

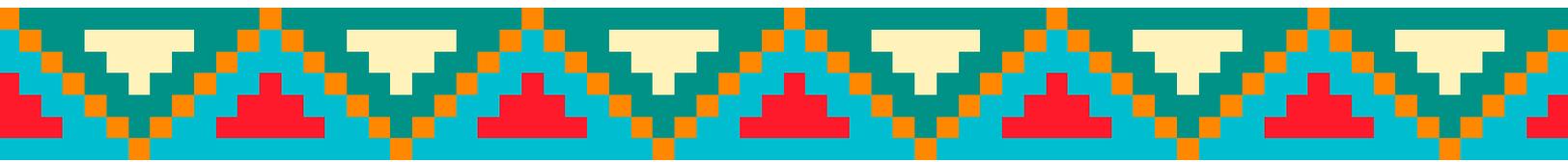


Kingdom of the Netherlands



Market Research

“Opportunities
for Dutch Businesses
in the Mexican
Ornamental Sector”



INDEX

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Executive summary

A sample group of 600 growers were given a survey, in order to gather accurate information for market research. Location was selected based on the grower's strategic importance; thus, the survey was conducted in the states of Mexico, Morelos, Puebla, Querétaro, Mexico City, Michoacán, Veracruz, and Baja California. In addition, interviews were held with the main opinion leaders of the ornamental sector in Mexico, at public, academic and private levels, and the opinion of the main associations of ornamental growers in the country, members of the Advisory Council of Ornamental Plants & Flowers Mexico, was considered:

- Consejo Mexicano de la Flor A.C. (CMF)
- Consejo Estatal de Productores Ornamentales de Morelos, A.C. (CEPOMAC)
- Asociación de Floricultores de Villa Guerrero A.C. (ASFLOORVI)
- Palacio de la Flor, A.C.
- Unión de Productores de Cactus y Suculentas del Semidesierto Queretano A.C.
- Unión Nacional de Productores, Distribuidores y Comerciantes del Mercado de Flores y Hortalizas, A.C.
- Consejo Regional de Productores de Planta de Ornato y Corte de Atlacomulco.

Total market by Grower Size

According to the information obtained through the survey and the desk research carried out in collaboration with the Advisory Council of OPF Mexico, represented by the main associations of plants, cut flowers and foliage growers in the country, and as per the categories established according to the size of the grower in hectares, there are 14,750 Nano growers (with no business relevance given their informality and lack of technification) and a total of **10,818 full-time growers in Mexico**. These are classified by size as follows: 5,805 Micro growers (1,929.32 ha managed), 3,819 Small growers (4,750.08 ha managed), 1,117 Medium growers (3,468.16 ha managed) and 77 Large growers (2,857.65 ha managed), for a total of **13,005.21 ha of full time use** and 10,083 ha served by Nano growers; **a total of 23,088 ha and 25,568 growers within the Mexican Ornamental Sector**.

Market segments

In Mexico, there are two main market segments: “Cut Flowers” and “Ornamental Plants”. Both segments represent similar positions in terms of production hectares in the country. However, they demand different supplies and technology; specifically, “Cut Flowers” requires post-harvest technology.

Market by Technification Level

Growers were categorized by their level of technification, taking into account supplies used, technology applied and post-harvest processes applied, splitting them into: Low, Middle-low, Middle, Middle-high, High and Very High Levels.

For each of these levels, specific opportunities were identified related to the use of technology in infrastructure, irrigation systems, basic and mixed substrates, fertigation technology and post-harvest processes.

Based on the 13,005.21 ha of professional use in Mexico, a total of 6,866.93 ha was regarded as Low level, 4,304.74 ha as Medium-Low level, 1,156.70 ha as Medium level, 413.34 ha as Medium-High level, 264.30 ha as High level and 0 ha as Very High level.

Growth Market

The Mexican ornamentals market has grown significantly and dynamically over the last ten years, both in the number of hectares devoted to production and in the number of employees.

In the last 10 years, the Mexican market for cut flowers and foliage has grown by 42.15% in hectares, with an average sustained growth of 4.22% per year, while in the plant market, the average growth in hectares was 64.29%, with an average annual growth of 6.43%.

In terms of employability, the cut flowers and cut foliage sector grew by 50% in the same period, while in the plants sector, its growth was 40%.

Species demand by market segment

The demand for species per market segment is different. In the “Cut Flowers” market, there is a high concentration of Rose and Chrysanthemum species, while the Poinsettia, Marigold and Geranium species are outstanding in the “Ornamental Plants” market.

Distribution channels

In the national market, a high concentration or preference for one distribution channel has been identified: Garden Centers and itinerant resellers. Seventy-five percent of Mexican growers use this channel.

Market trends in consumer behaviour

One of the consumer behaviors observed is the high preference for traditional flowers and plants. The “Cut Flowers” segment concentrates on Roses and Chrysanthemums. In “Ornamental Plants” the species of Poinsettia, Marigold, Succulents and Geranium prevail in sales.

Main stakeholders

The main stakeholders of the ornamentals sector in Mexico are Suppliers, Growers, Federal Government Ministries, Research Centers and Universities, Associations and/or organizations and lastly the Distributors. Collaboration opportunities are identified with Growers, Associations and/or organizations and Distributors.

Exports to North America

In general terms, there is little willingness of Mexican growers to explore international markets. There is a high potential in the US and Canadian markets for exporting cut flowers. The United States alone is the largest importer of cut flowers in the world. Its main suppliers are Colombia and Ecuador. Opportunities are identified in transport costs from Mexico to some cities in the United States, as prices are more competitive compared to those of Colombia. In this sense, a Dutch investor could be the ideal commercial partner to export flowers to the US and Canadian markets.

Challenges in regulation and breeder's rights

The main challenges identified are associated to the breeders' lack of registration with SNICS. According to the head of SADER, "foreign suppliers do not take the necessary steps to register their patents with SNICS and therefore cannot be followed up".

Challenges in sustainability, research & innovation

On research and development issues, there is a gap between the interests of research centers and universities and the primary areas of Mexican growers. Researchers' R&D efforts focus on genetics and growers' demands on crop development and pest control. Opportunities are identified for R&D linkages between Dutch companies and Mexican growers to address their needs.

INTRODUCTION

Objectives

To gain insight into the opportunities for Dutch businesses in the ornamental sector across the country, for:

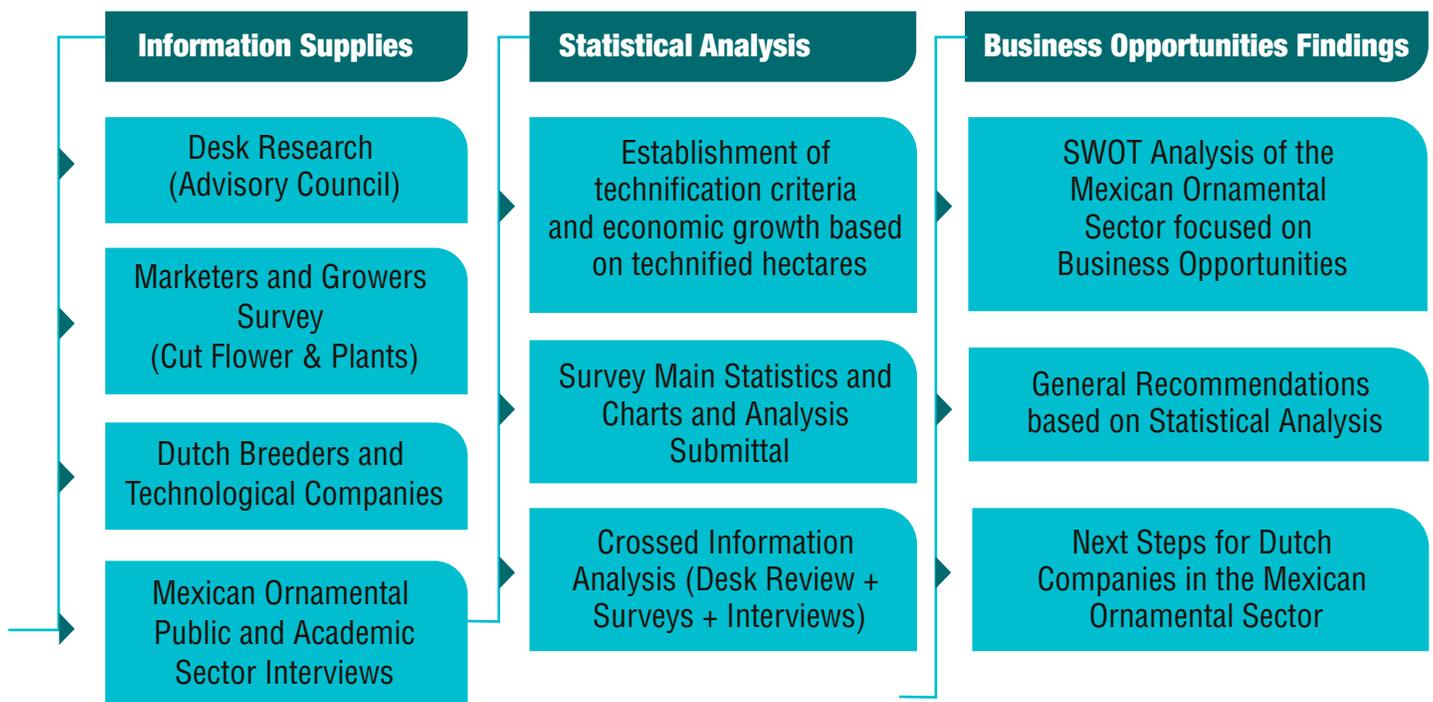
- Technology companies (for greenhouse production of “Ornamental plants” and “Cut Flowers”); and
- Suppliers of propagation material (including young plant material, seeds, and bulbs), and other supplies (e.g., Substrate)

With the goal to facilitate and support further development and success of the Dutch ornamental sector in Mexico.

Methodology

The study will focus on three work stages, combining desk research work obtained through the Advisory Council of OPF Mexico, with surveys conducted among the main actors in the value chain of the Mexican ornamental sector, as shown in Figure 1:

Figure 1: Project Methodology Approach



The first stage of the project includes 4 activities, which were carried out simultaneously; the first one was the desk research carried out in conjunction with our advisory council, and which provides a clear picture of the situation of “Cut flowers” and “Ornamental Plants” ornamental growers, highlighting the needs they have, their commercial opportunities and needs in the main ornamental production areas of the country.

Overall, the survey of ornamental growers and marketers was carried out in order to contrast the information with that obtained through the leaders of the Mexican ornamental sector. Besides, the opinions of the Dutch companies of vegetative material and technology that agreed to participate in the project and openly publicize the needs and challenges they have faced in their adventure through the sector were also considered. Mexican ornamental.

Once this information was collected, a statistical analysis of the information was carried out, in which the most relevant data was highlighted in easy-to-understand charts for the Dutch businessman. Through this info it was easy to identify existing business opportunities in Mexico.

At the same time, by matching information from the survey to the desktop research, quantitative criteria were established regarding the levels of technification, which will provide the Dutch entrepreneur with a perspective of the main areas of opportunity, always speaking in number of hectares that can be covered, and the opportunity this represents for the different Dutch suppliers in terms of ornamentals.

Finally, based on fully identified and established statistical parameters, we will pinpoint the main business opportunities for Dutch companies within

the Mexican ornamental sector. This will be done first by presenting a SWOT analysis, which will show the virtues and defects of entering this market, from the point of view of the Dutch entrepreneur. Then, general recommendations will be established taking into account the statistical analysis carried out and steps will be established for Dutch companies to implement in terms of business and opportunities.

Context of the Mexican Ornamental Sector

According to information from the Ministry of Agriculture, 23,088 hectares of ornamentals were cultivated in Mexico in 2013 (70% of production is located in the State of Mexico, Puebla, Morelos, Veracruz, and Mexico City), with a production value of €275.5 million. This activity involves 25,568 growers of cut flowers and foliage and container plants¹. According to this agency, the growers of Plants and Cut Flowers are considered quite loyal to their production habits, in reference to the fact that many of them have inherited their production systems from their ancestors.

Based on the information obtained through the survey and documentary research conducted with the Consultative Council of OPF Mexico, represented by the main associations of growers of plants and cut flowers in the country, and adhering to the categories established per the size in hectares of the grower, there are 14,750 Nano growers (without business relevance given its informality and lack of technification) and a total of 10,818 full-time growers in Mexico, classified as follows: 5,805 Micro growers (1,929.32 ha managed), 3,819 Small growers (4,750.08 ha managed), 1,117 Medium growers (3,468.16 ha managed) and 77 Large growers (2,857.65 ha managed), for a total of 13,005.21 full time ha, generating annual revenues of approximately €1,521.58 million, according to information from the Mexican Flower Council.

Total production hectares**13,006.01****Annual Revenues in Millions****1,521.58 €****Growers****10,818**

It is important to mention that the ornamental market generates 188,000 permanent jobs, 50,000 temporary and more than one million indirect.²

Below is a table showing production of the main floral species in Mexico from 2014 to 2019.

“Cut Flower” production in Mexico (2014- 2019) in tons according to “SIAP” prior to the completion of this market research

Cut Flower Species	Quantity (Million tons)
Chrysanthemum	10.45
Rose	8.25
Gladiolo	4.89
Carnation	3.75
Gerbera	1.15
Lilium	0.69
Sunflower	0.27
Crane Flower	0.00092
Orchids	0.00035

Ornamentos, compartiendo la belleza del campo, Servicio de Información Agroalimentaria y Pesquera (2020)

“Ornamental Plants” production in Mexico (2014- 2019) in tons according to “SIAP” prior to the completion of this market research

Plant Species	Quantity (Million tons)
Rose	4.13
Chrysanthemum	1.02
Lilium	0.87
Orchids	0.55
Dutch Tulip	0.24
Sunflower	0.00010
Margarita (Bellis Perennis)	0.000026

Ornamentos, compartiendo la belleza del campo, Servicio de Información Agroalimentaria y Pesquera (2020)

Some relevant data of Mexican floriculture obtained from “SIAP” in recent years are the following harvest numbers and seasons of the 3 most popular varieties cropped in Mexico during 2020:

Most relevant Mexican “Cut Flowers” species production (2020)

Specie	Thick Produced (Million)	% Produced during Spring - Summer	% Produced during Autumn - Winter
Rose	9.10	65.00%	35.00%
Chrysanthemum	11.31	73.00%	27.00%
Gladiola	5.10	55.55%	45.50%

Ornamentos, compartiendo la belleza del campo, Servicio de Información Agroalimentaria y Pesquera (2020)

¹ Latest data available by SIAP, SAGARPA

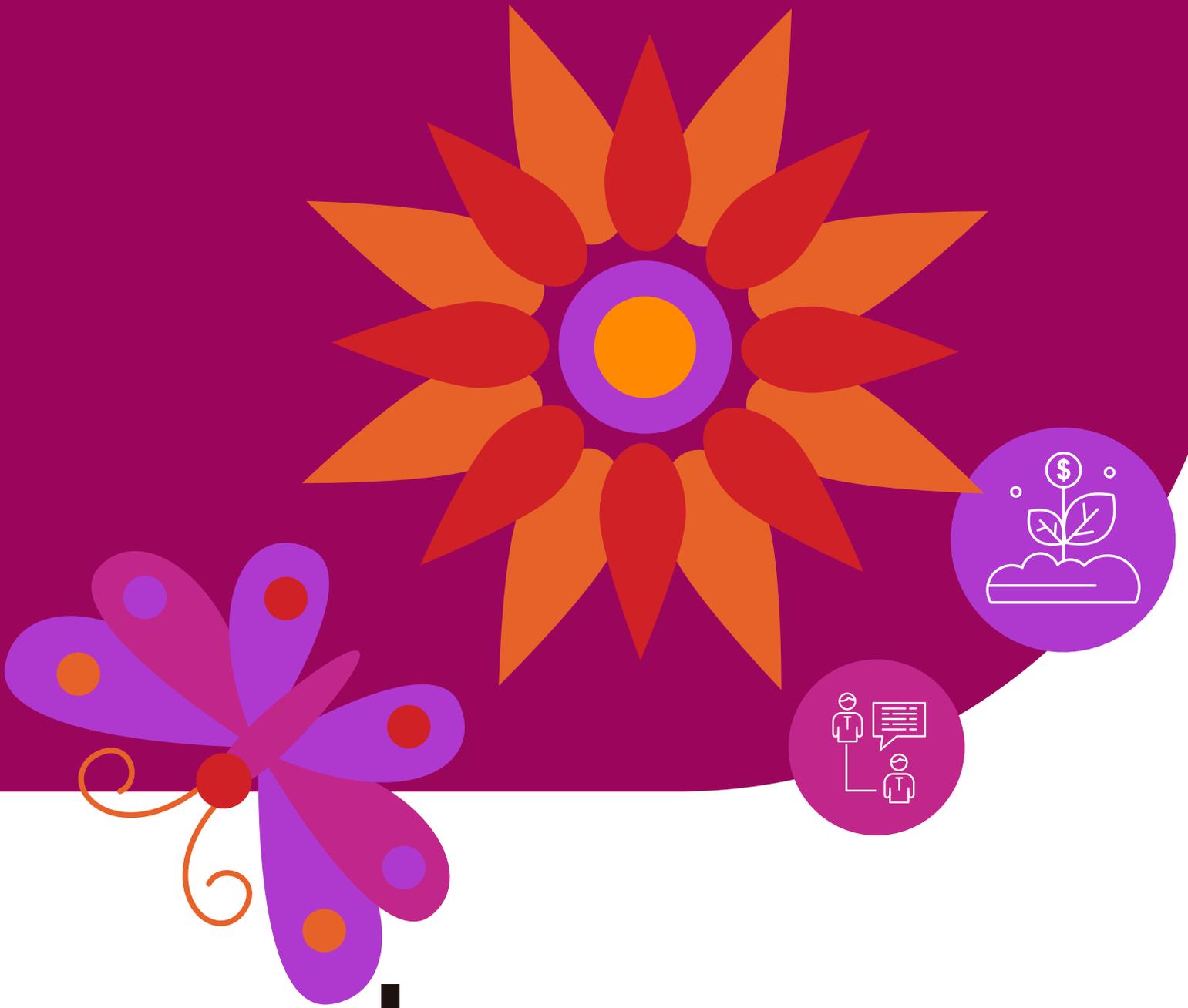
² SAGARPA, LIST 2015

Below is a map showing the nationwide harvest of rose (plant and gross) by state.

Rose production in Mexico during 2019



We can see that the **red figures** represent the production in tons of rose potted plants while the **purple numbers** represent the Cut Flower statistics, and these are the main states dedicated to production of roses in Mexico. It may be stated that the central part of Mexico concentrates the most significant production of roses, but also of other species of plants and flowers.



Market size, growth, structure

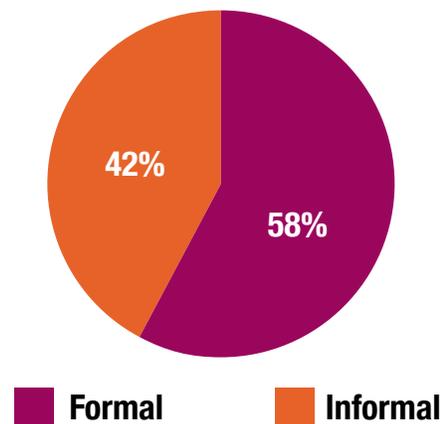


MARKET SIZE, GROWTH, STRUCTURE

According to the results achieved during this project, and considering the results of the survey and the official information issued by the Advisory Board, it was found that in Mexico there are 25,568 ornamental growers, and 57.69% of them are considered “Informal”; i.e., their production methods are “artisanal” or very rustic, and their sown area is not large enough to require any input or type of technological supply.

On the other hand, we found a universe of 10,818 ornamental growers that have agro-input and technology requirements, given their cropped area and professional focus on horticulture. This group represents 42.31% of the ornamental growers’ population. For more details of where they are located, see Appendix.

Grower type



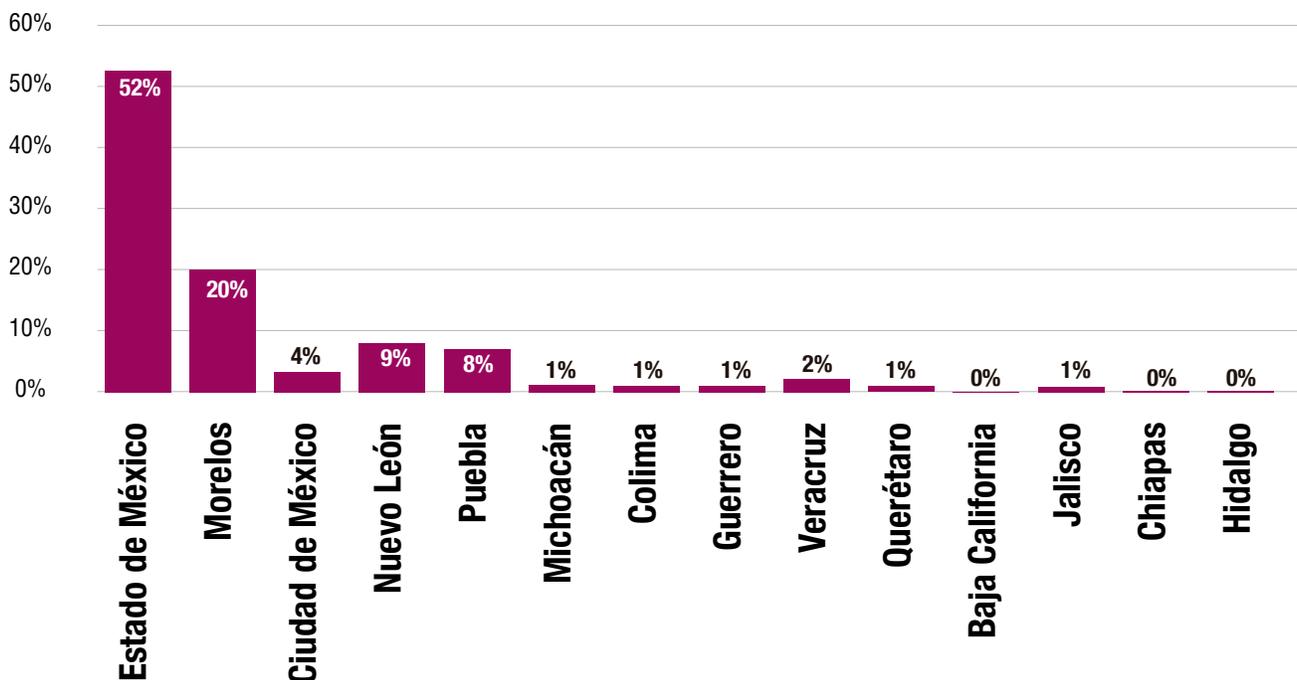
Based on the profiles interviewed and the classification made by size and technification, the study identifies a total of 14,750 catalogued as "Nano growers", which for the purposes of the results are eliminated because they do not represent any commercial opportunity for Dutch suppliers. Therefore, we are left with a base of 10,818 growers regarding whom we will make pertinent observations.

Market size

Based on the interviews conducted with experts from the Federal Government, representatives of various ornamental growers' associations in Morelos, Estado de Mexico, Puebla, Queretaro and Mexico City, and the cited desk research, we were able to identify the 13,005.21 hectares dedicated to the full-time production of "Ornamental Plants" and "Cut Flowers", generating annual revenues of approximately 1,521.58 €, according to information from the Mexican Flower Council.

The following chart shows the percentage of encompassed area by state. Areas with a high concentration of production in Mexico can be identified, with Estado de México and Morelos accounting for more than 70% of the market. They are followed by the group of states of Nuevo León, Puebla, and Mexico City, which are of significant size.

Hectares per state



As presented in the chart, the fact that the ornamental market in Mexico is concentrated in a few states represents an opportunity for Dutch companies, as it allows them to focus their efforts on these states, which are mainly located in Mexico's central area.

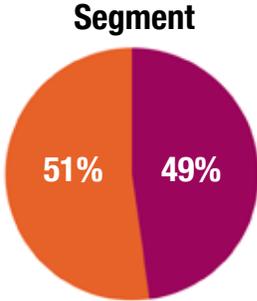
To determine the relevance of growers for Dutch companies, a **classification criterion was developed** in order to clearly get to know the existing business opportunities, according to **Ornamental Plant Size Production**.

Market by Segments

In general terms, 2 large market segments have been identified:

- Cut Flower**
- Ornamental Plants**

The following chart shows the distribution of the cited market segments, based on the total hectares destined to production in the country. Practically similar shares are observed.



■ Cut Flower ■ Ornamental Plants

Segment	Hectares
Cut Flower	6221.69
Ornamental Plants	6783.52

The following map shows geographic location of the main states in Mexico and their concentration of ornamental growers. The central part of the country stands out as the most commercial segment, where most of the growers of “Cut Flowers” and/or “Ornamental Plants” are located.



Source: Own elaboration with general information by OPF Mexico’s Advisory Council

Criteria to determine Mexican Ornamental Growers Size

Growers were classified by size, considering the number of hectares used for production. The classification includes Nano, Micro, Small, Medium, and Large growers.

