good in many areas of the country. Also, there are a number of public and private companies that offer fiber optic service throughout the country, this new technology is important and necessary so that more and more Ecuadorians can connect to the world.

Similarly, in Ecuador there is a policy that is still in place and was promoted in the government of Lenin Moreno called Ecuador Digital, which as the same (MINTEL, 2012) defines, aims to:

To transform and lead the country towards an economy based on digital technologies by reducing the digital divide, developing the Information and Knowledge Society, Digital Government, efficiency in public administration, and digital adoption in the social and economic sectors (paragraph 1).

The aim of this policy was to increase internet accessibility, boost different sectors of the economy through the application of new technologies and promote innovation and entrepreneurship.

Due to advances in technology in Ecuador, the fruit sector has benefited from all these advantages to implement in the industry, there are a variety of methods in which technology can be used to add value to different fruits. "For fruits, several processing alternatives are presented, ranging from conventional to those that involve greater technology and go to specialized markets" (Orrego et al., 2020).

Regarding the cultivation of pitahaya there is a study that presents a series of technological resources to improve the cultivation of the fruit. According to Llerena Zambrano (2020), researcher of the Internet of Things department of the Latin American Journal of Computing, a method was developed consisting of six steps using different technologies, in which the cultivation and production of Palora pitahaya can be understood, these are: sensors in

different stations in the plantation, connectivity between the implemented devices, cloud platform used for data processing and storage, a control panel for real-time monitoring, machine learning to create predictive patterns for irrigation, fertilization and application of agrochemicals and finally artificial intelligence for integration with other intelligent systems. The data provided showed that in Palora no additional water is needed for the crop, because there is constant rainfall, also solves that the crops have a constant exposure to sunlight so that the fruit can have adequate photosynthesis, likewise the sensors detected that soil moisture was always in an optimal range for the crop to grow. With all this data it was possible to know real crop data to better manage production and reduce labor costs, as well as costs of water, energy and agricultural inputs needed in production.

It is important that the study described above has been developed in Ecuador, since with this information and resources producers can use it to understand and implement technology in their plantations, in addition to using the technology to create products derived from pitahaya, it can also be used to improve production and reduce costs.

#### 2.4.5 Environmental

On the environmental issue, the agricultural sector and therefore the fruit sector has been developing different methods to reduce the carbon footprint, it is known that agriculture affects the environment in a certain way, since through the chemicals used there is contamination in the water, as well as soil degradation and salinization.

According to Diéguez et al. (2020), researchers from the Instituto Tecnológico Metropolitano de Medellín, a study was conducted on a farm in Palora where they found that pitahaya production in that area resulted in loss of biodiversity, soil degradation associated with the use of agrochemicals, clearing of forest ecosystems, opening of access roads and therefore earth movements. On the other hand, it had beneficial factors in economic issues, the same study conducted a plan with strategies to mitigate, prevent and compensate for environmental impacts to comply with the laws stipulated in terms of environmental issues.

In Ecuador there is an organization called Yara Ecuador that is responsible for training farmers to reduce the impact on the environment, through these courses they teach proper storage, handling and application of fertilizers, also their solutions help the farmer to improve their performance.

With organizations and studies like these, Ecuadorian fruit and pitahaya growers in particular

can be trained in a better way and know the impact that their plantations cause to the environment, they can also learn different methods of cultivation and ways to help the conservation of the environment. In the same way, they can even produce organic fruits that are increasingly better seen in foreign markets and that have a great added value.

#### 2.4.6 Legal

Regarding the legal environment related to the fruit part in Ecuador, we have as a key point, the yellow pitahaya produced in the city of Palora - Morona Santiago, is one of the five Ecuadorian products with denomination of origin, since 2018 the National Service of Intellectual Rights (SENADI) granted this distinction, thanks to its properties and composition. Thanks to this qualification, cultivation and production has been encouraged for its commercialization both locally and internationally. The Palora Amazonian pitahaya joins Cacao Arriba, Sombrero de Montecristi, Galapagos Coffee, and Transkutukú Peanuts as the only five products that have this qualification (Ministry of Tourism, 2019).

Likewise, there are companies in Ecuador that are dedicated to the cultivation, production and marketing of pitahaya, most of these companies use a brand to trade pitahaya especially in international markets, in order to use this distinctive, they must pay a certain amount for fees, this so that the state grants the exclusive use to the company that owns the patent. All the procedures to obtain a patent are done through SENADI.

### **2.4 PESTLE analysis of major pitahaya producing countries**

Next, the countries of Vietnam and China will be studied through the analysis of PESTAL environments, as explained above this analysis is a useful strategic tool to know how the pitahaya industry is in the two countries mentioned above, this is important to know the way in which our competitors operate in the industry, it also provides fundamental data to know the dimension of the same in the international market. The main objective of this analysis is to understand and know how our competitors perform, with this we can develop an appropriate export plan that adheres to the reality of our environment and can be competitive in the international arena.

#### 2.4.1 PESTLE Vietnam

##### 2.4.1.1 Political

This country located in Southeast Asia, known by its official name as the Socialist Republic

of Vietnam is an independent, sovereign and united country, which in its entirety includes its contents, islands, territorial waters and airspace, all this reflected in Article 1 of its constitution, also in this document indicates that the powers of the state are the Legislative, Executive and Judicial (Constitution of Vietnam , 2001). The executive power is exercised by the president and the prime minister who are currently Nguyễn Xuân Phúc and Phạm Minh Chính respectively. These two Vietnamese politicians took office in April 2021 and belong to the Communist Party of Vietnam which has ruled the country since 1954, in the first instance ruling North Vietnam and then in 1976 formed the socialist republic integrating South Vietnam.

Over the years, the government of Vietnam has invested heavily in the field of agriculture, the idea of the rulers has been not to depend on food imports, so for several years there has been support from the public sector to agriculture and fruit sector. "Agriculture in Vietnam has developed tremendously in recent years. Production has grown to the point that the country can meet domestic demand in most areas" (Embassy of Argentina in Vietnam, 2018). The support to agriculture in Vietnam by the government has been a constant since the creation of the country, between 1981 and 1986 there was a five-year plan in which the main objective was to develop the production of consumer goods, also to increase exports of food products, and above all, to give a priority to the agricultural development of the country (Pham , 2006). Since 1994 Vietnam has created different programs for rural development, rehabilitation and agricultural diversification, these programs have been financed through loans granted by the Asian Development Bank (ADB), the most important projects are: agricultural rehabilitation project for USD 52 million, rural financing project for USD 122 million and agricultural diversification project for USD 67 million (Consejo Agropecuario Centroamericano , 2001). After all these specifications, it is clear that the government of Vietnam has provided support in the agricultural sector, where pitahaya is found, these efforts have paid off because the country is the main exporter of this fruit worldwide.

In terms of foreign policy and international agreements, Vietnam has been a member of the United Nations since September 20, 1977. In terms of international agreements, we have to highlight that the integration to the Association of Southeast Asian Nations (ASEAN) has helped the country with different free trade agreements (FTA). Through ASEAN Vietnam has been able to get free trade agreements with Australia, New Zealand, India, Canada,

China, the European Union, Japan, South Korea, Russia, the United States and Pakistan (EENI Global Business School, n.d.). "Relations between China and Vietnam have developed favorably in the context of ASEAN, of which it is noteworthy that between 2009 and 2012 Vietnam was in charge of coordinating the ASEAN-China Dialogue" (Quezada, 2020). Consequently, Vietnam with the different trade agreements achieved has chosen to integrate with the world, it seeks that both the country and the exported products are visible in different parts of the world and likewise that quality products from other territories enter its country.

These international agreements, helped by the integration with different countries, have allowed Vietnamese fruits to enter many international markets. For example, there is a free trade agreement between the European Union and Vietnam that came into force on August 1, 2020, which specifies that the EU will progressively eliminate tariffs for products arriving from Vietnam until 2027 (European Commission, 2020).

#### 2.4.1.2 Economic

For the year 2020 Vietnam's GDP was 343.114 billion USD, a value that increased by 2.9% over 2019, Vietnam's GDP has done nothing but grow since the year 1989 (Macro Data, 2020). It also has a GDP per capita of 3,525 USD and a population of just over 97 million inhabitants.

As for agriculture where the fruit industry is located, it has been a sector that historically has had representative figures with respect to the country's GDP. "Agriculture, forestry and fisheries accounted for 14.57% of Vietnam's GDP in 2018" (ICEX, 2020). In addition, the country has an area of approximately 830 thousand hectares of fruit cultivation that gives a yield of 7.5 billion tons that in addition to meeting domestic demand, is used for export (Embassy of Argentina in Vietnam, 2018).

In exports Vietnam in 2020 sold to the world the figure of 281.555 million USD, this item represents about 82% of the country's total GDP of that year. This is a significant value that places Vietnam at number 6 out of 191 countries in the ranking of exports relative to GDP (Macro & Trade Map 2020 Data). Among the main export products of the Southeast Asian country are machines and devices for different purposes, footwear, garments, furniture, fish, plastics and fruits. Vietnam is known for its textile industry and this is reflected in exports, however, its export basket is varied as it has value-added products such as machines and

devices, also food in which the fishing and fruit industry stands out. Vietnam's main trading partners in terms of exports are: United States, China, Japan and South Korea.

In the section of edible fruits and fruits, Vietnam exported in 2020 the amount of 5.771 billion USD, more than half of Vietnam's total fruit exports belongs to the sale of coconuts which obtained a total of 3.000 million USD, followed by this product we find pitahaya, as stated above, Vietnam is the world's largest exporter of this product, mostly produce and export pitahaya in its red skin variety, because only in 2017 they had in pitahaya exports a total of 920 million USD, which has been growing in the following years (Nguyen, Strategic Marketing for the Vietnamese Dragon Fruit , 2020).

#### 2.4.1.3 Social

Vietnam's population is about 97.5 million people (World Bank , 2021), it is a country with a large population, however, many people live in rural areas. About 62% of the Vietnamese population lives in rurality (The Global Economy , 2020). As it is a large number of people still live in rural areas, one of their main sources of employment in those areas is agriculture, "the country's agricultural sector has become one of its most important industries and serves as a major provider of employment, especially in rural areas" (Embassy of Argentina in Vietnam, 2018). The fruit sector generates millions of jobs for people in Vietnam, thanks to its extensive crops and production, large amounts of labor are needed to be able to supply and fulfill the processes that the fruit industry demands.

Also, thanks to the aid and investments made by the government in the agricultural sector, there are different aids for Vietnamese producers, who in many cases opt for the cultivation of fruits to excel and improve the economies of their families.

