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THE COMMERCIALIZATION OF ORNAMENTAL PLANTS IN CONTAINERS IN THE SOUTH OF THE STATE OF MEXICO

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Abstract: The present study analyzes the marketing process of ornamental flowers in packaging or containers, in the municipality of Tejupilco, south of the State of Mexico and the economic impact that this activity generates among the main participating agents; The reference year of the research was 2021; The study was based on the most commercialized species in the region, the rose (Rosa sp.) and the Mexican tulip (Hibiscus rosa-sinensis). The main marketing channels that the plants follow from their exit from the greenhouse to their arrival at the final consumer were identified and the resulting marketing margins throughout the process were calculated at current prices. The traditional marketing channel used to take ornamental plants from the greenhouse to the final consumer was direct sales from the producer to wholesale intermediaries, from the latter to retailers and the final consumer. The participation of producers in the final price of roses was on average 60.47% and 66.35% in tulips; The collectors participated with 29.07% and 17.92% for roses and tulips respectively. The average total marketing margin for roses was 10.58 $/plant, of which the collectors achieved the highest average margin with 8.65 $/plant, while for tulips the total marketing margin was 8.24 $/plant, being awarded the higher margin for collectors with $4.65/plant.

Keywords: Ornamental plants, marketing, marketing margins.

INTRODUCTION

Global plant and flower production has expanded in recent years, with numerous production centers located in developing countries, which regularly supply large consumers (Gámez et al., 2017).

According to the International Association of Horticultural Producers (AIPH, 2022), the main producing countries of plants and flowers produced under greenhouse conditions during 2020 were China, with 843,518 ha (72.40% of world production), which It generates 9,130 million euros, the United States (139,596 ha), Italy (19,484 ha), Germany (18,613 ha) and Holland (17,190 ha).

In Mexico, the production of ornamental plants has great environmental, cultural, economic and social importance; since the well-being of many small producers in the country depends on this activity, despite not representing a basic product such as grains, fruits and vegetables.

According to Xia et al. (2006), Mexico is an ideal country for the cultivation of commercial floriculture, given its diversity of climates and its varied natural flora; despite having an adequate climate and geography, as well as an abundant and low-cost workforce; In this sense, Mexico has not yet realized its potential as a flower exporter, nor has it taken advantage of its various trade agreements, as production is mainly aimed at the local market rather than international markets; Thus, approximately 90% of the production is consumed within the country during celebrations, festivities and daily life (Pizano, 1997).

In our country, more than 1,000 species and varieties are used, occupying an area of around 20,000 hectares, only 0.1% of the country's surface, distributed in 20 states of the republic and generating eight to 12 permanent jobs per hectare. benefiting around 150 thousand families, which generated almost 6 billion pesos, 1.5% of the value of the national agricultural sector (SIAP-SAGARPA, 2013). Floriculture is of great importance in the Mexican agricultural sector, due to the high value of the variety of cut flowers, foliage, plants and trees that are marketed nationally and internationally (Gámez et al., 2017).

According to data from SIAP-SEDER (2022), during the period 2015-2020, an average of 10.33 million thick ornamental plants were produced in our country, said

activity growing at a rate of 4.82%, during said period; The cultivation of chrysanthemum stands out with 30.36% of the total production, followed by the rose (25.21%), the gladiola (14.68%) and the carnation (11.60%); Regarding the economic impact, said activity together generated an average commercial value of more than 1,860 million pesos, during the same period of time.

In this sense, the main states producing ornamental plants, during said period (2015-2020), were the State of Mexico, with 74.15% of national production, followed by Puebla (9.50%), Morelos (4.70%). and Veracruz (4.41%).

In the State of Mexico, the production of ornamental plants, during the period 2015-2010, grew at an average rate of 5.04%, higher than that registered at the national level (4.82%); The main cultivated species were the chrysanthemum with an average of 10.17 million thick, which represented 40.33% of the total production in the entity, followed by the rose, with 26.38% of the total and the carnation with 14.46%.

This way, for the year 2021, 10.12 million thick chrysanthemums were produced in the Mexican entity; The main producing municipalities were Villa Guerrero, with 65.74% of the entity's total production, Tenancingo (18.47%) and Coatepec Harinas (10.47%), all belonging to the DDR of Coatepec Harinas; For its part, the DDR of Tejupilco, located in the south of the state, participated with 3.10% of the state production (314 gross).

