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ORIGINAL

Analysis of the cape gooseberry value chain towards the European market

Análisis de la cadena de valor de la uchuva hacia mercado internacional

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ABSTRACT

The objective of this article is to analyze the demand for fresh cape gooseberry in the European market, which in recent years has been important due to its nutritional properties, high content of vitamins A, B and C and minerals such as calcium, phosphorus and others. The methodology applied is qualitative since information was collected from different qualified databases, repositories, academic journals and other digital resources from national universities; The main result was that Colombia is the main exporter of cape gooseberry, with Boyacá being the department that produces the most to be sent to international markets such as the Netherlands; In conclusion, for farmers or producers of Phisalis Peruviana to want to expand to international markets, they must comply with the certifications that the importing country requests.

Keywords: cape gooseberry; fruit; value chain; export.

RESUMEN

El presente artículo tiene como objetivo analizar la demanda de la uchuva fresca hacia el mercado europeo que en los últimos años ha tenido importancia gracias a sus propiedades nutricionales excepcionales, tales como su elevado contenido de vitaminas A, B y C, así como de minerales como calcio, fósforo y demás. La metodología que se aplicará es cualitativa ya que se recopiló información de diferentes bases de datos calificadas, repositorios, revistas académicas y otros recursos digitales de universidades nacionales; como principal resultado se obtuvo que Colombia es quien lidera las exportaciones de uchuva nivel global, siendo Boyacá el departamento que más produce para para ser enviada a los mercados internacionales como es Países Bajos; en conclusión para que los agricultores o productores de Phisalis Peruviana quieran expandirse a mercados internacionales deben cumplir con las certificaciones que el país importador les solicite.

Palabras clave: uchuva; fruta; cadena de valor; exportación.

INTRODUCTION

The uchuva is an exotic, round, yellow fruit protected by a hollow calyx. The calyx gradually forms from a single bell-shaped flower that eventually falls off, allowing it to expand and form a shell containing the seed, which grows until it turns orange-yellow (Colombia Trade, 2021). It is native to South America, mainly Peru, where it grows as a wild fruit, hence its scientific name Phisalis Peruviana.

The market for fresh tropical fruits has grown in importance, in the case of the uchuva, due to its nutritional properties, high vitamin content, colour, texture, and flavour, which add value and quality to the product. This is also enhanced

by its strategic geographical location and suitable climatic conditions (Javier Vélez, 2021) for Colombia, which has the right climate for growing exotic fruits, creating much more market participation. This is why the country is the world's leading exporter of this exotic fruit and is currently the top exporter of fresh uchuva to the Netherlands, the United States, Germany, Canada, Belgium, France and the United Arab Emirates, from the departments of Cundinamarca, Boyacá, Antioquia, Nariño, Cauca, Santander and Norte de Santander (Yulieth Murillo, 2023), the latter with a 5% share, as the municipalities that make it up focus on the production of other products. Currently, in Cáota, there is an association of horticulturists made up of 30 farmers who are dedicated to cultivation and export to the United States and Germany (La Opinión, 2020).

This article aims to analyse the value chain of cape gooseberries in the international market. Thanks to their properties, these fruits have been accepted in these markets. The methodology used is qualitative-descriptive research, as other articles from different national institutions, websites, magazines, etc., were analysed. The results show that Colombia leads in the exports of this fruit. In conclusion, for farmers or producers of this exotic fruit to expand into international markets, they must comply with the certifications required by the importing country.

METHOD

The type of research addressed in this article is qualitative-descriptive, as information was collected from different qualified databases, repositories, academic journals, and other digital resources from national universities such as América, Cooperativa de Colombia, Universidad de Cundinamarca, Antonio Nariño, Libre, and the military university. This methodology aims to analyse and conclude the importance of the cape gooseberry value chain in the export process to Europe.

Drafting plan

Description Phisalis Peruviana L.