#### 2.4.1.4 Technological

On the technological issue, Vietnam like other Asian countries began in the last two decades of the twentieth century to invest in the area of science and technology. It should be emphasized that by 1986 the Communist Party of Vietnam adopted the policy of *Đổi mới*, which consisted of adopting a series of economic reforms that were paradoxically oriented to the free market, foreign investment and private enterprise (Riopedre, 2013). This reform was important for development in the technological field. Similarly, (Lemus Delgado, 2020) states the following:

The *Đổi mới* period put an end to Soviet-style management of scientific and

technological activities and introduced the first elements of a new legal framework for their development in the context of a liberalizing economy (p. 274).

During the following years there has been a technological development in Vietnam, all this thanks to the different government policies that have been developed to form an industrialized society and with a technological level that is an example in Southeast Asia.

According to data from the World Bank (2021), 7 out of 10 Vietnamese use the internet, it is a fact to be remarked given that the internet penetration in Vietnamese society could be considered as very acceptable. Also, as described by (Hồng, 2020):

With about 45,500 enterprises operating in the IT sector, Vietnam's Internet economy achieved a total revenue of more than \$14 billion in 2020, of which e-commerce takes up half. (Paragraph. 3)

It is interesting how Vietnam's ability to connect to the internet has helped the economy to diversify and thus create jobs.

All this technological progress has resulted in the agricultural and fruit industry processes are being renewed, with these processes are more efficient and use fewer resources. For some years now, Vietnam has been using the technique of food irradiation, which consists of applying low levels of radiation by means of gamma rays or x-rays, thereby disinfecting the product and extending the shelf life. There are 11 facilities in Vietnam that are dedicated exclusively to food irradiation. For the year 2019 Vietnam irradiated on average 200 tons of fresh fruits per week, which were then exported (Viegas, International Atomic Energy Agency, 2020), this process is essential in the export since companies can send the fruit by different means of transport without worrying about the decomposition of the product.

Vietnam therefore has an important advance with respect to the export of fresh fruits, thanks to technological assistance it can increase the conservation times of the fruits it sends abroad, this is undoubtedly a factor in favor of Vietnamese exporters over their competitors, since they have an advantage with respect to delivery times and the quality of their fruits.

#### 2.4.1.5 Environmental

Vietnam is facing environmental problems that have worsened over the years, becoming a concern even for the health of its population. Firstly, the air quality is deplorable in many areas of the country and, secondly, the plastic waste generated and thrown into the oceans.

Air pollution is a factor that has become a concern in recent years in Vietnam, this factor kills

more than 60 thousand people a year and is one of the leading causes of premature death in the country (Vega, 2019). For some years now, the inhabitants of the cities that mark an unhealthy air quality index have been using daily masks to cover themselves from the air, thanks to the pollution there is a gray blanket that completely covers the sky. All this problem is caused by emissions from coal-fired power plants that expel greenhouse gases that are lethal to human health and the ozone layer, there is also another key factor to the problem of air pollution, is traffic, emissions generated by vehicles and motorcycles, the latter used in large quantities by the Vietnamese make the pollution problem becomes increasingly worrisome.

Plastic waste is another important environmental problem in Vietnam, according to (Salvá, 2021) Vietnam is among the top five countries that contribute the most to unmanaged plastic waste in the world entering the oceans. The constant population growth means that the more people living in Vietnam, the more the use of plastics. There is also a lack of knowledge among the population about the nature or origin of plastic waste, making recycling somewhat complicated.

To alleviate these major environmental problems, Vietnam through its government agency has issued a new directive to better manage the problems of plastic waste, also this directive seeks to review and complete laws and public policies to reduce among others single-use plastics and create a database that seeks to detail the type of plastics used and the purposes of plastics (Salvá, 2021). Similarly, the government issued the environmental protection law that limits the production of plastics, this with the aim of drastically reducing the pollution of its oceans and also the waste that is not recycled. In order to be able to clean its waters (Library of the National Congress of Chile, 2021).

On the subject of pollution, Vietnam is a matter of concern, and the country's fruit industry is also a participant in this problem that the country has been facing for decades. G where research was carried out to provide tools for responsible fruit growing, together with Dalat University and the Vietnamese Academy of Science, Technology, Energy and Conservation Center of Ho Chi Min City, guidelines were given for the development of lines of research in agricultural work, to recover genetic material and native species, in addition, different crop equipment was investigated to achieve better energy efficiency, all this to reduce energy consumption and have environmentally sustainable cultivation processes (Asociación de



Exportadores de Chile A.G, 2010).

In general, Vietnam has a long way to go on the issue of conservation and sustainability for the environment, it must improve many processes to become more sustainable over time and above all not affect the environment, also more and more countries in the world ask that different products that reach their territories have been produced under processes that do not affect the ecosystems where they are grown, so if a correction is not made on the issue of pollution in Vietnam, the products may lose market share abroad.

#### 2.4.1.6 Legal

In tax laws and others there is that the percentages of Value Added Tax (VAT) for Vietnam are 0%, 5% and 10% and these are applied depending on the nature of the transaction, it is noteworthy that those who record 0% are for exports, international transportation, mail services and telecommunications, among others (OffShore Company Corp , n.d.).

According to (Macro Data, 2020) the minimum wage for Vietnam in 2020 was 190.5 USD. Regarding labor laws, there has been much controversy over the labor situation experienced by workers in Vietnamese factories, however in November 2019 the National Assembly of Vietnam authorized that from 2021 at the company level there will be representative organizations of workers (San Juan , 2020) an important step for workers to claim their rights through these organizations.

As for patents under Vietnamese law there are different types: invention, utility solution, industrial design and integrated circuit, depending on what type is the patent may vary the terms ranging from five years to twenty. A number of documents are required to register the patent, many of them must be in Vietnamese language. Similarly, the law in Vietnam endorses products that have designation of origin, as is the case of the Palora Amazonian pitahaya, in this case the law says that the product must have two conditions: they must come from the indicated area and above all the products must have reputation, quality or characteristics that are attributable to their geographical conditions, likewise a series of documents are needed that must be presented (Embassy of Spain in Vietnam , 2019).

As it has been observed, Vietnam in the legal issue works similarly to many countries in the world, regarding the issue of patents and different documents, it is necessary to go through a process of presentation of the same and approval by the public bodies of the country, in the same way there is a slow and complex bureaucracy that makes the procedures more delayed.

## 2.4.2 PESTLE China

### 2.4.2.1 Political

Officially known as the People's Republic of China, this country located in the continent of Asia is in fourth place in terms of extension, only behind Russia, Canada and the United States of America. According to Article 1 of its constitution, "The Republic of China, founded on the Three Principles of the People, is a democratic republic of the people, governed by the people and for the people" (Constitution of the Republic of China, 1982). The country bases its foundations on the ideologies of the party that has governed it since 1949, the Communist Party of China, which after defeating the Kuomintang nationalists wins the civil war and proclaims a new unified country, this with the leadership of the remembered Mao Zedong (Rosas, 2007). Currently the president of the republic is Xi Jinping who has been in office since March 2013, in addition, the prime minister is Li Keqiang who has been in office since 2013.

China since the republic was formed is governed by a socialist party, so subsidies and state aid are instruments used by the governments that have passed through the country. Aid is given to different vulnerable groups in society in order to improve the quality of life and alleviate different situations that these groups are going through. As reported by the Xinhua news portal "China issues subsidies for USD 937.5 million to offset price hikes amid COVID - 19" (Xinhua News, 2020), after the pandemic and a rise in prices in the country, with these subsidies it seeks to counteract the situation, thus making the situation more bearable for the population. Similarly, another objective of the government with these state aids is to favor the country's exports; subsidies and different forms of assistance have been a central feature of China's industrial and trade policy (Kuczynski, 2012).

Regarding the fruit growing issue, part of the agriculture sector, the Chinese government has implemented different types of processes for development in this sector, since the beginning of the mandate of the Chinese Communist Party, the main objective was for the population to have food security, to have sufficient availability of food that is essential for life. State investment in the field of agriculture has been a constant for decades, all government efforts and decision making have resulted in the country achieving independence in food supply on a national scale through different public policies (Rodriguez M. , 2010). For example, in recent years the government has given subsidies, investments and price support in the

agricultural sector, since 2002 especially rice, wheat and corn crops taxes began to decrease practically to zero and subsidies went from 0% to 9% on the cost of production (Legiscomex, 2010).

In terms of international agreements, China during the last quarter of the 20th century began to dynamize its economy. It became the country with the largest exports in the world, not only thanks to the development of its industry, but also because it was able to integrate into the world economy through various free trade agreements (FTAs). Today China has around twenty FTAs in force with different countries, these are: Chile, Peru, Costa Rica, with the ASEAN bloc, with ASEAN Plus Three, which are the countries of the Southeast Asian bloc plus Japan and South Korea, with Pakistan, New Zealand, Singapore, Moldova, Hong Kong, Macao, the latter two are closer economic associations with each other, with Cameroon, South Korea, Australia, Georgia, Switzerland, Iceland and finally with the countries of the European Union is a customs cooperation agreement. It has also been involved in regional agreements, it is in the Asia-Pacific Economic Cooperation (APEC), in the Shanghai Cooperation Organization (SCO), in the Asia-Pacific Trade Agreement (APTA) and in the Central Asia Regional Economic Cooperation Program (CAREC) (EENI Global Business School, n.d.). Relations between China and Latin American countries have intensified in recent years, with Venezuela's oil exports to China standing out, since the Asian country demands a lot of this product for its industries; likewise, Brazil, Chile, Argentina and Peru have sent raw materials and food to satisfy the great demand of the Asian giant (León Manríquez, 2006).

Due to the great openness that China has had over the years, and all the international treaties that have arisen, many industries have benefited from these international agreements. The fruit sector in China is one of these sectors that have been favored, thanks to the support of the government in signing international agreements, Chinese fruits are welcomed in different international markets, not only Chinese products with added value have made their way into the international market, but also Chinese fruits have been able to cross borders and position themselves in other countries. For example, the free trade agreement signed by China and Chile in 2005 places tariffs on the import of fresh fruit from Chile, and it was agreed that the import tariff will be reduced for a period of five to ten years (Ministry of Foreign Affairs of Chile, 2006).

As a result, China, besides being a strong country in fruit imports, is also a strong country in exports, which is why the government has helped and especially protected the country's fruit industry, with this they try to ensure that Chinese producers and exporters can sell their products to different parts of the world, and also be competitive.