For its part, the production of roses was 7.42 million thick, highlighting the DDR of Coatepec Harinas with 97.76% of the total in the entity, highlighting the municipalities of Villa Guerrero, with 52.87%, and Tenancingo (25.41%). and Coatepec Flours (12.43%); The production of said species was not representative in the DDR of Tejupilco.

The production of ornamental plants in the southern region of the State of Mexico is developed as an activity of small family gardens, which represents a complementary income for low-income families; In this sense, Juan and Madrigal (2005) point out that families in the region always have small spaces where they grow and care for herbaceous plants in pots and other containers, which provide them with various benefits.

These family gardens operate as small nurseries which produce various species of ornamental flowers, among which the rose (Rosa sp.), the Mexican tulip (Hibiscus rosa-sinensis), the geranium (Pelargonium spp.), the lily (Lilium longiflorum) and teresitas (Catharanthus roseus), which are mainly marketable in packaging or containers.

In addition to the above, SAGARPA (2005) stated, as a primary objective of the governing plan of the ornamental product system, to identify the factors that determine competitiveness in each of the links that make up the system, as well as to promote the development of the activity, promoting the creation of a favorable environment that allows producers of flowers and ornamental plants, as well as having the necessary conditions to dignify and expand their right to freely carry out their activity, as well as promote their integral development so that it is reflects greater well-being for them and their families.

In this sense, the production of ornamental flowers has become an important activity in the south of the State of Mexico, as well as an important source of employment and income generation for low-income families, as well as an incentive for economic growth. and commercial in the region.

Under this context, it is important to analyze the situation presented by the marketing of ornamental flowers in packaging or containers in the south of the State of Mexico, specifically

in the municipality of Tejupilco, in order to identify the main participating agents, as well as determine the margins of marketing resulting during said process and identify the problems presented by the activity in its different stages, to subsequently issue opinion judgments and alternative solutions.

METHODOLOGY

This investigation was carried out during the year 2021, the year during which the field information was collected; An intentional sampling was carried out (Cochran, 1984), semi-structured surveys were applied to five producers of Mexican rose and tulip plants in packaging or containers, which represent the most commercialized species in the municipality of Tejupilco, State of Mexico, the which add up to 50% of the total nurseries established in the municipality, six collectors, 10 retailers and 30 consumers. The objective of the surveys was to collect information regarding the participating agents, marketing costs, volumes and current purchase and sale prices, elements that facilitated the determination of marketing margins.

CALCULATION SYSTEMS

According to García et al. (1990), to calculate marketing margins there are two systems: direct and indirect; The first and most suitable, is based on following statistically representative batches of the products, from when they leave the place of production until they reach the final consumer, recording the costs and prices that arise in the product's journey by the different agents. participants; Likewise, the investigation is limited to batches representative of the movement of the products, using statistical sampling to select the segments to study, with the intention that the results can be considered as an estimate of the true margins.

In this sense, the direct calculation system provides very complete information for the calculation of total margins and their components, however, the procedure is very complicated and expensive. Under this premise, in this research the direct method was used, since it is more truthful and reliable regarding the collection, calculation and analysis of the information obtained.

INFORMATION USED

The information regarding current purchase and sale prices was obtained directly from the agents participating in the marketing process; This information was weighted by the purchase and sale volumes of the respective species, with which their real prices were obtained.

ESTIMATION PROCEDURE

When estimating marketing margins, it is extremely important to ensure that throughout the process the information used is comparable, that is, that it refers to the same unit and quality of the products, in this case containerized plants.

Therefore, the total absolute marketing margin (M) was calculated by the difference between the value of the product (packaged plant), in consumption (Pc) and the corrected value in production (Pp), plus the marketing costs that were incurred during the process (CC); that is, $M = Pc - Pp - CC$.

This way, a marketing margin refers to the difference between the sales price of a unit of product by a marketing agent and the payment made in the purchase of the quantity of product sold; Additionally, the margins are made up of a series of components corresponding to the different costs and benefits of the agents, such as the value, in pesos, of the work used, transportation, materials, containers and packaging used, advertising, depreciation, taxes, profits, interest, rents and other costs,

which are called marketing costs (CC) (García et al., 1990).

