

Competitiveness of the Orange Juice Chain in Brazil

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Abstract

The method developed by Neves (2011) involves the survey of three pieces of information in the supply chains of food products: the facts that occur along the chain, the impacts identified by such facts, and the strategic acts necessary to reduce such impacts. In this study, the method was applied to the citrus production chain in Brazil. To obtain such information and apply it in this method, a complete analysis of the production chain was necessary, encompassing consumption of orange juice around the world, concentration on the retail market and at bottlers, the situation of the orange juice processing industry in Brazil, and the profile of Brazilian orange production and producers. Based on the study, it was concluded that the decrease in consumption of orange juice in the primary markets, the concentration in the retail and bottler links in the supply chain, along with the fluctuation of prices of orange juice on the international market, the rising costs of processing, and the cost of orange production, are putting pressure on profit margins and varying the income not only for growers but for the industry as well. Hence, interventions and joint strategic actions are needed, such as the establishment of Consecitrus, the composition and management of inventories, systematic dissemination of information, development of the domestic market, technical and financial support to citrus growers, and strengthening of research efforts.

Keywords: orange juice, chain plan, Brazil.

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Executive Summary

This paper presents a detailed study on the meaning of the last decade to the citrus chain, providing unpublished data, for the purpose to give more transparency, historical action requested in the citrus industry. Some information hitherto unpublished which now appear are amazing, and will serve as a basis for deeper analysis of researchers, citrus growers, entrepreneurs and other stakeholders about the citrus production and its insertion in the current world scenario. It is noteworthy that both the material contained in this paper, and new data collection that will occur in the future, will benefit the improvement of the method developed and knowledge of the methodological difficulties encountered in this initial study.

The understanding of the orange juice consumption around the world is the starting point of the paper. While not common, this should be the beginning of any study that has the intention of analyzing a productive chain. This procedure is justified because more and more the decisions are driven by the perspective of the consumer. Next, the paper addresses the retail, going through the bottlers juices, processing industry, and reaches the farm. Finally, in last section summarizes all facts and impacts in citriculture that are detail explained along the text and, looking for the future, the paper suggests a list of acts that should be performed to increase the chain competitiveness.

The characteristics of the orange juice productive chain, and an observation of its performance over the last 20 years, lead to the conclusion that simply leaving it at the mercy of market forces does not represent a sustainable solution from the viewpoint of society. A certain degree of intervention is necessary, and the joint strategy of regulating inventories, can contribute toward a modern and shared intervention in this productive chain, aimed at a sustainable future.

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Introduction

Introduced in Brazil early in the colonization period, orange trees encountered optimal conditions to thrive and produce fruit, and orange farming expanded nationwide. The major driving force for growth of the Brazilian citrus industry was the frost that hit the orange groves in Florida, USA, in 1962, until then the largest producer of oranges and orange juice. Consolidation of the Brazilian orange industry occurred definitively after the frosts returned to castigate Florida in the 1970s and 1980s. Starting at that time, the union of highly developed citrus growing techniques and a competitive industry led Brazil to become the world's largest producer of oranges in the 1980s, surpassing the United States not only in production but also in citrus technology. Since then, Brazilian production has nearly doubled, and the United States has remained as the second largest producer of oranges. But the U.S. is losing production year by year, and currently accounts for less than half of Brazil's orange production.

Brazil produces half the orange juice on the planet, bringing in from US\$ 1.5 billion to US\$ 2.5 billion in orange juice exports annually. In nearly 50 years, the citrus supply chain has brought in nearly US\$ 60 billion to Brazil directly from orange juice consumers (at today's prices). By now Brazil has achieved high efficiency in the citrus chain; and all this with Brazilian competence and know-how.

This paper aims to present the economic balance regarding the last ten years and the performance of the orange juice chain in its various links. This is an important contribution by bringing information able to identify more broadly the aspects that impact the economic sustainability of the sector and, as usual in these 20 years researching and publishing papers about the citrus chain, suggesting strategies to the public and private sectors.

