

Fruit Market in the City of Lavras, Minas Gerais, Brazil from 2004 to 2017

José Clélio de Andrade, Lair Victor Pereira, Ângelo Albérico Alvarenga, Ester Alice Ferreira, Paulo Márcio Norberto, Marcelo Ribeiro Malta

Searchers for the Agricultural Research Company of Minas Gerais, EPAMIG, Lavras, Brazil

Email: jclelio@epamig.br

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Abstract

Fruit growing has achieved advances through the use of new technologies generated by research. In Brazil, it is one of the most prominent sectors in agribusiness, achieving significant results and generating business opportunities. In this way, the fruit market has grown considerably in the last decades, both in quantity and in quality. Allied to this, the changes in consumer behavior regarding food consumption have been responsible for the increase of the fruit market. The objective of this work was to know the evolution of the fruit trade in the city of Lavras, state of Minas Gerais, Brazil, in relation to the quantity sold, monetary value, losses in the gondolas of retail establishments and per capita consumption of the population of this city.

Keywords

Market, Fruits, Consumption

1. Introduction

One of the most important sectors in the world agribusiness is fruit growing, which includes a large number of fruit trees. Brazil with a great territorial extension, allied to the climatic diversity, allows the production of the most diverse fruits, generating great opportunities for the agribusiness. Taking advantage of this advantage, the country produced 38.36 million tons of fruit in 2013, placing it in the 3rd place in the world ranking, surpassed only by China and India, which produced 137.6 and 71.07 million tons of fruit, in that same period [1].

Fruit farming, besides having economic importance, generates a great number of jobs, distributing wealth in all layers of society. According to the IBRAF [2], fruit growing in Brazil occupied an area of 2.2 million hectares, moved US\$ 5.29 billion and employed 5.6 million people, representing 27% of the agricultural

labor force from the country.

The fruit market has grown considerably in the last decades, both in quantity and in quality. This was possible because of advances in research and development in the industry. In four decades, Brazil has passed from importer to exporter of some temperate fruits, such as apple. In the 1970s, the national production of this fruit represented only 10% of domestic consumption. Today, there are more than 36,000 hectares producing high quality apples, enough to meet the domestic market and even for export [3] [4].

The changes in consumer behavior, with regard to food consumption, have been responsible for the increase in the fruit market [5]. Faced with this trend, the Center for Advanced Studies in Applied Economics, University of São Paulo (CEPEA-USP), conducted a survey on fruit consumption in Brazil, which showed an average increase of approximately 4.38 kg per person per year, from 2005 to 2011 [6].

The objective of this work was to know the fruit market of the city of Lavras, MG, Brazil, from 2004 to 2017, in relation to the volume sold, monetary value, percentage of losses in gondolas and per capita consumption of fruits of the population.

2. Methodology

This research was carried out in three stages in the city of Lavras, MG, Brazil, the first one in the months of August to January of 2004/2005; the second in the months of August to January 2011/2012, and the third in the months of August to January 2016/2017, in the various supermarket chains, sweatshops and free markets.

The data collection was performed monthly, through a spreadsheet with questions about quantity marketed, total value of consumer prices and percentage of losses in gondolas. The data collected were tabulated and analyzed monthly.

The sampling of the number of establishments interviewed was carried out according to the criteria of Cochran [7], in which locality with more than fifty commercial establishments of fruit the sample is of 10%, of ten to forty of 20% and with less than ten of 100%. For this research carried out in the city of Lavras, Minas Gerais, Brazil, the sample was 100% of the four networks of supermarket establishments and ten retail establishments.

3. Results and Discussion

According to the data presented in **Table 1**, it can be seen that, in the first stage (2004/2005), an average of 377.6 t of fruits per month was traded, moving around US\$ 18,850,798, with a price average of US\$ 0.50 per kg of fruit.

In the second phase (2011/2012), there were 650.8 t of fruits per month, moving US\$ 396,808.30 monthly, with an average price of US\$ 0.61 per kilo [3].

Finally, in the third stage, this average rose to 786.3 t monthly, moving US\$ 60,995,207 per month at an average price of US\$ 0.79 per kg of fruit. In a

Table 1. Quantity (t) and value (US\$) of the fruit marketed in Lavras from August to January 2004/2005, 2011/2012 and 2016/2017.

Month/ Stages	Stages					
	2004/2005		2011/2012		2016/2017	
	Amount (t)	value (US\$1,000.00)	Amount (t)	value (US\$ 1,000.00)	Amount (t)	value (US\$ 1,000.00)
August	385.9	185.75	642.6	402.36	783.3	605.61
September	383.0	188.78	634.9	391.46	822.0	635.53
October	350.9	169.65	589.1	365.11	851.3	658.19
November	355.0	193.80	591.1	366.19	798.4	617.29
December	401.1	199.84	667.7	443.70	874.0	675.74
January	389.7	197.60	644.8	412.01	824.6	637.54
Average	377.6	189.14	650.8	396.80	825.6	638.32

*Dollar quotation on September 20, 2017 (US\$ 1.00 = R\$ 3.13).

study conducted by Andrade *et al.* [8] in the period of 2014/2015, similar results were observed.