#### 2.4.2.2 Economic

On the economic issue with China, it is worth highlighting the increase in the last quarter of the 20th century after its commercial opening given by different reforms in 1978. The Chinese economy grew from USD 149 billion in 1978 to USD 11 trillion in 2016 (World Bank, 2021). A capital increase in its GDP that turned the country's economy into what it is today, one of the best in the world. According to Sornoza, Parrales, Sornoza, & Guaranda, (2018), China's economic development is divided into four periods; the first, between 1979 and 1992, is given by the agrarian reform, in which the government with different methods helped and provided support to farmers in their plots. The second, between 1993 and 2005, was the period of regulatory focus and administrative restructuring, which also regulated the fiscal, financial and banking systems, and above all the external sector, since after a long period of isolation, the country entered the world economy through its accession to the World Trade Organization (WTO). The third period between 2005 and 2012, the Property Law of the People's Republic of China was created, which protects the interests of private investors in the ownership of land and real estate, something paradoxical because it is a contrast to what is promulgated by the socialist doctrine of the party. And the fourth period 2012 - present, is that of the basket of foreign exchange reserves of the International Monetary Fund (IMF), with this the yuan was integrated into the basket of special drawing rights three, also in this period is touching on the issue of urbanization and rural-urban transformation.

China's GDP at current prices in 2020 was 14.723 trillion USD, it is placed as the second largest economy in the world, behind only the United States, in terms of GDP (World Bank, 2021). according to the DW portal (2021), China's population is 1,411 million inhabitants in 2021 and is the most populous country in the world, followed by India and the United States. Therefore, the GDP per capita at current prices in 2020 is 10,434 USD (World Bank, 2021). Thanks to all the economic growth of China and its openness to world trade, the Asian country was placed as the world's largest exporter since 2009. "Since 2000 Chinese exports soared growing at a rate of more than 25% every year until 2007 which placed China as the

third world economy at the end of 2008" (BBC , 2009). Since then, no other country has been able to compete with China in terms of exports; it could be said that China is the world's supplier. There are different factors that placed China in this position, in addition to its economic growth, trade facilitation was and is also important, the investment in infrastructure for export - import was a determining factor to simplify the processes. For this reason, according to CAMAE Maritime Chamber of Ecuador (2019), of the 10 best ports in 2018 in terms of container cargo throughput, 7 are in China, the port of Shanghai ranks first in the world; Ningbo, Shenzhen, Guangzhou, occupy the third, fourth and fifth place respectively; and Hong Kong, Qingdao and Tianjin the seventh, eighth and ninth place correspondingly. In terms of numbers China in 2020 exported a total of 2.59 trillion USD, due to its industrialized economy, products such as machines and devices stand out as the main export goods, followed by furniture, plastics, optical instruments, vehicles, textile articles, toys, among others. In reality, there are many products with a high export quantity, we wanted to highlight those with the highest export quantity and volume (Trade Map , 2021).

In the section of fruits and edible fruits in general in 2020 China exported about 7 billion USD (Trade Map , 2021). In total in 2020 China's total fruit exports reached the amount of 3.86 million tons, these figures have made an increase of 7% in volume and 16% in value compared to 2019 (SimFruit , 2021). The main fruits exported by China are watermelons, apples and fresh grapes, likewise, we must highlight the fruit of our study, pitahaya, with 13 million USD exported, the largest buyers of Chinese fruits are the countries of Thailand and Vietnam.

To achieve these figures in fruit exports, there is a large production in the Asian country, "China is the first world producer, concentrating around 30% of world production and reaching a production of 300.90 million tons of fruit in 2017" (Salado García , 2019). Although the vast majority of fruit production stays in the country to meet the country's demand, there is a portion that goes dedicated to export, adding to the above, the growth of the fruit sector has been growing at a rate of 2.8% in the last 5 years (FAOSTAT , 2019).

In economic terms, China manages large amounts of production and value in the fruit sector, it is an industry that is constantly developing thanks to the large production and sales in the domestic and international market.

#### 2.4.2.3 Social

The Chinese population is mostly concentrated in the east of the country, to the west are mountainous areas that are sparsely populated. In the east are the most populated cities, which are Shanghai, Canton, or the capital Beijing (CIA World Factbook, 2021). The urbanization that took place in the country led to the emergence of highly populated cities in the eastern part of the country, such as those mentioned above. In 1949, 89% of China's population lived in rural areas; by 2011, 51% of the population lived in urban areas and the Chinese government expects that by 2032 the urban population will be 75% of the total (Reinoso, 2012).

In terms of employment in the agricultural sector, there has been a change due to the industrialization of the country. In 1970, agriculture provided 81% of employment to the working population at that time; forty years later, in 2010, the agricultural sector employed only 37% of the total, and in 2008 the number of people working in the agricultural sector was 279 million (Huang et al., 2012).

Similarly, in China there have been different trainings for farmers to develop different capabilities to improve their crops. For example, a group of rice farmers received the Pest and Pesticide Management (IPM) course created by FAO (Mangan, 1998).

It is notable that thanks to the agricultural sector in China, millions of people can benefit from this activity to earn enough income to have a decent life. Agriculture has been a great source of employment for the population for many years, and has made it possible for many people to get ahead thanks to this occupation.

#### 2.4.2.4 Technological

Due to the already exposed economic growth that China has had, this has derived in a growth in the technological issue, "thanks in large part to its massive investment in research and development, which totaled about 2.2% of its GDP" (Jun, 2018). With this, it has been able to improve different social and economic aspects in Chinese society. Also, government policies for improvement in the field of technology came hand in hand with the economic reforms of 1978. From this year onwards, they sought to keep the technology used in industrial production in the country, which was achieved and a transformation was achieved in the years to come.

A few decades passed and policies were modified, as (Haro Sly & Liaudat , 2021) state:

The second half of the 1990s saw the beginning of the Deep Reform phase. The new policies focused on three objectives: 1. to shift innovation drivers from public research organizations to industrial sectors; 2. to improve the R&D and innovation capacity of industrial sectors; 3. to improve the efficient commercialization of academic products (paragraph 20).

With these new reforms, the aim was to make advances in technology bear fruit in the industrial sectors in order to improve and be more efficient in the processes, as well as to encourage research and development to help different companies to be more competitive. With these objectives, it was possible to create companies with a high added value that to this day are benchmarks in the Chinese technology industry, such as Lenovo, ZTE, among others: Lenovo, ZTE, among others.

As has been pointed out, China has invested heavily in the advancement of technology, and the country's agricultural sector has not been left behind; the national agricultural research system has helped to develop new processes that have even replaced the use of labor with machinery. The products that have benefited most from this research and subsequent use of technology have been: corn, rice and wheat. In addition to this, agricultural development through the implementation of technology has served as an example and guide for countries that want to specialize in this field. "The country plans to establish more than 20 agricultural technology demonstration centers around the world and double the number of experts sent abroad" (Legiscomex, 2010). In addition, China has also taken into account the issue of biotechnology, and has researched on transgenic varieties, however, there are still doubts about releasing these varieties since it is not known what reception they will have in foreign markets and especially if there will be possible negative effects on health.

After all the above data, China is also a technological power in terms of agriculture and cultivation, there are more specialized processes in this branch. The country's fruit sector has benefited from all these advances and is now a global example and a strong competitor for other countries that want to stand up to it in this field.

#### 2.4.2.5 Environmental

In terms of the environment, China suffers the same problems as some Asian countries; air pollution is a problem for the population, which is often exposed to respiratory problems such as asthma or bronchitis due to this pollution. During the Olympic Games in Beijing in

2008, the city's landscape was grayish due to high levels of pollution. "Air quality indexes have the following parameters: below 50 is good; above 200 is highly dangerous. Beijing yielded 341" (National Geographic, 2018). This data gives us an account of how dangerous it can be to transit through the Chinese capital with such air quality indices.

One of the main reasons for air pollution in China is because of the large size of the industrial sector, the hundreds of factories existing in the country emit different gases that are harmful to both the environment and people. Another reason is due to the massive circulation of automobiles, since it is a country with several million inhabitants, the number of vehicles is also large.

The Chinese government, in 2013 presented a plan with measures against air pollution, these measures aimed directly at energy and industrial production and also at private traffic. One of the measures was to prevent the construction of new coal-fired power plants, and the plan also proposed a modernization of refinery companies, which would improve the quality of fuel and reduce emissions from motor vehicles (ICEX, 2013).

In the agricultural sector it happens in the same way as in more developed industries, China produces a lot of food, but this productivity has not been accompanied by an environmentally sustainable agriculture. There is an excessive use of pesticides and fertilizers that have caused both Chinese waters and soils to be contaminated. "China is the largest consumer of fertilizers and its consumption accounts for 90% of the global increase in fertilizer use since 1981" (Liu & Diamond, 2006). It is worrying that thanks to the Chinese consumption of these chemical products there has been a global increase in their use, these products are highly harmful to the environment.

The environmental issue in relation to the fruit sector is a problem for China, since it does not produce fruits that have been grown or processed respecting different parameters for the care of the environment, this is an important point to highlight, since many countries require that the fruit that enters their territories has passed different stages and that these have not damaged the environment.

#### 2.4.2.6 Legal

China, like many countries, has taxes as its main source of tax revenue. VAT in China is levied on the sale of tangible goods and the provision of certain services at a rate of 17%; however, for deliveries of agricultural and other essential products, 13% is applied. Similarly,



taxes in China can be classified into eight categories, these are: excise or transaction taxes, income taxes, resource taxes, special purpose taxes, property taxes, operating taxes, agricultural taxes and the category of customs duties (Roccaro, 2011).

Regarding workers' rights and labor laws for many years China has been in the spotlight because international media constantly covered mining accidents, deaths in factories or strikes in different workplaces. Since 1990 the different unions and consumer groups have exerted pressure on transnational companies operating in China, with the aim of improving the working conditions of workers, something to note is that the Chinese government has been present through labor legislation, however, the implementation of this legislation is given by provincial and local governments, where the levels of compliance are uneven (Chan & Nadvi, 2014).

Similarly, in the area of patents, China is the country that has received the most applications, overtaking the United States of America in this area (WIPO, 2020). For both agriculture and fruit, this is essential since many companies in China have their own patents and trademarks for different fruits, including pitahaya, which are marketed in China and abroad, and for these companies it is essential to protect these trademarks given that future foreign or domestic companies may make use of them.

## **2.5. Comparative analysis between Vietnam and China as the main pitahaya exporting countries and Ecuador**

After having developed the PESTLE analyses of both Ecuador and its immediate competitors in the international pitahaya market, such as Vietnam and China, it is important to highlight that these analyses were carried out to understand the current situation of the three countries in terms of pitahaya production and exports. Knowing the position of each country is fundamental to be able to compete in international markets. The main objective is to expose the advantages and disadvantages that Ecuadorian producers and exporters have compared to their counterparts in Vietnam and China, with this it will be possible to choose the ideal destination for export and know how to compete with them.