Likewise, the gross marketing margin (MBC), expressed as a percentage, is defined as the difference between the price per plant paid by the final consumer and the price per plant received by the producer; The analysis of the MBC aims to determine its magnitude in the different stages of commercialization, depending on the type of participating agent, as well as the distribution of income among its actors (Acuña, 1980; cited by Vilavoa et al., 2010); The MBC is calculated in relation to the final price or price paid by the last consumer and is expressed in percentage terms; Thus, the: $MBC = [(PC - PP) / PC] \times 100$, where PC represents the consumer price and PP the producer price (Mendoza, 1987).

MARKETING COSTS

To calculate the marketing margins, the components of the marketing costs (CC), which were incurred by the different participating agents, were determined as direct labor, transportation costs, electrical energy, water, depreciation of machinery and equipment, packaging, storage, administrative expenses, indirect labor and other various costs (González et al., 2019).

RESULTS AND DISCUSSION

PRODUCTION SYSTEM

The production system of container ornamental plants in the municipality of Tejupilco, Mexico, is characterized by small family gardens, which, like small nurseries, grow ornamental flowers, as well as plants for medicinal and decorative use for the homes of the region, which is in accordance with what was pointed out by Juan and Madrigal (2005); The small orchards do not exceed an average of 755 m2, in which various species of bush plants for food, medicinal and ornamental use are grown that provide various benefits; These production units are managed by families, for whom it represents an important source of income, which is complemented with the development of other productive activities. The main species of flowers produced in these spaces are mainly packaged flowers with a high commercial value such as roses, tulips, geraniums, lilies and teresitas, which are in great demand, mainly during the commemoration of festivities and in the season of replanting and establishing gardens in homes, during the rainy period.

RESULTS OF ROSES IN PACKAGING

AGENTS AND MARKETING CHANNELS

The agents participating in the marketing process of rose plants in packaging or containers, in the municipality of Tejupilco, Mexico, are: producers, stockpilers, retailers and final consumers.

The traditional marketing channel that the plants follow from their departure from the nursery to the final consumer is from the producer to the collector, which is carried out by 60% of the agents participating in the process.

Likewise, 20% of the agents carry out the following alternative of said channel: from the producer to the retailer and to the final consumer and another 20% carry out the channel: from the producer to the final consumer (Diagram 1).
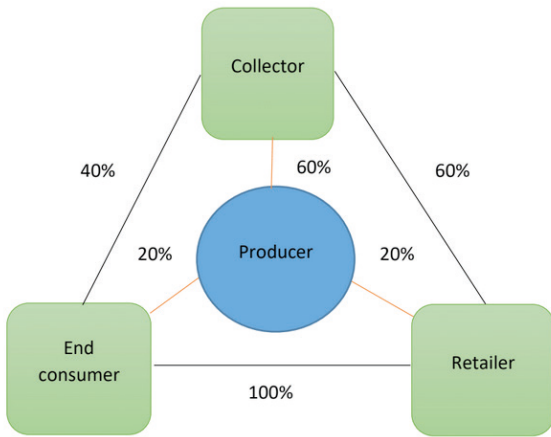
Diagram 1: Agents participating in the marketing chain of containerized roses in the south of the State of Mexico

Source: Own elaboration based on field information.

SALES PRICES

Regarding the sales prices reached by the different agents participating in the marketing process of the containerized rose plants, the retailers stand out, who recorded an average sales price of $32.31/plant, followed by the collectors with $29.00/plant. plant, while producers obtained a price of $19.61/plant.

Regarding the participation in the final sale price of the plants, the producers registered the greatest contribution with 60.71%, followed by the collector with 29.07% and the retailers with 10.22%.

The highest sales price recorded by producers, collectors and retailers of rose plants was reached in the month of May, which coincides with the Mother's Day festivities, the date on which it is customary to give this species as a gift. and increases the demand for it (Table 1).

GROSS MARKETING MARGIN

The gross marketing margin (MBC) revealed that for each peso that the final consumer paid when purchasing a rose plant in a container, the intermediaries obtained 39.29% of said price, that is, $12.70/plant; For their part, producers got 60.71% of the total price paid by the consumer, that is, $19.61/ plant. Intermediaries recorded the best gross marketing margins during the months of May, February, June and July (Tables 2, 3 and 4).