Theoretical Framework

According to Malhotra (2001), to characterize and analyse a production chain it is necessary to define its objectives as well as boundaries and scope, participant subsystems of the production chain, and its environment (Malhotra, 2001). Batalha (2001) reports that for a chain analysis, the researcher must define certain conditions that are consequences of the objectives to be reached. The most important and difficult definitions are related to the analysis scope and levels that should be detailed. Zylbersztajn (2000) also comments that the definition of the Sag boundaries shall be dependent on the research purposes, which are generally focused on a product.

Two traditional approaches to studying chains can be found in the literature. The commodity system approach (CSA) was developed by Goldberg (1968) in the USA in studies of citrus, wheat, and soybean production systems. The CSA methodology emphasizes the sequence of product transformations in the system. The merit of Goldberg's method is that it changed the focus of analysis from the orchard to the entire system, which prevented researchers from considering the agricultural sector in isolation from the overall economy.

47 The second approach, proposed by Morvan (1985), considers a chain (“filière”) as linked
48 operations in the transformation of a good. The chains are influenced by technology and have
49 complementary interdependences, according to Batalha (2001). According to Morvan (1985),
50 the filière analysis is an important tool for describing systems, for defining the role of
51 technology in the framing of production systems, for organizing integration studies, and to
52 analyse industrial policies, firms, and collective strategies.

53
54 The supply chain is viewed as a system that integrates raw material suppliers, factories,
55 distribution services, and consumers (Stevens apud Omta et al., 2001). Furthermore, there is
56 the network concept in which organizations are directly involved in different processes that
57 add value in the development of goods and services until they reach the consumer
58 (Christopher apud Omta et al., 2001). Lazzarini et al. (2001) integrate chain and network
59 concepts in a study on net chains. According to these authors, the integration of these
60 approaches allows for considering existing organizational interdependences in a network, as
61 well as the different mechanisms of coordination (managerial plans, process standardization,
62 and adjustments), and sources of value (production and operations optimization, transaction
63 cost reduction, diversity, and "co-specialization" of knowledge).

64
65 Hardman et al. (2002) demonstrated the possibility of increasing the competitiveness of South
66 African apple chain exportations through cooperation among producers, packers, and
67 exporters. From the ideas of CSA and the filière, it is possible to develop tools and managerial
68 activities to improve the chains’ efficiency. Thus, the concepts of Supply Chain Management
69 (SCM) and the set of networks and net chain ideas are important theoretical concepts and
70 empirical notions for the development of food and bioenergy chains (Batalha and Silva, 2001).

71 **Method**

72
73
74 To achieve the objectives, was used the method developed by Neves (2011) which consisting
75 in three steps:

- 76
77 1 - Identify the facts that influence the productive aspects and market activities.
78 2 - Understanding the impact of the events identified have on Brazilian citrus, making these
79 messages that can be easily received and understood by the audience.
80 3 - Acting strategically, based on the information received in order to reduce risks and
81 maximize production output.

82
83 The data were collected from secondary sources, interviews and participation in the World
84 Juice Conference held in Madrid (October 2011). Then visits were made and interviews with
85 bottlers and industrials at ANUGA held in Cologne, Germany (October, 2011). The method
86 also contemplated survey with members of CitrusBR in 4 months of immersion, by collecting
87 individually and compilation confidentially, resulting in averages of data relating to the
88 purchase of oranges in Brazil and sale of FCOJ in Europe and North America, such as the
89 average of the production costs of orange and costs of manufacturing and worldwide
90 distribution of FCOJ and by-products. The individual information of the companies were later
91 returned in strict confidence and only the industry averages were analyzed.