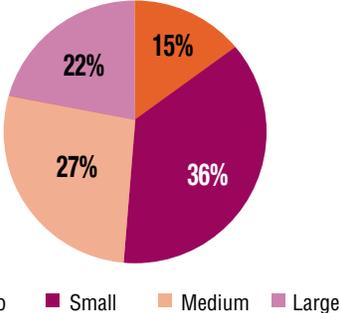
Classification	Extension in Hectares
Nano – Informal growers.	0 – 0.019
Micro	0.02 – 0.5
Small	0.5 – 2
Medium	2.01 – 4
Large	4.01 – or more

In general terms, we identified that small growers demand seed material for their species. Medium and large growers represent an additional business opportunity in terms of specialized technology, aside from seed material.

The following chart shows the distribution of growers by size. It is easy to identify that the potential market for Dutch suppliers is divided into two main areas:

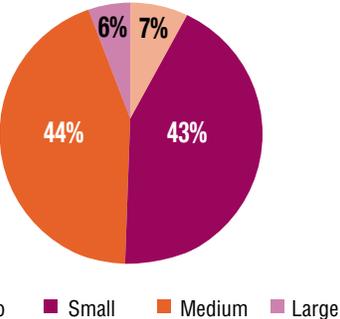
Size	Total ha
Micro	1929.32
Small	4750.08
Medium	3468.16
Large	2857.65
Total	13,005.21

Classification of growers by size



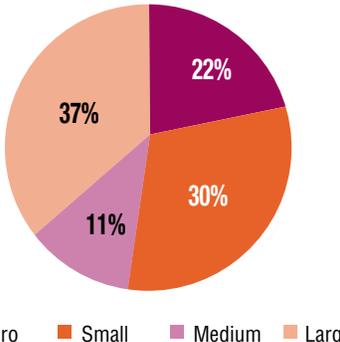
The following charts show the size of growers grouped by market segment: Cut Flowers and Plants.

Cut Flower



The “Cut Flowers” market stands out for having a little over 6,200 hectares, 50% of which belong to medium or large growers.

Ornamental Plants

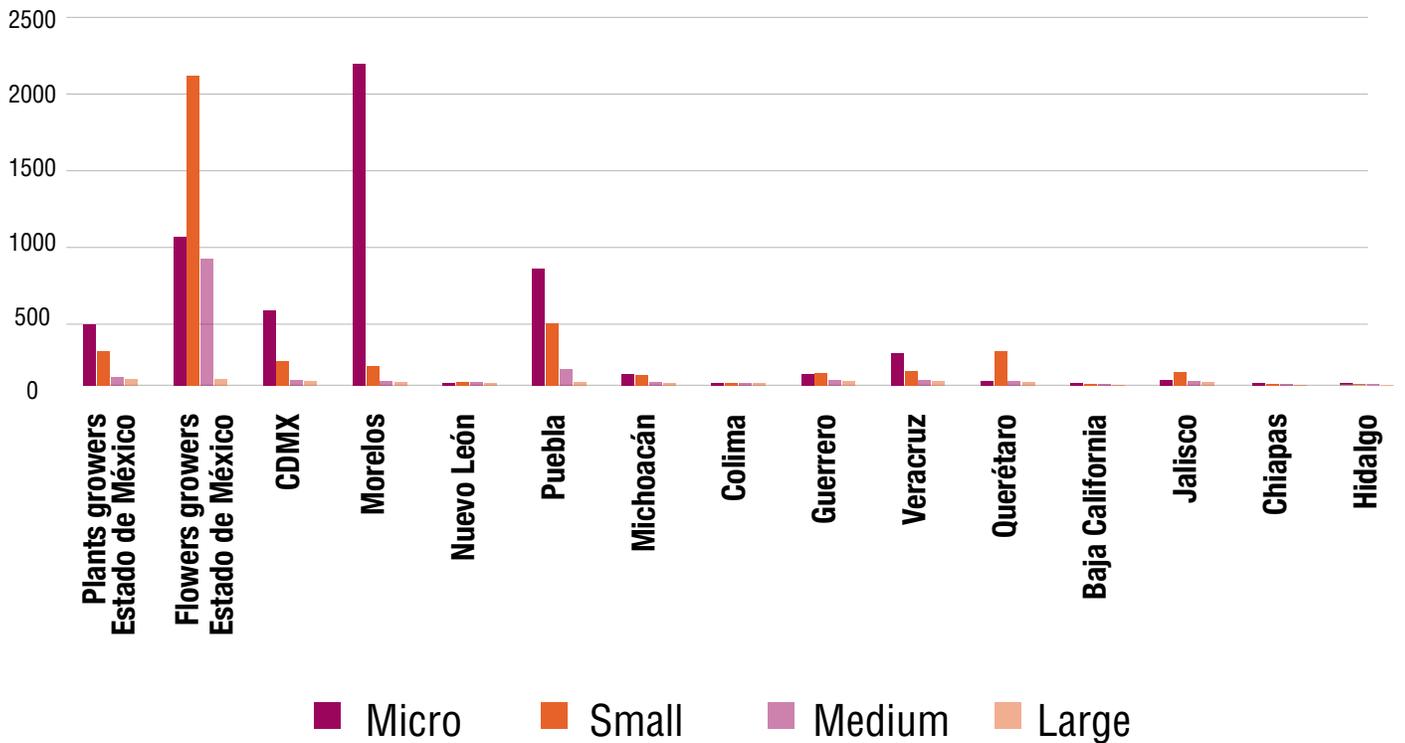


The “Ornamental Plants” market has almost 6,800 hectares, 48% of which belong to medium and large growers.

In the following charts we can identify the classification of ornamental growers in Mexico by size, in some specific areas where they are located. Estado de México stands out, with areas specifically destined to the production of “Cut Flowers” and other areas related to the production of “Ornamental Plants”.

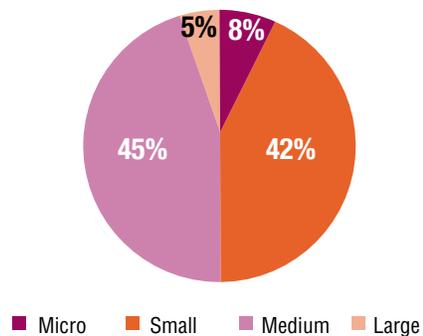
Therefore, this State will be displayed, divided into two areas, as this will allow Dutch suppliers to identify specific opportunities for these two market segments. Also, in the state of Nuevo Leon, large growers who mainly produce trees, thus requiring large areas of land, have been identified.

Ornamental grower size by location



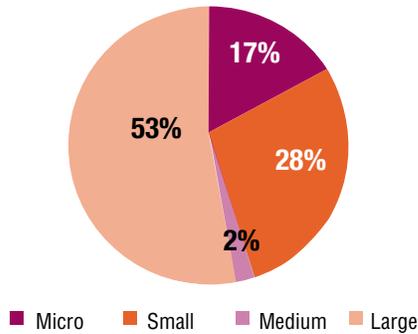
The cut flower productive area of the Estado de México has a little more than 6,000 hectares, out of which 50% belong to medium and large size growers, in addition to 42% which are the property of small growers.

Estado de México Cut Flower and Follage growers



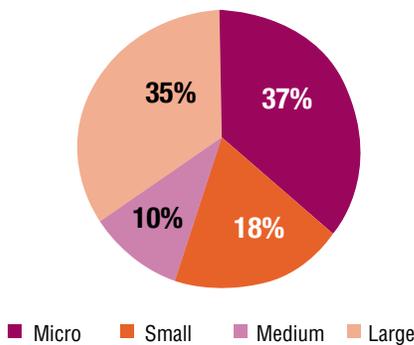
The area destined to grow ornamental plants in the Estado de México has more than 680 hectares, and 55% of its growers have a medium and large size classification; whereas 28% are regarded as small growers.

Estado de México Plant Growers



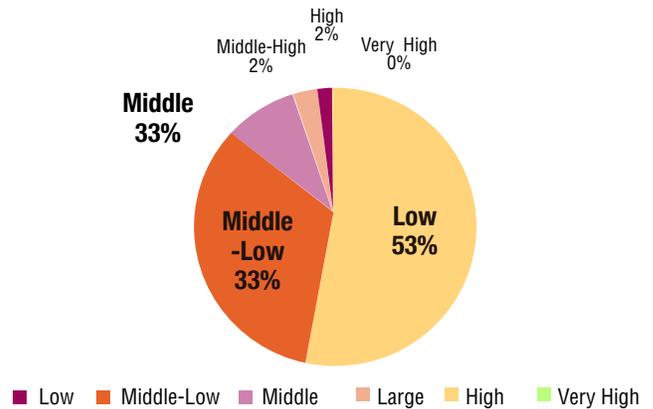
In the state of Morelos, the identified commercial opportunity encompasses 45% of medium and large growers, adding 18% of small growers. This represents more than 2,500 hectares destined mainly to the production of ornamental plants.

Morelos Growers



This evaluation includes type of infrastructure of each productive unit (open sky, shade net, plastic greenhouse, polycarbonate or acrylic greenhouse, glass greenhouse), the type of Substrate used on it (organic black soil, leaf soil, mixtures, peat, coco peat, zeolite), the type of irrigation system applied (permanent irrigation, rolled, hose, drip, sprinkler, automatic irrigation), humidity control systems used, supplementary illumination control systems implemented, temperature control systems installed, fertigation supplies, and the use of lack of cold chambers (this tells us whether growers apply cold chain processes). As displayed in the following chart, the predominant degree of technification in the study sample is "low", with 53%. Business opportunities identified are associated with 14% of the growers classified as "Middle", "Middle-high" and "High" technification levels, regarding them as the real market potential for technological Dutch suppliers.

Technification Level



Criteria to Classify the Level of Technification of Mexican Ornamental Growers

As part of the methodological development, the research group has generated a measurement system designed to evaluate the degree of technification of Mexican growers.

Technification Level	Total ha
Low	6866.93
Middle-low	4304.74
Middle	1156.70
Middle-high	413.34
High	264.30
Very High	0

The general characteristics of each technification level are depicted below:

Technification Level	Characteristics
<p>Low 1-9 Points</p>	<ul style="list-style-type: none"> • 1 or more Open Field Unit / Open Sky and Shade Cloth Greenhouse Infrastructure • Counts with 1 irrigation system (Manual) • Use of basic substrates • No control processes implemented • None post-harvest processes applied
<p>Middle Low 10-19 Points</p>	<ul style="list-style-type: none"> • Open Sky / Shade Cloth and Plastic Greenhouse Infrastructure • Counts 1 or 2 with irrigation systems (All manual) • Use of basic substrates / substrate mixture • 1 or 2 Manual control processes implemented • None post-harvest processes applied
<p>Middle 20-29 Points</p>	<ul style="list-style-type: none"> • Shade Cloth / Plastic Greenhouse Infrastructure • Counts with 1 or more Irrigation Systems (manual) • Use of basic substrates / mixture substrates combined • Manual Fertigation Process Applied • At least 2 Control processes applied (1 could be Automatic) • Post-harvest processes could be applied depending on species
<p>Middle-High 30-39 Points</p>	<ul style="list-style-type: none"> • 1 or more Shade Cloth / Plastic Greenhouse Infrastructure • Counts with 1 or more Irrigation Systems (Could be manual or automatic) • Use of basic substrates / mixture substrates combined / 1 kind of peat substrate applied • Manual Fertigation Process Applied • 3 Manual Control processes applied / 1 Automatic and 2 Manual • Post-harvest processes could be applied depending on species
<p>High 40-50 Points</p>	<ul style="list-style-type: none"> • 1 or more Plastic / Acrylic Greenhouse Infrastructure • Automatic Irrigation Systems • Combined usage of mixture / coco peat / peat / zeolite substrates • Manual / Automatic Fertigation Process Applied • 2 Automatic Processes Applied (1 could be manual) • Post-harvest processes applied
<p>Very High 51 Points or more</p>	<ul style="list-style-type: none"> • 1 or more Acrylic or Glass greenhouse infrastructure • Automatic Irrigation systems • Combined usage of mixture / coco peat / peat / zeolite substrates • Automatic Fertigation Processes Applied • All Automatic Process Controls Applied

Consult Appendix for points technification level criteria

Economic value of the market

In the interview with the representatives of the Consejo Mexicano de la Flor, one of the topics discussed was the economic value of the Plants and Cut Flowers market in Mexico. According to their historical data and, as mentioned before, total size of the market is equivalent to €1,521.58 million. The following table shows the proportion of the economic value, related to the technification level of Mexican growers, highlighting the opportunities in demand to the different suppliers. Growers with a Medium-Low,

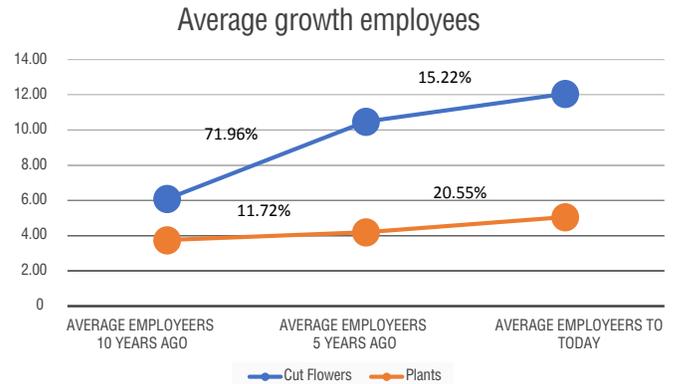
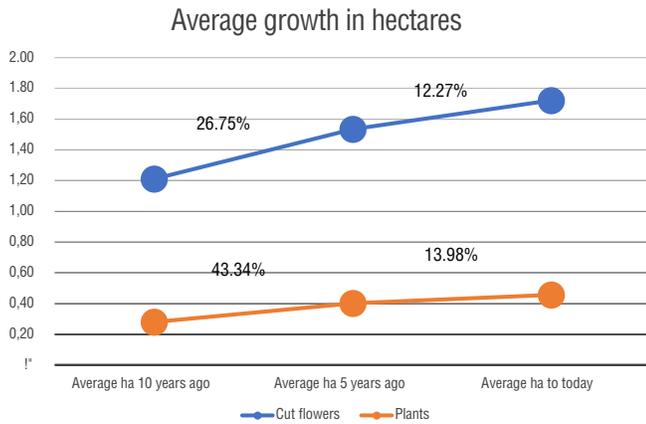
Medium and Medium-High level of technification stand out, accruing 69.42% of the market and representing annual purchases of €528.17 million. Supplies related to Shade Cloth and Plastic Greenhouse Infrastructure, manual irrigation systems, basic substrates / substrate mixture, manual control processes, Manual Fertigation Process Applied and Post-harvest processes could be applied depending on species.

Tech Level	Ha	Annual supplies consumption in millions	Annual sales in millions	Market share
Low	6,866.93	167.98 €	335.96 €	22.08%
Middle-low	4,304.74	315.91 €	631.81 €	41.52%
Middle	1,156.70	141.48 €	282.95 €	18.60%
Middle-high	413.34	70.78 €	141.55 €	9.30%
High	264.30	64.65 €	129.31 €	8.50%
TOTAL	13,006.01	760.79 €	1,521.58 €	100.00%

Market growth

According to the information gathered by the survey, it may be said that the Mexican ornamental market has had a significant growth in the last 10 years. As can be seen in the following chart, the “Cut Flowers” market segment has grown 42.30% in hectares from 10 years to date. The growth of the “Ornamental Plants” market stands out with 63.38% in 10 years.

The following chart shows that from 2012 to 2017, the “Cut Flowers” market displayed an increase of 26.75% and from 2017 to date this figure was 12.27%. Similar behavior in the “Ornamental Plants” segment, with a growth of 43.34% from 2012 to 2017 and 13.98% from 2017 to date. The growth of the last surveyed period is quite a surprise, since in both segments it is not as accelerated as in the previous period. This behavior matches the prevailing pattern detected during the years of the COVID-19 pandemic.



Period	Average hectares	
	Cut Flowers	Ornamental Plants
2012 to 2017	1.21	0.28
2017 to 2022	1.53	0.40
2012 to 2022	1.72	0.46

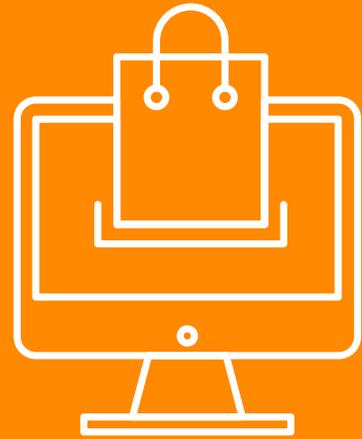
Period	Average employees	
	Cut Flowers	Ornamental Plants
2012 to 2017	6	3
2017 to 2022	10	4
2012 to 2022	12	5

This average number of hectares destined to the production of ornamental plants shows the evolution of the Mexican market through the years. It represents a greater number of hectares destined to the production and therefore to the commercialization of its products in the Mexican market. This in turn shows that it is a dynamic sector, and consequently that there is a higher demand for supplies and technology.

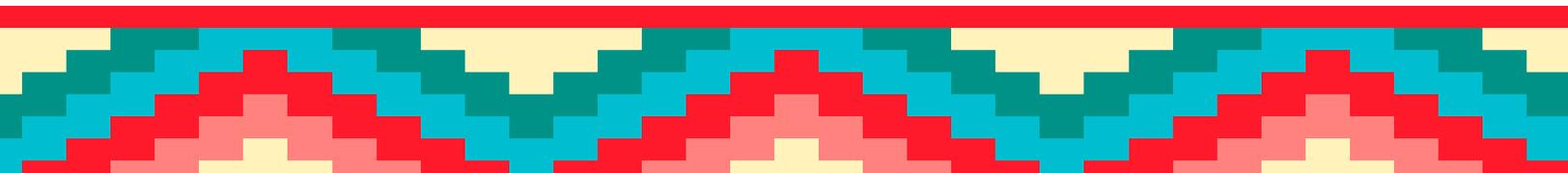
Growth in employability was also evaluated, and it too exhibited growth in both segments. From ten years to date, the “Cut Flowers” market grew by 98.12% and “Ornamental Plants” market by 34.67%. The average growth of the two segments was 52.84%.

In conclusion, it may be stated that there is significant growth in these two factors in the cut flower and foliage segment, representing an investment opportunity for Dutch suppliers in this market segment.

Agricultural labor costs in Mexico are considered very competitive compared to those of other countries such as the United States and Colombia. Based on data issued by the Mexican Flower Council, the average labor cost in Mexico is \$400 USD per month, while in the United States it is \$2,800 USD, and in Colombia it is around \$550 USD, clearly identifying the competitive advantage of the labor costs.

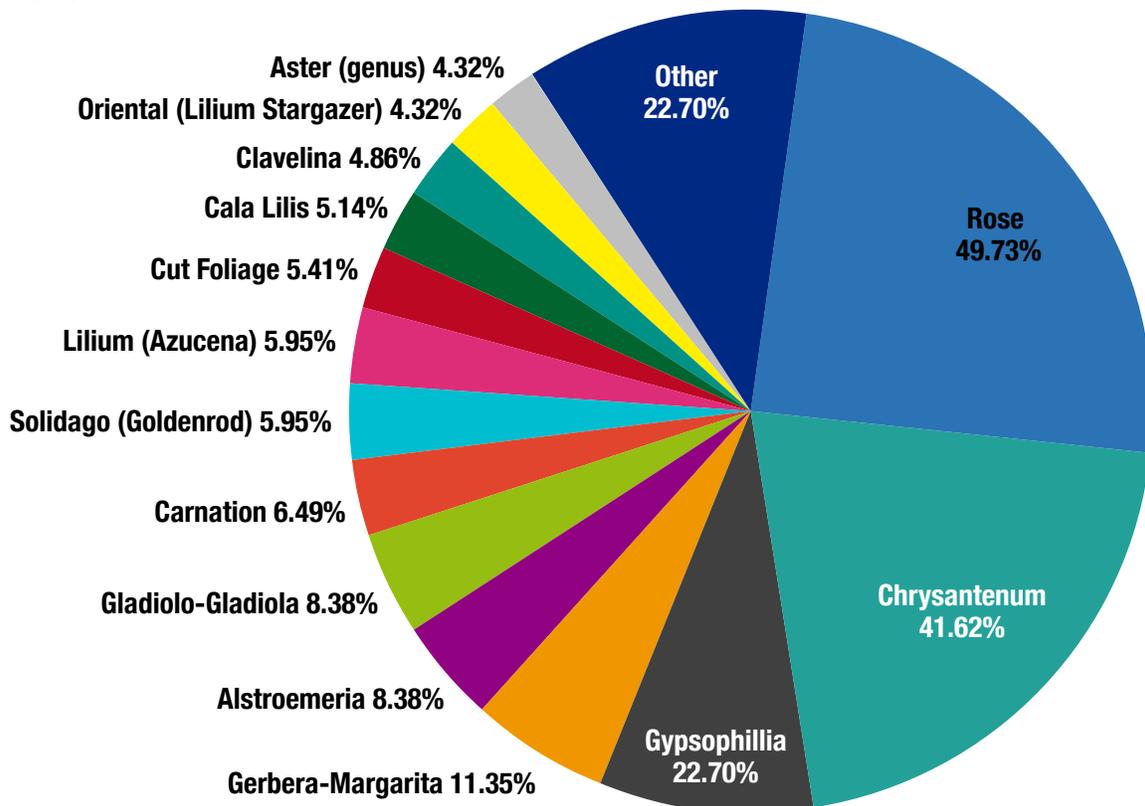


|| Market trends



Species demand

The Cut Flowers segment is encompassed mainly by two species: Rose and Chrysanthemum. A second group of species such as the Gypsophilia, Gerbera-Margarita, Alstroemeria and Gladiola may be seen in the following chart, with moderate percentage of participation in the segment. There is also a third group of species whose participation is low, and finally more than 20 species were grouped in the "Other" category.

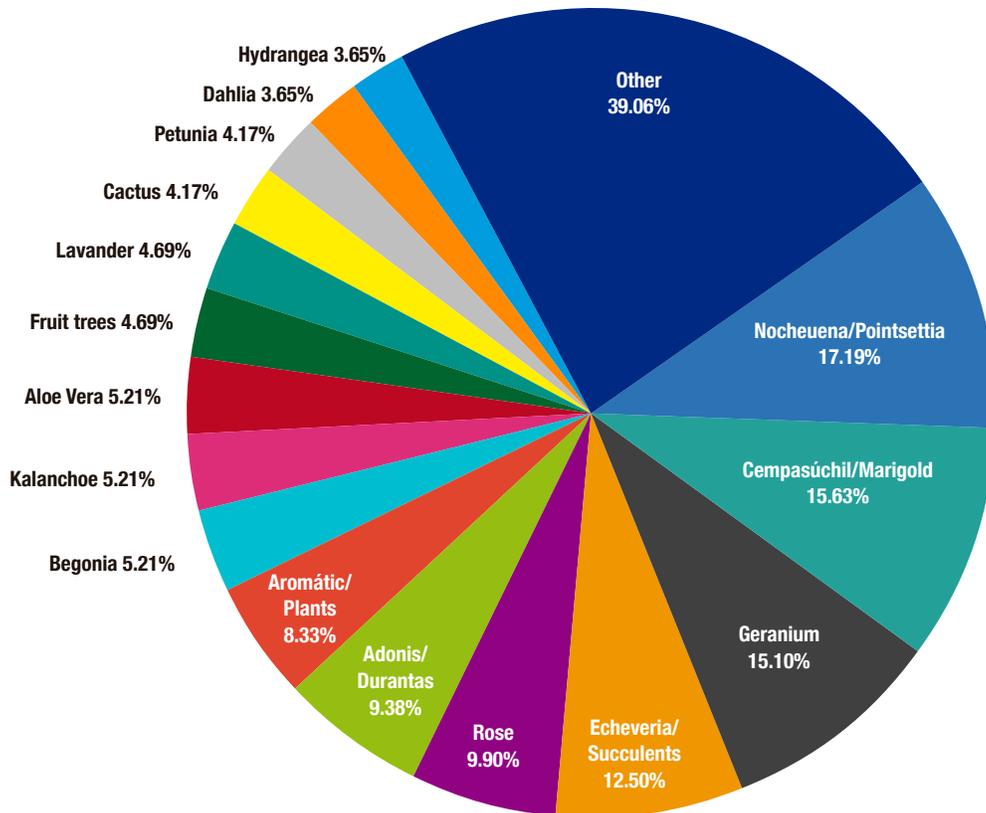


Below is a chart showing the percentage of all growers interviewed who produce this Cut Flower species; this was a multi-response question, so it must be taken into consideration that the table is not measured on a scale 0% -100%. Instead, it shows the amount of all growers that produce these species.

The species demanded in the plant segment may be seen in the chart below. This market is dominated by three species, Poinsettia, Marigold and Geranium. These species are followed by a second group made up of Echeveria / Succulents, Rose, Adonis, Aromatic plants, Begonia, Kalanchoe and Aloe Vera. There is also a third group with very low percentages of participation, integrated by Fruit Trees, Lavender,

Cactus, Petunia, Dahlia and Hydrangea. Finally, a little more than 35 species were grouped under the "Others" category.

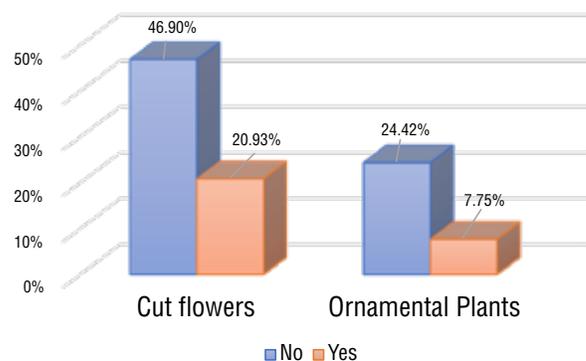
Again, this was a multi-response question, so it is important to take into consideration that the table is not measured on a scale 0% -100%. Instead, it shows the amount of the total growers who produce these species.