The uchuva, whose scientific name is Phisalis Peruviana L, is a fruit native to the Andes, grown in several Latin American countries. It is also known by other names such as uvilla, tepareey makowi, chuchuva, aguaymanto, and cape gooseberry. There are more than eighty species of uchuva, which differ in size, shape, and colour. The most common uchuva has a 1,25 to 2,5 cm diameter and weighs between three and three grams (El nuevo siglo, 2021). The plant can reach a height of 1 to 1,5 metres and produces yellow flowers with purple spots. The uchuva is propagated by seeds, which undergo a fermentation process lasting between 24 and 72 hours. The seeds are washed, dried, and stored for a week before being sown in small containers. When the seedlings germinate, they are transplanted into the soil, where they need an average temperature of between 13° and 15°C to grow properly (Víctor Julio Flórez, 2022). High temperatures can affect the sprouting and fruiting of the uchuva. The production stage of the uchuva is 9 to 11 months, depending on the climate and agronomic management (Acuña B, 2023).

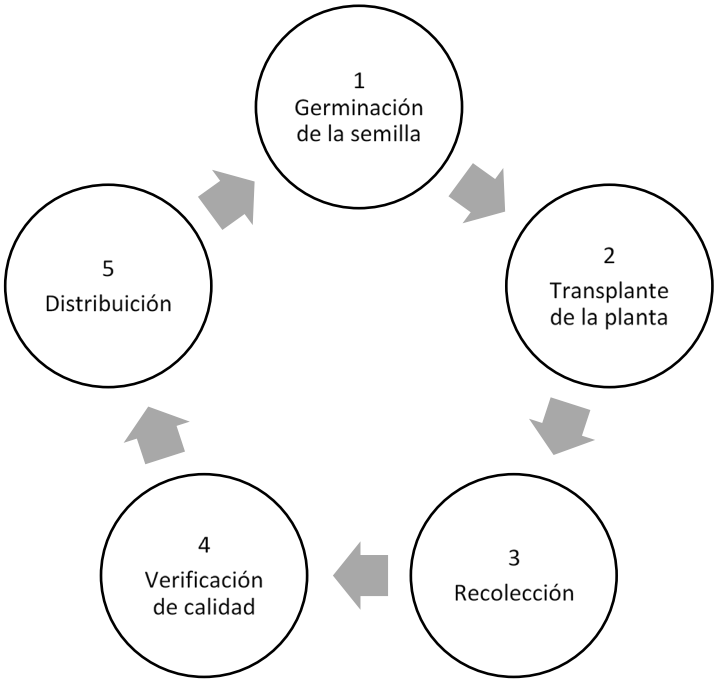
To better preserve the cape gooseberry, it is recommended to keep it in its capsule until ready to eat. It has a tart and refreshing flavour, which can vary depending on the ripeness of the fruit. It can be eaten fresh, accompanied by other fruits, or processed into yoghurt, jam, or preserves. It has a high nutritional and medicinal value, containing vitamins A, C, and E, antioxidants, fibre, phosphorus, iron, and potassium (Victor Florez, 2022). Its health benefits include the prevention of cataracts, relief from throat and mouth infections, regulating blood sugar, and strengthening the immune system. For these reasons, the uchuva has gained popularity internationally and is exported to various countries worldwide (Ángel D. Sora, 2022).

Large-scale production in Colombia began in 2012, thanks to favourable climatic and environmental conditions, with 7872 tonnes produced. However, countries such as South Africa, Zimbabwe, Kenya, Ecuador, Peru, Bolivia, and Mexico also stand out as global producers of uchuva, whose primary consumers are the Netherlands, the United States, Germany, Canada, Belgium, France, and the United Arab Emirates. However, Colombia is dedicated to the production and commercialisation of large quantities from the departments of Cundinamarca, Boyacá, Antioquia, Nariño, Cauca, Santander, and Norte de Santander, the latter with 753 tonnes, equivalent to a 5% share (La Opinión, 2023).