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Results and discussions

Analysis of Consumption

Analyzing the data for 2010 (provided by Tetrapak) from 40 countries representing 99% of worldwide consumption, one can see that the global consumption of orange juice fell 5.3% in the period from 2003 to 2010 (Table 1). Among the 20 largest consumers, the most significant drop was in Germany, at 22.8%, followed by the U.S. – by far the largest consumer market – with a decrease of roughly 20%. Observing the U.S. market in a period longer than a decade, there has been an even greater decrease in consumption, around 27%; in the 1999/2000 agricultural year, 1,114,000 tonnes were consumed, and in 2009/10 this figure was only 809,000 tonnes. The combined downturn in consumption in the US and Germany corresponded to a decrease of 363,000 tonnes of FCOJ equivalent in annual sales, representing a decrease of demand in the citrus belts of the states of São Paulo and Florida on the order of 90 million boxes of orange per year.

Despite the decline in these major consumer markets, new facts have appeared that may represent opportunities. Compared with 2009, consumption began to increase again in 2010: 1% on average. There has also been an increase in emerging markets, which are still relatively small, as well as a recovery in some of the traditional European markets. In just one year, emerging markets consumed 42,000 tonnes more FCOJ.

Table 1. Consumption of orange juice in the 40 top markets, grouped by continent

Continent	2003	2005	2007	2009	2010	Variation (2003/2010)
North America	1,117	1,118	1,002	968	930	-15.3%
Europe	910	882	895	883	903	-1.4%
<i>Western Europe</i>	797	748	743	738	746	-7.0%
<i>Eastern Europe</i>	113	134	153	145	157	38.2%
Asia	232	235	245	247	268	15.4%
Central & South America	88	84	90	100	108	16.0%
Oceania	45	46	46	47	47	5.6%
Africa	23	27	31	32	33	40.3%

Consumption shown in the table does not include orange juice used in carbonated soft drinks, estimated at 70,000 tonnes of FCOJ a year. Data from 2003 to 2009 were reviewed by Tetrapak.
 Source: Prepared by Markestrat based on data from Tetrapak and Euromonitor.

The sum of this growth in 2010 offset the decline in the U.S., but not elsewhere in the world. The behavior of orange juice consumption must be closely monitored in the coming years, since Europe is again facing a severe crisis and the stable price of concentrated juice at levels above the previous year may negatively impact consumption.

Retail

In countries that are major consumers of orange juice, sales are concentrated among very few retailers. This increases the bargaining power and suppression of prices, and decreases alternative distribution channels for orange juice on the part of bottlers. At current price levels

132 – according to estimates by bottlers interviewed for this study – a retailer’s net earnings are at
 133 least 0.10 euro for each 1-liter package of orange juice sold, which at the current conversion
 134 rate from euros to dollars, makes the retailer’s net margin reach US\$ 761 per tonne of FCOJ
 135 66° brix equivalent, over US\$ 3.00 per 40.8 kg box of oranges. Therefore, according to the
 136 interviewees, over 70% of the profit margin in the productive chain is earned by retailers,
 137 while the remaining 30% of profit margin remains for the bottlers, processors and growers.

138
 139 Another interesting aspect of retail in Western Europe is the strong presence of store brands
 140 that, in the case of Germany, now account for 65% of overall consumption, leaving less room
 141 for products of major brands that are able to attain higher selling prices on supermarket
 142 shelves. Table 2 shows that the participation of five largest retailers in food sales, by country,
 143 has been growing year after year.

144
 145 **Table 2.** Share of the five largest retailers in food sales, by country

Country	Market Share		
	2000	2005	2010
Israel	99.3%	99.5%	100.0%
Switzerland	80.7%	85.1%	92.1%
South Korea	58.5%	72.3%	84.4%
Austria	72.5%	71.9%	84.4%
Germany	66.4%	72.9%	80.0%
France	70.0%	64.8%	74.7%
Russia	60.9%	55.1%	74.4%
Canada	60.6%	54.8%	73.7%
Japan	66.6%	63.4%	66.5%
Spain	52.7%	56.7%	69.2%
United Kingdom	50.6%	59.8%	67.9%
Italy	69.6%	67.5%	67.1%
Poland	51.4%	41.6%	53.2%
United States	42.7%	45.3%	46.3%
Brazil	41.0%	40.5%	43.0%

146 Includes only modern food distributors; does not include small neighborhood retailers.

147 Source: Compiled by authors based on data from Planet Retail and Abras.

148
 149 Therefore it is necessary to strengthen the position of orange juice in alternative channels, and
 150 within retail, to deal with the rising costs of the production chain, in order to maintain
 151 sustainability. It is also necessary for the product to have higher added value, so it can be sold
 152 at higher prices.