In both segment, growers mainly demand more vivid colors and greater resistance to pests, among other elements. This is largely due to trends in consumer preferences.

One of the behaviors observed in the Mexican ornamental market is the interest in persisting in investments in new varieties. About 30% of the growers of ornamentals have these good practices in their processes, and this represents a very good opportunity for Dutch suppliers. The Mexican growers are willing to buy supplies, which will allow them to produce new species. In general terms, Mexican growers do not carry out research to develop new species.

New species in crops



This behavior was corroborated when asked about the last time they had incorporated new species into their crops. As displayed in the following table, 34,88% of the growers have incorporated new varieties, highlighting the fact that almost 23% did it more than a year ago. It is possible to identify a niche

market (12%) interested in adding new varieties in their crops in the last year. This behavior may be due to the wariness related to their investments, since they do not know if there will be sufficient demand in the markets to justify their investment. Therefore, they are gradually incorporating new varieties.

Growers time since last addition of new varieties

Grower Specialty Area	Cut Flower	Ornamental Plants	Total
Between 1 and 11 months	1.55%	2.33%	3.88%
Between 1 y 3 weeks	0.00%	0.19%	0.19%
A year ago	4.07%	3.88%	7.95%
More than a year ago	16.09%	6.78%	22.87%
Never	46.12%	18.99%	65.12%
Total	68%	32%	100%

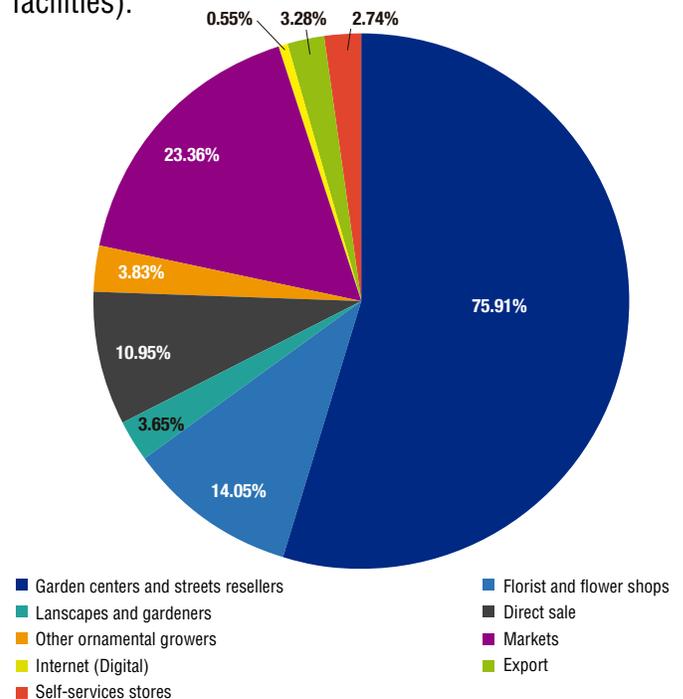
There are no major differences in this behaviour when analysed by type of grower. They practically keep the same varieties in their crops.

Distribution channels

Regarding distribution channels in the national market (not exports), it may be seen that the most popular means among Mexican growers are Garden Centers and itinerant resellers (75%). These are followed by Marketers with 23% and Florists with 14% for the consumer market. As mentioned in the market trends section, Ornamental Plants and Cut Flowers growers are beginning to venture into new sales channels online and in self-service stores, as of the pandemic-induced confinement in 2020.

According to information gathered in the surveys and interviews, the Ornamental Plants and Cut Flowers growers prefer the Garden Centers distribution channels, mainly because they obtain good results; the price-quality ratio meets the requirements of both markets and the product delivery requirements are also satisfactory. Most of the Garden Centers go to the growers' facilities, make the product selection, take the product to the Garden Centers' transport and assume the risk as soon as they leave the grower's

facilities. In general terms, it may be said that they handle the negotiation Incoterm known as ExWorks (delivery of the product at the grower-seller's facilities).

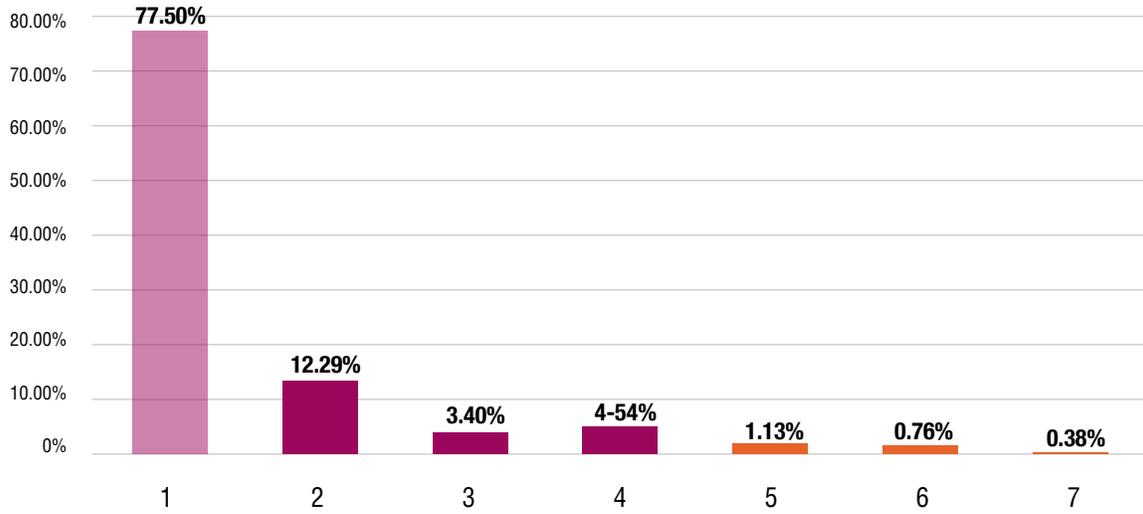


One of the main characteristics of most of these distribution channels is the absence of quality requirements.

The characteristics of the distribution channels in Mexico are detailed below:

Distribution Channel	Characteristics
Garden Centers and Street Resellers	These are plant shops and/or small nurseries in cities, also composed of roadside vendors, commonly known as "viveros", where they sell potted plants, ground covers, trees, and some home-made inputs, such as pots, substrate, etc.
Florist and flower shops	Specialized stores and professionals on cut flower and foliage sales, where people can buy bouquets, floral arrangements or just cut flower and foliage species.
Landscapers and gardeners	Specialised marketplace for landscape architects and professional gardeners for urban developments
Direct sale	Direct sales to final consumer
Other ornamental growers	Sale of varieties that other ornamental growers request, but do not produce and need to sell due to demand.
Marketers	The Marketers are companies or grower cooperatives whose purpose is to collect plants for resale to large customers or orders that require the production of several growers, best known as "Central de Abastos" or "Mercados" in Mexico
Internet (digital)	e-Commerce / Online Shop
Export	Marketers located mainly in the USA and Canada
Self-service stores	Large companies that dedicate a section of their shops to the sale of ornamental plants and flowers

As displayed in the following chart, most growers (77.50%) use only one channel to market their products. A little over 20% of those interviewed who use between two and four different channels stand out.



Number of Distribution Channels Used by Growers

Ornamental plants and flowers traders and their business trends

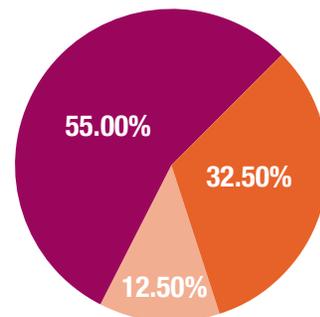
Case Study – Xochimilco Ornamental Traders of “Palacio de la Flor” Market (Mexico City)

A survey focused on ornamental traders took place in Xochimilco, Mexico City; this sample summarizes the normal activity of large markets such as “Central de Abastos” in Mexico City or Villa Guerrero’s Market in Estado de México.

50 Ornamental Traders answered the survey. They were first asked about their trading scheme processes (some of them are also ornamental growers, but they buy species that they do not

produce to other ornamental growers of the area, and sometimes, from other regions such as Puebla or Morelos).

Trading Scheme Applied

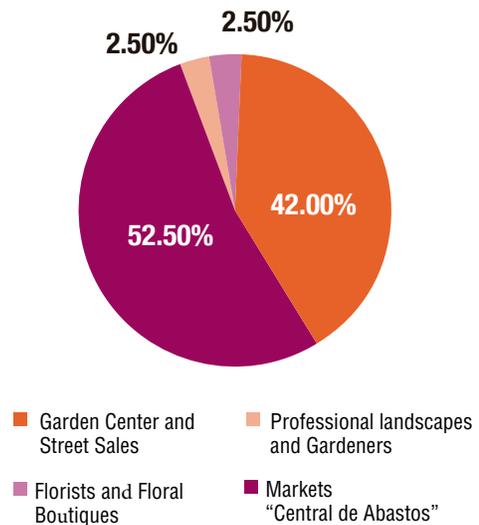


Final Consumer Sale Mid-Volume Sales Wholesale

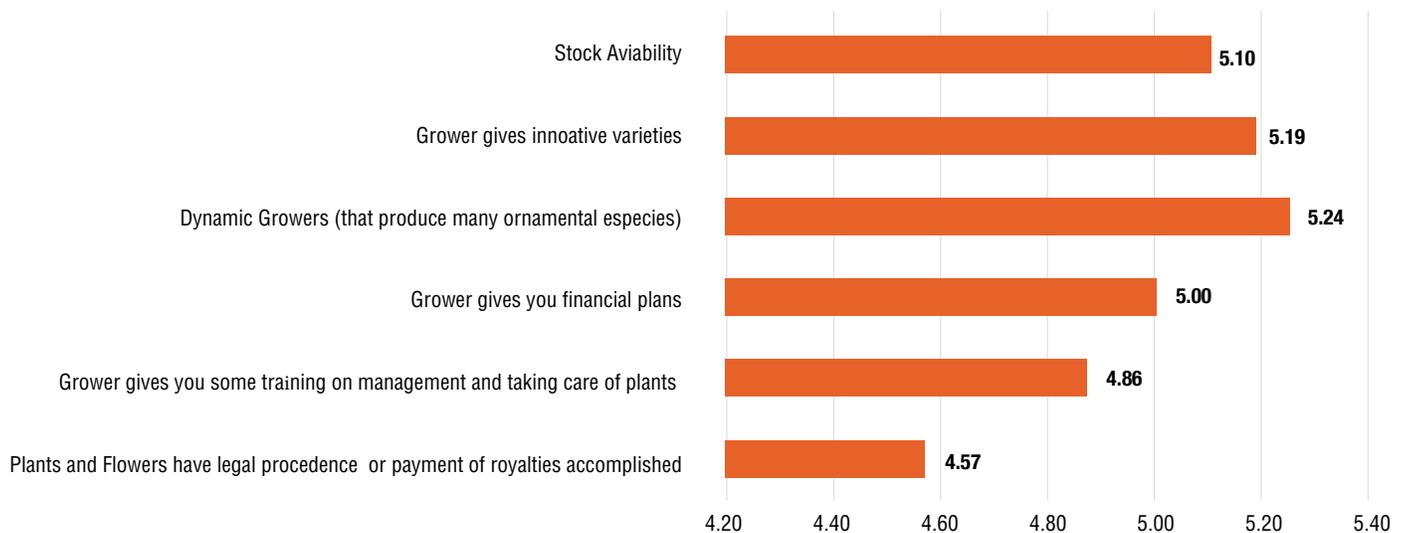
54.16% of the Ornamental Traders apply 2 or more trading scheme methods

From information provided by the traders, we detected some opportunity areas for ornamental growers, and were able to make a brief analysis of how prices vary during the year, taking for instance three ornamental species.

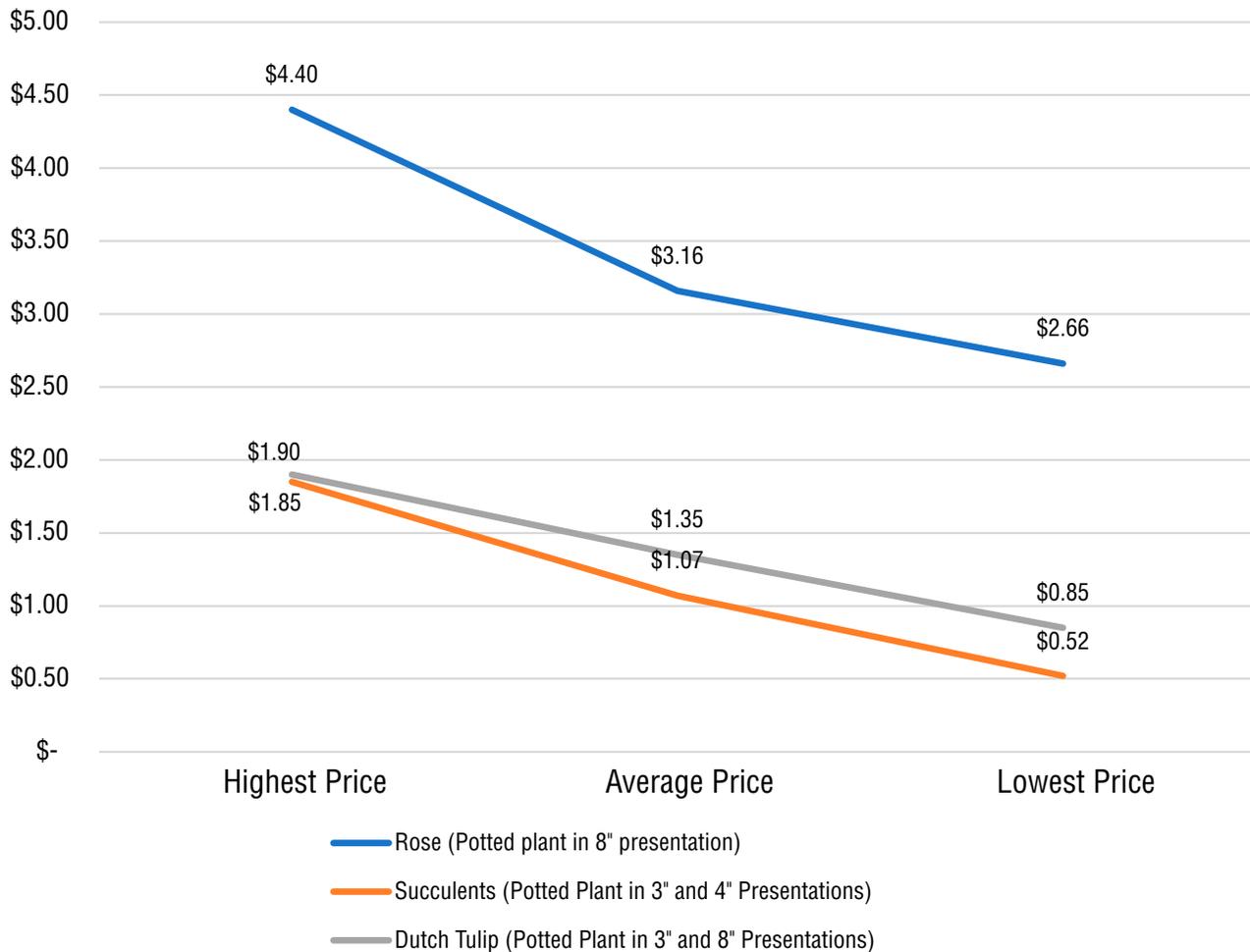
Trading Targets



What do you expect more from your ornamental grower (provider)? (from 0 to 10)



Price Variation of Succulents, Roses and Tulips in Xochimilco Market (USD)



Growth Barriers for the Ornamental Marketer in the Xochimilco Area

- A lot of competition
- Insecurity inside trading locations
- Raw material is expensive

Market trends in Mexican consumer behavior

According to the "Study on habits of Internet users in Mexico 2022", published by the Mexican Internet Association, confinement due to the COVID-19 pandemic caused a growth in Internet penetration in Mexico, reaching 75.60% of the population over 6 years old. Among the products purchased online, the study highlights that 12% of Mexicans said they have made purchases of "Home and Garden" items, which includes the Plants category, whereas 9% of Mexicans said they had purchased some item related to the category of "Flowers, greetings and gifts" online, which includes Cut Flowers.

This online shopping trend in Mexico accelerated during 2020 and 2021, as a result mainly of the confinement due to COVID-19 pandemic. Most people spent more time at home and as a result noticed that something needed to be added or changed in their green spaces. Mexicans made changes to their workspaces at home, in a tendency to try to make small or large modifications in their environment, looking for some relief, calm, happiness, or motivation.

According to the Mexican Association of Online Sales ("Asociación de Internet MX"), e-commerce will reach €19.45 billion in 2021, representing 11.30% of retail sales. In this context, Business Insider Mexico conducted a study which shows how some online sales companies, such as Ecovoraz, Envía Flores, Verbena Flores, Flores de México, among others, have taken advantage of this opportunity. Forbes magazine conducted an interview with the CEO of "Envía Flores" addressing issues of their sales during the pandemic. The cited CEO comments that in 2015 they had 180 thousand transactions and in 2020 they went to 1.3 million transactions. Having a growth in those five years of seven times the volume of transactions.

According to Nielsen's Consumer Outlook 2022 study, there is a trend among Mexican consumers that indicates 82% consider that their purchasing habits have been impacted by the COVID-19 pandemic. According to the report, 38% of Mexicans are looking to buy sustainable or environmentally friendly products. This can be related to the growing demand for homes and offices with a high presence of natural elements. Plants and cut flowers are aspects that, according to Design Week 2021, have been incorporated as an important element in the design of living spaces, both for the family and for the employees in an office. The same event highlighted the trend of "Xerojardinería", as a factor that contributes to the care of the planet's environment, specifically because of the small amount of water that these gardens require. The company Jardines de México offers training courses to train gardeners to make good use of native plants and flowers, as well as concepts such as "Xerojardinería".

The Millennial generation in Mexico stands out for the incorporation of consumers' habits during COVID-19 confinement. According to the figures shared by the National Institute of Statistics and Geography (INEGI), there are over 28 million millennials in Mexico, representing 22.60% of the population. As they are considered "digital natives", online shopping is normal to them. Based on the IAB's Study of Media and Device Consumption among Mexican Internet users, 91% of millennials have a smartphone and use it for most of their activities such as shopping, work, entertainment, calls, among others. One of the changes in the consumption habits of millennials refers to the purchase of products which allow them to start creating stories. Another study presented by the agency Kantar shows that 27% of the people of this generation mentioned that the pandemic had an impact on their mental health, looking for products, such as plants and cut flowers, which may bring them closer to nature and make them feel "inner

peace". Brands such as "Envia Flores" took advantage of this trend by identifying that in millennials' social networks, they were sharing photos with flower arrangements, balloons or gifts. This was the beginning of a new way of celebrating: "receiving flowers during the pandemic was a reason to celebrate". According to information from the Mexican Flower Council, during this period, sales of bouquet flowers (flower arrangements) grew significantly, both in the online channel and in self-service stores such as Walmart, Costco, among others.

Finally, PWC in its study Global Consumer Insights 2021-Mexico Chapter (GCIS), describes significant changes in the characteristics of the Mexican consumer, becoming a digital and hybrid shopper (physical and digital). The study highlights changes in the behavior of the Mexican shopper, choosing in 2021 "omni channels", which include physical (retailers, wholesalers, specialty stores [florists], super markets) and digital (online) shopping. 50% make purchases in physical stores, 39% make them through their smartphone and 37% shop from their computer (PC). The study highlights a new shopping means, the "intelligent voice assistants" with 26% of purchases done this way. The study mentions the coexistence of physical and online stores in the preference of Mexican consumers, even after the confinement.

The following table shows the main species demanded in each market segment. In the Cut Flowers market there is an evident high concentration in Roses and Chrysanthemums, and the demand is about 46%, whereas in the Ornamental Plants market it is distributed among the species of Poinsettia, Marigold, Succulents and Geranium, reaching a 36% market share.

Cut Flowers and Foliage	
Ornamental Specie	% of Growers
Rose	49.73%
Chrysantenum	41.62%
Gypsophilia	17.57%
Gerbera	11.35%
Alstoemeria	8.38%
Gladiolo	6.49%
Carnation	5.95%
Solidago (Goldenrod)	5.95%
Lilium (Azucena)	5.41%
Cut Foliage	5.14%
Cala Lilis	4.86%
Clavellina	4.32%
Oriental (Lilium Stargazer)	4.32%
Aster (genus)	3.78%
Hydrangea	2.43%
Lisianthus	2.43%
Sunflower	1.89%
Perrito (Anthrinum)	1.89%
Wallflower (Alhelí)Mini Rose	1.08%
Estatice (Limonium sinuatum)	1.08%
Tulip	0.54%
Agapanthus	0.54%
Alcatraz (Zantedeschia aethiopica)	0.27%
Bamboo	0.27%
Eucalyptus	0.27%
Iris	0.27%
Margarita (Bellis perennis)	0.27%
Cut Orchids	0.27%
Ranunculus	0.27%
Velvet flower (Terciopelo)	0.27%
Other	8.38%

Live plant in pot or container

Ornamental Specie	% of Growers
Nochebuena / Poinsettia	17.19%
Cempasúchil / Marigold	15.63%
Geranium	15.10%
Echeveria / Succulents	12.50%
Rose	9.90%
Adonis / Durantas	9.38%
Aromatic Plants	8.33%
Begonia	5.21%
Kalanchoe	5.21%
Aloe Vera	5.21%
Fruit Trees	4.69%
Lavender	4.69%
Cactus	4.17%
Petunia	4.17%
Dahlia	3.65%
Hydrangea	3.65%
Chrysantenum	3.13%
Dollar Tree	3.13%
Spathiphyllum	3.13%
Anthurium	2.08%
Bamboo	2.08%
Bougainvillea	2.08%
Dracaena (Palo de Brasil)	2.08%

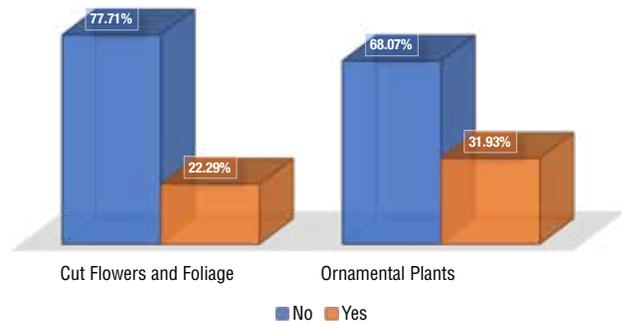
Live plant in pot or container

Ornamental Specie	% of Growers
Perrito (Anthirrinum)	2.08%
Alstroemeria	1.56%
Grass / Cover Plants	1.56%
Lilies	1.56%
Orchids	1.56%
Agapanthus	1.04%
Crane Flower	1.04%
Clavellina	1.04%
Cyclamen	1.04%
Lilium Stargazer	1.04%
Ferns	1.04%
Tulip	1.04%
Aphelandra	0.52%
Arrayán	0.52%
Bromelias	0.52%
Calas	0.52%
Carnation	0.52%
Dipladenia	0.52%
Climbing Plants	0.52%
Sunflower	0.52%
Bellis Perennis	0.52%
Hebe	0.52%
Vinca	0.52%

In the opinion of growers, in general terms, only 26% of their clients demand new varieties. This represents a traditional and not very dynamic market; however, there is a certain demand for new varieties and this becomes a very focused opportunity. It is largely due to the habits and customs of the Mexican buyer and the supply of the growers. According to sales reports from May 10, 2022, Mexican buyers prefer to buy the typical flowers (e.g., "they are the ones my mother likes"). This shows that the consumer has a traditional buying behavior. In addition, growers take high risks when introducing new species or variety and consumers do not buy them or are not willing to pay a high price for them.

Within these requirements, there are mainly colored varieties and some species such as Chrysanthemums, Succulents, Gerberas, Roses and Poinsettias are among the most frequently mentioned.