According to the data presented, evolution of 72.35% from the first to the second stage and 108.23% from the first to the third stage is observed, clearly showing the trend of increase in fruit consumption by the population, mainly motivated health aspects and the search for a better quality of life.

In six years, from the first to the second stage, per capita fruit consumption in Lavras rose from 47.76 kg/inhabitant/year to 58.90 kg/inhabitant/year [3]. In that interval, consumption per capita had an increase of 11.14 kg per person per year, which was more than double the average in Brazil, where there was an increase of 4.38 kg per person per year [6].

Comparing the evolution from the first one (2004/2005) to the third stage (2016/2017), per capita consumption increased from 47.76 kg/inhabitant/year [4] to 78.63 kg/inhabitant/year, representing an increase of 30.87 kg/hab/year, a 64.63% increase in per capita consumption.

The per capita consumption in 2010 in Brazil was 57.00 kg/hab/year, in Italy, 114.00 and in Spain, 120.00 kg/hab/year, according to FAO [1]. In Lavras, although per capita consumption is above the national average, it is still below that in Italy and Spain [3]. This fact can be explained by the increase in the supply of fruit in the retail market, as a consequence of the increase in the demand for the population, due to the behavioral changes of the population that started to look for healthier foods, together with an improvement of the purchasing power of the society in general, as well as the improvement of the supply and distribution of these products by the retail network with assiduity and punctuality.

The losses of the fruits in the supermarket shelves and bakeries went from 7.8% [3], in the first stage, to 4.6% in the third stage, as reported by those responsible for the hortifrúti section of the establishments surveyed. There was a

Table 2. Most traded fruit (t) in Lavras, MG, from August 2016 to January 2017.

Fruits/month	Ago/16	Set/16	Out/16	Nov/16	Dez/16	Jan/17	Average
Banana Prata	92.79	109.66	109.93	102.24	104.72	94.38	102.29
Banana Nanica	28.29	27.09	33.30	40.79	47.85	53.46	37.13
Orange Pêra	105.85	109.66	121.90	107.99	102.13	104.60	108.68
National apple	44.52	41.29	56.05	38.87	69.30	45.44	49.24
Papaya Formosa	19.50	24.29	19.37	20.86	18.73	21.50	20.70
Papaya Amazonas	15.01	18.70	16.37	20.15	21.14	22.34	18.95
Pineapple Pérola	20.86	18.92	18.72	24.01	30.60	18.29	21.23
Grape Rosada	-	-	-	-	37.74	-	-
Mango Palmer	-	-	-	-	-	35.72	-
Sub-total*	326.82	349.58	375.64	354.91	432.21	395.73	358.22
Others	456.78	472.42	475.66	433.49	441.79	428.87	467.38
TOTAL	783.30	822.00	851.30	798.40	874.00	824.60	825.60

*Subtotal for banana, orange, apple, papaya and pineapple.

reduction in losses from 64.24 to 40.48 t/month, that is, 23.76 t/month less, representing a saving in waste of US\$ 18,294.40 per month. This is due to the efforts made by the management of Ceasa Minas in the logistics of distribution to the final consumer.

Table 2 shows the data of the main fruits commercialized in the city of Lavras, MG, in the third stage of this research, from August 2016 to January 2017. The banana was the most commercialized fruit, with a monthly average of 139.42 t, of which the cultivar Prata contributes with 102.29 t, the “Nanica”, with 37.13 t. The second most traded fruit was the “Pêra” orange, with a monthly average of 108.68 t, followed by the national apple, with 49.24 t, and papaya with 39.65 t, with 20.70 t of papaya “Formosa”, and 18.95 t of the “Amazonas” papaya. In December 2016, the “Rosada” grape was the 5th placed with 37.74 t and in January 2017 this position was occupied by the “Palmer” mango, with 35.72 t.

In the three steps studied, it is verified that the month of December was the month of greatest fruit supply in the city of Lavras. It can be said that this event is due to the greater supply of fruit, accompanied by the greater demand for the population, a factor motivated by the Christmas festivities and also by the increase of income, with the receipt of the 13th salary.

As for the increase in the volume of fruit traded, it can be said that it is a consequence of the increase of productivity and quality, as well as the constant supply of these products during all months of the year. This offer, in turn, is provided by the technological development coming from the results of continuous scientific research, which has made possible the advancement of fruit growing in the various geographic regions of Brazil.

4. Conclusions

The commercialization, consumption and supply of fruit with quality, attendance and punctuality in Lavras have increased.

Losses in facilities have decreased as a result of more efficient distribution logistics.

Technological development has provided better quality fruit during all months of the year, favoring increased consumption, which has also been driven by the change in consumer habits.

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