Month/ Agent	Producer Sale price ($/plant)	Retailer Sale price ($/plant)	Margin (MBC) (%)
January	19.50	32.25	39.53
February	19.50	32.60	40.18
March	19.50	32.22	39.48
April	19.50	31.02	37.13
May	20.79	34.53	39.77
June	19.50	32.61	40.20
July	19.50	32.62	40.22
August	19.50	32.38	39.78
September	19.50	32.39	39.80
October	19.50	32.32	39.67
November	19.50	31.15	37.39
December	19.50	31.61	38.31
Average	**19.61**	**32.31**	**39.29**

Table 2: Calculation of gross marketing margin (MBC)

Source: Own elaboration based on field information.

GROSS MARGINS IN INTERMEDIATION

The total gross profit (MBC) recorded during the entire intermediation process (39.29%), the collectors recorded the best marketing margin, since for each containerized rose plant sold, they obtained $9.39 in profit, that is, 29.07% Regarding gross profit, the highest margin was obtained in the month of May ($10.41/ plant); In this sense, retailers reached an MBC of $3.31/plant, which represents 10.22% of the total gross profit, reaching the highest margin in the month of July with $3.82/plant (Tables 3 and 4).

Month/Agent	Producer ($/plant)	Part. (%)	Collector ($/plant)	Part. (%)	Retailer ($/plant)	Part. (%)
January	19.50	60.47	28.80	28.84	32.25	10.70
February	19.50	59.82	28.80	28.53	32.60	11.65
March	19.50	60.52	28.80	28.86	32.22	10.62
April	19.50	62.87	28.80	29.98	31.02	7.15
May	20.79	60.23	31.21	30.16	34.53	9.61
June	19.50	59.80	28.80	28.52	32.61	11.68
July	19.50	59.78	28.80	28.51	32.62	11.71
August	19.50	60.22	28.80	28.72	32.38	11.06
September	19.50	60.20	28.80	28.71	32.39	11.09
October	19.50	60.33	28.80	28.77	32.32	10.90
November	19.50	62.61	28.80	29.86	31.15	7.53
December	19.50	61.69	28.80	29.42	31.61	8.88
Average	**19.61**	**60.71**	**29.00**	**29.07**	**32.31**	**10.22**

Table 1: Participation of the different agents in the sale price

Source: Own elaboration based on field information.

Collector to Retailer	Price to the Collector	Producer Price	Final Consumer Price	MBC (%)	MBC ($/plant)
January	28.80	19.50	32.25	28.84	9.30
February	28.80	19.50	32.60	28.53	9.30
March	28.80	19.50	32.22	28.86	9.30
April	28.80	19.50	31.02	29.98	9.30
May	31.21	20.79	34.53	30.16	10.41
June	28.80	19.50	32.61	28.52	9.30
July	28.80	19.50	32.62	28.51	9.30
August	28.80	19.50	32.38	28.72	9.30
September	28.80	19.50	32.39	28.71	9.30
October	28.80	19.50	32.32	28.77	9.30
November	28.80	19.50	31.15	29.86	9.30
December	28.80	19.50	31.61	29.42	9.30
Average	**29.00**	**19.61**	**32.31**	**29.07**	**9.39**

Table 3: Gross marketing margins in intermediation

Source: Own elaboration based on field information.

Retailer to Final Consumer	Consumer Price	Price to the Collector	Price to the last consumer	MBC (%)	MBC ($/plant)
January	32.25	28.80	32.25	10.70	3.45
February	32.60	28.80	32.60	11.65	3.80
March	32.22	28.80	32.22	10.62	3.42
April	31.02	28.80	31.02	7.15	2.22
May	34.53	31.21	34.53	9.61	3.32
June	32.61	28.80	32.61	11.68	3.81
July	32.62	28.80	32.62	11.71	3.82
August	32.38	28.80	32.38	11.06	3.58

September	32.39	28.80	32.39	11.09	3.59
October	32.32	28.80	32.32	10.90	3.52
November	31.15	28.80	31.15	7.53	2.35
December	31.61	28.80	31.61	8.88	2.81
Average	**32.31**	**29.00**	**32.31**	**10.22**	**3.31**
Total				**39.29**	**12.70**

Table 4: Gross marketing margins in intermediation

Source: Own elaboration based on field information.