### **2.5.1 Advantages**

As for what advantages the yellow pitahaya of Palora has in relation to the pitahaya exported by China and Vietnam, it is mainly the type of fruit that occurs in Palora, this pitahaya harvested in the Ecuadorian Amazon has some characteristics that stand out above the Asian

fruit, first, it is of different species, the one produced in China and Vietnam is red, of the undatus species, and the one produced and exported from Palora, the yellow one, is called megalanthus. The main and outstanding difference between the two species lies in the edible part of the fruit, the pulp. In the case of the yellow pitahaya, the pulp is sweeter than the pulp of the red pitahaya. Therefore, it is digested in a better way and even derivatives can be made from this species; jams, drinks, among others. This is an important advantage of the Ecuadorian pitahaya.

Similarly, as noted above, Chinese exports of pitahaya are lower than Ecuadorian exports, mainly because the Chinese production of the fruit does not meet the demand generated by the Chinese people. The Vietnamese pitahaya is present to a large extent in the Chinese market, but it does not satisfy the demand either, because the Chinese consumer knows the yellow pitahaya and prefers it over the red one for what has already been mentioned above, which is the flavor, therefore, in the Chinese market the yellow pitahaya is ahead of the red one.

Finally, the Ecuadorian yellow pitahaya is positioned for some years in different areas of the world, from North America, through Europe and even in the Middle East, these exports guarantee the product as one of good quality and is appreciated in a variety of foreign markets.

#### 2.5.2 Disadvantages

There is a clear disadvantage regarding mainly the Ecuadorian pitahaya with that of Vietnam, is that for several decades the Vietnamese government opened to international markets, began to sign various international treaties that have made the products of that country generate advantage over others, mainly because importing countries pay less tariffs for Vietnamese products due to international agreements signed. Vietnam has benefited greatly from being a member of ASEAN (Association of Southeast Asian Nations), since this bloc has been working for some years to integrate and become a trading partner of the world's major economic powers. Also, the different public policies implemented by the Vietnamese government for several years have improved agriculture, with public loans to producers and an agrarian reform they managed to develop this sector. Therefore, pitahaya growers in Vietnam have to some extent more mechanisms to invest in their plantations than Ecuadorian producers.

Similarly, another disadvantage is the section of foreign trade by Ecuador, is deficient, it takes a series of procedures, first, so that a plantation can generate fruit for export must be a minimum of one year in review, then the procedures to be an exporter are tedious, and finally there is some bureaucracy that makes it complicated to form an export. Likewise, Ecuadorian ports do not have the technology and space that ports such as Ningbo in China or Ho Chi Minh in Vietnam have. This is another adversity that an Ecuadorian exporter has to go through.

Finally, an important disadvantage is that although the yellow pitahaya is in many countries of the world, it cannot be compared with the magnitude that reaches the pitahaya of Vietnam, the production of this country is so high for export that reach many countries, there are different setbacks that make the Ecuadorian pitahaya cannot reach other countries, the main reasons are that Ecuadorian governments have not negotiated protocols or agreements so that the fruit can enter other countries. This is an adversity for the Ecuadorian fruit since, although it has the potential to enter more countries, it cannot do so because of tariff and non-tariff barriers.

### 2.5.3 Recommendations for Ecuador

After analyzing Ecuador's competitors in the international pitahaya market, it can be seen that the main competitor is Vietnam for pitahaya exports. The following are a series of suggestions that Ecuador can implement to compete directly in different international markets with Vietnam and its large pitahaya industry.

Firstly, it would be important that the Ecuadorian government takes into account the processes of quality certificates and export processes, in this case if these procedures were more agile, there would be a trade facilitation that would greatly benefit both exporters and small and medium producers who would not only sell the fruit to exporters, but also would enter into exports, this would generate more competition among them and therefore would lead to more efficient fruit and export processes by Ecuador.

Secondly, the issue of international agreements, as highlighted above, Ecuadorian pitahaya cannot enter many countries for lack of mechanisms and tools that the local government negotiates with other countries, it would be important that the guilds and organizations of producers and exporters of pitahaya of Ecuador ask the governments in office to negotiate protocols or export agreements with more countries where the Ecuadorian pitahaya can be

successful.

And finally, it is necessary for pitahaya producers in Ecuador to be aware of the different international regulations and certifications in this case of fruits. As shown above, the international consumer, mainly from the West, demands healthier, organic food products, with less chemicals and additives. Therefore, the Ecuadorian producer has to satisfy this demand with products that meet the demands of the international consumer, mainly so that the Ecuadorian pitahaya is recognized for its quality compared to its competitors.

## **2.6 Analysis of potential markets (possible destination countries)**

The yellow pitahaya of Palora is a fruit that in recent years has been positioning itself in different international markets, thanks to its properties and the different tastes of consumers abroad, this fruit has grown in volume and value of exports. Next, a series of possible destination countries for Palora pitahaya will be suggested, together with an analysis of the market of these countries and the competition that would exist.

### **2.6.1 United States of America**

To begin with, this country is the main buyer of Ecuadorian pitahaya in the world. Just over 50% of total Ecuadorian pitahaya exports in 2020 were destined for the United States (Trade Map, 2021). Some Ecuadorian exporters already have experience in selling this fruit to companies in the United States of America. Therefore, this country is an important trading partner for pitahaya exports.

Regarding the analysis of the U.S. market, in terms of tastes and preferences, the average American consumes about 120 kilos of fresh fruits per year, within the food consumption, which is only surpassed by dairy and vegetables, also, fruit is consumed in the form of juice, half of the consumption and in fresh state in a third and the remaining one third frozen or packaged, fresh fruits are a highly consumed product in the U.S. bananas, grapes and apples stand out (Albareda, 2011). Similarly, Americans currently prefer fresh produce as they consider food to be the new medicine, and is the path to good health (Consumer Reports , 2015). Ecuadorian pitahaya during the last years has entered the market and has achieved good sales since previously only pitahaya arrived from Vietnam, which is the red species, but with the arrival of Ecuadorian pitahaya with yellow skin, Americans found variety with respect to this product.

In terms of logistics, the distribution channels used in most cases are sales to a large importer,

which in turn distributes the product to the different supermarket chains with which it is affiliated. Three national chains stand out as the best qualified and that offer fresh fruits and products, these are: Wegmans, as the best qualified, followed by The Fresh Market and Whole Foods (Consumer Reports , 2015), it is important that the Ecuadorian exporter tries to get importers that have relationships with important supermarket chains, so that there is a possibility of a greater sales margin since they are supermarkets with a high concurrence of people. As for the means of transport used for the export of pitahaya in general are by air and sea. The former has a higher cost, but has certain benefits such as preserving the cold chain, shorter transit times, less handling of boxes, less risk of contamination by drug trafficking, and joint inspections at the same cargo terminal. On the other hand, when pitahaya is shipped by sea, arrival times are later and there is more handling due to increased shipping processes. In addition, refrigerated containers must be obtained to maintain the cold chain. As regards packaging, all packaging must comply with international standards (ISO 7001), and the packaging must have the necessary characteristics to comply with the cold chain, and there must be holes in the boxes for adequate ventilation. It should be noted that pitahaya boxes for export go through a palletization process for a correct use of space when using air and sea transport (Ministerio de Comercio Exterior, 2016).

It is also important to analyze the country risk in this case, which is important to know the political and economic situation. This indicator helps us to see the risk we have when investing in a certain country, conditioned by macroeconomic and political situations. In the case of the United States, the country risk is 178 in February 2022 (Macro Data, 2022), which is relatively acceptable, there are countries with a very good country risk such as Japan or Finland that have 2 and 23 respectively. In general, with the United States there is less likelihood of defaults or a depression in its economy, which facilitates trade with this country. Regarding taxes and tariffs that importers must pay in the United States, the method used for calculating tariffs is ad valorem on the value of the cost, insurance and freight (CIF), also, the U.S. applies one of the lowest rates on imports which is 3.5% on average, this rises only in dairy products, sweets, beverages and clothing (Santander Trade, n.d.). According to the Tariff Schedule (HTSUS) prepared by the United States International Trade Commission (USITC) (2022), in the case of pitahaya the value is similar to the average, it is paid at 2.5% ad valorem on the CIF value.

And, in the case of technical specifications and non-tariff barriers that the United States has for the importation of fresh pitahaya from Ecuador, according to the United States Department of Agriculture (USDA) in conjunction with Animal and Plant Health Inspection Services (APHIS) (2022), the fruit can enter any port in the continental United States as long as it first obtains an import permit required by APHIS, and then contains the phytosanitary certificate issued by Agrocalidad, which is the regulatory body in Ecuador, and in turn a certificate that meets the production and preparation standards required by 7 CFR 319. 56-4, which was prepared by APHIS.

The issue of segmentation of the U.S. market is important because the U.S. has a large population and not all consumers have the same needs. In the case of pitahaya, it is a fruit that does not have the same price as other traditional fruits, which makes it in a certain way an exclusive product in this market; therefore, socioeconomic segmentation will be used, which deals with aspects such as income level, activity or profession, and properties. In itself, the segmentation issue is carried out by the importer in the destination country, since he will have to decide which companies and supermarket chains the pitahaya is destined to so that the volume of sales is adequate.

And finally, the issue of competition analysis is important, since in Ecuador there are a number of companies that for some years are already engaged in the export of pitahaya and other fruits. Companies such as Nativearth SA, Mega Fruits Amazon and Andes SAS, Ecuarurukuna SAS, Agrícola OPLA Cía. Ltda., Sidelsur SA, Exportadora Importadora Cotopaxi, among others, are companies that in recent months have sent fresh pitahaya to the United States, mainly using the ports of Miami in Florida and San Diego in California to supply both the eastern and western markets (SEAIR, 2022). In the case of Nativearth SA they also offer soft drinks and other beverages, then we have Ecuarurukuna SAS that exports both yellow and red skin pitahaya. And Agrícola OPLA offers organic yellow pitahaya for export. There are also a number of Ecuadorian companies that first arrive in Panama with shipments and then send them to the United States.

In general, there is competition among different companies for the export of pitahaya to the United States from Ecuador, there is a monopolistic competition since there are many competitors that offer pitahaya in different ways (yellow skin, red skin, organic, etc.) more and more companies are opting for this industry because they get to have important profit

items. In general, the companies that compete for the export of Ecuadorian pitahaya to the United States have already defined processes and have found different clients that from time to time ask for the fruit for their market.