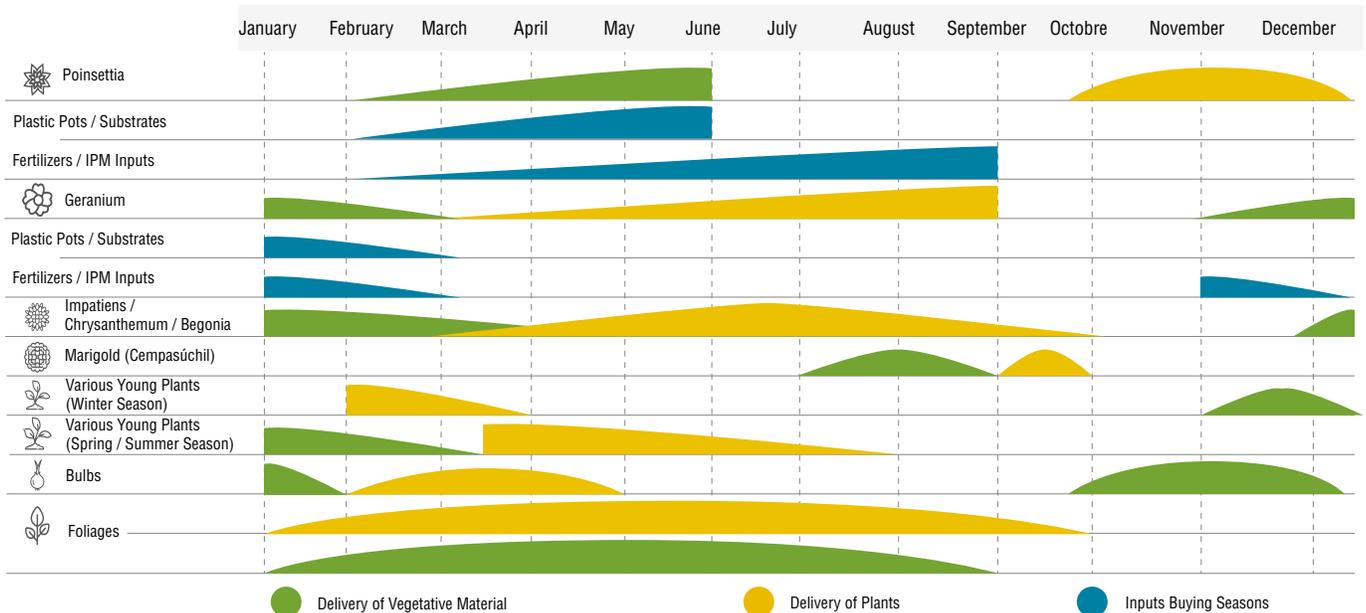
New varieties demanded by market Segment

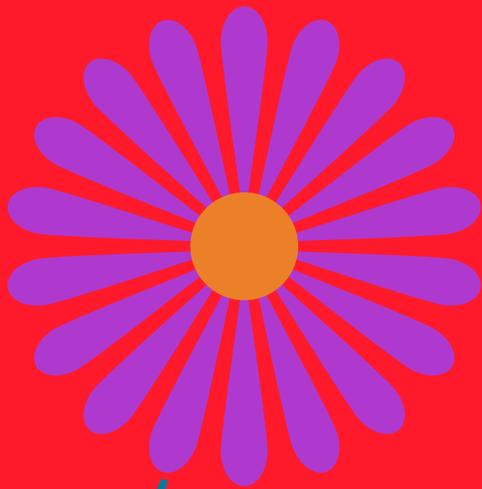


Crop and Sales Seasons According to Consumers' Behavior

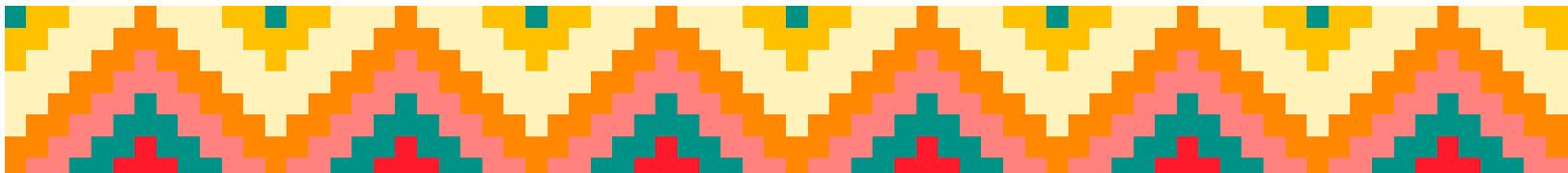
The following table shows the trade opportunities in agro-supplies and vegetative material for the main potted plant varieties commercialized in Mexico.

Crops and sales seasons on main mexican ornamental species





||| Stakeholders

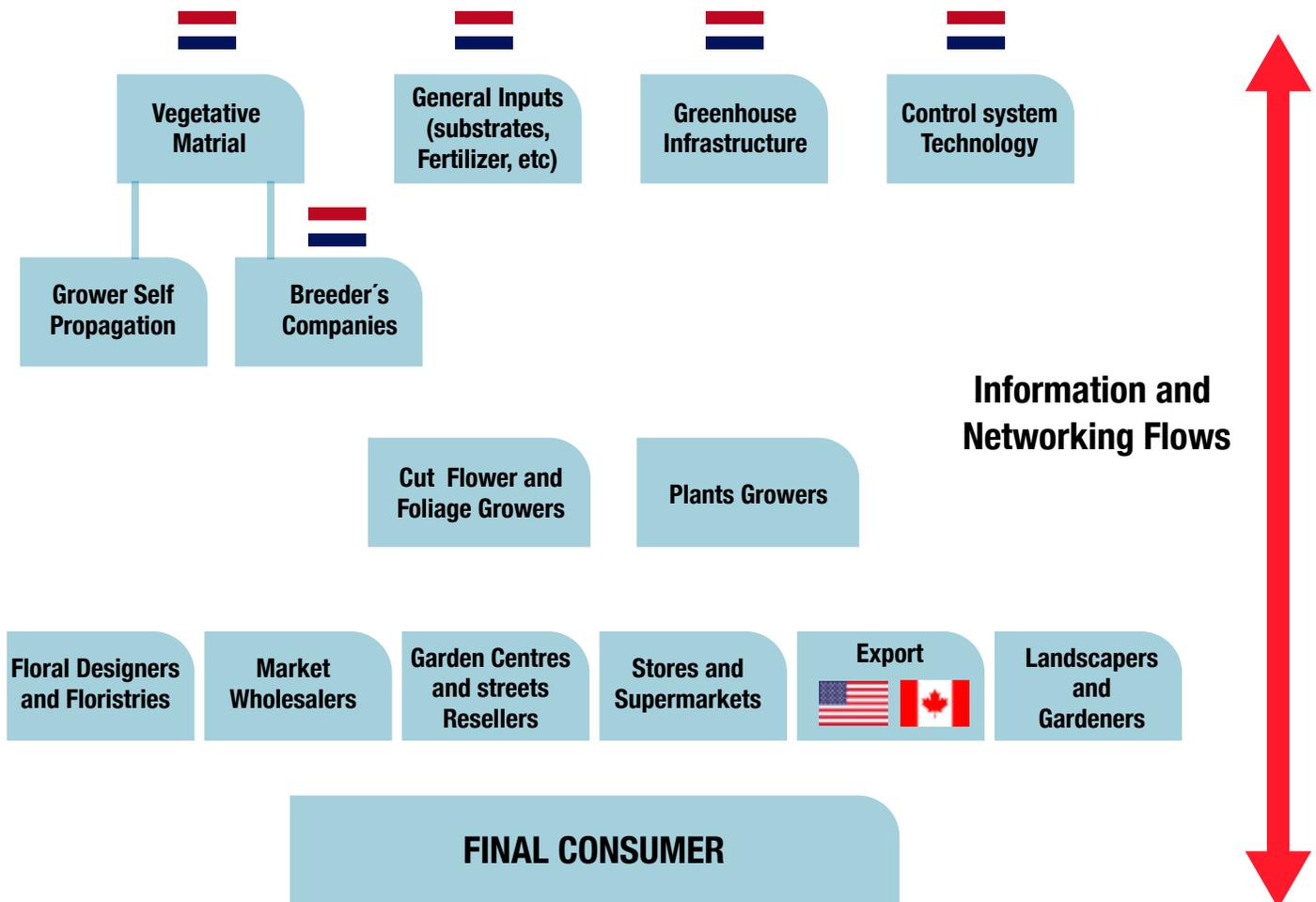


STAKEHOLDERS

Main stakeholders

The following chart represents the general structure of the Mexican Ornamental Production supply chain and the way in which relevant players interact.

The Netherlands flag was placed on those business areas where we consider they have relevant players to participate in said sector.



In addition to key players in the value chain, the ornamental sector in Mexico integrates other stakeholders, mentioned in the chart through information flows and networking (green arrow), such as:

List of growers and representatives of finished plants and cuttings, seedlings and seeds in Mexico.

Company	Location by State	Size by classification	Crops and Services	Amounts	Type of buyer	Do they work with international suppliers or customers?
VIVERO LA CEIBA	BAJA CALIFORNIA SUR	Medium	Ground cover, grasses, everything related to gardening.	Information not available	Real estate developers and other nurseries.	Yes
VIVEROS LOS CABOS	BAJA CALIFORNIA SUR	Medium	Ground cover, grasses, everything related to gardening.	Information not available	Real estate developers and other nurseries.	Yes
ARGOVIA RIO CUILCO	CHIAPAS	Medium	Anthuriums, Orchids, Bromeliads, Foliages	Information not available	Floral designers and flower and gift stores.	Yes
CHIAPAS FLOWER	CHIAPAS	Large	Anthuriums, Cymbidium, Phalenopsis	Information not available	Retailers, flower shops, self-service stores.	Yes
BALASHTE	CHIAPAS	Medium	Anthuriums, Phalenopsis	Annually, 250,000 anthuriums, 250,000 phalaenopsis orchids, 75,000 poinsettias and 60,000 Moses cradles are produced. This means about 20,000 anthuriums and orchids are produced monthly.	Retailers, flower shops, self-service stores.	Yes
MERCADO DE FLORES PALACIO DE LA FLOR	CDMX	Small growers	Groundcovers, Flowers, Grasses, Succulents	Information not available	Developers, real estate developers, other marketers, landscapers and governments.	Yes

List of growers and representatives of finished plants and cuttings, seedlings and seeds in Mexico.

Company	Location by State	Size by classification	Crops and Services	Amounts	Type of buyer	Do they work with international suppliers or customers?
VIVEROS GIJON	GUERRERO	Medium	Regional palms	Wholesale	Developers, real estate developers, other	No
BLAW FLOWERS	GUERRERO	Medium	Cut Flowers	Wholesale	Plants and flowers traders and florists.	Yes
VIVEROS TOLUQUILLA	JALISCO	Medium	In-vitro seedlings	Wholesale	Plant growers and marketers.	Yes
VIVEROS RANCHO CALDERON GUADALAJARA	EDO DE MEXICO	Medium	Perennial and seasonal plants, foliage, fruit trees, grasses, trees and palms, grass in rolls.	Wholesale	Developers, real estate developers, other marketers, landscapers and governments.	Yes
ASOCIACION DE FLORICULTORES DE VILLAGUERRE-RO, AC	EDO DE MEXICO	Encompasses 700 cut flowers and foliage growers	Roses, gerberas, carnations, most species and varieties of cut flowers and foliage.	Among over 700 associated growers, on over 1,000 hectares.	They mainly sell flowers and foliage in "Central de Abastos de la Ciudad de México", the largest vegetable and flower market in the country.	No
FLORES DE CHILTEPEC	MORELOS	Large	Flowers, foliage, sun and shade plants, cuttings, young plants, seedlings and finished plants.	Information not available	Other growers, marketers, real estate developers, retailers, governments and gardeners.	Yes

List of growers and representatives of finished plants and cuttings, seedlings and seeds in Mexico.

Company	Location by State	Size by classification	Crops and Services	Amounts	Type of buyer	Do they work with international suppliers or customers?
VIVEROS EL EDEN	MORELOS	Large	Flowers, foliages, sun and shade plants, ornamental plants.	Information not available	Developers, real estate developer, other marketers, landscapers and governments. marketers, landscapers and governments.	Yes
TECNOFLO	MORELOS	Medium	Flowers, foliages, sun and shade plants	Information not available	Developers, real estate developer, other marketers, landscapers and governments. marketers, landscapers and governments.	Yes
VIVEROS ANAYA	MORELOS	Large	Flowers, foliages, sun and shade plants	Information not available	Developers, real estate developer, other marketers, landscapers and governments. marketers, landscapers and governments.	Yes
CONAPLOR	MORELOS	Large	Encompasses 80 growers of different species and varieties of live plants.	Information not available	Developers, real estate developer, other marketers, landscapers and governments. marketers, landscapers and governments.	Yes
ROMENS DE CUAUTLA	MORELOS	Large	Athurium and Phalenopsis	Information not available	Developers, real estate developer, other marketers, landscapers and governments. marketers, landscapers and governments.	Yes

List of growers and representatives of finished plants and cuttings, seedlings and seeds in Mexico.

Company	Location by State	Size by classification	Crops and Services	Amounts	Type of buyer	Do they work with international suppliers or customers?
ORNAPLANT	MORELOS	Large	Flowers, foliage, sun and shade plants, cuttings, young plants, seedlings and finished plants.	Information not available	Developers, real estate developer, other marketers, landscapers and governments. marketers, landscapers and governments.	No
FLORACUAUTLA	MORELOS	Large	Flowers, foliage, sun and shade plants, cuttings, young plants, seedlings and finished plants.	Information not available	Developers, real estate developer, other marketers, landscapers and governments. marketers, landscapers and governments.	No
COMERCIALIZADORA PROPLAN	MORELOS	Large	Flowers, foliage, sun and shade plants, cuttings, young plants, seedlings and finished plants.	Information not available	Developers, real estate developer, other marketers, landscapers and governments. marketers, landscapers and governments.	No
ORNAMENTALES DE CUAUTLA, SPR DE RL	MORELOS	Large		Information not available	Developers, real estate developer, other marketers, landscapers and governments. marketers, landscapers and governments.	No
COMERCIALIZADORA COINHOMEX, SA DE CV	NUEVO LEON	Medium	Flowers, foliage, sun and shade plants, cuttings, young plants, seedlings and finished plants.	Wholesale	Developers, real estate developer, other marketers, landscapers and governments. marketers, landscapers and governments.	Yes

List of growers and representatives of finished plants and cuttings, seedlings and seeds in Mexico.

Company	Location by State	Size by classification	Crops and Services	Amounts	Type of buyer	Do they work with international suppliers or customers?
PALMA REAL	VERACRUZ	Medium	Palms	Wholesale	Developers, real estate developer, other marketers, landscapers and governments. marketers, landscapers and governments.	No
VEGTATIVE MATERIAL MAIN SUPPLIERS						
FLORICULTURA BV	BAJA CALIFORNIA SUR	Large	Orchids, young plants, tissue culture, breeding, propagating and research laboratories, geothermal cultivation and advice, for phalaenopsis, dendrobium, miltoniopsis, cymbidium, odontoglossum, anthurium, and spathiphyllum.	Information not available	Growers mainly from the center of the country.	Yes
OGG – DUMMEN ORANGE	CHIAPAS	Large	OGG represents Dummen Orange in Mexico for the live plant sector.	Information not available	Growers mainly from Chiapas represented in the center of the country.	Yes

List of growers and representatives of finished plants and cuttings, seedlings and seeds in Mexico.

Company	Location by State	Size by classification	Crops and Services	Amounts	Type of buyer	Do they work with international suppliers or customers?
COXFLO	ESTADO DE MEXICO	Large	Asiatic Liliun, Oriental Liliun, Golden Roses, League, Premium Roses, Mini Roses, Gerberas, Mini Gerberas, Altroemerias, Dutch Tulips, French Tulips, Irises, others.	Information not available	Growers, wholesale traders, self-service stores, florists, flower shops, etc.	Yes
MACRO IMPORTACIONES FRESAFLOR	ESTADO DE MEXICO	Medium	Commercializes cuttings, seedlings, seeds and bulbs.	Information not available	Growers mainly from the center of the country.	Yes
GRUPO BALL-AKIKO	CDMX	Large	Representation and sale of several hybridizers from Europe and the United States; recently partnered with Ball Seeds.	Information not available	Growers of plants and flowers throughout Mexico.	Yes
SEMILLAS TINAJERO	CDMX	Small	Commercialization of Cyclamen seeds Cuttings, seedlings and finished plant of poinsettia, various flowers and foliage.	Information not available	Cyclamen growers in Mexico	Yes
FLORAPLANT	MORELOS	Large	Cuttings, seedlings and finished plant of poinsettia, various flowers and foliage.	Information not available	Growers, marketers, self-service stores in Mexico and provides cuttings	Yes
VIVERO INTERNACIONAL	MORELOS	Large	Geranium cuttings malvon, regal, poinsettia, belen, dipladenia.	"We have produced more than 1.5 billion cuttings since our beginning in 1990".	Growers of plants and flowers in Mexico and abroad.nationally and abroad.	Yes

List of growers and representatives of finished plants and cuttings, seedlings and seeds in Mexico.

Company	Location by State	Size by classification	Crops and Services	Amounts	Type of buyer	Do they work with international suppliers or customers?
STIGMA INTERNACIONAL	MORELOS	Small	Sales representation in Mexico for ANTHURA; they supply anthurium and orchid seed material to growers in Mexico.	Information not available	Growers mainly from the center of the country.	Yes
AZTECH GROWERS	MORELOS	Small	Produce cuttings and semi-finished plants of succulents	Information not available	Mexican plant resellers	Yes
FREESIAS	MORELOS	Small	Seedlings of: spring flowers, seasonal flowers and vegetables.	Information not available	Growers of ornamental and cutting plants	Yes
PLANTULAS DE TETELA	CDMX	Small	Seedlings of: spring flowers, seasonal flowers and vegetables.	Information not available	Growers of ornamental and cutting plants	Yes
VEGTATIVE MATERIAL MAIN EXPORTERS						
FLORAPLANT	MORELOS	Large	Cuttings of poinsettias, succulents and geraniums.	Information not available	Growers of ornamental plants in Mexico and abroad	Yes
VIVERO INTERNACIONAL	MORELOS	Large	Cuttings of poinsettias, succulents and geraniums.	Information not available	Growers of ornamental plants in Mexico and abroad	Yes
PLANT SOURCE INTERNATIONAL	MORELOS	Large	Cuttings of poinsettia and geranium.	Information not available	Growers of ornamental plants in Mexico and abroad	Yes
YECAFLORA BY BALL FLORAPLANT	MORELOS	Large	Cuttings of poinsettia and geranium.	Information not available	Growers of ornamental plants in Mexico and abroad	Yes

The following list includes the Federal Government Ministries that play a regulatory and public policy role in the ornamental sector. It also encompasses the universities and research centers which carry out

research and development processes for the sector, and groups and/or organizations which represent the interests of growers in Mexico before the government and other interest groups.

Organization Name	Representative	Category	Influence Area
Secretaría de Agricultura y Desarrollo Rural (SADER) / Ministry of Agriculture and Rural Development	PhD. Víctor Manuel Villalobos Arámbula	Mexican Government	The Ministry of Agriculture is an agency of the Federal Executive Branch, whose objectives include promoting the exercise of a support policy that allows for better production, better use of the comparative advantages of our agricultural sector, integrating rural activities into the production chains of the rest of the economy, and stimulating the collaboration of grower organizations with their own programs and projects, as well as with the goals and objectives proposed for the agricultural sector in the National Development Plan.
Servicio Nacional de Sanidad, Inocuidad y Calidad Agroalimentaria (SENASICA) / National Agri-Food Health, Safety and Quality Service	PhD. Francisco Javier Trujillo Arriaga	Mexican Government	Senasica protects agricultural, aquaculture and livestock resources from pests and diseases of quarantine importance.
Servicio Nacional de Inspección y Certificación de Semillas (SNICS) / National Service of Seed Inspection and Certification	PhD. Leobigildo Cordova	Mexican Government	SNICS is a decentralized body of the Ministry of Agriculture and Rural Development, responsible for regulating and overseeing compliance with legal provisions on seeds and plant varieties. In coordination with various public and private organizations, research institutions and farmers, the three strategic actions of SNICS contribute to safeguarding and increasing the production and quality of agricultural products from their origin: the seed. There are 2 main activities in relation to the ornamental sector: <ul style="list-style-type: none"> - Verify and certify the origin and quality of seeds. - To legally protect the rights of those who obtain new plant varieties, through a plant breeder's right.
Secretaría del Medio Ambiente y Recursos Naturales (SEMARNAT) / Ministry of Environment and Natural Resources	Mtra. María Luisa Albores González	Mexican Government	Conservation and sustainable use of ecosystems and their biodiversity. Pollution prevention and control. Integral management of water resources. Combating climate change.
Embajada del Reino de los Países Bajos en México / Embassy of the Kingdom of the Netherlands in Mexico	Erik Plaisier - Agricultural Counsellor for Mexico and Cuba, at the Netherlands Embassy in Mexico-City	Embassy	It serves as a link between the public, private and academic sectors of the Netherlands, in order to establish relations that are beneficial to both countries, leading through cooperation projects between the Netherlands and Mexico. The Embassy has an area dedicated to deal with agricultural issues, which facilitates the approach for specialized projects.

Main stakeholders in Mexico

Organization Name	Representative	Category	Influence Area
Sistema Producto Ornamentales Nacional y Estatales / National and State Ornamental Product System	Non-Government Representative C. Rosendo Rogel Guadarrama / Government Representative Mtro. José Merced Mejía	Organization	The Ornamental Product System's corporate purpose is to present a strategic plan called the Ornamental Sector Guiding Axis and its function is to link all the productive links in the chain, and it is also the official (non-exclusive) link with the federal government.
Consejo Estatal de Productores de Ornamentales Morelos, A.C. (CEPOMAC) / Morelos State Council of Ornamental Growers	Ing. Mariano Alejandro Oropeza Sosa	Civil Association	Its purpose is to represent the growers of ornamentals in the state of Morelos with the authorities and the National Ornamental Product System, as well as to strengthen the links in the production chain.
Asociación de Floricultores de Villa Guerrero, A.C. / Villa Guerrero's Floriculture Growers Association	C. Edgar Estrada Cotero	Civil Association	It is made up of almost 700 growers of flowers and foliage from the municipality of Villa Guerrero, State of Mexico and are the main suppliers of the "Central de Abastos" market in Mexico City.
Consejo Mexicano de la Flor / Mexican Flower Council	Ing. Federico Martínez Martínez	Civil Association	It is made up of the main players in the ornamental industry and represents all the growers of ornamental plants in the country.
Palacio de la Flor, A.C. / Palace of Flower - Xochimilco	C. Arturo Camacho Velasco	Civil Association	It is made up of growers of containerized plants from Mexico City, mostly from Xochimilco, and has a market for sales to resellers and end consumers.
Unión de Productores de Cactus y Suculentas del Semidesierto Queretano A.C./ Union of Growers of Cactus and Succulents of the Querétaro Semi-Desert	Ing. Emilio Fernández	Civil Association	It is formed by growers of succulents and cacti in the state of Querétaro.

Main stakeholders in Mexico

Organization Name	Representative	Category	Influence Area
Consejo Regional de Productores de Planta de Ornato y Corte de Atlacomulco / Regional Council of Growers of Ornamental Plants and Cutting of Atlacomulco	C. Juan Manuel Cárdenas	Civil Association	It is formed by growers of container plants located in the municipality of Atlacomulco, State of Mexico.
Unión Nacional de Productores, Distribuidores y Comerciantes del Mercado de Flores y Hortalizas, A.C. / National Union of Growers, Distributors and Traders of the Flower and Vegetable Market	Lic. Silvia Correa Sánchez	Civil Association	It is formed by growers from several states of the Mexican Republic and are growers mainly of gladiolas.
Ornamental Plants and Flowers México (OPF)	Enrique Arias Velasco	Private Institution	Its purpose is to link all the links in the ornamental production chain, and it has an advisory council made up of the most representative grower associations in Mexico.
Florejal	Jan de Lange	Private Institution	Brings together distinctive growers adhering to legality and good practices, leading to partnerships with self-service stores associated with ANTAD.
Fideicomisos Instituidos en Relación con la Agricultura (FIRA) / Instituted Trusts in Relation to Agriculture	Act. Jesús Alan Elizondo Flores	Banco de México (Bank), Development and Research Centre	FIRA is an institution dedicated to supporting the development of the rural, agricultural, forestry and fishing sectors of the country through financial intermediaries and specialized companies. We provide credit, guarantees, training, technical assistance and technology transfer so that growers and rural companies like you can start or grow your productive projects.
Instituto Nacional de Investigaciones Forestales, Agrícolas y Pecuarias (INIFAP) / National Institute of Forestry, Agricultural and Livestock Research	Dr. Luis Ángel Rodríguez del Bosque	Development and Research Centre	INIFAP's objective is to contribute to sustainable rural development by improving competitiveness and maintaining the natural resource base, through participatory and co-responsible work with other institutions and public and private organizations associated with the Mexican countryside, through the generation of scientific knowledge and technological innovation in agriculture and forestry, in response to the demands and needs of agro-industrial chains and different types of growers.