Month	Margin 1 Producer to Collector				Margin 2 Collector to Retailer				Absolute Margin Retailer to Producer			
	PC	DC	PV	M	PC	DC	PV	M	PC	DC	PV	M
Jan	19.50	0.74	28.80	8.56	28.80	1.38	32.25	2.07	19.50	2.12	32.25	10.63
Feb	19.50	0.74	28.80	8.56	28.80	1.38	32.60	2.42	19.50	2.12	32.60	10.98
Sea	19.50	0.74	28.80	8.56	28.80	1.38	32.22	2.04	19.50	2.12	32.22	10.60
Apr	19.50	0.74	28.80	8.56	28.80	1.38	31.02	0.84	19.50	2.12	31.02	9.40
May	20.79	0.74	31.21	9.67	31.21	1.38	34.53	1.94	20.79	2.12	34.53	11.61
Jun	19.50	0.74	28.80	8.56	28.80	1.38	32.61	2.43	19.50	2.12	32.61	10.99
Jul	19.50	0.74	28.80	8.56	28.80	1.38	32.62	2.44	19.50	2.12	32.62	11.00
Aug	19.50	0.74	28.80	8.56	28.80	1.38	32.38	2.20	19.50	2.12	32.38	10.76
Sep	19.50	0.74	28.80	8.56	28.80	1.38	32.39	2.21	19.50	2.12	32.39	10.77
Oct	19.50	0.74	28.80	8.56	28.80	1.38	32.32	2.14	19.50	2.12	32.32	10.70
Nov	19.50	0.74	28.80	8.56	28.80	1.38	31.15	0.97	19.50	2.12	31.15	9.53
Dec	19.50	0.74	28.80	8.56	28.80	1.38	31.61	1.43	19.50	2.12	31.61	9.99
Avg.	**19.61**	**0.74**	**29.00**	**8.65**	**29.00**	**1.38**	**32.31**	**1.93**	**19.61**	**2.12**	**32.31**	**10.58**

Table 5: Total marketing margins of participating agents ($/plant)

M =Margin; PC = Purchase price; PV =Sale price; CC = Marketing costs

Source: Own elaboration based on field information.

TOTAL MARKETING MARGINS

The average total margin recorded throughout the marketing process of containerized rose plants was $10.58/plant; the collectors achieved the highest margin with 8.65 $/plant; The remaining $1.93/plant went to the retailers; The highest total (absolute) marketing margins were reached in the months of May and July, with $11.61/plant and $11.00/plant, respectively; For its part, the lowest total margins were recorded in the months of April ($9.40/plant) and November ($9.53/plant).

The collectors obtained the best margin during the month of May, with 9.67 $/plant, which coincides with the greater demand for the product motivated by the Mother's Day festivities; In this sense, retailers achieved better margins during the months of July and June with 2.44 $/plant and 2.43 $/plant, respectively, which coincides with the rainy period and causes a greater demand for plants for transplanting and repopulating in the gardens of homes in the region; In this sense, the lowest margins are recorded in the months of April (0.84 $/plant) and November (0.97 $/plant), months in which dry weather and cold reduce plant production and demand (Table 5).

RESULTS OF TULIPS IN PACKAGING

AGENTS AND MARKETING CHANNELS

The main agents participating in the marketing of packaged tulips, in the municipality of Tejupilco, Mexico, are producers, packers, retailers and final consumers.

The traditional marketing channel that container tulip plants follow, from the moment they leave the nurseries until they reach the final consumer, is 60% from the producer to the collector; An alternative marketing channel developed by 25% of the agents is: from the producer to the retailer and the final consumer; and the remaining 15%, from the producer to the final consumer (Diagram 2).
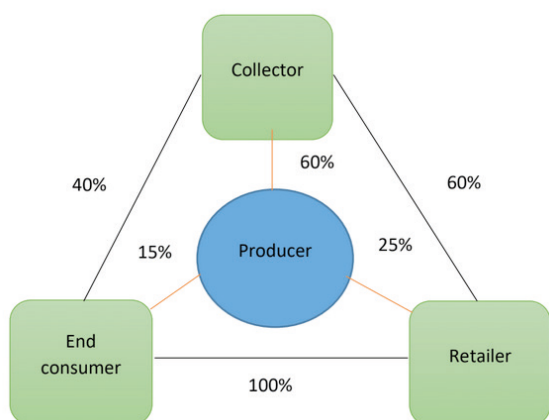

Diagram 2: Agents participating in the marketing chain of tulips in containers in the south of the State of Mexico

Source: Own elaboration based on field information.