Value chain

The value chain is the set of activities to generate, produce, and deliver a product or service to the market, from the start of production to the end of consumption. Its objective is to identify the functions that generate the most value for the customer and allow the company to differentiate itself from its competitors, optimising resources and costs. It consists of two types of activities: primary activities, which are directly related to the creation, marketing, distribution, and customer service for the product or service; and secondary activities, which support and improve the performance of primary activities, such as human resource management, infrastructure, technology, or purchasing. In the case of seed cultivation, the value chain includes everything from the moment the seeds are planted, following the appropriate care and processes, to the moment they reach the end consumer (Riquelme, 2023).

Figure 1.
Value chain of the uchuva



Source: Arenas, 2019

The value chain for cape gooseberries begins with germinating the seed in a nursery. When the plant emerges, it is transplanted to a bag containing virgin soil and other components that help it grow and strengthen. After one month from germination and when the plant measures 15 to 20 cm, the uchuva is transplanted to the soil, adding lime to help with metabolism. Then, after six months of growth and monitoring, pruning and pest control, the first harvest of uchuva begins, followed by quality control, checking the condition of the fruit and its appearance. This is done at collection centres so that the fruit can finally be packaged for shipment to its domestic or international destination (Arenas L., 2019).

Export

According to a study by Analdex (2023), exports of fresh uchuva with tariff classification 0810.90.50.00 have experienced a steady increase in their cumulative value, reaching USD 228,2 million FOB between 2016 and 2022. This increase represents an annual growth of 8,8%; during 2022, there was a 1% growth compared to the previous year, reaching a value of USD 38,2 million FOB. It should be noted that this growth was especially notable in May.

In addition, it is important to highlight the significant growth in demand for fresh uchuva on the international market between 2016 and 2022, with monthly exports rising from 2,0 million to a record high of 3,2 million.

In terms of the main export destinations for fresh uchuva, the Netherlands tops the list with 64,2%, followed by the United States with 22,2%, Brazil with 10,6%, the United Arab Emirates with 5,7%, and Malaysia with 13,6%. It is important to note that the Netherlands is the main destination for fresh uchuva.

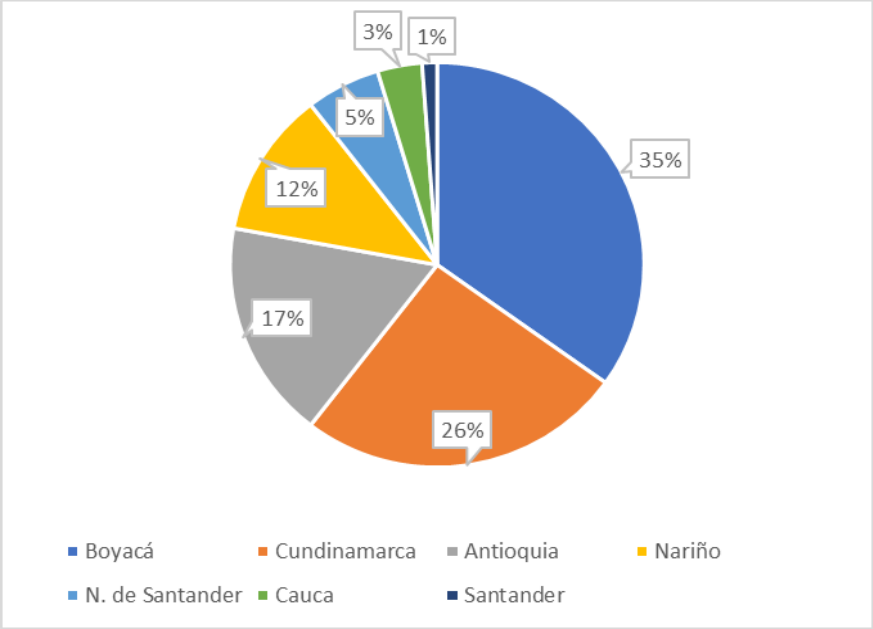
Table 1.
Value and weight of cape gooseberry exports (2016-2022)

Year	Net Tons	USD FOB million
2016	5198	23,6
2017	6333	27,8
2018	7271	32,4
2019	8287	35,7
2020	7363	32,7
2021	7872	37,8
2022	8541	38,2

Source: Analdex, 2022

In the last six years, Colombian exports of uchuva to international markets have grown. From 2016 to 2019, there was an increase of 3343 tonnes produced each year. As a result of the pandemic, there was a decrease of one tonne in 2020, which remained the same until 2021. By 2022, it grew again to 8541 tonnes.