Main stakeholders in Mexico

Organization Name	Representative	Category	Influence Area
Centro de Investigación y Asistencia en Tecnología y Diseño del Estado de Jalisco, A.C. (CIATEJ) / Center for Research and Assistance in Technology and Design of the State of Jalisco.	Dra. Eugenia del Carmen Lugo Cervantes	Development and Research Centre	CIATEJ is a Research Center ascribed to the Coordination of Environment, Health and Food of the System of Public Research Centers (CPI) of the National Council of Science and Technology (CONACYT) to offer technological solutions and human capital that will, in turn, contribute to improve the competitiveness of various social actors in the agricultural, food and beverage, animal and human health, environment and sustainable energy sectors.
Centro de Investigación Científica de Yucatán (CICY) / Center for Scientific Research of Yucatán	Dr. Pedro Iván González Chi	Development and Research Centre	Main function: Research on LY disease and in vitro propagation of resistant genotypes, molecular techniques related to phytoplasma detection and genetic characterization, study of phytoplasmas in plants, germplasm/screening assays for LY resistance and resistance techniques.
Universidad Nacional Autónoma de México (UNAM) / National Autonomous University of Mexico	PhD. Laura Alicia Palomares Aguilera – Director of the Biotechnology Institute	Academic Institution	Institute of Biotechnology: The fundamental mission of the Institute is to develop modern biotechnology at UNAM based on academic excellence and frontier research and, in parallel, the training of specialized human resources.
Universidad Autónoma del Estado de Morelos (UAEM) / Autonomous University of Morelos	PhD. Gustavo Urquiza Beltrán	Academic Institution	The university has a Faculty of Agricultural Sciences that includes the following careers and postgraduate programs: Agricultural Engineer in Rural Development Phytopathology Engineering Agricultural Engineer in Horticulture Agricultural Engineer in Animal Production Plant Production Engineer
Universidad Autónoma del Estado de México (UAEMex) / Autonomous University of Estado de México	PhD. Carlos Eduardo Barrera Díaz	Academic Institution	The university has a Faculty of Agricultural Sciences that includes the following careers and postgraduate plans: Bachelor's Degree In Agricultural Engineering In Floriculture Bachelor's Degree In Agricultural Production Engineering Bachelor's Degree In Phytotechnician Agronomist Engineering Bachelor's Degree In Industrial Agronomist

Main stakeholders in Mexico

Organization Name	Representative	Category	Influence Area
Instituto de Ecología INECOL A.C. / Institute of Ecology	PhD. Armando Contreras Hernández	Academic Institution	The creation of INECOL arose from the interest in developing research on the use of natural resources, conservation, and biodiversity in Mexico. In turn, this interest stemmed from the need for basic studies and scientifically based answers to solve the ecological problems derived from the use of natural resources. This position has made it possible to gather an important accumulation of experiences and is still valid today. With this, we seek to support with solid bases the establishment of adequate policies and mechanisms to continue and promote the development of the country, avoiding as much as possible the affectation of the environment and the biological richness of ecosystems, which condition the quality of life and the well-being of the population.
Universidad Autónoma de Chapingo / Autonomous University of Chapingo	PhD. José Solís Ramírez	Academic Institution	<p>University center with the highest specialization in Agro-sciences and degrees focused on the Agro sector, covering the following faculties:</p> <ul style="list-style-type: none"> Agroecology Division of Forestry Sciences Phytotechnics Irrigation Engineering Agro-industrial Engineering Agricultural Mechanical Engineering Agricultural High School Agricultural Parasitology Rural Sociology Soils <p>Have worked on joint projects with Wageningen University and Research, located in the Netherlands.</p>
Universidad Autónoma de Querétaro (UAQ) / Autonomous University of Querétaro	PhD. Margarita Teresa de Jesús García Gasca	Academic Institution	<p>The university has undergraduate programs focused on agricultural and microbiology topics.</p> <p>In addition, postgraduate projects are currently underway in international business in floriculture and export, based on the production of roses in the state of Querétaro.</p>
Universidad Michoacana de San Nicolás de Hidalgo (UMNSNH) / San Nicolás de Hidalgo University	PhD. Raúl Cárdenas Navarro	Academic Institution	<p>The university has higher education and postgraduate programs specialized in agricultural sciences such as:</p> <ul style="list-style-type: none"> Bachelor's Degree in Agricultural Engineering Bachelor's Degree in Horticultural Agricultural Engineering Bachelor's Degree in Agricultural and Livestock Business Administration Bachelor's Degree in Biotechnology

Main stakeholders in Mexico

Organization Name	Representative	Category	Influence Area
Universidad de Guanajuato / University of Guanajuato	PhD. Luis Felipe Guerrero Agripino	Academic Institution	<p>The University has a Faculty of Agricultural Sciences, which offers the following programs:</p> <p>Agribusiness Agronomy Engineering Agro-industrial Engineering</p> <p>Additionally, we know that it has a solid research program, which has done work related to ornamentals, such as the propagation and generation of agave varieties for ornamental use.</p>
Colegio de Post Graduados en Ciencias Agrícolas (COLPOS) / Post Graduated College on Agricultural Science	PhD. Juan Antonio Villanueva Jiménez	Academic Institution	<p>Based on its three substantive activities, and the need to have an administration that allows them to be carried out efficiently, the following strategic objectives have been defined:</p> <p>To educate and train creative, innovative, and humanistic people to meet the agri-food needs of society in a context of sustainable development.</p> <p>To conduct research that generates relevant knowledge for the sustainable management of natural resources and the production of nutritious and safe food, as well as other goods and services.</p> <p>To improve the quality of life of society and provide feedback to academic activities through networking.</p>

Current major players in Mexico continue to invest and have ambitious development plans.

No new players have been identified in this Mexican ornamental industry, although in our conclusions it is the ideal plan to increase exports.

However, there are projects that can be carried out based on previous success stories in Mexico; a concrete example of this was in the Berries industry which is shown below:

USA Berry Hub in Mexico

28 years have passed since the berry sector in Mexico began, with this type of agricultural product currently occupying third place in importance within the agri-food export sector, with annual sales of around \$3,527 Billion USD, with 479,000 tons exported to 35 countries around the world.

Of the berry production, 98.25% of berry exports are to the United States and Canada, the rest to Europe and Asia. From the last 10 years, the industry growth increase in hectares

from 24,000 to 53,000 ha. This is the economic importance of berries in Mexico, since according to the president of the National Association of Berry Exports, José Luis Bustamante Fernández, the berry industry in Mexico generates around 470,000 direct jobs.

All this was made thanks to the creation of a Berry Hub located mainly in the states of Jalisco and Michoacan, and thanks to the investment of North American companies, which buy most of the berries produced in the country. Aneberries (2021)

On the other hand, some Dutch companies already have experience developing ornamental production centers in other countries, as done in Ethiopia and Kenya to expand ornamental production areas, under the quality parameters of

the Dutch growers. This was achieved thanks to the agro-climatic conditions of these countries, and with a relatively fast air transportation system from these countries to Europe (mainly the Netherlands).



IV Price, Quality and Competition



**PRICE, QUALITY
AND COMPETITION**

Currently, there are no quality standardizations in the sector; the market itself demands quality in relation to prices.

Below is a comparison of prices in the most common presentations showing the maximum, minimum and average prices of the different Ornamental Plants and Cut Flowers that are commercialized in the Mexican market, during 2021.

Average Ornamental Plants prices in Morelos, Mexico 2021

Plant name	Price max EUR	Minimum price EUR	Average price EUR	Plant name	Price max EUR	Minimum price EUR	Average price EUR
Nochebuena / Poinsettia	2.69 €	1.22 €	1.71 €	Perrito (Anthrinum)	1.22 €	0.88 €	1.08 €
Cempasúchil / Marigold	0.98 €	0.73 €	0.88 €	Grass / Cover Plants	29.35 €	5.38 €	12.23 €
Geranium	0.73 €	0.49 €	0.64 €	Lilies	1.71 €	0.88 €	1.22 €
Echeveria / Succulents	1.22 €	0.73 €	0.88 €	Orchids	17.12 €	5.38 €	8.81 €
Rose	1.71 €	0.73 €	0.88 €	Agapanthus	1.22 €	0.59 €	1.08 €
Adonis / Duras	0.73 €	0.29 €	0.49 €	Crane Flower	3.18 €	1.71 €	1.71 €
Aromatic Plants	0.73 €	0.39 €	0.49 €	Clavellina	1.22 €	0.49 €	0.88 €
Begonia	1.71 €	0.88 €	0.88 €	Cyclamen	1.71 €	0.88 €	1.22 €
Kalanchoe	1.22 €	0.64 €	0.88 €	Lilium Stargazer	1.71 €	1.08 €	1.22 €
Aloe Vera	1.22 €	0.39 €	0.73 €	Ferns	1.71 €	1.08 €	1.22 €
Fruit Trees	5.87 €	2.20 €	2.69 €	Tulip	1.71 €	0.88 €	1.22 €
Lavender	0.73 €	0.39 €	0.49 €	Aphelandra	1.71 €	0.88 €	1.22 €
Cactus	1.96 €	0.88 €	1.22 €	Arrayán	0.88 €	0.39 €	0.73 €
Petunia	1.71 €	0.88 €	1.22 €	Bromelias	14.68 €	5.38 €	8.81 €
Dahlia	1.22 €	0.49 €	0.88 €	Calas	7.34 €	5.38 €	5.87 €
Hydrangea	2.45 €	0.88 €	1.22 €	Carnation	1.22 €	0.88 €	1.08 €
Chrysanthemum	0.88 €	0.49 €	0.64 €	Dipladenia	1.71 €	0.88 €	1.22 €
Dollar Tree	1.22 €	0.88 €	1.08 €	Climbing Plants	1.71 €	1.08 €	1.22 €
Spathiphyllum	1.71 €	1.08 €	1.22 €	Sunflower	1.71 €	0.88 €	1.22 €
Anthurium	10.76 €	5.87 €	7.34 €	Bellis Perennis	1.22 €	0.88 €	1.22 €
Bamboo	5.38 €	3.91 €	4.40 €	Hebe	1.22 €	0.88 €	1.08 €
Bougainvillea	1.71 €	1.08 €	1.22 €	Vinca	1.22 €	0.88 €	1.08 €
Dracaena (Palo de Brazil)	2.20 €	1.08 €	1.71 €				

The following table shows the prices in the Cut Flowers segment.

Prices of Cut Flowers, by stem, in "Central de Abastos, Ciudad de México", in 2021.

Flower name	Price max EUR	Minimum price EUR	Average price EUR
Roses	0.37 €	0.05 €	0.15 €
Carnation	0.16 €	0.06 €	0.11 €
Eryngium	0.20 €	0.10 €	0.14 €
Ruscus	0.20 €	0.09 €	0.13 €
Solidago	0.12 €	0.06 €	0.10 €
Aster	0.13 €	0.06 €	0.09 €
Chrysanthemum	0.20 €	0.05 €	0.11 €
Gerbera	0.44 €	0.07 €	0.19 €
Alstromeria	0.10 €	0.04 €	0.06 €
Gypsophila	0.43 €	0.12 €	0.26 €
Spray Roses	0.24 €	0.09 €	0.18 €
Foliage dollar	0.08 €	0.05 €	0.06 €
Gladiolus	0.22 €	0.08 €	0.12 €

Domestic Market

In the Cut Flowers sector, the wholesale and mid-wholesale selling prices change every day in a frame of "Supply and Demand" controlled mainly by the prices negotiated in the "Central de Abastos de la Ciudad de México". As seen in the price table, the minimum and maximum selling prices have a very wide margin. Therefore, the grower runs the risk of finding very low prices on the day he takes his flowers to market; growers who manage to consolidate a clientele of florists, florists or self-service stores, secure more stable and secure sales prices.

Quality definitely influences selling prices, but these are also clearly affected by "Supply and Demand" so

sometimes it is possible to find very good quality flowers at very low prices. This in turn affects the grower and in seasons or holidays prices can go up and benefit the price of low-quality flowers.

Supply and Demand also affects the Ornamental Plants sector but prices change less rapidly than in Cut Flowers; quality is recognized in sales channels of professionals and self-service stores, sometimes prices are affected by the "Nano" and "Small" growers who do not have the knowledge to afford supplies and labor. This leads to sales of their plants at minimal profits and even losses, which causes the grower not to have the financial capacity to invest in new technologies.

International Market

Exports of Cut Flowers are mainly to the west coast of USA and prices are negotiated based on previous quality and price between the wholesalers and the growers. Mexican flowers are sold at lower prices than those from other countries, due to lower costs of freight and unacknowledged quality.

What kind of supplies and technologies are being used at present? Who are the main competitors for Dutch suppliers?

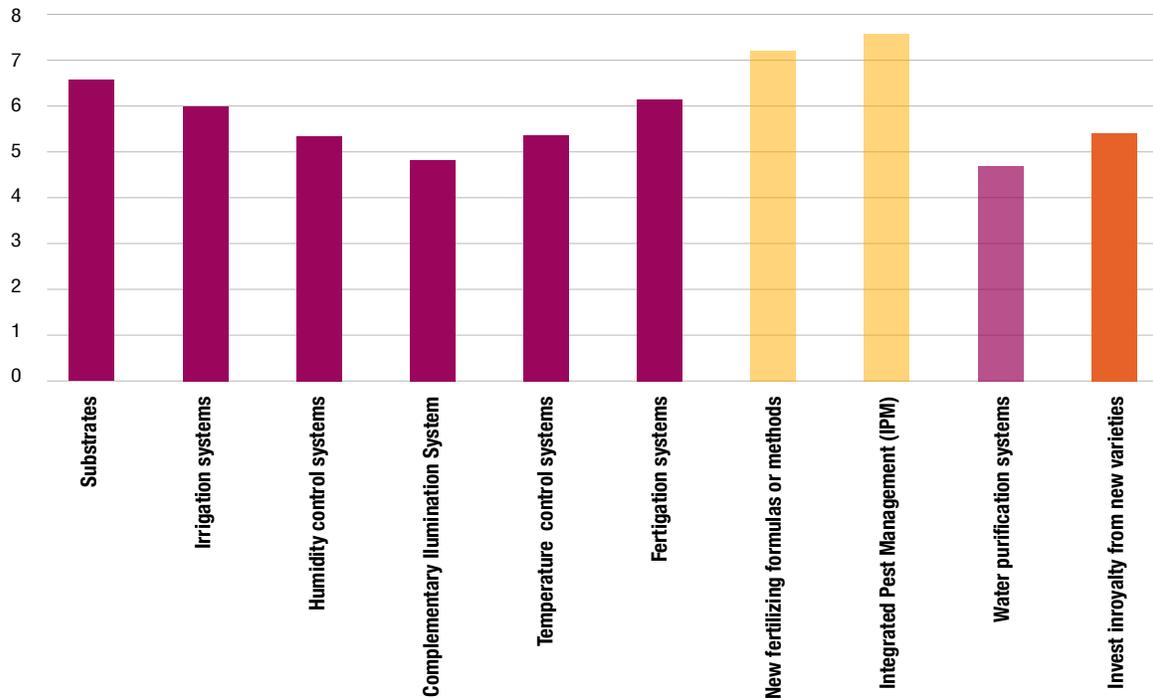
SUPPLIES AND TECHNOLOGIES CURRENT NEEDS AT THE MEXICAN ORNAMENTAL SECTOR

A scale from 1 to 10 was used to measure the degree of interest in investing in new technologies. This allows us to measure the real intentions of a grower to buy or invest in a specific type of technology. This scale can be interpreted as a traffic light of intentionality with four main levels: Green, Yellow, Orange, and Red. If the average is less than 5, it is categorized as Red or very low level of intentionality. If the average is between 5.01 and less than 7 it is classified as Orange or a low level of intentionality. If the average score is 7 or less than 8.49 it is considered Yellow with a medium level to invest. Finally, if the average is equal to or higher than 8.50, it is classified as Green with a high level of interest to invest.

In general terms, the level of intention of Mexican growers to invest in technology is 6.07. This represents an opportunity to define communication strategies with growers, highlighting the benefits of the use of these technologies in production systems.

The following supplies were evaluated in the survey: Substrates, Irrigation Systems, Humidity Control Systems, Light Control Systems, Temperature Control, Fertigation Systems, Fertilizer Research, IPM (Integrated Pest Management Controls), Water Purification Systems and buyers' interest or willingness to pay royalties for new varieties.

Average interest to invest in thechnology



As revealed in the previous chart, the topics attracting the greatest interest for investing are those related to New Fertilizing Formulas or Methods (7.51) and Integrated Pest Management Supplies (7.70); nonetheless, given the climatic conditions in the country, growers are less interested in the use of high technology in agro-climatic controls.

Presence of Dutch Vegetative Materials companies in the Mexican Ornamental Sector and Relevant attributes expected from breeders of Mexican ornamental growers

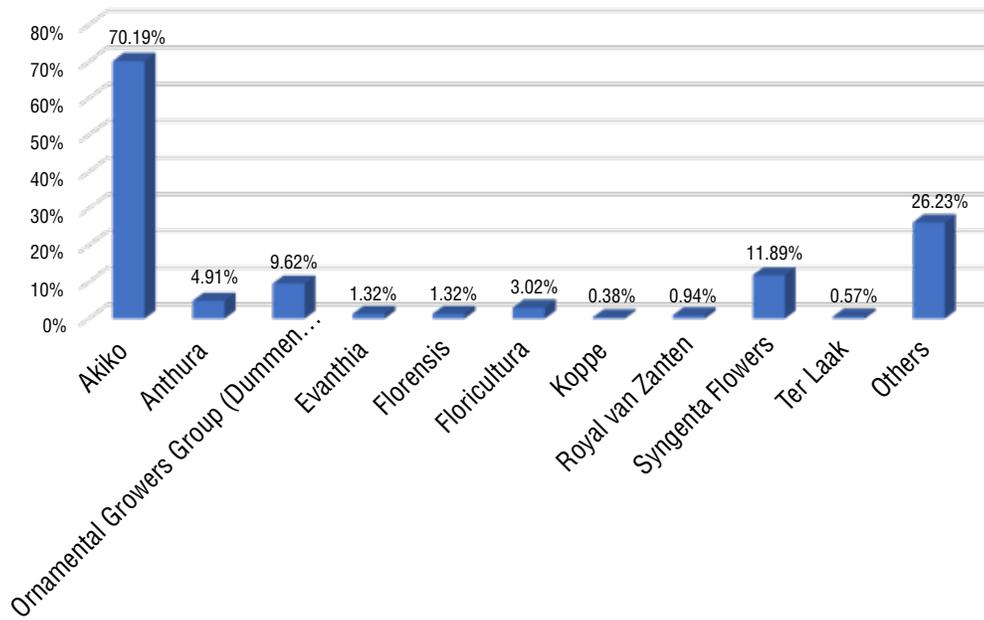
According to the following chart, and taking into account the opinions that some representatives of Dutch vegetative material companies with operations in Mexico issued in an interview, many of the growers do not know the companies directly because they sell the plant material through large Mexican traders, which tend to represent not only Dutch companies,

but also companies from countries such as Germany, the United States or even Thailand and Eurasian regions, with catalogues that can often exceed 5 thousand ornamental varieties for sale.

This is due to the "convenience" of selling through the marketing companies, although it is not always the best way, since in the survey, we detected that the Mexican ornamental grower does consume Dutch vegetative material, but, as materials are purchased through Mexican marketing companies, buyers do not know the company of origin of the same.

In the survey, buyers were asked about the name of their local suppliers of plant material. 70% of the growers said they recognized Akiko, which represents their market position. However, growers are not able to identify Dutch brands as part of the product portfolio offered by this trader.

Vegetative material suppliers

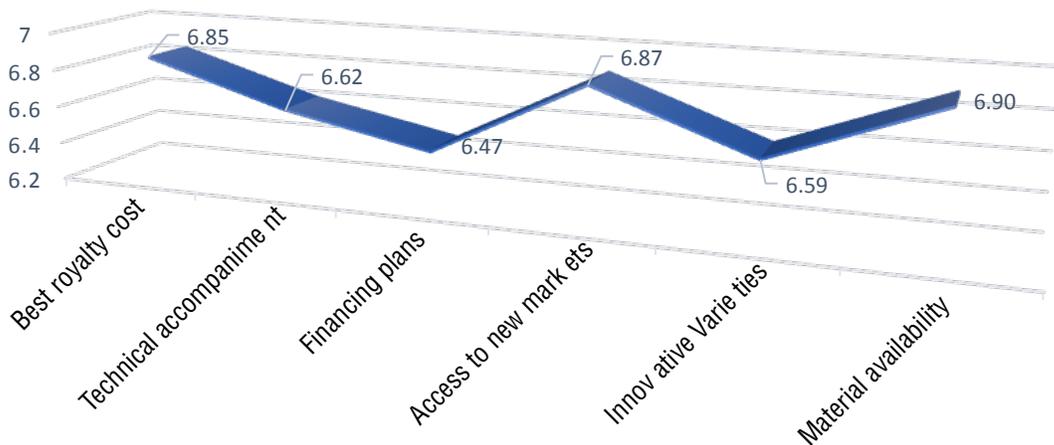


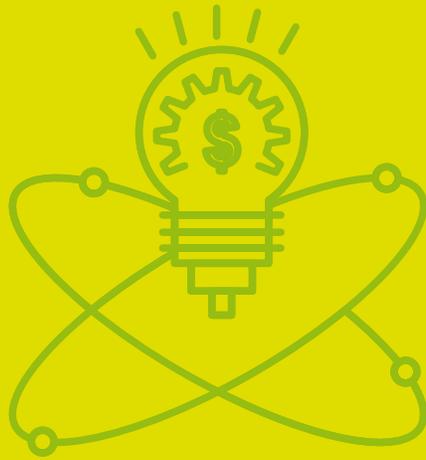
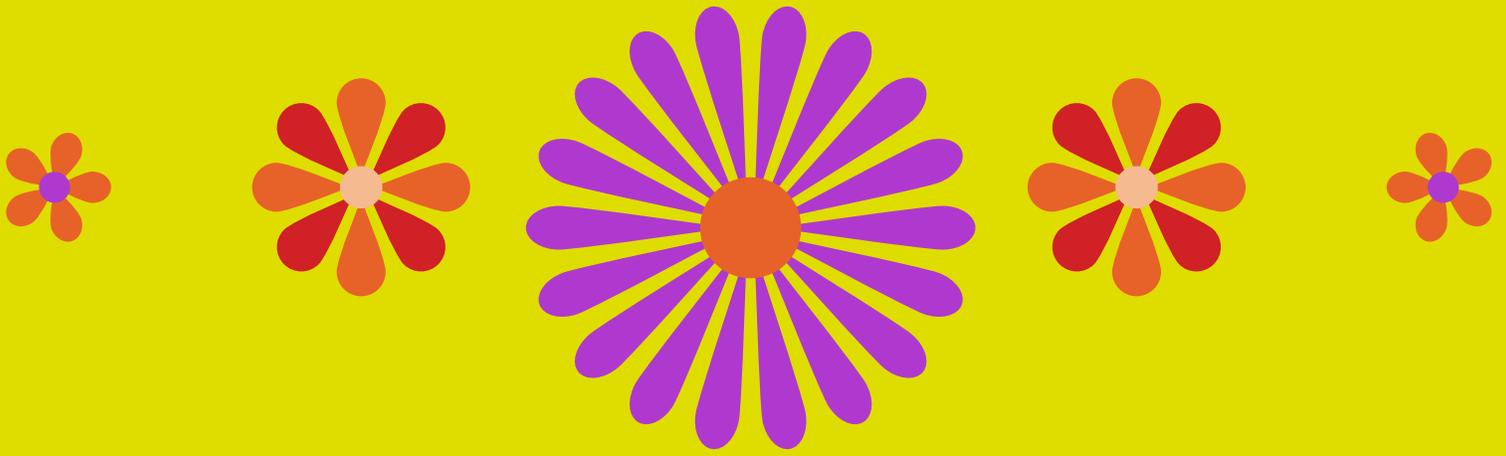
In others, Mexican companies like "Vivero Internacional", and "Floraplant" stand out as the most mentioned.

The market study assessed the relevant attributes required of a breeder on a scale of 1 to 10. These included best royalty cost, technical accessories,

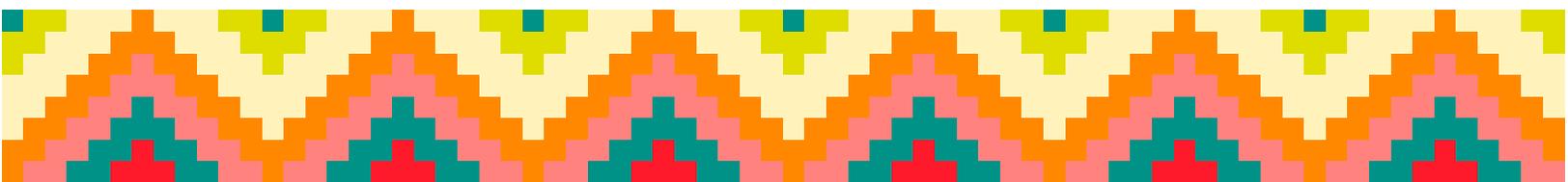
financing plans, access to new markets, innovative varieties and material availability. As can be seen in the following chart, there are no major differences in the average rating for each of the attributes. Therefore, consideration is given to the opportunity of offering better support and a better grower-supplier relationship.