In conclusion, the pitahaya market in the United States is wide, an important point is that the product is already positioned in the market, also the tastes and preferences of Americans make the pitahaya is desired, another important aspect is the distance, the country is located on the same continent as Ecuador, so the time and transportation costs are lower and that affects the final price. The aspect of quality certifications and phytosanitary standards requested by the North American country is a more convoluted issue since public agencies request different certifications that producers and exporters have to comply with, there are a number of customers who even ask for organic pitahaya and products of that nature because they are gaining market share.

#### 2.6.2 People's Republic of China

As for China, it should be noted that this country has been taken into account for two main reasons, the first is for the potential market, it is the country with the largest population on the planet, and secondly for the opportunity for Ecuadorian exporters to export directly to China from 2022, with the new export protocol that will be explained below.

Ecuadorian pitahaya could not enter directly to this country, since the Chinese authorities that regulate the entry of fruits into the country had not established regulations for Ecuadorian pitahaya, therefore, Ecuadorian exporters sent the fruit to Hong Kong and then illegally entered China. However, exports to Hong Kong are in second place only behind the United States, about 30% of Ecuador's total exports in 2020 were destined for Hong Kong. Until 2018 this destination led Ecuadorian exports, after that year, the United States unseated it in first place (Trade Map , 2021). Now, it should be noted that, at the beginning of 2022, thanks to the close relations between the governments of Ecuador and China, it was possible to sign the protocol for the export of pitahaya, with this not only can be sent to Hong Kong, but to any port in China, producers already have in their hands the requirements requested by the health authorities of the Asian country to enter the fruit to the world's largest market. Similarly, Julio José Prado, Ecuador's Minister of Production, Foreign Trade, Investment and Fisheries, stated that this protocol will especially benefit small Ecuadorian pitahaya products, since greater exports will increase production (Prado, 2022).

It is known that the Asian country is one of the largest importers of fruit in the world, mainly because of its population. In the case of pitahaya, China mainly receives the pitahaya produced and exported by Vietnam, which is red-skinned and has properties that are somewhat different from the yellow-skinned pitahaya produced in Palora, which is why for the Chinese importer the Amazonian pitahaya from Palora has an important added value because it has different characteristics from the Vietnamese pitahaya that is distributed in large quantities in the country.

Regarding the analysis of the fresh fruit market in China, we have that more and more foods are entering China, in 2019, the country imported 2300 food products from 185 countries, likewise the Chinese consumer is against additives in food since 88% of consumers in major cities are willing to pay more for a product without preservatives or additives (Center for International Economics, 2021).

It is important to take into account the tastes and preferences of fruit consumers in China. In this case, they prefer fruits that meet two fundamental aspects, the first one, that they have a good taste and flavor, and that they feel that the product is natural. And, secondly, that it is good for digestion, since Chinese consumers resort to fruit after their meals, therefore, it should help digest meals and soothe the stomach. In addition to this, they also look for the fruit to be easily portable and to be able to be eaten in slices (Mundo Agro , 2019). Palora yellow pitahaya has the two fundamental requirements that the Chinese consumer prefers, as it has the pulp of the fruit is sweet and also has properties to aid in digestion.

Regarding the logistics used in the export of fresh pitahaya from Ecuador to China, there is a distribution chain that contains seven important agents for the distribution of the fruit to the Chinese market. According to Prom Peru & Produce Marketing Association (2017), they are the following:

- Exporter: In general, in the case of pitahaya are companies in the country where the fruit is produced, Vietnam and Ecuador stand out. In the case of Ecuadorian exporters, most of them send shipments to the port of Hong Kong.
- Importer: These are Chinese companies engaged in the export of fresh fruit, there are 393 companies in this field, but only four import pitahayas, these are: AWFI International LTD, Belove Delicacies ColTd, Eatore Co. Ltd, Gold Harvest.
- General Distributor: In this case they are small or medium-sized companies that do



business with importers and buy the fruit to distribute it to different places and stores in the country.

- Wholesale market: There are a large number of wholesale markets around the country, around 4,000. In the capital Beijing, the best known is the Xinfadi market, which supplies 70% of the vegetables and 80% of the total fruit consumed in the city of more than 21 million people. In the southern city of Guangzhou, the fruit and vegetable market called Jiangnan stands out.
- Retail sector: It is made up of common markets, fresh fruit stores, supermarkets and hypermarkets. The latter have grown in recent years, but consumers still prefer to buy fruit in street markets.
- E-commerce: E-commerce is booming and the main importers are Alibaba Group and JD.com.

It is also necessary to analyze both the economic and political environment that China is going through to know what we are facing in terms of the general situation of the country, this is a necessary fact to consider when you want to make an export with the risks that this entails. China has a country risk that stands at 261 as of February 2022 (Macro Data, 2022), the number is therefore acceptable given that its neighboring countries have higher scores, but it is a stable number that suggests that there is a certain normality both politically and economically and that trade with this country is favorable. In addition, China in recent years has invested in improving its infrastructure in foreign trade so it is easier to import and export with that country, there has been a trade facilitation.

Since Ecuador does not have free trade agreements with China on fruit, it is at a disadvantage compared to other countries. Chinese companies pay 20% ad valorem on Ecuadorian pitahaya that enters their country, while with Peru, for example, which has a free trade agreement, no tariffs are paid (Market Access Map, 2022). In this case, Ecuadorian pitahaya exporters have a tariff disadvantage compared to exporters from other countries. In the same line, Vietnam, which is China's main supplier of pitahaya, Chinese importers who want to buy pitahaya from this country also do not have to pay import tariffs because they have a preferential rate of 0% as an ASEAN country.

In the same way, the technical specifications and phytosanitary standards that China's health control agencies require for pitahaya to be able to enter the country must be stated. All fruit

must meet a series of standards imposed by 4 public agencies in China, these are: China Food and Drug Administration, Ministry of Agriculture, National Health and Family Planning Commission and The General Administration of Quality, Supervision, Inspection and Quarantine (USDA Foreign Agricultural Service, 2015). In addition to this, it is important that pitahaya has some quality certifications to give added value to the product, those accepted by China are: China - Organic Standard Product, Good Agricultural Practices (GAP) China and Green Food (Prom Peru, 2017). With all these requirements fulfilled, Ecuadorian pitahaya could enter the People's Republic of China.

The issue of market segmentation in the same way is a situation carried out by importers and other distribution agents of pitahaya in China, given that they know the best destination option for the fruit. As the product is a fruit and as it has already been exposed the consumer of this product in China chooses to buy it mostly through street markets, the segmentation by buying and consumption habits is used, since in this way places, schedules and above all means of purchase are analyzed. This segmentation is mainly used for products that people consume on a regular basis.

As for competition, there are a number of companies engaged in the export of pitahaya from Ecuador to the port of Hong Kong, China. There are a few companies, but the one that stands out for export volume is Disproducsa of the Nobis group, which regularly sends shipments. This company has been working with Chinese importers for several years. In general, there is pure competition since there are several companies that offer the same product to importers (Lizarzaburo, 2021).

China in general is a market that can be entered because the fruit is known and consumed in large quantities, and it is already positioned in the market as a quality product. Since there are not a large number of exporting companies, by adding value to the product we could satisfy the demands of Chinese importers. The negative point with this country is the distance, having to pass the entire Pacific Ocean makes it difficult to send the fruit, often opt for the area but that affects additional costs and therefore raises the final price of the fruit, another problem is the tariffs paid by the pitahaya to reach China, however, However, as added above, in recent months Ecuadorian representatives have managed to get the pitahaya to enter China without having to go through Hong Kong, this is a big step since it is now possible to use different ports and above all do business with other importers, this was

achieved through the signing of the protocol for the export of pitahaya (El Universo, 2022).

### 2.6.3 Norway

Norway, there are three key arguments for this country to be among the possible destination countries for Ecuadorian pitahaya, first, although its population is not very high, most of its inhabitants have a high annual income, so they can afford to buy products with some degree of added value, in addition to being imported, as is the case of pitahaya. Second, the Ecuadorian pitahaya has not yet entered the country, Norwegian consumers only know the pitahaya imported from Vietnam, with red skin, therefore, it can be a novel product that surprises in the market. And third, Ecuador has had an economic agreement with Norway and three other countries for a few years, therefore, there is an advantage of Ecuadorian products over other foreigners, this makes international negotiations more bearable and agreements can be reached more easily.

This country located in northern Europe, is a real option to be a destination for Ecuadorian pitahaya, has a population of over five million inhabitants, in addition to the fact that the inhabitants have a high purchasing power, according to the World Bank (2020) the per capita income in the Nordic country was 59 130 euros in that year, with this amount is placed in the number 6 position in the world ranking, which means that the Norwegian population has a high quality of life. In addition to population and income, an important factor is that in June 2020 Ecuador ratified the economic agreement between Ecuador and the four countries that make up the EFTA Economic Free Trade Agreement or EFTA for its acronym in English, among these countries is Norway, in addition to Switzerland, Liechtenstein and Iceland (Inclusive Economic Partnership Agreement between Ecuador and the EFTA States, 2018). With this, there are advantages such as Ecuadorian pitahaya not paying tariffs when entering Norway. Ecuador has the Multipartes treaty with the European Union, however, these four countries do not belong to that community so before this agreement it was difficult to establish trade relations.

Regarding the market analysis of Norway, Norway's fresh fruit imports, according to Trade Map database (2021), in 2020 was imported in the amount of 785 million USD FOB, about 35 million more than 2019. There is a large import given of production has been declining in recent years. "Norwegian fruit and vegetable production shows a slightly declining trend. Norwegians produce around 150,000 tons of vegetables and 25,000 tons of fruit" (Central

America Data, 2014).

To begin the analysis of tastes and preferences it should be noted that as in most countries in Europe, there is an interest in health care through improved nutrition, likewise they look favorably on organic products given that they have an affinity for caring for the planet" In 2018, Norwegians spent 300 million euros on organic food, representing an increase of 8% compared to 2017" (Fresh Plaza , 2019). The intake of healthy drinks has grown by 5% from 2013 to 2017, likewise 37% of this consumption corresponds to the category of natural products and 32% to those that are reduced in. Similarly 12% of a Norwegian consumer's expenditure goes destination fruits and vegetables (Segura González , 2018). "Norway has the highest percentage of income spent on food of all Nordic countries. 13.5% of Norway's average income is spent on food and non-alcoholic beverages" (Prom Peru, 2012). With all of the above, it can be seen that Norway is an ideal destination for Ecuadorian fruits and pitahaya, because the fruit has similar characteristics to what the Norwegian consumer is looking for.