SALES PRICES

The sales prices recorded by the different agents participating in the marketing process of tulips in containers, it was found that the producers obtained an average sales price of $21.82/plant, the collector sold the plants at an average price of $27.72, while retailers recorded an average sales price to the final consumer of $32.89/plant.

Regarding the participation of the sales price of the participating agents, the retailers participated with 15.73% of the final sale price, the collector with 17.92%, while the producers obtained the highest margin of participation in the final sale price with the 66.35% (Table 6).

GROSS MARGIN IN MARKETING

The general gross marketing margin (MBC) indicates that for every peso the consumer pays to acquire a packaged tulip plant, the intermediaries appropriated 33.65% of said price, which is equivalent to $11.07 for each unit sold. That is, their profit was 33.65%, while the producers were awarded 66.35% of the total price paid by the final consumer, which is equivalent to $21.82/plant (Table 7).

Month/ Agent	Producer Sale price ($/plant)	Retailer Sale price ($/plant)	Margin (MBC) (%)
January	21.71	32.66	33.52
February	21.71	33.01	34.23
March	21.72	32.28	32.71
April	21.71	32.87	33.94
May	23.00	34.09	32.53
June	21.72	32.76	33.70
July	21.71	33.13	34.47
August	21.71	32.26	32.70
September	21.71	33.83	35.83
October	21.71	32.43	33.06
November	21.71	32.88	33.96
December	21.71	32.49	33.18
Average	**21.82**	**32.89**	**33.65**

Table 7: Calculation of gross marketing margin (MBC)

Source: Own elaboration based on field information.

Month/ Agent	Producer ($/plant)	Part. (%)	Collector ($/plant)	Part. (%)	Retailer ($/plant)	Part. (%)
January	21.71	66.48	27.50	17.72	32.66	15.80
February	21.71	65.77	27.50	17.53	33.01	16.70
March	21.72	67.29	27.50	17.90	32.28	14.81
April	21.71	66.06	27.50	17.61	32.87	16.33
May	23.00	67.47	30.11	20.84	34.09	11.69
June	21.72	66.30	27.50	17.64	32.76	16.06
July	21.71	65.53	27.50	17.47	33.13	17.00
August	21.71	67.30	27.50	17.94	32.26	14.76
September	21.71	64.17	27.50	17.11	33.83	18.72
October	21.71	66.94	27.50	17.84	32.43	15.21
November	21.71	66.04	27.50	17.60	32.88	16.35
December	21.71	66.82	27.50	17.81	32.49	15.36
Average	**21.82**	**66.35**	**27.72**	**17.92**	**32.89**	**15.73**

Table 6: Participation of the different agents in the sale price

Source: Own elaboration based on field information.

Collector to Retailer	Price to the Collector	Producer Price	Final Consumer Price	MBC (%)	MBC ($/plant)
January	27.50	21.71	32.66	17.72	5.79
February	27.50	21.71	33.01	17.53	5.79
March	27.50	21.72	32.28	17.90	5.78
April	27.50	21.71	32.87	17.61	5.79
May	30.11	23.00	34.09	20.84	7.10
June	27.50	21.72	32.76	17.64	5.78
July	27.50	21.71	33.13	17.47	5.79
August	27.50	21.71	32.26	17.94	5.79
September	27.50	21.71	33.83	17.11	5.79
October	27.50	21.71	32.43	17.84	5.79
November	27.50	21.71	32.88	17.60	5.79
December	27.50	21.71	32.49	17.81	5.79
Average	**27.72**	**21.82**	**32.89**	**17.92**	**5.90**

Table 8: Gross marketing margins in intermediation

Source: Own elaboration based on field information.

Retailer to Final Consumer	Consumer Price	Price to the Collector	Price to the last consumer	MBC (%)	MBC ($/plant)
January	32.66	27.50	32.66	15.80	5.16
February	33.01	27.50	33.01	16.70	5.51
March	32.28	27.50	32.28	14.81	4.78
April	32.87	27.50	32.87	16.33	5.37
May	34.09	30.11	34.09	11.69	3.98
June	32.76	27.50	32.76	16.06	5.26
July	33.13	27.50	33.13	17.00	5.63
August	32.26	27.50	32.26	14.76	4.76

Month											
September	33.83	27.50		33.83		18.72	6.33				
October	32.43	27.50		32.43		15.21	4.93				
November	32.88	27.50		32.88		16.35	5.38				
December	32.49	27.50		32.49		15.36	4.99				
Average	**32.89**	**27.72**		**32.89**		**15.73**	**5.17**				
Total						**33.65**	**11.07**				

Table 9: Gross marketing margins in intermediation

Source: Own elaboration based on field information.