Average of Relevant attributes





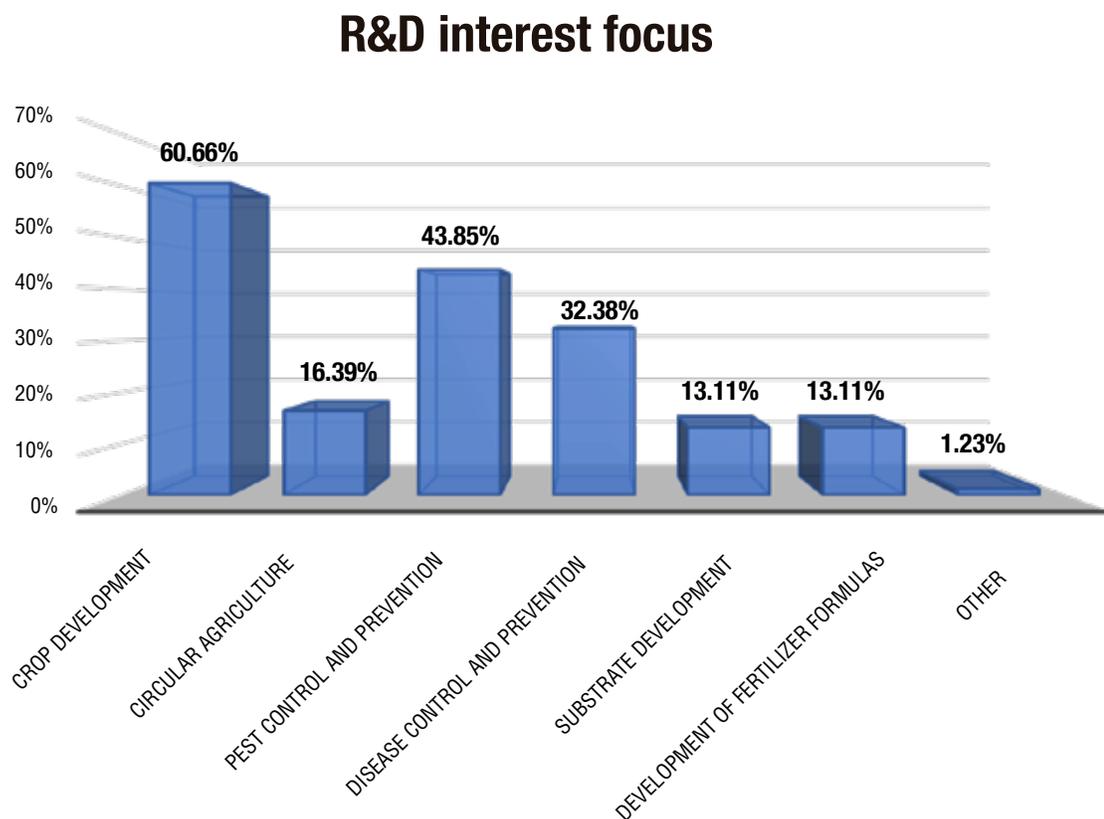
V Research & innovation



RESEARCH & INNOVATION

As part of the results of the interviews with academic opinion leaders and Federal Government authorities, it became clear that the lines of research of the centers and universities are not aligned with the interests of Mexican growers.

The following chart shows the main research topics of ornamental growers.



The representative of the research center at the University of Chapingo said that the lines of research focus on proposals for support for patent development and plant varieties. The University of Chapingo has a postgraduate and research program with support aimed at stimulating individual researchers or research groups in the development of equipment, products, or processes for patents before the IMPI and plant varieties before the SNICS.

Another key player is FIRA's Tezoyuca Technological Development Centre. Its main strategic line is developed in the field of Ornamental Horticulture, with the main functions of designing, implementing, and disseminating methodologies for the integration of value networks, promoting the development of the market for consultancy services in agribusiness in nurseries and ornamental plants in general. This center has three business units: Micropropagation laboratory, nursery and floriculture. Its objectives are detailed below.

Micropropagation Laboratory Unit: The objective of this module is to provide the service of Micropropagation of species with high growth rates and high multiplication rates, and which are technically and economically viable.

Nursery Unit: The objective is to demonstrate to technicians, growers and entrepreneurs, the business models for growing ornamental plants and trees, propagated by tissue culture or by traditional processes, using different systems such as: fertigation, integrated management of pests and diseases, use of phytohormones and suitable substrates that are competitive even in the international arena, under the principle of rational use of water and energy.

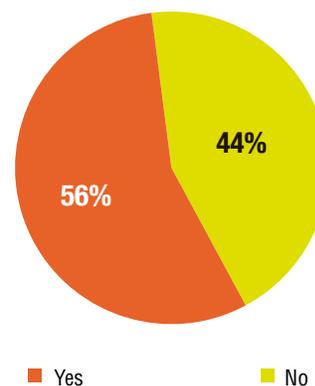
Floriculture Unit: The objective is to demonstrate the business characteristics of flower production, typical of dry subtropical climates, in competitive commercial schemes, using fertigation and hydroponics techniques to produce vegetables, flowers and ornamental foliage.

Source: <https://www.fira.gob.mx/>

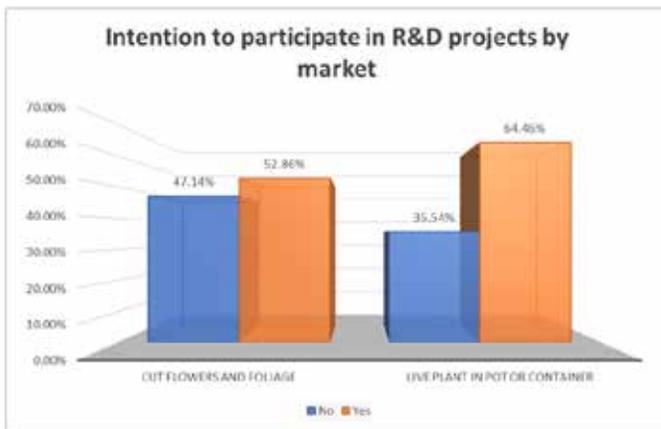
One of the distinctive features of these centers is the limited cooperation with actors outside the sector, and virtually no opportunities for joint research with foreign private sector companies are identified. Researchers are very "jealous" of their developments and patent generation; this closes their circle to the academics themselves who have been working together for a long time and who are members of the National System of Researchers (SNI).

These formal research programs contrast with the needs and demands of the growers. 56% of those interviewed said they were interested in participating in research and development projects. However, one of the main limitations identified is the lack of proximity between research centers and growers.

Intention to participate in R&D projects



Prevailing behavior patterns in each of the market segments are easily seen in the following chart. It seems that when the grower focuses on a segment, he/she is more interested in participating. Plant growers are the most interested (64%).

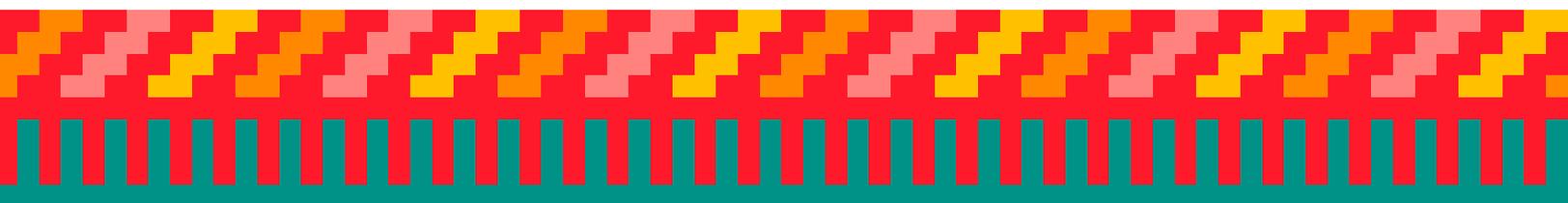


When analyzing by zone, we can identify that there are different interests in participating in research and development projects. Nurseries in the State of Mexico and Xochimilco stand out as the areas that have many growers and show great interest in participating.

In terms of the threats perceived by ornamental growers, water is one of the most relevant factors. 66% of those interviewed perceive this element to be a high risk.

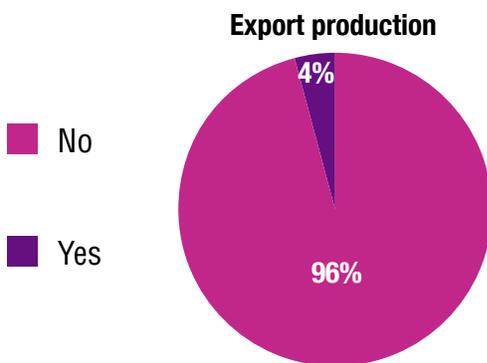


VI Exports to North America



EXPORTS TO NORTH AMERICA

In general terms, we identified a poor entrepreneurial culture oriented towards international markets. Only 4% of the total number of people interviewed, said that they export their products. Practically the growers who belong to the Cut Flower segment are the ones who export.



The areas with experience on ornamental exports are located mainly in Villa Guerrero and Baja California. However, we found that 100% of the ornamental growers established in Baja California are exporting, as opposed to almost 5% of Villa Guerrero growers that are exporting.

Challenges for Mexican growers of ornamentals from exporting.

There are several challenges which prevent Mexican growers of ornamentals from exporting. We consider that the main obstacle is the lack of entrepreneurial culture in the sector. It is common knowledge that the Cut Flower segment is practically the one that would have more real possibilities for exporting. The growers, despite belonging to groups, are not aware of the opportunities existing in international markets. Since all their production is marketed in Mexico, they do not see the need to expand.

To address this issue, it is recommended that growers be accompanied by experts in international trade, in order to help them see the real opportunities that exist in the American market. Above all, there should be an alliance between the group of growers and the expert marketers.

We consider that, although the Mexican growers of cut flowers have the quality to export, there is barely any interest on their part to enter this activity. There is a great demand in the United States for some species of cut flowers and they are being supplied mainly by suppliers from Colombia and some from Ecuador. Mexican cut flowers can compete in quality with Colombian and Ecuadorian cut flowers; however, there is no real interest of the growers to undertake export activities.

The demand for roses and chrysanthemums is shown below, as these are the species that prevail in the Mexican market.

As shown in the following images, the United States is the main importer of roses (24% share) and chrysanthemums (27% share).

Market share for Roses by country



Trade Map (Consulted at: <https://www.trademap.org/>)

Market share for Chrysanthemums by country



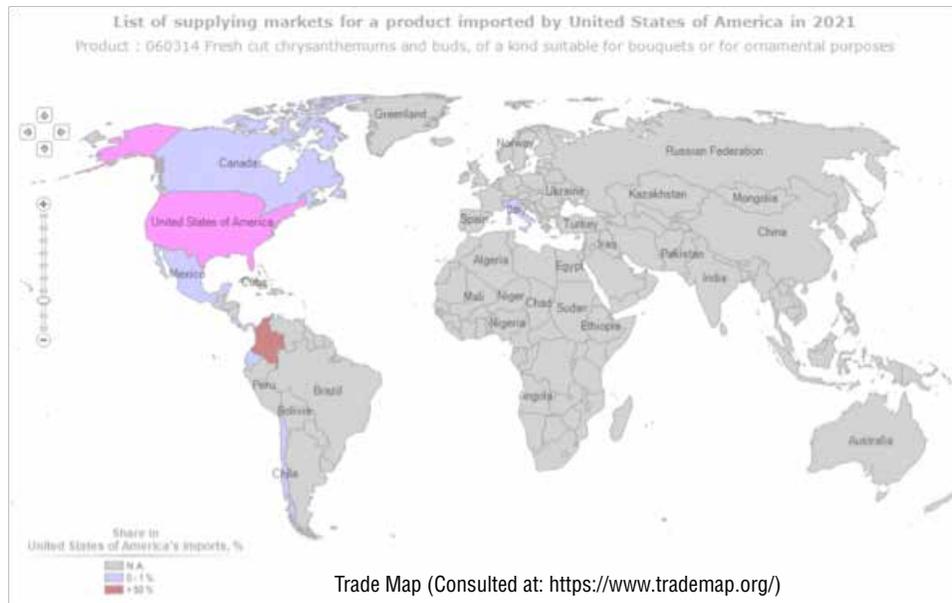
Looking deeper into the import market for roses and chrysanthemums in the United States, two countries are identified as suppliers, Colombia, and Ecuador.

For roses, Colombia is the most important supplier (58%), followed by Ecuador (39%). For Chrysanthemums, Colombia definitely controls the import market with 99%.

Supplying markets for Roses imported by USA



Supplying markets for Chrysanthemums imported by USA



The position that Mexico has in terms of imports of ornamentals (plants and cut flowers) in Canada and the USA may be seen in the following tables:

List of supplying markets for a product imported by United States of America
Product: 06 Live trees and other plants; bulbs, roots and the like; cut flowers and ornamental foliage
Unit : US Dollar million

Exporters	Imported value in 2021
World	3,563
Colombia	1,356
Canada	671
Ecuador	533
Netherlands	288
China	112
Mexico	97
Costa Rica	94
Taipei, Chinese	86
Guatemala	71
India	30

ITC calculations based on US Census Bureau statistics since January, 2015

List of supplying markets for a product imported by Canada
Product: 06 Live trees and other plants; bulbs, roots and the like; cut flowers and ornamental foliage
Unit : US Dollar million

Exporters	Imported value in 2021
World	546
United States of America	263
Colombia	88
Netherlands	63
Ecuador	36
Mexico	15
Taipei, Chinese	11
China	9
Guatemala	8
Costa Rica	6
India	5

ITC calculations based on US Census Bureau statistics since January, 2015

The following table shows the total world imports of cut roses made by the USA under HS Code 060311, where it is clear that under an individual export scheme, Mexico competes with major South

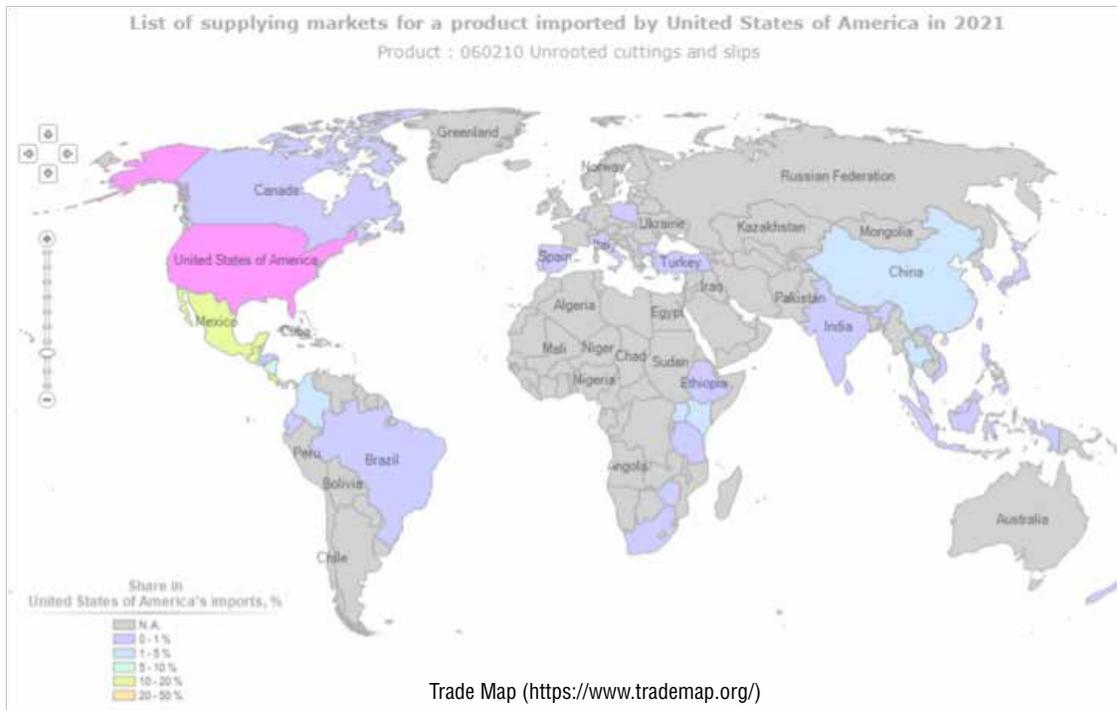
American powers, however, in the bouquet development sector, there is a great opportunity, given the geographical situation of Mexico and the facilities involved in sending bouquets by land to the USA.

Product: 060311 Fresh cut roses and buds, of a kind suitable for bouquets or for ornamental purposes

Country Export	Value import 2021 (USD thousand)	Share in USA (%)	Unit value (USD/unit)	Growth in imported quantity between 2017-2021
Colombia	533,476	57.80%	0.34	7%
Ecuador	356,888	38.70%	0.39	11%
Guatemala	17,006	1.80%	0.33	11%
Mexico	10,463	1.10%	0.31	6%
Ethiopia	2,492	0.30%	0.25	3%
Netherlands	1,376	0.10%	1.02	-26%
Kenya	1,118	0.10%	0.59	-49%
Canada	80	0.00%	8.37	-8%
Thailand	73	0.00%	5.9	-27%
Costa Rica	55	0.00%	0.99	233%

Trade Map (<https://www.trademap.org/>)

In the following map we can observe the exporting countries of code 060210 Unrooted cuttings and slips to the United States. Mexico stands out with 13% market share with 11% growth in the period from 2017 to 2021.



One of the highlights in international trade is related to the opportunities concerning logistics costs between Mexico and the United States. The consolidated shipping cost per pallet from the State of Mexico to Los Angeles is between \$180 and \$200 USD and from the State of Mexico to Texas it is approximately \$250 USD. As displayed in the following table, the unit cost of a cutting exported from Mexico is \$0,10 USD. In interviews with growers from Colombia and the State of Mexico, they commented that the cost per stem transported by air

from Bogota to Miami is \$0,13 USD and by land from the State of Mexico to Los Angeles is \$0,06, a difference of a little more than 50%.

One of the main commercial strengths within the ornamental industry in Mexico at the international level is the export of cuttings and seed material HS code 060210, as it is the third most important importer of the United States, however, since it is vegetative material, it must be transported by air due to the lifetime period of the mentioned products.

Cuttings and seeds materials main exporters:

Country Export	Value import	Share in USA	Unit value (USD/unit)	Growth in imported quantity between 2017-2021
Costa Rica	36,169	21.1%	\$0.15	18%
Guatemala	33,205	19.4%	\$0.09	8%
Mexico	22,697	13.3%	\$0.10	11%
El Salvador	12,693	7.4%	\$0.10	2%
Nicaragua	11,252	6.6%	\$0.07	15%
Kenya	8,214	4.8%	\$0.13	87%
China	7,097	4.1%	\$0.16	11%
Colombia	6,349	3.7%	\$0.09	12%
Uganda	6,301	3.7%	\$0.10	52%
Dominican Republic	5,972	3.5%	\$0.07	34%

Trade Map (<https://www.trademap.org/>)

The global position of Mexico, in terms of vegetative material exports, can be seen in the following chart:

Product: 120930 Seeds of herbaceous plants cultivated mainly for flowers, for sowing

Country Export	Value import 2021 (USD thousand)	Share in USA	Unit value (USD/unit/tons)	Growth in imported quantity between 2017-2021
Netherlands	16,102	20.50%	95,278	9%
Costa Rica	10,006	12.80%	1,250,750	8%
Germany	9,088	11.60%	61,405	14%
Japan	8,144	10.40%	509,000	-4%
Guatemala	6,583	8.40%	2,194,333	4%
China	6,053	7.70%	90,343	-6%
Chile	4,329	5.50%	618,429	-33%
France	3,889	5.00%	105,108	40%
Thailand	2,245	2.90%	748,333	16%
Denmark	2,218	2.80%	369,667	16%
15th Mexico	678	0.90%	10,594	36%

Trade Map (<https://www.trademap.org/>)

What is hampering the development of exports to the North American market?

The most important current obstacle to increasing exports is the composition of the ornamental sector. As we present in this document, there are more than 10,818 growers who encompass 13,005 Ha, made up of many participating growers with production extensions close to one hectare. These small extensions are not enough to carry out individual exports, so they must be grouped, which constitutes a risk in the unification of quality and compliance. Furthermore, their differences in criteria in their decision-making process makes it difficult to agree on many issues for common export objectives. Finally, there is a common preference to approach the local market because it is very attractive and easy to access.

What would be the ways to tackle it?

The suggestion to access the US and the Canadian market is to form Floriculture Hubs, with a business and financial vision, adhering to North American market trends and regulations, with minimum units of planted area of at least 8 ha to be able to supply possible international contracts, with professional post-harvest management units and bouquet assembly areas, providing products that would be ready for the point of sale.

What are the chances that exports to the North American market will take off in the near future?

In previous paragraphs, we presented the positive conditions in legal terms of the TMEC, such as the favorable agroclimatic conditions, geographic location (adjacent to the USA), competitive advantages in labor costs, and land transportation, all of which constitute the set of advantages for which we consider that Mexico can be the main supplier of flowers and foliage cutoff for USA and Canada.

The case of “Ornamental Plants” sub-sector is similar to the advantages of “Cut Flowers”, except that in this sub-sector legislative work must be done to make it easier to export plants with substrate from Mexico. These subjects will have to be developed in the medium-term because they require the will of Congress and the country's phytosanitary authorities, specifically SENASICA

Market trends in floriculture industry in USA and Canada.

Trends in the floriculture industry have been influenced in the last two years by the COVID-19 phenomenon, a situation that has generated changes in the behavior of its consumers.

Isolation and its effects on the supply chain have contributed to the emergence of several new consumer behaviors or preferences, these trends are being reported in different sources related to the Floricultural industry in the USA and Canada.

The following trends are described by organizations such as: The Floral Marketing Fund (FMF), The Society of American Florists (SAF), American Institute of Floral Designers (AIFD), and from statistics of the Canadian government (Canada.ca) and the United States Department of Agriculture (USDA).

A recent study from The Floral Marketing Fund (FMF) states the following:

“COVID-19 has had dramatic impacts on the horticulture industry. Overall, most industry categories have experienced growth since 2019. Industry experts hypothesize that because people are home more, they are engaging in more plant-related activities for various reasons (health, time available, etc.)”

- COVID-19 has greatly affected the supply chain of goods and services in general and in particular the flower industry; it has been an important factor in the development of new flower delivery methods, and as a consequence, some of them have arrived to stay. A recent survey by Floral Marketing Fund (FMF) in regards to sales channels shows that online sales are a very common and relevant sales channel for the industry.

“Ninety-four percent of brick-and-mortar florists accept online ordering. One hundred percent of online florists and wire services accept online orders. Sixty-eight percent of supermarkets accept online orders. Seventy-three percent of domestic growers accept online orders, while 45% of international growers do. Eighty-six percent of importers accept online orders and 78% of distributors accept online orders, while only 33% of manufacturers accept online orders.”

- The repressed demand has manifested itself in the floral market through the increase in personalized shipments between relatives and acquaintances to be able to express feelings of concern and love with no physical contact, from a distance.
- A survey conducted by The Society of American Florists (SAF) has indicated that:

“Consumers want florals on both sides of the color spectrum – happy, bright colors and subdued, neutral tones. The Pantone Color Institute’s New York Fashion Week Spring and Summer 2022 palette reflects the nation’s “need for calm and comfort” along with a “free-spirited optimism and joyful adventure.” The grounding, comforting tones include sapphire blue (Skydiver), earth brown (Coca Mocha), bluegreen (Harbor Blue), ice blue (Glacier Lake), baby blue (Spun Sugar) and pale pink (Gossamer Pink). In

festive colors include hot pink (Innuendo), bright yellow (Daffodil), fiery red (Poinciana) and chartreuse (Dahlia). Pantone’s color predictions go hand in hand with the Flower Council of Holland’s 2022 Horticulture Sector Trends, which are: Fresh Start (whites and bright accent colors), Bright and Breezy (Funfetti cake colors), Traditional Sentiment (faded pastels and darker secure colors) and Wellness Bubble (watery pales).”

- Another trend that is inspired by nature is dried flowers which tend to reflect a natural style that is very oriented to the Boho look which is very popular among the younger generations.
- Due to distortions in the logistics chain, the market has also reacted by accepting proposals for flowers to replace those that began to be scarce, as an example in the interviews, the promotion of Spray roses is mentioned since their main characteristic is to present several buttons on a single stem, which represents a greater volume of flowers and in turn generates a feeling of greater value for money.
- According to a designer belonging to the American Institute of Floral Designers (AIFD) the market has always looked for inspiration in Europe, where they have observed that the airy and natural European garden style has been present and their perception is that it will not disappear.
- Floral subscriptions to florists are very popular because the home office modality has impacted the conception that flowers are luxury items, and has turned them into an expression of well-being and joy, in addition to knowing that the subscription can offer them discounts, free delivery among other added values like virtual floral workshops that help on plant care techniques.
- Florists have realized the desire of consumers to support local businesses, which is why they have chosen to supplement flower arrangements with other products, a practice that had been observed even before the pandemic, in

which they combine the arrangements with chocolates, totally natural spa products among other items.

- The demand for indoor plants is a growing trend, which is why specialized indoor plant stores are present in every city, and are the places where consumers go to buy only indoor plants. These stores are building a community and can [collaborate] with live bands or coffee shops as people buy new plants and learn how to care for them. As per The Floral Marketing Fund (FMF) 2021 survey there is a positive trend in the houseplant business.

“Comparing Purchasers from 2019 to 2021, Purchasers in 2021 own more plants and are more active in their houseplant hobby. Interestingly, they purchase less frequently and they are less likely to physically go to different shopping outlets than 2019 Purchasers (perhaps an influence of COVID sheltering-in-place). Also, 2021 Purchasers are willing to pay a higher average price value at each price level in each plant category.

2021 Purchasers are also more likely to give a houseplant as a gift, especially a “Get Well” gift (75% of 2021 Purchasers would give a houseplant as a “Get Well” gift, as compared to 12% of 2019 Purchasers). 2021 Purchasers are older, have higher levels of education, income, and members in the household than 2019 Purchasers. Geographically, 2019 Purchasers has a higher percentage of rural or small-town dwelling consumers from the Northeast, Midwest, or West while 2021 Purchasers had higher percentages in metropolitan or suburban areas in the Southeast and Mid-Atlantic regions of the United States.”

Distribution channels trends USA and Canada

Canada

When sales resumed in late spring in most of Canada, pent-up demand and a home-bound population drove sales upward by 6.4% from \$2.39 billion in 2019 to \$2.56 billion in 2020. Retailers adapted to pandemic restrictions by offering online shopping, curbside pick-up and home delivery, as well as physically distanced on-site sales.

Greenhouse flowers and plants appears to be the largest sub-sector accounting for 66 % of total ornamental product sales (\$1.7 billion) in 2020. Nursery plant sales and resales reached \$727 million in 2020, accounting for 29 % of total ornamental sales. Turf sod generated a further \$138 million in sales, contributing 5 % of total ornamental production in 2020.