In terms of logistics for the shipment of fruit and food to Norway in smaller volumes, the first shipment is to the Netherlands and Belgium, since many products arrive first to these countries and then are distributed to different parts of Europe, especially Norway imports large quantities of fruit from the two countries mentioned above. When the volumes are already higher, direct shipment of containers with a variety of foodstuffs is chosen. In Norway, it arrives mainly at the port of the capital, Oslo, and from there the large importers distribute the fruit to retailers. The most commonly used means of transport for fruit exports to Norway are by sea, with Maersk shipping, and by air, with DHL and KLM airlines. For sea freight there is an approximate time of 26 days and when shipped by plane the time is usually 2 to 3 days (Chaverría Mendoza, 2018).

In the Nordic country the main food retail chain is NorgesGruppen with a market share of over 30%, it has a number of national brands and different hypermarket chains, among the best known Spar, Meny and Kiwi. Then fighting for second place in the market are the companies Coop Norge and Reitangruppen, the latter has a supermarket brand called Rema 1000 with a low price profile, popular with young people and students. After these three large companies, ICA Norge and Bunnpris have a lower market share (Prom Peru, 2012).

It is necessary to expose the price of pitahaya in Norway, in this case the value given by the

Meny supermarket of the most important food company highlighted above called NorgesGruppen, has a value of 79.90 Norwegian kroner or the equivalent of approximately 9 USD for the amount of only one unit of pitahaya, it should be noted that the pitahaya offered by this supermarket is from Vietnam, according to information on the website of the same trade (meny.no, 2022).

### Price of pitahaya in the Norwegian supermarket Meny

Frukt & grønt — Frukt — Pitahaya

## PITAHAYA

Eat Me



kr 79<sup>90</sup>

 Legg i handlevognen

Figure 15 Price of pitahaya in the Norwegian supermarket Meny

Source: (meny.no, 2022)

Country risk is an index to take into account when considering doing business with companies from a certain country other than our own. In the case of Norway is located at 196 (Macro Data, 2022), is a fairly good value and indicates that there is less risk of non-payment and problems with the importer in the financial issue, also, the country has a political stability that allows doing business with this country is ideal.

As for the tax issue, it is the point in favor of Ecuadorian fruits in Norway, thanks to the EFTA Economic Free Trade Agreement explained above, the Ecuadorian pitahaya does not have to pay taxes when arriving at Norwegian ports, This is a tariff advantage that allows both importers and exporters to have a margin when doing business, and above all to be one step ahead of pitahayas from other countries that have to pay extra tariffs (Market Access Map & Inclusive Economic Partnership Agreement between Ecuador and the EFTA States, 2022). The Norwegian Food Safety Authority Mattilssynet is the authority in charge of

issuing the necessary regulations for foodstuffs, and for products that want to be classified as organic they must pass an inspection called DEBIO (Prom Perú, 2012).

Market segmentation is essential so that the product can reach the right consumer and sales are as expected. In the case of exporting Ecuadorian pitahaya to Norway, segmentation by purchasing and consumption habits would be used, mainly because the general food trends in Norway are ideal for this segmentation, there is an increase in eating out, this can be allowed by the average income of Norwegians, but the most important thing is that there is an inclination in this population for organic and premium products, they prefer food that has not been produced with additives or pesticides and above all take care of their health through food intake, all these factors are ideal for the marketing of pitahaya for its exotic fruit characteristics (Segura González , 2018).

The analysis of competition is another point in favor, given that there is no Ecuadorian exporting company that sends pitahaya to Norway directly, which is why in the different supermarkets and retail stores in this country only pitahaya of Vietnamese origin is found. There are Ecuadorian exports of pitahaya to Belgium, the Netherlands or the United Kingdom, however, it has not reached the Norwegian country. Therefore, the lack of competition can be a point in favor of a new exporter, but it is also necessary to analyze the country's environment, as well as the advantages and disadvantages so that the export is not detrimental.

Finally, Norway is a country with ideal conditions for the export of pitahaya, first, because there is no Ecuadorian yellow pitahaya that is marketed in that country, second, there is the challenge of entering a new market that can give great profits and third because the consumer of that country today has a tendency for exotic fruits and organic products.

### **2.7 Choice of destination country**

For the selection of the destination country, a comparison was made using a rating system for each of the countries analyzed based on their performance in the most important factors related to the opportunities and facilities that each one presents for the commercialization of fresh pitahaya fruit. In this rating system the maximum score is 5 points, and it will go to the country that presents the best scenario in this factor. The following grades given to the other candidate countries will be assigned with reference to this one. The countries analyzed above have been taken into account: China, the United States of America and Norway. Eight factors

have been taken into account: political situation of the country, market size with different tastes and preferences of consumers, consumer knowledge about pitahaya, foreign trade facilitation provided by each country, logistics and distribution chain, tariff and non-tariff barriers, Ecuadorian experience on exports to the three different countries, and finally the existing competition. The total score is 40 and the country with the highest score or closest to the maximum value will be the country chosen as the destination for the export plan of the yellow pitahaya from Palora - Ecuador.

**Comparative table of possible destination countries**

<b>Key factors</b>	<b>China</b>	<b>USA</b>	<b>Norway</b>
Political situation of the country	<b>4</b>	<b>5</b>	<b>5</b>
Market size and preferences	<b>5</b>	<b>4</b>	<b>4</b>
Consumer knowledge of the product	<b>5</b>	<b>4</b>	<b>3</b>
Foreign trade facilitation	<b>5</b>	<b>5</b>	<b>5</b>
Logistics and supply chain	<b>5</b>	<b>4</b>	<b>4</b>
Tariff and non-tariff barriers	<b>5</b>	<b>5</b>	<b>5</b>
Ecuadorian experience exporting to the country	<b>4</b>	<b>5</b>	<b>1</b>
Competition in the destination country	<b>3</b>	<b>3</b>	<b>3</b>
<b>TOTAL</b>	<b>36</b>	<b>35</b>	<b>30</b>

*Table 14 Comparative table of possible destination countries*

Author: Own elaboration

After describing these three countries for possible exports, the decision was made to export to the People's Republic of China. In the area of tariff and non-tariff barriers, China is the country with the fewest obstacles, since after signing the protocol for pitahaya exports, it is clear what the requirements are for the entry of the fruit into the country, and the tariffs charged on Ecuadorian pitahaya are not a high percentage and thanks to the characteristics of the fruit, Chinese importers could cope with this value. Secondly, although China has the highest value of country risk of the three studied, it is important to mention that it has

remained at that value for many years, also in the political issue the Chinese Communist Party has ruled for decades, therefore, it has had stability in political and economic issues for a long time. Thirdly, the issue of level of demand, tastes and preferences is key to the choice of this country, there is a large number of people in China so the market share of pitahaya would be very large, also the characteristics of pitahaya are in line with the tastes and preferences that the population has with fruits in general, there is an ease of purchase that would make the levels of sales of the fruit would be ideal. In fourth place, the logistics that are handled for export to China is adequate, although the costs are higher than, for example, sending pitahaya to the United States due to the issue of distance, there is a correct trade facilitation by China that makes it easier to export to this country, they have ports and ships equipped with the best technologies. And in fifth and last place, it would be a pioneer export, as mentioned above there are companies that send pitahaya, but to Hong Kong, not directly to Chinese ports, we could learn from the experience of these companies for this export.

## **2.8 Conclusion**

Finally, it is important to mention that this chapter has covered a fundamental part of the study, it has made an analysis of both Ecuador and the main exporting countries of pitahaya worldwide. Likewise, three possible destination countries for the fruit have been examined, all this information is of utmost importance to know the situation of both Ecuador and the countries that are competitors in the international market of fresh pitahaya. Likewise, the information of the possible destination countries has been very useful to understand the potential markets and which one is the most suitable for the export plan of the yellow pitahaya from Palora - Ecuador.



## Chapter III: "Export plan of yellow pitahaya from Palora to the People's Republic of China"

### 3.1 Introduction

After having elaborated different observations and analysis, the People's Republic of China has been chosen as the destination country for the export plan of the yellow pitahaya of Palora, next, we will detail different dispositions to take into account and the process that must be carried out so that this product can be exported in a correct way to the Asian country.

### 3.2 Tariff heading for fresh pitahayas

The tariff heading is fundamental in an export, because it is the denomination that the country gives to a specific product, if for some reason this heading is placed in a wrong way, it can cause many inconveniences to the importer especially at the time of customs clearance in the destination country. The following is the tariff heading used by the People's Republic of China for fresh pitahaya, from the main section to the last digits that specify the fruit.

#### Pitahaya tariff heading in China

Tariff heading used in China	Description
08	Edible fruit and nuts; peel of citrus fruit or melons
0810	Fresh strawberries, raspberries, blackberries, black, white or red currants, gooseberries and other edible fruits
081090	Fresh tamarinds, cashew apples, jackfruit, lychees, sapodillo plums, passion fruit, carambola, pitahaya and other edible fruit
<b>0810908000</b>	<b>Dragon fruit fresh</b>

Table 15 Pitahaya tariff heading in China

Source: (Trade Map , 2022)

Author: Own elaboration

### 3.3 Imports of pitahaya

As shown above, China is a country that produces pitahaya mostly to supply the local demand for the fruit, however, this production cannot satisfy the large demand that its population generates, therefore, it has to import pitahaya from other countries. According to Trade Map data (2022), China imported around 618 000 tons of fresh pitahaya with a value of USD 553 million FOB. Almost all pitahaya was imported from Vietnam, and a small amount, only

0.1% of the total, from Taiwan.

### Imports of fresh pitahaya from the People's Republic of China

Fresh pitahaya	USD FOB	Tons
2016	383 161 000	526 635
2017	389 513 000	533 448
2018	396 588 000	510 844
2019	362 096 000	435 702
2020	552 950 000	618 394

Table 16 Imports of fresh pitahaya from the People's Republic of China

Source: (Trade Map , 2022)

Author: Own elaboration

These data are important to realize that the Chinese consumer needs to have diversity when buying pitahaya, today the Chinese population only consumes pitahaya from Vietnam and it would be important to give them a new variety of this fruit, for example, the yellow pitahaya produced in Palora, Ecuador.

### 3.4 Pitahaya Price

Knowing the market value of pitahaya in the Chinese market is important when making the export plan, this information is important to start the negotiation with the importer, also with this data you can calculate the profit margins that the trader can get in the destination market. The pitahaya that is marketed in Chinese territory, as mentioned above, is the red pitahaya from Vietnam (USD 11.50). The selling price to wholesalers is 74 yuan per kilo of red pitahaya, while the estimated retail price is 224 yuan per kilo (USD 35.22), these prices are from March 2022, but depending on the seasons of the year has a slight variation (TW Food, 2022).