Figure 2.
Production by department



Source: Ministry of Agriculture and Rural Development, 2019

In terms of departments that export Phisalis Peruviana, Boyacá is the largest producer of this exotic fruit with 7172 tonnes, followed by Cundinamarca with 5235 tonnes, Antioquia with 1327 tonnes, Nariño with 933 tonnes, Norte de Santander with 753 tonnes, Cauca with 415 tonnes, and Santander with 360 tonnes.
According to Procolombia (2021), international certifications identify a product with certain specific characteristics that meet production standards, such as quality, origin, sustainability, and whether it is organic. These are obtained through government, international, and business agencies. Mandatory certifications verify that the product complies with the necessary standards to enter the international market, depending on the country's regulations to which it will be exported. The customer requires voluntary certifications and provides guarantees such as social, environmental, and economic responsibility.

Table 2.
Certifications in agri-food

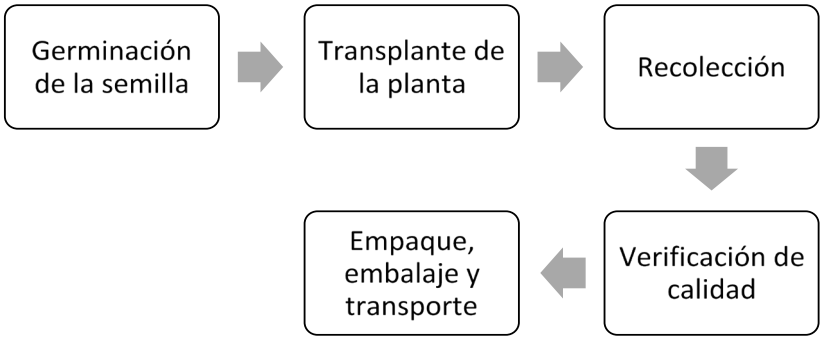
Certifications	Mandatory	Volunteer	Who certifies?
Good agricultural practices	X		ICA
Good manufacturing practices	X		INVIMA
HACCP	X		IAS
Global G.A. P		X	Global G.A. P
FAIRTRADE		X	FLOCERT
RAINFOREST		X	Rainforest Alliance
USDA ORGANIC	X		QAI

Source: Procolombia, 2021

For exotic fruits, in this case cape gooseberries, there are eight certifications required to export agri-food products that generate added value for the environment and the community; three of these are mandatory and the rest are voluntary. It is important to note that for certifications that are not mandatory, a study of the target country must be carried out prior to negotiation, as some countries require them in order to import products.

RESULTS

Figure 3.
Value chain of the chilli pepper



Source: Ministry of Agriculture and Rural Development, 2019

The best fruit is selected based on its size and ripeness during seed germination. The seed is extracted and left to dry at room temperature away from direct sunlight (Correa J, 2019). & (Puente L, 2020). They are placed in a plastic container, and after a month, they are transferred to a bag for 30 to 40 days. The seeds can also be sown directly into the bag, considering that 2 to 3 are sown, to avoid wasting the bag and soil. The plant is then transplanted when it reaches 15 to 20 centimetres and has three to four leaves. The holes should be 30 by 30 centimetres, with two kilograms of organic fertiliser added, and the plants should be spaced 2 metres apart.