Ornamental sales and resales by sub-sector (million Canadian dollars)

Sub sector	2020	Share
Greenhouse flower and plants	1,677.50	66%
Nursery	727	29%
Sod	137.50	5%
Field-grown cut flowers	24.30	1%
Total	2,542	

Own elaboration Source: <https://agriculture.canada.ca/en/agriculture-and-agri-food-canada/canadas-agriculture-sectors/horticulture/statistical-overview-canadian-ornamental-industry-2020#orn>

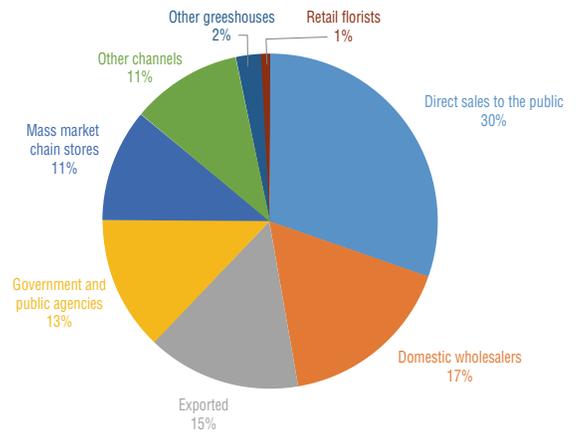
Inside the greenhouse flowers and plants subsector, the most relevant channels are Direct sales to the public 30 % of total sales, followed by domestic wholesalers 17%.

**Distribution Channels for Greenhouse flower and plants product sales and resales
(million Canadian dollars)**

Sales distribution channel	2020	Share
Direct sales to the public	509	30%
Domestic wholesalers	285	17%
Exported	249	15%
Government and public agencies	214	13%
Mass market chain stores	184	11%
Other channels	180	11%
Other greenhouses	44	3%
Retail florists	12	1%
Total sales	1,678	100%

Own elaboration Source: <https://agriculture.canada.ca/en/agriculture-and-agri-food-canada/canadas-agriculture-sectors/horticulture/statistical-overview-canadian-ornamental-industry-2020#orn>

Greenhouse share value by Marketing Channels



Own elaboration Source: <https://agriculture.canada.ca/en/agriculture-and-agri-food-canada/canadas-agriculture-sectors/horticulture/statistical-overview-canadian-ornamental-industry-2020#orn>

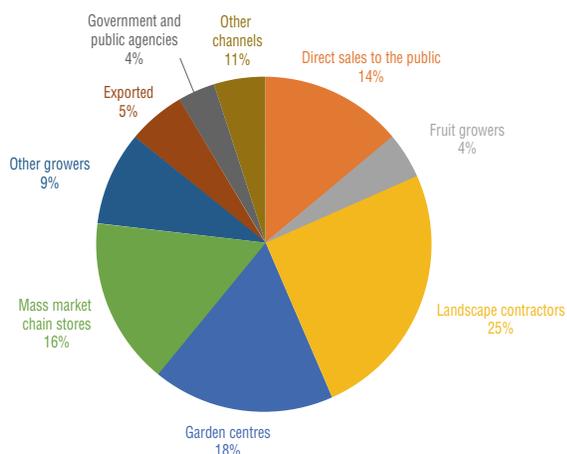
Canadian statistics show an increment on sales through the Channels for distribution for nursery product sales and resales in 2020, (+4 % to 2019). Distribution channels concentration of sales (75 %) are on four channels, out of which landscape contractors are the most relevant (25 %), followed by Garden centers (17 %) and mass market chain stores (16%). Direct sales to the public are described as “Including roadside stands and owner-operated retail outlets”, which means somehow an important source of self-grown segments that in the end will acquire their growing vegetative material through a formal source.

Channels for distribution for nursery product sales and resales

Sales distribution channel	2020 (Millions)	Share on total sales
Direct sales to the public	105	14%
Fruit growers	31	4%
Landscape contractors	179	25%
Garden centers	128	17%
Mass market chain stores	119	16%
Other growers	66	9%
Exporters	37	5%
Government and public agencies	26	4%
Other channels	36	5%
Total sales	727	100%

Own elaboration Source: <https://agriculture.canada.ca/en/agriculture-and-agri-food-canada/canadas-agriculture-sectors/horticulture/statistical-overview-canadian-ornamental-industry-2020#orn>

Nursery share value by Marketing Channels



Own elaboration Source: <https://agriculture.canada.ca/en/agriculture-and-agri-food-canada/canadas-agriculture-sectors/horticulture/statistical-overview-canadian-ornamental-industry-2020#orn>

USA

USDA 2019 survey shows horticulture products were primarily marketed wholesale, for 11.9 billion, accounting for 86% of the value in sales, while retail accounted for 1.9 billion, 14% of total sales.

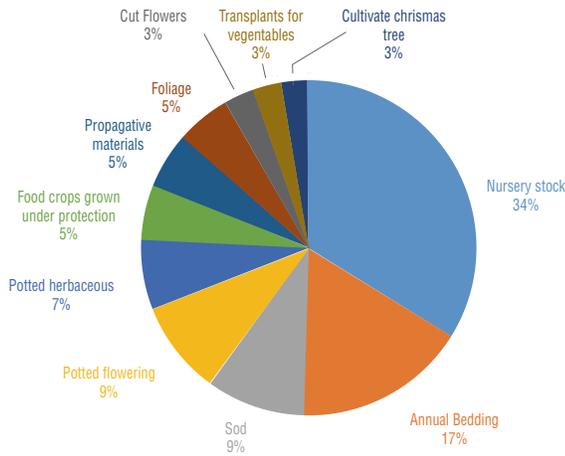
Nursery stock was the largest horticultural sub-sector value of sales and accounted for 34% of all horticultural sales.

Sale value of horticultural by sub-sector 2019

Sub sector	2019 sales \$ millions	Share
Nursery stock	4,545	34%
Annual Bedding	2,244	17%
Sod	1,272	9%
Potted flowering	1,200	9%
Potted herbaceous	923	7%
Food crops grown under protection	703	5%
Propagative materials	720	5%
Foliage	691	5%
Cut flowers and cut lei flowers	386	3%
Transplants for vegetables	370	3%
Cultivated Christmas trees	357	3%
Total	13,411	

Own elaboration, source: https://www.nass.usda.gov/Surveys/Guide_to_NASS_Surveys/Census_of_Horticultural_Specialties/index.php

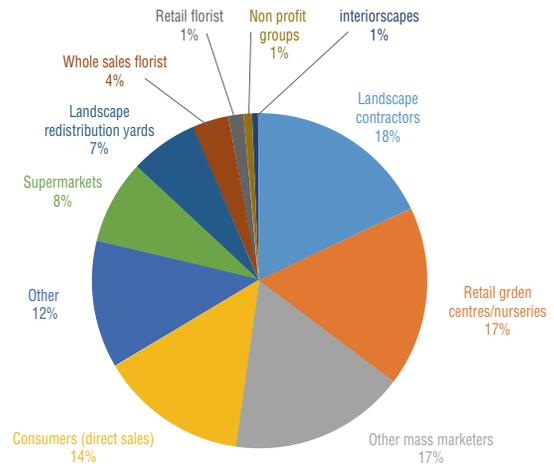
Horticultural share value by plant sub-sector 2019



Own elaboration, source: https://www.nass.usda.gov/Surveys/Guide_to_NASS_Surveys/Census_of_Horticultural_Specialties/index.php

In regards to total horticulture channels, USDA reports that five channels concentrate most sales; out of which landscape contractors the largest marketing channel by volume, accounting for 18% total sales, followed by Garden centers (17 %) and other mass marketers (17%), Consumer direct sales (14%).

Horticultural share value by Marketing Channels 2019



Own elaboration, source: https://www.nass.usda.gov/Surveys/Guide_to_NASS_Surveys/Census_of_Horticultural_Specialties/index.php

Nursery stock was the largest horticultural category by value of sales and accounted for 34% of all horticultural sales. Broadleaf evergreens were the largest plant category of nursery stock sales and accounted for 19% of total nursery sales.

Marketing value by channels 2019 (\$ million)

Marketing Channels Used, 2019	2019 sales \$ millions	Share
Landscape contractors	4,545	34%
Retail garden centers/nurseries	2,244	17%
Other mass marketers	1,272	9%
Consumers (direct sales)	1,200	9%
Other	923	7%
Supermarkets	703	5%
Landscape redistribution yards	720	5%
Whole sales florist	691	5%
Retail florist	386	3%
Non profit groups	370	3%
Interiors capers	357	3%
Total	13,411	

Own elaboration, source:

https://www.nass.usda.gov/Surveys/Guide_to_NASS_Surveys/Census_of_Horticultural_Specialties/index.php

Nursery Stock share value by plant category

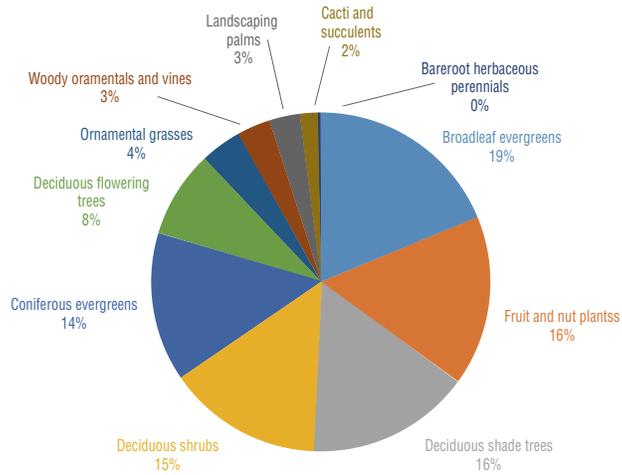
Nursery Stock sales value by plant category

Plant category	Million US \$	Share
Broadleaf evergreens	853	19%
Fruit and nut plants	735	16%
Deciduous shade trees	711	16%
Deciduous shrubs	674	15%
Coniferous evergreens	652	14%
Deciduous flowering trees	377	8%
Ornamental grasses	179	4%
Woody ornamentals and vines	141	3%
Landscaping palms	133	3%
Cacti and succulents	79	2%
Bareroot herbaceous perennials	11	0,20%
Total nursery stock sales	4,545	

Own elaboration, source:

https://www.nass.usda.gov/Surveys/Guide_to_NASS_Surveys/Census_of_Horticultural_Specialties/index.php

Nursery Stock share value by plant category

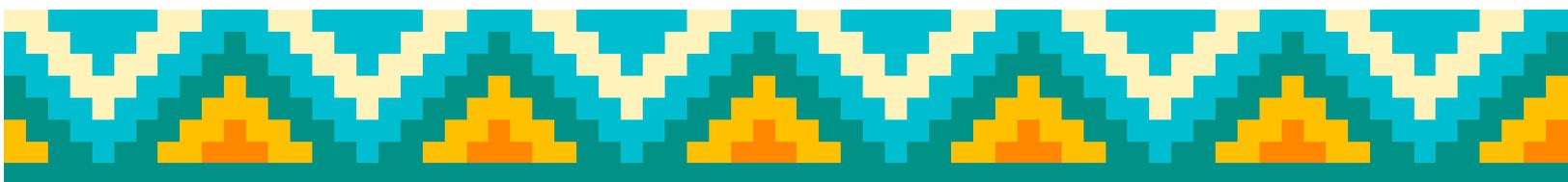


Own elaboration, source:

https://www.nass.usda.gov/Surveys/Guide_to_NASS_Surveys/Census_of_Horticultural_Specialties/index.php



VII Policy legislation & regulation, breeders rights



National Service for Agri-Food Health, Safety and Quality (SENASICA) - Responsible for issuing phytosanitary import certificates

The Phytosanitary Certificate for Imports is the document issued by SENASICA at the points of entry into Mexico, to supervise the quality of goods of plant origin regulated by the Ministry of Agriculture and Rural Development (SADER), upon compliance with the requirements established for this purpose.

Before making your application, you should check the requirements for the import of plants, their products, and by-products, which can be found in the "Phytosanitary Consultation and Requirements for Imports Module" (MCRFI), as well as those required to obtain the Phytosanitary Certificate for Imports.

In case the requirements for imports do not appear in the MCRFI, you must follow the SENASICA-02-022 procedure, "Request for requirements that are not in the Module of Phytosanitary Requirements for Imports", as established.

National Service of Seed Inspection and Certification (SNICS) – The Mexican Institution that protects Breeders and their varieties

Varieties that are to be commercialized in the country must comply with the internal regulation of registering their variety with the SNICS.

In Mexico, plant varieties can be registered through the application for a breeder's title that grants a temporary right of exclusive exploitation and through registration in the National Catalogue of Plant Varie-

ties (CNVV), which does not confer exclusivity of use but which is indispensable both in the process of qualifying the quality of the seeds and in the official list of varieties for common use. The regulatory framework for the first is the Federal Law on Plant Varieties (LFVVV) of 1996, which is in accordance with the 1978 Act of the Convention of the International Union for the Protection of New Varieties of Plants (UPOV), to which Mexico adhered in July 1997. The second type of registration is based on the 2007 Federal Law on Seed Production, Certification and Trade (LFPCyCS).

We can say that Dutch providers have to register their own varieties at SNICS before they begin with their commercialization in Mexico, this gives them the opportunity to be more protected in terms of duplication of vegetative material, another recommendation that we obtain is that companies may have to make very specific 1 on 1 contracts, in order to have a better protection of both parts and to make certain growers make good use of the vegetative material.

Commercial organization for export under United States–Mexico–Canada Agreement (USMCA)

The United States–Mexico–Canada Agreement (USMCA) replaces the North American Free Trade Agreement, which was enacted on January 1, 1994 (the "NAFTA"), regardless of those provisions established in the USMCA that refer to provisions of NAFTA.

The USMCA represents the continuation and updating of commercial relations between Mexico, the United States, and Canada.

This new treaty expands the characteristics of the negotiation since it goes from 22 articles in the NAFTA to 34 articles in the USMCA. This grants it greater specificity; chapter 20 stands out, which is dedicated to intellectual property rights, and this in turn implies greater protection of copyright and technological innovations, both industrial and agricultural.

For marketing purposes, especially for export, growers will have to abide by the new regulations incorporated in the USMCA regarding intellectual property.

The free trade agreement Mexico-United States-Canada USMCA incorporates in its CHAPTER 20 "INTELLECTUAL PROPERTY RIGHTS", Section A: General Provisions, Article 20.1: Definitions, in which it describes several international treaties to which the countries subscribing the treaty must adhere, among them and relevant to our research is UPOV 91.

"UPOV 1991 refers to the International Convention for the Protection of New Varieties of Plants, enacted in Paris on December 2, 1961, revised at Geneva on March 19, 1991."

In turn, in this same chapter, Article 20.7: International Agreements indicates the following:

Each party states that it has ratified or subscribed to the following agreements, among which UPOV 1991 may be found four years.

Later in the same article, it states:

Each Party shall give due consideration to ratification or agreement to PLT or, in case this is unapplicable, shall adopt or maintain procedural standards consistent with the objective of the PLT. (PLT means the Patent Law Treaty, adopted by the WIPO Diplomatic Conference, executed in Geneva on June 1, 2000)

Then in article 20.9 "Final Provisions" the following is indicated:

Concerning obligations subject to a transition period, Mexico shall fully implement its obligations under the provisions of this Chapter, no later than on the expiration date of the relevant period specified below, which begins on the date of enactment of this Agreement:

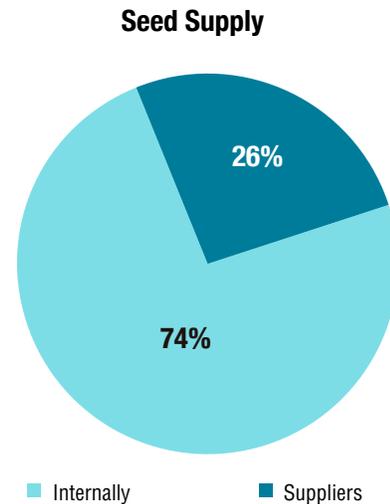
Article 20.7 (International Agreements), UPOV 1991, four years.

Finally, the federal law on plant varieties (Mexican Deputies Congress), as well as its regulations (Mexican Deputies Congress) will establish the sanctions to which those who commercialize plant varieties without complying with the provisions of the law will be subjected to.

The foregoing indicates that the bases exist for Mexico to be able to enter the international flower market in compliance with the international standards related to the breeder's rights of flower varieties, which at this time are not being adequately exercised.

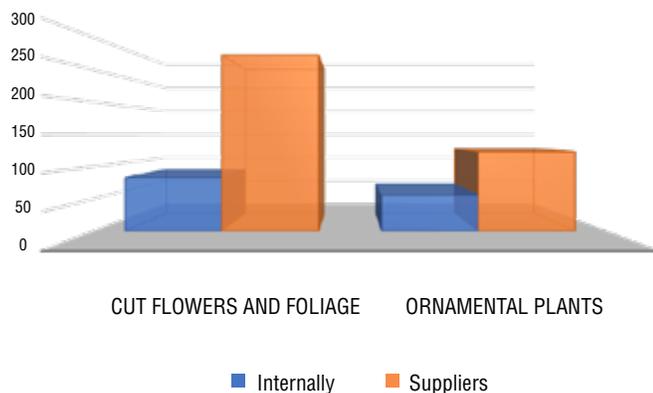
Challenges for Dutch suppliers

As shown in the following graph, 74% of ornamental growers buy their seeds from external suppliers. This means that they are "used to" this type of commercial practices.



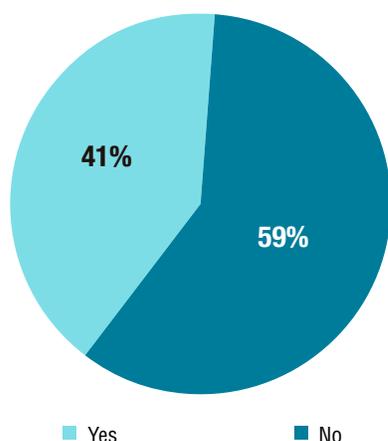
Seed Supply	Count
Internally	145
From Suppliers	403
Total general	548

Seed supply by market



As displayed in the following chart, 41% of the interviewees are willing to pay royalties. Many growers said they agree with the payment, consider it fair and perceive it as necessary. Several of the growers associate the benefit of royalty payments with having a client who pays for the quality of the flower. Some said they were "unaware of this issue". It is therefore recommended that buyers and suppliers conduct a campaign to communicate the benefits of purchasing supplies protected by intellectual property laws in Mexico.

Willungness to pay royalties

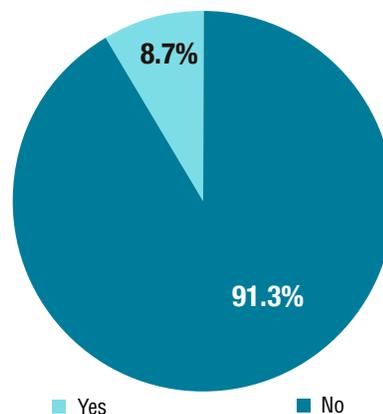


In general terms, we can say that ornamental growers are aware of the payment of royalties, they associate it with benefits in the quality that they will obtain in their products. Medium and large growers are the ones who most demand propagation material with high quality standards such as the Dutch.

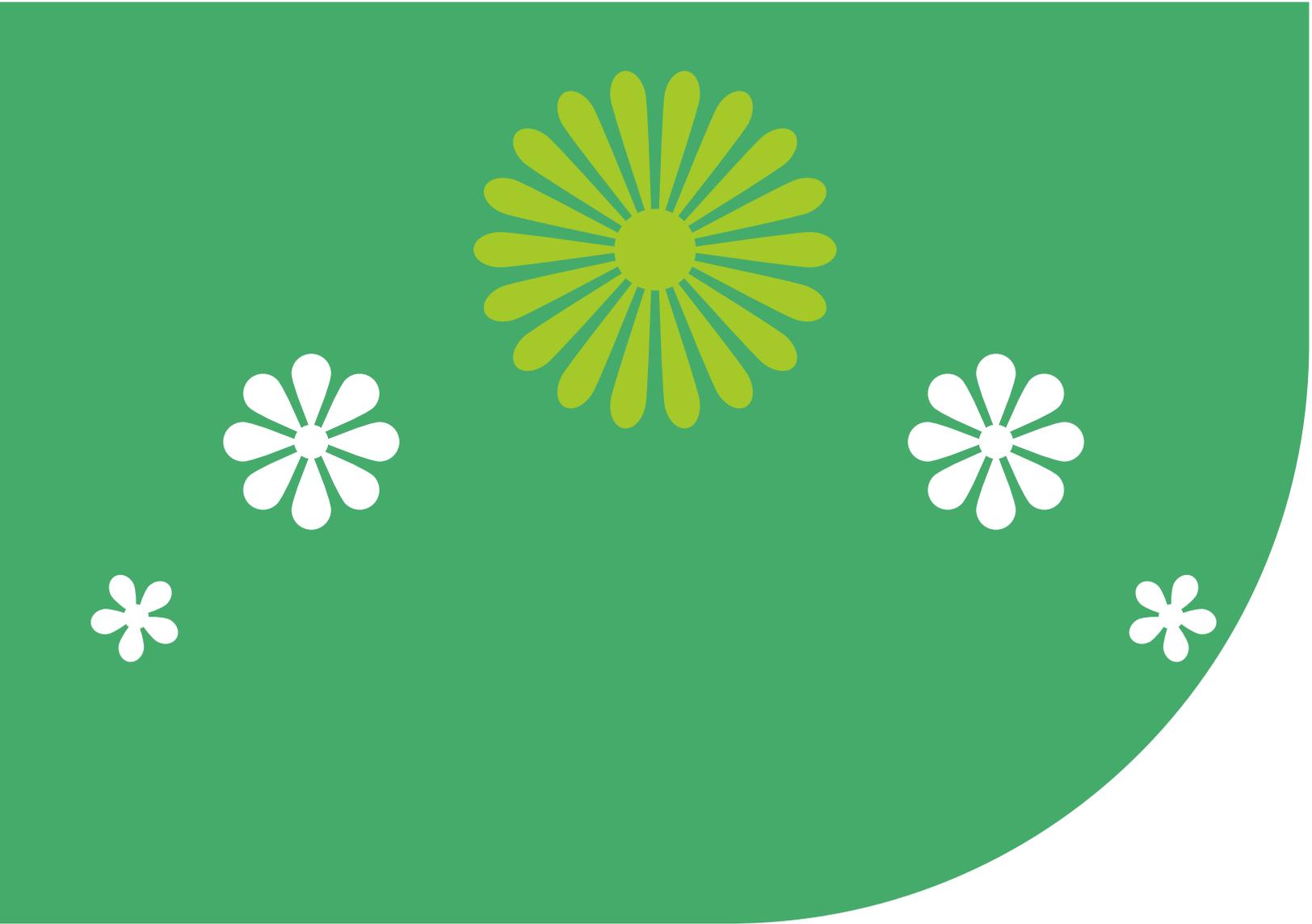
Wholesalers Unaware of Breeder's Rights Related to Ornamental Plants and Flowers Market – Hindrance to Royalty Payments in Mexico

When we asked Mexico City's market wholesalers about the requirements of royalties' payment to their providers (ornamental growers), 91.30% told us that they do not require the grower to prove that the plants they are buying have legal precedence.

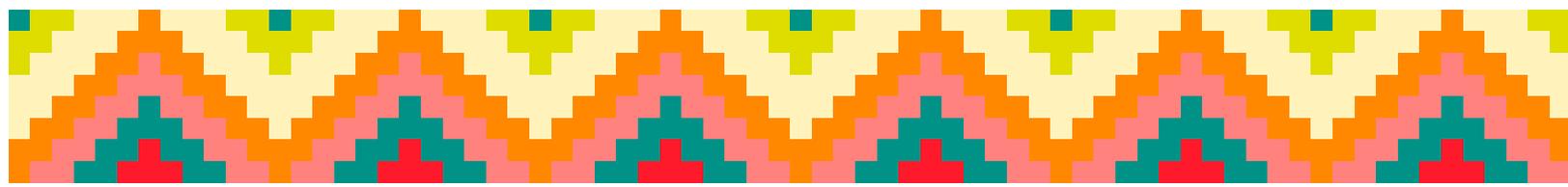
Do you require growers the royalties payment in varieties that you trade



In fact, almost 87% of ornamental traders interviewed do not even know anything about Vegetative Material, and this is one of the main reasons why ornamental growers are not being pushed to make payment of royalties, because from "Central de Abastos" market to supermarket chains and department stores, to this date nobody is asking ornamental growers for payment of royalties, generating unfair competition with those that acknowledge more benefits in the payment of royalties.



VIII Sustainability

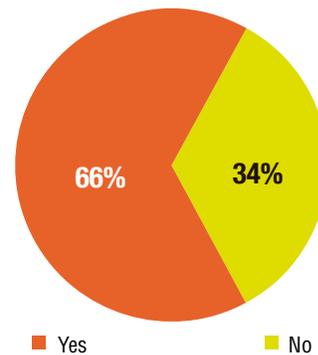


One of the most relevant and urgent sustainability problems in Mexico's ornamental sector is associated with the poor management of plastic waste. Some growers do not properly manage the disposal of greenhouse plastics, plastic bottles, plastic containers, and plastic bags, in addition to low energy efficiency and little solar energy generation.