### Fresh pitahaya price in China

Type of pitahaya	Amount	Price
Fresh red pitahaya	1 kg	¥ 74 (USD 11,50)

Table 17 Fresh pitahaya price in China

Source: (TW Food , 2022)

Author: Own elaboration

### **3.5 Barriers to entry (tariff and non-tariff)**

Both tariff and non-tariff barriers are an important issue to take into account when exporting to a certain destination. These barriers to trade are protectionist measures that countries put in place mainly to protect the country's local industry. In order to preserve the industry, governments not only impose taxes on the import of certain products, but also use mechanisms such as import licenses, technical and sanitary requirements, maximum import quantities, among others. The following are the tariff and non-tariff barriers imposed by the People's Republic of China on imports of fresh pitahaya from Ecuador.

#### **3.5.1 Tariff barriers**

In this case Ecuador has a tariff barrier with a 20% tariff charged on fresh pitahaya imports from Ecuador (Market Access Map , 2022). Therefore, China has this tariff for pitahaya imports from Ecuador. However, this value may decrease due to the fact that since September 2021 there are technical tables between Ecuador and China negotiating a free trade agreement, which is expected to be finalized by the end of 2022, and there is also a protocol for the export of pitahaya to China, therefore, it is likely that there will be a decrease in the tariff that China applies to imports of pitahaya from Ecuador (Alvarado, 2021).

#### **3.5.2 Non-tariff barriers**

As explained above, China also has a vast food production, therefore, there have been different regulations and strategies to protect the country's food industry. There are a series of inspections, registrations and authorizations that China has established for food imports; however, all these processes have been aligned with international regulations since China joined the World Trade Organization in 2001. For food, the main non-tariff barriers that China has are technical and sanitary requirements, they take care of the issue of pests and bacteria to protect the health of its population. There are different regulatory entities in charge of inspecting the entry of fresh and processed food. The main agencies are: China food and drug administration, Ministry of Agriculture, National Health and Family Planning Commission and The General Administration of Quality, Supervision Inspection and Quarantine (Prom Peru, 2017).

##### **3.5.2.1 Phytosanitary requirements**

As for the requirements that Ecuadorian pitahaya must meet to enter China, according to the protocol for exporting pitahaya to China, Ecuadorian producers of the fruit must comply with

the GAP (Good Agricultural Practices) certification, and they must also monitor the plantations to know if they have the following pests: *Ceratitis capitata* (Wiedemann), *Anastrepha fraterculus* (Wiedemann), *Lopholeucaspis cockerelli* (Grandpr & Charmoy), *Dysmicoccus neobrevipes* Beardsley and *Phenacoccus solenopsis* Tinsley. (El Universo, 2022). After complying with these requirements, producers will be certified and authorized to export the pitahaya they produce to China.

### **3.6 Quality certificates**

Pitahaya, being a food that will be consumed by the Chinese population, must strictly comply with the different sanitary and phytosanitary requirements stipulated by Chinese law, and must also be in accordance with the protocol for the export of pitahaya to China, which has certain regulations and specifications that Ecuadorian pitahaya must pass. Similarly, quality certificates are important in the Chinese market, mainly to make the product known as a quality product.

#### **3.6.1 Quality certificates**

On the subject of quality certificates, the different agencies approve a series of international certificates, these documents come to give added value to the product at the time of export, since they can get more market share. In addition to the aforementioned BAP - Good Agricultural Practices, there is the China - Organic Standard Product certification, this certificate guarantees that the product is organic and all its equivalents in China. It should be noted that these two certifications are issued by the Global GAP organization. Additionally, there is one more certification issued by the Ministry of Agriculture in China which is called Green Food this title accredits food with high technical standards and also with environmental care (Prom Peru, 2017).

### **3.7 Labeling and packaging requirements**

Just as pitahaya must pass the phytosanitary requirements to enter China, the fruit must also arrive packed and labeled according to Chinese laws. This is important so that the product is not rejected when trying to enter the Chinese market, passing these requirements is fundamental for the success of both the export and the product in China.

#### **3.7.1 Labeling requirements**

The labeling of fresh food in China is governed by the GB 7718 - 2011 standard called General Labeling Standard for Prepackaged Food, this standard was created by the Ministry

of Public Health of the People's Republic of China (Economic and Commercial Office of the Embassy of Spain in Beijing, 2011). Pre-packaged means any food that has been wrapped, wrapped or packaged beforehand and is ready to be offered to the consumer. The basic requirements for labeling in accordance with this standard are detailed below.

- They must be in compliance with state laws as well as food safety standards.
- The label must be durable, conspicuous and clearly visible.
- They must be easy to understand for all members of the public.
- They must be truthful, accurate and must not misrepresent foods.
- They may not be presented or described with words, images or symbols that resemble other products.
- They shall not be marked with cure or disease prevention content.
- The label cannot be separated from the food or packaging material.
- They have to use Chinese characters, with the exception of the brand name.
- At the same time a foreign language can be used, but this cannot be with size larger than Chinese characters, with the exception of the brand name.

(Prom Peru, 2015)

These are, among others, the main characteristics that a food product label in China must have.

### 3.7.2 Packaging requirements

The packaging is essential so that the fruit that we export does not suffer contamination, it also protects all the properties of the pitahaya and even keeps it at a stable temperature so that there is no deterioration.

In the People's Republic of China both containers and packaging are regulated by the Food Safety Law of 2015, this law mentions that all products that are intended for direct consumption have to be packed in reduced packages, or use clean and non-toxic packaging containers, likewise these materials must be safe and avoid contamination or deterioration of the product (Rodriguez & Villanueva, 2017).

In China, there are about 125 industrial standards and approximately 130 national standards that establish the materials and manufacture of packaging and packaging that must be used in food (Prom Peru, 2015).

### **3.8 Export logistics**

The logistics issue is one of the essential parts in the export, first of all, it is necessary to know the product measurements and how it will be shipped, by boxes, palletized, loose cargo, among others. After this it is important to decide how much product is going to be shipped, with this data already taken into account, the transportation and shipping method is decided. And finally the FOB value, freight and insurance are calculated. Next, the logistic process of exporting yellow pitahaya from Palora to China will be suggested.

#### **3.8.1 Shipment method**

The yellow pitahaya from Palora, which is for export, has an approximate weight of between 250 and 320 grams. The fruit is packed in boxes measuring 50 cm long by 30 cm wide and with a height of 13.5 cm. These boxes hold 15 pitahayas, so the weight of the export box is approximately 4 kilograms (Heredia, Field study in Palora - Ecuador, 2022).

For export to the People's Republic of China, it is ideal for the boxes to go on pallets, because it has a number of benefits such as better use of transport space, facilitates the reception of the product at the port of destination, and improves inventory control. Therefore, for export, the pitahaya boxes will go on the so-called euro pallet, which is a wooden pallet that measures 1200x800x100 mm and weighs about 25 kilograms; this pallet can support about 1500 kilograms (Delgado, 2020). Consequently, in a euro pallet fit 6 boxes of export pitahaya with a small space, and reaches the 6 rows one box on top of the other. As a result, one pallet can carry 144 kilograms of pitahaya, about 540 units.

#### **3.8.2 Transportation**

For this export plan, it is recommended that the pitahayas be transported by sea, mainly because of the cost savings that this generates in relation to shipping by air. The container to be used is the 20-foot refrigerated container, since the pitahaya must be at a suitable temperature for proper ripening during the trip to the port of destination. Depending on the quantity of the export, the 40-foot container could be changed to a 40-foot container.

#### **3.8.3 FOB value, freight and insurance calculation**

This calculation is essential to know in figures how much it costs to export the pitahaya to China, then, we will list a series of steps to know these values.

- Product measures:

As mentioned above the pitahaya will go in boxes of 50 cm long by 30 cm wide and

with a height of 13.5 cm, these boxes will go in 6 rows stacked one on top of the other in a euro pallet, leaving a small space, the dimension of the pallet is 120 cm long by 10 cm high. Therefore, the total size of the pallet together with the boxes is 80 cm wide by 120 cm long and 91 cm high. With a weight of 144 kilograms of fruit plus 25 kilograms of the pallet, it gives a total of 169 kilograms.

- Internal measurements of the container:

As previously stated, the 20-foot container will be used with measurements in length of 590 cm, in width of 235.2 cm and in height of 239.2 cm.

- Total pallets in the container:

After dividing the dimensions of the container by the pallet dimensions, the result is that 20-euro pallets fit in a 20-foot container. These pallets are arranged as follows: 6 pallets are placed horizontally on one side of the container and 4 pallets are placed vertically on the other side of the container, leaving a small space in between. These placements together with the dimensions of the container allow for an additional row of pallets on top of those shown above. Therefore, there are 12 pallets horizontally and 8 pallets vertically to complete the 20' refrigerated container.

### Reference figure container

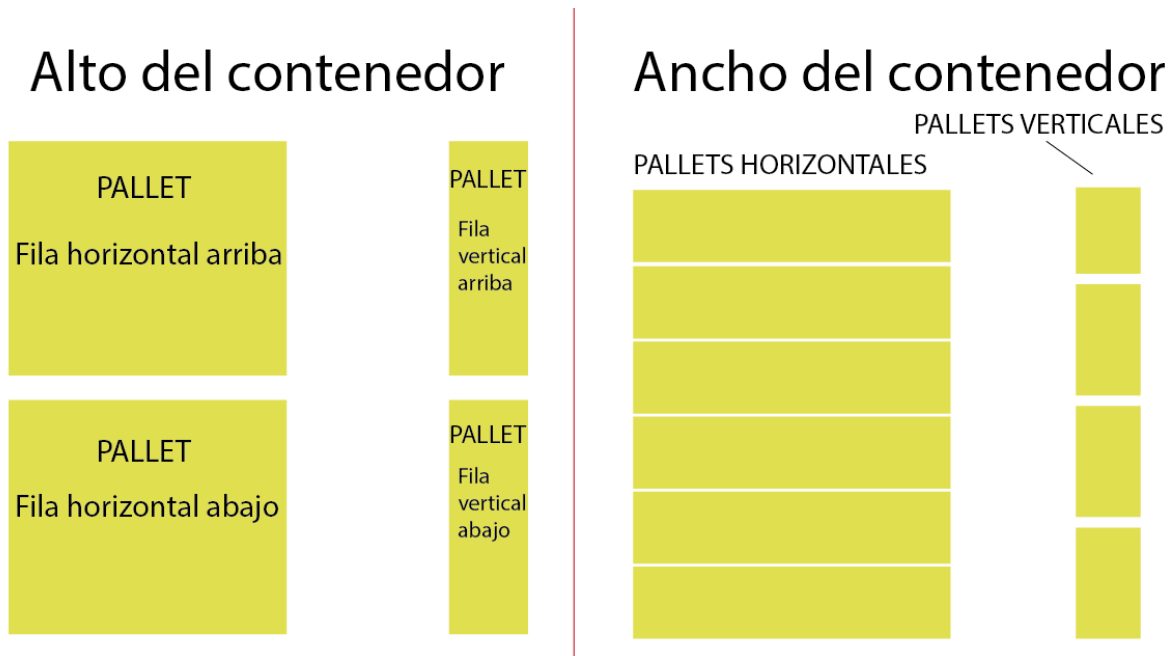


Figure 16 Reference figure container

Author: Own elaboration

- Final calculation of export costs:

After knowing the way in which the pitahaya will be shipped, it is necessary to know the cost of freight, that is, transportation from the place of origin to the place of destination. According to Gallardo (2022), export advisor of the Ecuador - Shanghai Chamber of Commerce, the cost is USD 7000 without considering extra export expenses. It should be remembered that the freight cost is from the port of Guayaquil to the port of Tianjin in the People's Republic of China.