Month	Margin 1 Producer to Collector				Margin 2 Collector to Retailer				Absolute Margin Retailer to Producer			
	PC	**DC**	**PV**	**M**	**PC**	**DC**	**PV**	**M**	**PC**	**DC**	**PV**	**M**
Jan	21.71	1.25	27.50	4.54	27.50	1.58	32.66	3.58	21.71	2.83	32.66	8.12
Feb	21.71	1.25	27.50	4.54	27.50	1.58	33.01	3.93	21.71	2.83	33.01	8.47
Sea	21.72	1.25	27.50	4.53	27.50	1.58	32.28	3.20	21.72	2.83	32.28	7.73
Apr	21.71	1.25	27.50	4.54	27.50	1.58	32.87	3.79	21.71	2.83	32.87	8.33
May	23.00	1.25	30.11	5.85	30.11	1.58	34.09	2.40	23.00	2.83	34.09	8.26
Jun	21.72	1.25	27.50	4.53	27.50	1.58	32.76	3.68	21.72	2.83	32.76	8.21
Jul	21.71	1.25	27.50	4.54	27.50	1.58	33.13	4.05	21.71	2.83	33.13	8.59
Aug	21.71	1.25	27.50	4.54	27.50	1.58	32.26	3.18	21.71	2.83	32.26	7.72
Sep	21.71	1.25	27.50	4.54	27.50	1.58	33.83	4.75	21.71	2.83	33.83	9.29
Oct	21.71	1.25	27.50	4.54	27.50	1.58	32.43	3.35	21.71	2.83	32.43	7.89
Nov	21.71	1.25	27.50	4.54	27.50	1.58	32.88	3.80	21.71	2.83	32.88	8.33
Dec	21.71	1.25	27.50	4.54	27.50	1.58	32.49	3.41	21.71	2.83	32.49	7.95
Avg.	**21.82**	**1.25**	**27.72**	**4.65**	**27.72**	**1.58**	**32.89**	**3.60**	**21.82**	**2.83**	**32.89**	**8.24**

Table 10: Total marketing margins of participating agents ($/plant)

M =Margin; PC = Purchase price; PV =Sale price; CC = Marketing costs

Source: Own elaboration based on field information.

GROSS MARGINS IN INTERMEDIATION

Regarding the gross profit recorded by each of the actors participating in the marketing process, it was observed that of the total gross profit that was recorded throughout the intermediation process (33.65%), the retailers achieved a greater marketing margin, since for each tulip plant in a container they made they obtained $32.89 in profit, participating with 17.92% of the gross profit; For their part, the producers obtained 21.82 $/plant that they sold to the final consumer, participating with 15.73% of said profit (Table 8 and 9).

TOTAL MARKETING MARGINS

The average total margin achieved by tulip plants in containers was 8.24 $/unit, of which the collector recorded the highest margin with 4.65 $/plant, while the remaining 3.60 $/plant corresponded to the retailers.

The best marketing margins achieved by collectors were recorded in the month of May with 5.85 $/plant; For their part, retailers recorded their highest marketing margin in September with $4.75/plant and July with $4.05/plant. For its part, the best absolute margin was recorded in the month of September with 9.29 $/plant, caused by the low supply of the species, which resulted in an increase in its price (Table 10).

CONCLUSIONS

The production system of ornamental flowers in the municipality of Tejupilco, Mexico (southern of the State of Mexico), is represented by small production units, characterized by family gardens or nurseries of small areas, in which plants for flowering are produced in container or container, fruit trees and plants of medicinal interest; This activity represents a complement to the main income of low-income families in the region; The main floricultural species exploited are roses, geraniums, lilies and teresitas, which have an important commercial value; The greatest demand for these species responds to festive and religious situations.