Regarding the level of awareness of sustainability issues related to plastic waste management and energy efficiency, we observed that suppliers and authorities are constantly carrying out campaigns to inform growers about this situation. However, it is not enough to have this information, we believe that there should be an accompaniment by the suppliers, where they are informed of the advantages of improving their practices. In this sense, there are Mexican government initiatives to facilitate the switch to renewable energy, but very few growers take advantage of them. In general terms, we did not identify a great demand or interest on the part of growers to invest in sustainable projects. The representatives of the different Federal Government offices (Ministry of Agriculture and Rural Development, Ministry of Economy, Ministry of Energy), as well as the State and Municipal governments, together with suppliers of the sector, have initiatives to promote investment in sustainability aspects; however, they are not attractive to most growers and these calls are not taken advantage of. In the interviews with growers, they refer they fail to see the value of these initiatives because there are other more urgent situations. One of the most significant problems is related to water. Specific cases, such as that of the Xochimilco growers' zone, have strong demands, together with projects associated with gathering and storage of rainwater and its filtering for efficient and adequate use.

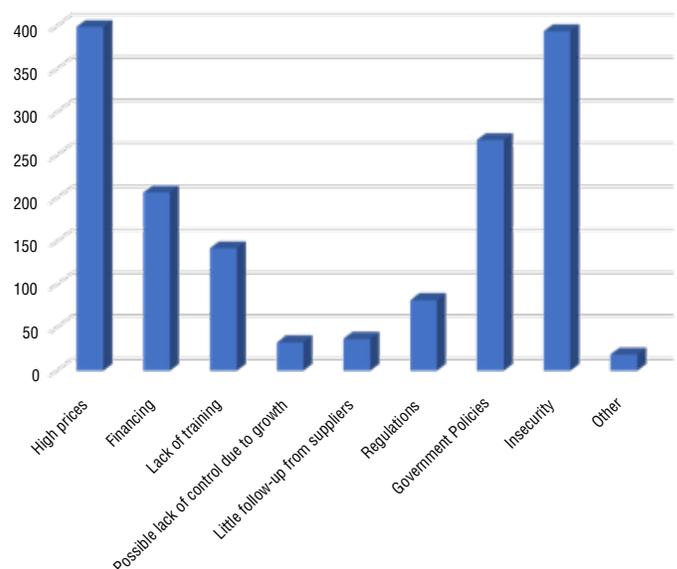
In terms of water, in Mexico City's growers in the region of Xochimilco are dealing with purified water access because of the high levels of pollution that water in the canals contain, opening the opportunity to apply Research Projects focusing on this problem.

Water threatens crops



The most relevant factors considered as deterrents for growth in the sector are high input prices, insecurity, and government policies. Two other factors which bear influence are financing and follow-up training by suppliers.

Barriers to growth in the sector



Plans in the sector

As part of the interviews conducted with key players, such as representatives of the Federal Government and trade associations, we can identify very poor plans or plans with little interest in the development of the ornamental sector in Mexico. For the Federal Government, the axis of development spins around the "Ornamental Product System"; however, there is little interest from the Ornamental Product System to carry out high impact projects. There is no entrepreneurial vision in the sector.

There is currently no guiding principle, no work plan, and no budget for these purposes. In the States where there is a representative of the Ornamental Product System, the work is independent and depends on the efforts of the leader and the support of the State government.

One of the private sector initiatives which stands out is the Floregal label. It seeks to organize the processes and links between the actors in the flower and ornamental production chain. In recent months, an agreement was signed between the National Association of Self-Service and Department Stores (ANTAD), the Ministry of Agriculture and Rural Development (SADER) and Floregal, which seeks to give preference to the marketing of flowers that meet the requirements of the Floregal label in ANTAD-affiliated shops.

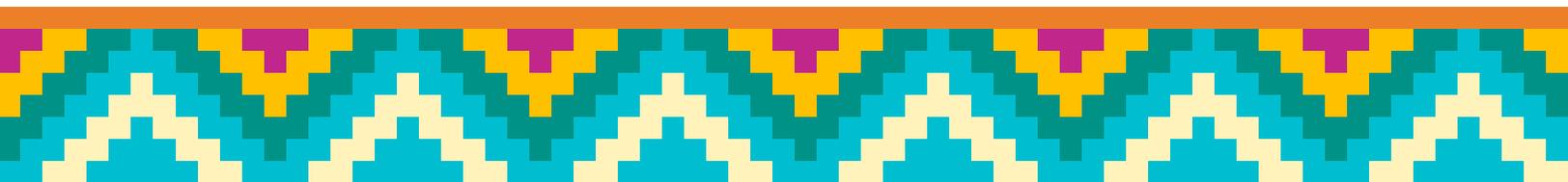
Another initiative identified is the "WFB Mexican Floriculture Hub", initiated by a group of Mexican investors. This project seeks to detonate the growth of the ornamental sector in Mexico, by developing market studies and strategic plans to support the decisions of the central member growers regarding the appropriate location of the productive project, based on agro-climatic and socio-demographic conditions; legal proposal of consortium; financial projection; commercial and financial viability of

varieties in the U.S. and Canadian markets; strategy for market penetration in those countries; production and storage scalability plan. This project is currently in the incubation phase and may open the possibility for Mexican-Dutch investment, as well as the chance to have Dutch suppliers of seed material, supplies and technology.



IV

General conclusions



Opportunities in the market

In Mexico there are a total of 25,568 growers, out of which 42.31% represent an opportunity for Dutch companies to sell production supplies and technology. It is a market with a high growth rate, from an average of 0.72 ha 10 years ago to 1.31 ha to produce ornamentals, and the number of employees has almost doubled from 5 to 9. The Mexican market is valued at €1,521.58 million in annual revenues, representing an annual purchasing opportunity of €528.17 million for medium-low, medium and medium-high technology growers.

30% of the growers have practices to include new species and varieties as part of their offer to the market. This represents an excellent opportunity for Dutch companies. The rest of the growers are very faithful to their habits.

There are two main market segments in Mexico: Cut Flowers and Ornamental Plants. The demand for species per market segment is different. In the Cut Flowers market, there is a high concentration of Rose and Chrysanthemum species, whereas in the Ornamental Plants market, the Poinsettia, Marigold, and Geranium species stand out.

Opportunities by:

Grower Size

Opportunities are identified among the Small Growers (4,700 ha) only to supply vegetative material, while in the Medium and Large Growers segments (6,000 ha) there is demand for vegetative material and technological supplies.

Market by Technification Level

Technification Level

Opportunities

Very High
0.02%

- Suppliers related to the infrastructure of Acrylic or Glass greenhouse
- Suppliers of Automatic Irrigation Systems
- Suppliers of combined usage of mixture / coco peat / peat / zeolite substrates
- Suppliers of irrigation systems and control processes
- Suppliers of Post-harvest processes

High
2.03%

- Suppliers related to the infrastructure of Plastic / Acrylic Greenhouse
- Suppliers of Automatic Irrigation Systems
- Suppliers of combined usage of mixture / coco peat / peat / zeolite substrates
- Change of technology or supply in irrigation systems and control processes
- Suppliers of Post-harvest processes

Middle-High
3.16%

- Suppliers related to the infrastructure of Shade Cloth / Plastic Greenhouse
- Change of technology in irrigation systems
- Suppliers of Basic substrate / mixture substrates combined
- Change of technology in Fertigation and Control process

Middle
8.89%

- Suppliers related to the infrastructure of Cloth / Plastic Greenhouse Infrastructure
- Change of technology in irrigation systems and control processes
- Suppliers of Basic substrate / mixture substrates combined
- Change of technology in Fertigation and Control process

Middle Low
33.10%

- Suppliers related to the infrastructure of Shade Cloth and Plastic Greenhouse
- Change of technology in irrigation systems and control processes
- Substrate supply

Low
52.80%

- Suppliers related to the infrastructure of greenhouses and shade cloth
- Change of technology in irrigation systems
- Substrate supply

Distribution channels

75% of Mexican growers use the Garden Centers and street resellers channel. The lack of quality requirements from distributors to growers means that growers do not see the need to invest in better supplies and technology.

As of the confinement due to the COVID19 pandemic, the sector has begun to venture into online sales channels and self-service stores.

Market trends in consumer behaviour

Several studies show trends associated with the behavior of buyers of Plants and Cut Flowers in Mexico, brought about mainly by the confinement of the pandemic due to COVID-19. These include the increase of purchases on online stores; the design of natural spaces for family or work; xeriscaping or green spaces with low water consumption; stories of millennials associated with the experience of buying bouquets or floral arrangements in online stores on social networks and the incorporation of new sales channels such as self-service and online stores.

The behavior of Mexican consumers can be categorized as a "traditional buyers". In the Cut Flower segment, they usually buy Roses and Chrysanthemums. In Plants the species of Poinsettia, Marigold, Succulents and Geranium dominate sales.

Main stakeholders

The main stakeholders of the ornamental sector in Mexico are: Suppliers, Growers, Federal Government Ministries, Research Centers and Universities, Groups and/or organizations and finally Distributors. Collaboration opportunities are identified Growers, Groups and/or organizations and Distributors, as they are the most active in the sector.

Challenges in Price, Quality and Competition

Domestic Market

In the Cut Flowers sector, the wholesale and mid-wholesale selling price changes every day in a dynamic of "Supply and Demand" governed mainly by the prices negotiated in the "Central de Abastos de la Ciudad de México". The minimum and maximum selling price has a very wide margin, the growers who manage to consolidate a clientele of florists, florists or self-service stores, achieve more stability and secure better selling prices.

For the Ornamental Plants sector, quality is recognized in the sales channels of professionals and self-service stores.

International Market

Exports of Cut Flowers are mainly on the west coast of the USA; Mexican flowers are sold at lower prices than those from other countries due to lower freight costs and the quality of Mexican flowers, is not so widely acknowledged.

Challenges in Research and Innovation

On research and development issues, a divergence is identified between the interests of research centers and universities and the primary areas of Mexican growers. Researchers' R&D efforts focus on genetics and growers' demands on crop development and pest control. Opportunities are identified for R&D linkages between Dutch companies and Mexican growers to address their needs.

Exports to North America

There is little willingness on the part of Mexican growers to explore the international market. There is a high potential in the US and Canadian markets for exporting cut flowers. The United States alone is the largest importer of cut flowers in the world. Its main suppliers are Colombia and Ecuador. Opportunities are identified in transport costs from Mexico to some cities in the United States, as prices are more competitive with respect to those of Colombia. In this sense, a Dutch investor could be the ideal commercial partner to export flowers to the US and Canadian markets.

Challenges in regulation and breeder's rights

The main challenges identified are associated with the lack of registration with SNICS by breeders. According to the head of SADER, "foreign suppliers do not take the necessary steps to register their patents with SNICS, so they cannot be given proper follow up".

Challenges in sustainability

There is little interest on the part of growers on sustainability issues. Despite the efforts of governments and supplier companies to raise awareness in the sector, there are no significant investment projects in sustainability projects in the sector.

SWOT Analysis of the Mexican Ornamental Sector

Strengths:

Mexico has 10,818 growers of Cut Flowers and Ornamental Plants. These were classified as small, medium, and large size.

Their current size (13,005.21 Ha) is an attractive market for Dutch suppliers' technology and vegetative material.

Dynamic growth of the sector in the last 10 years was measured by the growth in hectares produced and in employability, which have grown more than 50% in 10 years.

There is a geographical concentration of ornamental growers in the central part of the country (business target is clearly identified).

There is a deep-rooted culture among Mexican society, related to ornamental plants' and cut flowers' consumption. This situation that can be observed in the number of species sold in Mexico and their prices.

Mexican ornamental sector has a good infrastructure in terms of research and development issues with highly prestigious academic institutions and researchers.

Weaknesses:

Currently, flower growers are mostly characterized by having small areas of flower plantings; this complicates the organization of large volume exports due to possible differences in quality and standardization of processes, in contracts of the same flower variety.

Mexican flowers are classified as low quality in the USA; this is due to poor cold chain management and when orders are for large volumes, flower growers come together to supply an order among several, but this causes the quality to be not consistent, which has generated a bad reputation.

Production of live plants and/or containerized plants is almost 100% national. There are two important factors, the first one is that in Mexico there is a great consumption of live plants, and the second factor is that the national regulations are very complicated to export natural substrates and the regulations are very specific in relation to exports (ACR - Permit to Import Plants and Plant Products - Quarantine Material) of one species per specific buyer for each country with specifications of inert substrates.

Production is hyper-fractionated by many small growers, complicating strategic plans.

The large number of growers identified as "informal" weakens the development of the sector.

Despite the existence of a prestigious research and development infrastructure in the sector, it is not being used to its full potential.

SWOT Analysis of the Mexican Ornamental Sector

Opportunities:

Its potential growth, both in terms of hectares of production and employment.

Favorable agro-climatic conditions

Low labor costs in international relations

Mexico's geographical proximity as well as trade agreements with the United States. and Canada.

Attraction of foreign investors, since the return on their investment is better than in their country of origin.

The sector can take advantage of government programs.

Generation of quality improvement programs, from genetics to post-harvest.

Threats:

Poor actions or lack of consequences from the governmental authorities in the case of theft of seed material.

High insecurity levels in some ornamental regions of the country, such as Estado de México and Michoacan, reflected by the responses of several growers at the survey.

Change in public policies in the sector.

Supplies have a lot of price variations through the year, making it difficult for ornamental growers to define budgets when investing on new technologies.

What recommendations would you give to Dutch suppliers interested in the Mexican ornamental market?

Based on the summary of Opportunities, Threats, Strengths and Weaknesses, we recommend some actions aimed towards generating an integration of the key actors in the ornamental sector in Mexico.

Taking as a reference the hyper-segmented composition of more than 10.000 growers of the Mexican ornamental sector, our suggestion is that Dutch companies interested in promoting their products and services participate in specialized field events of networking, supplies and training in each productive zone, as well as in the "Ornamental Plants and Flowers" fair (OPF) in Mexico City, where the participation of the leaders of the ornamental industry is concentrated. The fairs "Expo Agroalimentaria" in Irapuato, Guanajuato and "Greentech Americas" in Queretaro are important showcases to launch innovations.

Establish collaboration agreements with associations and companies for the implementation of technological research projects.

For companies that already have operations in Mexico, it is very important to strengthen their accompaniment plans with growers.

Supervision by Mexican authorities in case of complaints due to the use of seed material without royalty payments is very complicated, given the execution in the legal process. It is also very difficult to carry out, so the constitution of a "Virtual Cluster of Honorable Growers" is suggested, through

which contracts between breeders and growers are established, in agreement on their commitments. We also recommend supporting the "FLOREGAL" initiative with the aim of landing a group of prestigious growers and helping to link this group of growers to buyers.

In case a Dutch company has a special project we also recommend approaching the Mexican Flower Council, governmental organizations such as SNICS, SENASICA or private organizations such as JMT Consultores (OPF), Floregal, etc., depending on the project.

Recommendations for FLORICULTURE

It is possible to organize a collection center where different varieties of flowers and foliage are received and where "Bouquets" are produced for domestic and export sales.

Advantages granted by the country's geographical location give the Mexican floriculture the ability to strengthen exports to USA and CAN. These are clear because of the advantage of using land transportation, which has lower costs than air transport needed by growers in Colombia, Ecuador, Kenya, and Ethiopia.

Advantages that Mexico has in labor costs to assemble "Bouquets" from the production area, instead of sending the flower and foliage and to have those customers assemble their bouquets in the USA or CAN with labor at higher costs.

A possible strategy for floriculturists to increase exports to the USA, CAN and the rest of the world, is to take advantage of the "Floriculture Hub" initiative,

which is undertaking the integration of several growers with standardized quality, with optimized costs by being in one place and being able to collect production in the same cold chain, where suppliers and buyers have the security of good management and legality in every step of the way, in addition to optimizing the filling of transportation units in case there is a need to consolidate orders and / or loads. The clear opportunity for Dutch companies in floriculture is mainly the sale of seed material, since the technology (Mid-Tech) required for floriculture is available in Mexico at lower costs.

Recommendations for PLANTS

The area of opportunity for Dutch companies in Seed Material in the nursery production sector is mainly in species that are not easy to propagate such as phalaenopsis orchids, calla, anthuriums, where it is not profitable or possible to have the mother plants for most of the Mexican growers, and the species and varieties that are easy to propagate. It is important to have well selected customers, as well as the sale of hybrid seeds for the production of seedlings and their growth through nurserymen.

The area of opportunity for technology suppliers is mainly in crops that require high quality processes and special care in their growth stage, and of good commercial value, such as orchids, anthuriums, carnivorous plants, since it is required to generate controlled climate environments, preferably even automated.

MICRO-PROPAGATION - CUTTINGS - SEEDLINGS

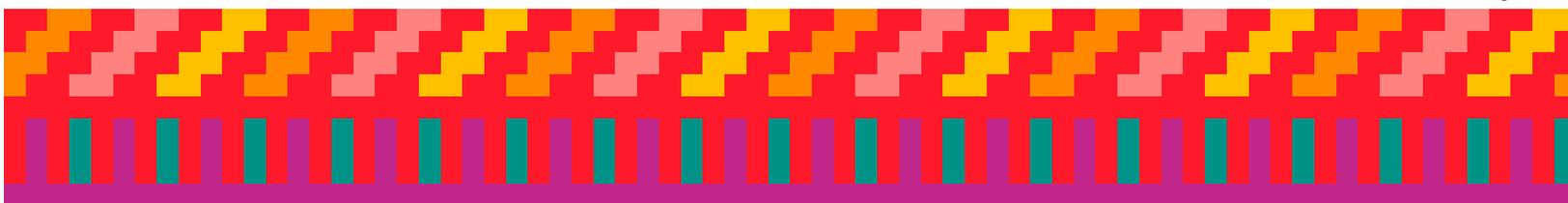
For technology suppliers, micro-propagation, cuttings, and seedlings segments are areas of opportunity due to the need to take care of controlled climates in terms of temperature, humidity, ventilation, inert environments, and luminosity.

For company owners of varieties (breeders) Mexico can be a suitable place to establish contracts of propagation through maquila (toll manufacturing) or directly to install their production units of cuttings for domestic sale and export. There are factors which could benefit them, such as the climate conditions that help to achieve controlled climates with less investment due to the existing prevailing conditions.

Finally, Mexico has favorable international treatments to export to USA-CAN, UK and European Union.



X APPENDIX



APPENDIX

Mexican Ornamental Growers Census per Region and Size

Region	NANO- Informal	Micro	Small	Medium	Big	Total per Region
Plant Growers Estado de México	2,000	510	340	4	20	2,874
Cut Flower and Foliage Growers Estado de México	4,500	1,162	1,991	919	25	8,597
Mexico City	450	711	302	16	0	1,479
Morelos	2,500	2,150	200	48	10	4,908
Nuevo León	0	0	10	10	10	30
Puebla	2,000	804	490	84	0	3,378
Michoacán	500	120	80	2	0	702
Colima	300	0	10	25	7	342
Guerrero	0	33	50	4	0	87
Veracruz	0	300	100	0	0	400
Querétaro	0	15	184	0	0	199
Baja California	0	0	0	2	4	6
Jalisco	400	0	50	1	1	452
Chiapas	2,000	0	10	1	0	2,011
Hidalgo	100	0	2	1	0	103
TOTAL, Per Size	14,750	5,805	3,819	1,117	77	25,568

Level of Ornamental Growers' Technification

Level of Growers' Technification

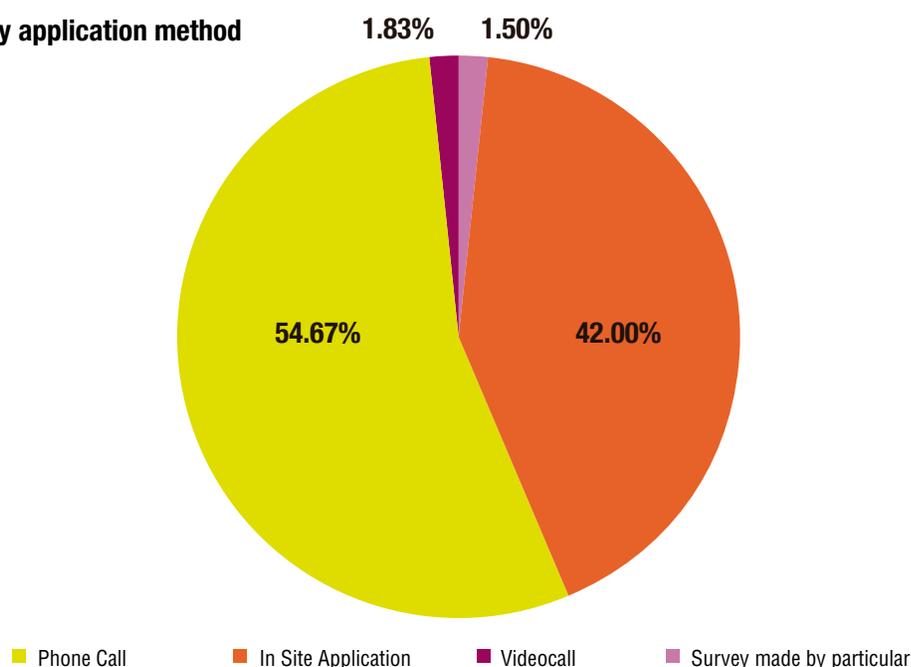
Criteria	Points
Rainfed Irrigation	0
Permanent Irrigation Method	1
Irrigation by hose	2
Sprinkle Irrigation	3
Drip Irrigation	3
Automatic Irrigation System	3
Fertigation	1
Automatic Fertigation	3
Humidity Controls	3
Automatic Humidity Controls	3
Temperature Controls	3
Automatic Temperature Controls	3
Complementary Illumination	3
Automatic Complementary Illumination System	3
Substrates Applied	-
Organic Soil Substrate	1
Leaf Soil Substrate	1
Soil Substrate Mixture	2
Peat	3
Coco Peat	3
Zeolite	3
Type of Infrastructure(s)	-
Sky Opened	0
Shade Cloth	1
Plastic Greenhouse	3
Polycarbonate / Acrylic Greenhouse	5
Glass Greenhouse	10
Post-Harvest Process	-
Use of Cold Chambers	3
Total Points	69

Statistics and Photographic Report of Survey Appliance

600 surveys were carried out in the period from March through June 2022, involving Mexican growers, Mexican ornamental traders, as well as Dutch companies focused on vegetative material (breeders) and technological inputs.

Survey Application Method		
Phone Call	54.67%	328
In Site Application	42.00%	252
Videocall	1.83%	11
Survey made by particular	1.50%	9
TOTAL		600

Survey application method



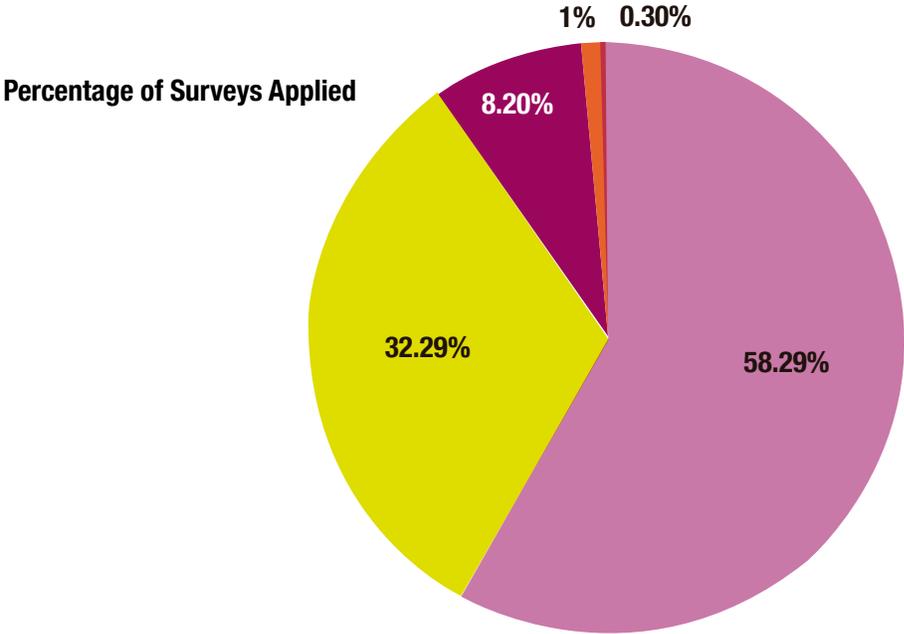
We count with the participation and opinions from the main actors in the ornamental sector's supply chain:

Professional Sector

Cut flower and foliage Growers
 Potted Plants Growers
 Ornamental Plant Traders
 Dutch Breeders
 Dutch Technological Providers

Percentage of Surveys Applied

58.29%
 32.29%
 8.20%
 1.00%
 0.30%



■ Potted plants Producers ■ Ornamental Plants Traders ■ Dutch Breeders ■ Dutch Tecnological Providers ■ Cut Flower and Foliage Growers

VISITS TO ORNAMENTAL PRODUCTIVE AREAS (PHOTOGRAPHIC REPORT)

Atacomulco



Atlixco, Puebla



Villa Guerrero, Estado de México



Morelos Ornamental Productive Areas



Xochimilco, Mexico City



“Central de Abastos” Market, Mexico City





Kingdom of the Netherlands

Project "Opportunities for Dutch Businesses in the Mexican Ornamental Sector" made by JMT Consultores, S de RL de CV known as Ornamental Plants & Flowers (OPF) México in conjunction with internal team and Advisory Council for the Embassy of the Kingdom of the Netherlands in Mexico and the Netherlands Enterprise Agency (RVO)

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July 2022