Table 3.
Certifications required for export

Certification	What is it?	Who issues it?	Countries that request it
Health and phytosanitary certificates	Prevent pests, insects and parasites from spreading in products.	ICA (Colombian Agricultural Institute)	Mandatory certification
Good agricultural practices	Ensuring product safety, health protection, worker well-being, and environmental protection.	ICA (Colombian Agricultural Institute)	Mandatory certification
Good manufacturing practices	Applies to product handling	INVIMA (National Institute for Food and Drug Surveillance)	Mandatory certification
HACCP (Hazard Analysis and Critical Control Points)	Prevention and control of biological, chemical and physical hazards	IAS (Integrated Assessment Services)	United States European Union
Global G.A. P	Ensuring product safety, health protection, worker well-being and the environment at a global level.	Global G.A. P	European Union
FAIRTRADE (Fair Trade)	Fair price for the products	FLOCERT	Germany-United States Australia-Finland Austria-France Belgium-Great Britain Canada-Netherlands Denmark-Ireland Italy-Japan-Mexico
RAINFOREST (Sustainable Agriculture Network)	Adapt to climate change, increase productivity, reduce costs, and produce better crops.	Rainforest Alliance	At the customer's discretion
USDA ORGANIC	Product is 100% organic or made with at least 95% organic ingredients.	United States Department of Agriculture	United States

Source: Procolombia, (2021)

Six to nine months after the first harvest, the harvesting process begins. This is done when the calyx is between green and yellow to preserve it longer (Mauricio L, 2019). The fruit is then taken to the collection centre where quality control is carried out manually, selecting the cape gooseberries in the best condition in terms of size and health to guarantee a good product, without removing the husk. On the other hand, to package the fruit, especially if it is to be exported, the calyx must be dehydrated to avoid any contamination from moisture. This can be done naturally at the collection centres, taking advantage of the climate, or using a forced air system for six hours. It is advisable to do this after the cape gooseberries have been packed in small or large plastic baskets to prevent damage to the fruit. Finally, the fruit is loaded onto the truck that transports it to the port, where it is unloaded and transferred to a container (Asohofrucol, 2019).

For the aforementioned certifications, the export market must be considered, as some of them are not voluntary but are requested by the country or customer to whom the product is to be sold. All of them are important for expanding into the international market, guaranteeing the buyer that the product is of good quality and complies with the required parameters. This also helps to generate trust and satisfaction among customers and consumers.

DISCUSSION

The value chain of the uchuva, from seed germination to distribution, is important for identifying processes, time, structures, and climate, among other factors, to improve production management (Arenas, 2019). As an important factor for the fruit to grow in good conditions and have a longer fruiting time, an agronomic study is carried out to examine soil characteristics, irrigation implementation, distances and land preparation (Aristizabal, 2019); also the logistics to be carried out in the distribution of the fruit, given that it must remain under controlled conditions of durability, humidity, temperature, contamination and other factors (Restrepo, 2019).

Producers and companies must also consider the mandatory certifications necessary for the product to enter new markets and the voluntary certifications that guarantee a product at the time of consumption. Although the latter are avoidable, they may be required by the target market (Procolombia, 2021).

Colombia is the world's leading exporter of cape gooseberries, followed by Peru and Ecuador. Production has been increasing every year since 2016, with 2022 recording the highest number of external sales, mainly to the Netherlands, followed by the United States (Analdex, 2022). It is produced by seven departments, led by Boyacá, followed by Cundinamarca. Norte de Santander does not have a high share in producing this fruit for export (Minagricultura, 2019). Through various entities, this department seeks to increase production, marketing, and exports (La Opinión, 2020). It is marketed in processed form as dehydrated, covered in chocolate, jam, sauce, and snacks. (Minagricultura, 2019) & (Cardozo Saavedra, 2019).

CONCLUSIONS

The strawberry guava has significantly impacted and gained recognition and popularity due to its nutritional properties and high vitamin content. Thanks to Colombia's favourable climate, it has been produced in large quantities since 2012, with production increasing annually in tonnes. The value chain contributes to the improvement of processes, human resource management, infrastructure, technology, among other things; optimisation of resources from the moment the plant is germinated until it reaches the consumer, taking into account documentation such as health and phytosanitary certificates, BPA, BPM, HACCP, and when internationalising the product, if the target market so requires, the intervention of entities that issue the requested documents, such as Global G.A.P., Fairtrade, Rainforest, USDA Organic. At the national level, only eight departments, led by Boyacá and followed by Cundinamarca, produce uchuva for export, mainly to markets where consumers, such as the Netherlands and the United States, will accept it.

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