The traditional marketing channel followed by containerized rose and tulip plants, from the nursery to the final consumer, is direct sales from the producer to intermediaries; Another variant of said channel is sales to retailers and to a lesser extent to final consumers. The marketing of plants is carried out by presenting them in packaging or containers. The collectors obtained a greater participation in the sale price, which reached the highest level in the month of greatest demand. Regarding the marketing margins resulting from the intermediation process, collectors recorded the best profits during the months of greatest demand for flowers, either to give as gifts on important dates or for transplanting and establishing gardens in homes.

REFERENCES

Cochran, W. G. 1984. Técnicas de muestreo. Edit. CECSA. México, D. F. 513 p.

International Association of Horticultural Producers (AIP). 2022. International Statistics Flowers and Plants. Yearbook 2020. En: https://aiph.org/giic/international-statistical-yearbook/#orderform Consultado el 24 de julio de 2022.

Gámez, M. O., Villavicencio, G. Serrato, C. E., M. A., Mejía, M. J. M., Treviño, de C. M. G., Martínez, G. M. H. L., Rodríguez, O. M., Granada, C. L., Flores, C. M., Reyes, S. J. Á., Islas, L. M. Á., Salomé, C. E., Menchaca, G. R. A., Espadas, M. C. M., Hernández, S. L., Vázquez, G. L M., Colinas, L. M. T. B., Martínez, M. F., Vargas, P. O. y Ríos, S. E. 2017. Conservación y aprovechamiento sostenible de especies ornamentales nativas de México. Servicio Nacional de Inspección y Certificación de Semillas y Universidad Autónoma Chapingo. México. 152 p.

García, M. R.; García, D. G. y Montero, H. R. 1990. Notas sobre mercados y comercialización de productos agrícolas. Centro de economía. Colegio de Postgraduados. Montecillo, Edo. de México. 473 p.

González, R, F. J., Sangerman, J. D. M., Rebollar, R. S., Omaña S. J. M., Hernández, M. J. y Morales, H. J. L. 2019. El proceso de comercialización del café en el sur del Estado de México. Revista Mexicana de Ciencias Agrícolas. Vol. 10. Núm. 6. pp. 1195-1206.

Juan, P. J. I. y Madrigal, U. D. 2005. Huertos, diversidad y alimentación en una zona de transición ecológica del Estado de México. Ciencia ergo sum. Vol. 12-1. En: file:///D:/Articulo%20Ornamentales/Huertos%20Sur%20EdoMex.pdf Consultado el 10 de julio de 2022.

Mendoza, G. 1987. Compendio de mercadeo de productos agropecuarios. Instituto Interamericano de Cooperación para la Agricultura. San José, Costa Rica. 343 p.

Pizano, M. 1997. International market trends - tropical flowers. Acta Horticulture 683. En: https://www.actahort.org/books/683/683_6.htm Consultad0 el 15 de agosto de 2022.

SIAP-SAGARPA. 2013. Cierre de la producción agrícola por cultivo. En: http://www.siap.gob.mx/cierre-dela-produccion-agricola-por-cultivo/ Consultado el 27 de julio de 2015.

SAGARPA. 2005. Plan rector sistema nacional ornamentales. Segunda fase: diagnóstico inicial base de referencia estructura estratégica. México, D. F. 29 p. En: https://vdocuments.pub/plan-rector-sistema-nacional-ornamentales-plan-rector-sistema-nacional-ornamentales.html?page=1 Consultado el 10 de julio de 2022.

SIAP-SEDER. 2022. Sistema de Información Agroalimentaria de consulta. En: https://www.gob.mx/siap/documentos/siacon-ng-161430 Consultado el 20 de junio de 2022.

Vilaboa, A. J.; Díaz, R. P.; Platas, R. D. E.; Ruiz, R. O.; González, M. S. S. y Juárez, L. F. 2010. Fallas de mercado y márgenes de comercialización en bovinos destinados al abasto de carne en la región del Papaloapan, Veracruz. Revista Economía, Sociedad y Territorio. 34 (X). pp. 813-833

Xia, Y., Deng, X., Zhou, P., Shima, K., Teixeira da S. J. A. 2006. The world floriculture industry: dynamics of production and markets. Floriculture, ornamental and plant biotechnology. Global Science Books. Vol. IV. p. 341. En: https://www.researchgate.net/publication/283348233_The_World_Floriculture_Industry_Dynamics_of_Production_and_Markets Consultado el 15 de junio de 2022.