The following table will detail the total costs of exporting yellow pitahaya from Palora to China. According to Heredia (2022), producer and owner of yellow pitahaya plantations in Palora, the price of yellow pitahaya for export is USD 2 per kilogram. In addition to this we must add the transportation from Palora to the port of Guayaquil, the various expenses in terms of documentation and export procedures, then the cost of the freight mentioned above and finally add the insurance that is calculated based on the cost plus the freight.

**Table of total pitahaya export costs**

Calculation	Value	Price per kg
Ex work	\$5760	\$2
Internal transportation	\$700	\$0,12
Docs of exportation	\$300	\$0,05
<b>FOB</b>	<b>\$6760</b>	<b>\$2,17</b>
International freight	\$7000	\$1,04
<b>CFR</b>	<b>\$13760</b>	<b>\$3,21</b>
Insurance 5%	\$688	\$0,05
<b>CIF</b>	<b>\$14448</b>	<b>\$3,26</b>

*Table 18 Table of total pitahaya export costs*

Author: Own elaboration

As can be seen in the table, the price of pitahaya has been calculated from the value in the warehouse in Palora, to the break-even price that it would have when arriving at the port in China, it should be remembered that wholesalers in China sell pitahaya



at approximately USD 11, therefore, with the USD 3.26 that it would cost to put the pitahaya in Chinese territory, there is a great amplitude for the negotiation of the price of the fruit.

### **3.9 Export documents**

After knowing how we are going to send the pitahaya to China, it is essential to get all the necessary documents so that there is no inconvenience with the state agencies of both Ecuador and China. According to the Technical, Logistic and Security Protocol for the export of pitahaya, created by the Ministry of Foreign Trade of Ecuador (2016) lists a series of documents that are needed to export the fruit from Ecuador, they are the following:

1. Registro Único de Contribuyente RUC: Indispensable to carry out any economic activity in Ecuadorian territory. Regulated by the Internal Revenue Service (SRI).
2. Digital Signature Certificate or Token; This document is requested at the Central Bank of Ecuador, it is necessary to later manage the ECUAPASS platform and be able to make both exports and imports.
3. Registration as an exporter in the ECUAPASS portal: All procedures are done online and this registration is necessary to be able to interact with the Ecuadorian Single Window (VUE), a portal dedicated to foreign trade to make procedures and consultations.
4. Commercial export invoice: This invoice must include certain conditions to be valid both in Ecuador and in the destination country, among the things to include are: logo or company name, RUC of the company, company information, the invoice format must be approved by the SRI along with the approval code, buyer or importer information, field to include RUC or its equivalent in the destination country, INCOTERM used, payment terms, fields for the values to be paid or paid, recommended to be in English and Spanish and finally, it is recommended to have a space to include account numbers and SWIFT.
5. Declaracion Aduanera de Exportacion - DAE: This declaration must be accepted by SENAE for the final export of pitahaya, the processing of this document is done through the ECUAPASS portal.
6. Declaracion Jurada de Origen - DJO: This document must be taken by the exporter and must be registered in the VUE system. Indispensable to validate that the product

is from a specific location.

7. Certificate of Origin - CO: This document is important for the product to be catalogued as Ecuadorian when it arrives at its destination and to be able to access the different tariff preferences imposed in the destination country.
8. Phytosanitary Export Certificate: This document is issued by AGROCALIDAD and is accompanied by the export; it is to verify that the fruit sent was produced with all the standards and requirements specified by the destination country. It is of utmost importance.

With all these documents duly obtained in the different agencies of the country, the export would be ready to be executed.

### **3.10 Export opening**

Once the necessary export documents are obtained, the export process can be carried out in the ECUAPASS system, in which 3 documents are required as a basis: Original commercial invoice, packing list and previous authorizations.

#### **3.10.1 Export quotation**

This document is fundamental, since it establishes certain rights and obligations for both the buyer and the seller, specifying: the characteristics of the product, the method of payment, the packaging used and finally the delivery of the goods. All these singularities can also be negotiated directly through an INCOTERM.

#### **3.10.2 Negotiation term (FOB or CIF)**

It is important when negotiating to include an INCOTERM, especially when you do not know or have not had previous commercial relations with the buyer, there are a series of INCOTERMS that can be used, in the export of pitahaya to China, we suggest the INCOTERM CIF (Cost, Insurance and Freight), for the following reasons:

- International shipping companies usually ask for the freight to be prepaid for products such as fruits, which mostly go in refrigerated containers.
- It allows to manage the logistic chain in a better way to give a good service to the client.
- Although there would be an obligation to assume the transport and insurance, it is partly necessary to ensure that the fruit arrives in the ideal state.

CIF has been chosen over FOB (Free on Board) mainly because pitahaya is a delicate

product, it must be refrigerated and during the course of export it must mature, these circumstances are often not taken into account by the importers of the product and they can use means of transport that do not contemplate them and in the end the product can arrive in poor condition, therefore, it is necessary that the exporter takes into account these situations.

### 3.10.3 Payment terms exporter and importer

In international trade there are different forms of payment between buyers and sellers, depending on the relationship with the client, the forms of payment vary.

For the export of pitahaya from Palora to China, it is recommended that the method of payment be through a letter of credit. This means of payment is a promise of payment made by an issuing bank, in which the export is made, but the necessary documents for customs clearance are not sent, the moment in which the letter of credit becomes effective, the appropriate documents are delivered. This means of payment is ideal since there are financial institutions that act as intermediaries in the payment, therefore, there is greater security.

### **3.11 Export closing**

Once all the aforementioned processes have been completed, the export is concluded and the product can be shipped, and this closure must be presented to SENA, which in turn issues the DAE document.

### **3.12 Commercialization**

Once the Ecuadorian pitahaya is in Chinese territory, it is necessary to suggest the commercialization of the fruit, because the fruit market in China has several potential customers.

#### 3.12.1 Type of customer on Chinese territory

There are a number of possible customers to whom the pitahaya could be sent. It is suggested that for the export of the fruit from Ecuador, customers who already have experience importing fruit from the American continent should be sought, in this case large fruit and food importing companies. It is also proposed to sell pitahaya to customers in the wholesale market, since the Chinese population tends to buy fruits through popular markets.

These customers are the most beneficial for the fruit because by selling to importers, these in turn deliver the fruit to large supermarket chains and this will increase both the exposure of the fruit and the sale, in addition to the supermarket customers have a higher economic level than the general population. And also to the wholesale markets because the vast majority of

the popular Chinese population that buys fruit goes there.

### **3.13 Conclusion**

To conclude, the plan to export the Ecuadorian pitahaya from Palora to the People's Republic of China is viable, because there are all the necessary factors to carry out the procedure. The pitahaya already has a tariff heading established in China, so it will not be inconvenient to export, in the same way there are tariff and non-tariff barriers, however these can be assumed and counteracted by the importer and exporter. It is important that the exporter takes into account everything related to quality certificates so that the pitahaya has an added value in the Chinese market, in the same way it is necessary to be careful and follow exactly the requirements in terms of labeling and packaging. The logistics of exporting pitahaya to China is feasible because there is a lot of foreign trade between Ecuador and China. In general, the export of yellow pitahaya from Palora to China is a great opportunity for both Ecuadorian producers and exporters to find a new market for this fruit, and it is a simple market, if not the largest in the world in terms of target customers.

### **4. Final conclusions**

Pitahaya, like other exotic Ecuadorian fruits, has had a great growth in exports in recent years. In the same way this fruit has increased the exports because international consumers have realized the attributes and qualities that contains the fruit, with a high content of nutritional value contains vitamin C, phosphorus and iron that makes it a fruit recommended in the diet of any person. Consequently, there are a number of countries that lead exports worldwide, with Vietnam as the main one, which for many years has been the main supplier of pitahaya in the world. Likewise, Ecuador is located as a country that can supply different international markets mainly because of the quality of its pitahaya. The major destination markets for pitahaya are China, the Netherlands and the United States, which are consumers of this fruit. It is important to analyze the situation of major producers such as Vietnam and China, which for many years have invested in agriculture to obtain large quantities of food, mainly supported by government aid. In the case of Ecuador, government support is still lacking. In addition to this, there are countries such as China, the United States and Norway that are potential markets for pitahaya due to different factors and market situations. The target country chosen was the People's Republic of China due to issues such as tariff advantages, export protocols between countries already defined, high levels of demand for pitahaya in

that country and adequate logistics for export.

Finally, the objective of this study has been achieved, which is to develop an export plan for the yellow pitahaya from Palora, thanks to information about the current situation of pitahaya producers and the need for direct export without the need for intermediaries. Likewise, we analyzed the competing countries in the export of pitahaya at the international level, we learned about the current situation of Ecuador in terms of pitahaya exports, and above all, we studied a series of possible potential markets for pitahaya, to finally suggest the ideal one, which was the People's Republic of China.

### **5. Recommendations**

As for suggestions that can be made, firstly, producers are advised to seek to certify the fruit, this is important to give added value to the pitahaya and even to have a wider margin when negotiating the export price. And secondly, to the Ecuadorian government to streamline export processes and that as far as possible exports are faster and more efficient, with this the Chinese importer will have a good buying experience and prefer our product over a similar one from another country.

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