153
 154 *Bottlers*

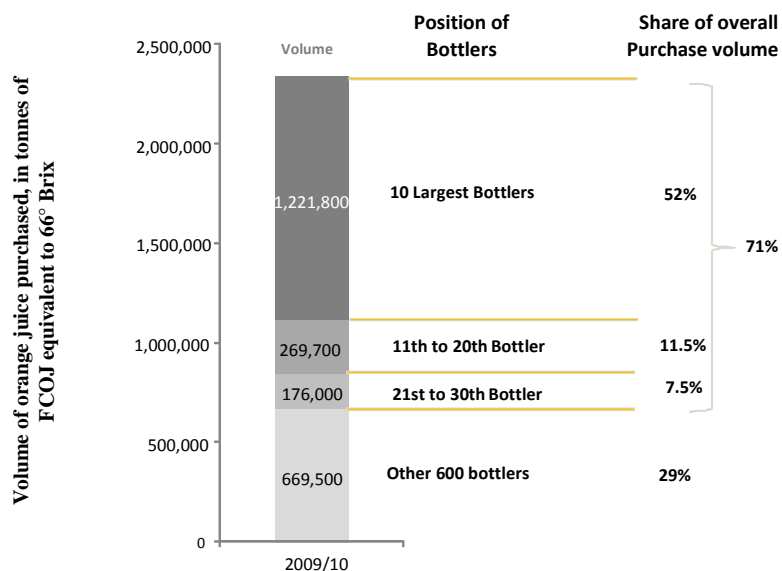
155
 156 Bottlers are companies that buy Brazilian orange juice and use this raw material as a base for
 157 their beverages, with different mixtures (blends), trademarks, and wide-ranging applications. It
 158 is noteworthy that the orange juice production and industrialization links in the supply chain in
 159 Brazil are very dependent on the other links: bottling, distribution and marketing. After all,
 160 more than 95% of what is produced by Brazil is consumed abroad, since the domestic market
 161 absorbs very little industrialized orange juice.

162
 163 The investments required for the construction and commissioning of these bottling plants are
 164 significant, and almost all of them around the world also bottle various types of fruit juices

165 and often other types of beverages such as non-carbonated and carbonated soft drinks.
 166 Therefore, one must consider that without the bottlers, the orange juice – which is produced by
 167 the fruit processing industries in bulk or in drums – has no way to reach consumers on
 168 supermarket shelves.

169
 170 In recent years, the beverage market has gone through a strong period of concentration (Graph
 171 2). Today, just 30 customers purchase and bottle the equivalent of 71% of the orange juice
 172 produced worldwide. Out of this total, the 10 largest orange juice bottlers account for 52% of
 173 the entire market. Today the better part of distributed juice is done by multi-product
 174 companies, where orange juice is just one more item from their large portfolio of beverages
 175 such as juices, nectars and non-carbonated soft drinks made from other fruit flavors; bottled
 176 waters; soft drinks; energy drinks; milk-based beverages; and other non-alcoholic beverages
 177 that invariably channel more marketing investments, giving more attention and priority to the
 178 categories of beverage production that offer the best profit margin at any given time.

179
 180 **Graph 2.** Concentration of bottlers in the acquisition of orange juice around the world.
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182
 183 Source: Prepared by Markestrat based on CitrusBR.

184
 185 *Brazilian industry*

186
 187 Global production of orange juice has decreased over the last few years, and was below
 188 consumption in the 2008/09 season. In the last 15 seasons, from 1995/96 to 2009/10, the drop in
 189 worldwide production of juice was 13% (equivalent to 308,000 tonnes), with the largest
 190 reductions occurring in Florida (295,000 tonnes) and in the citrus belt of São Paulo and Triângulo
 191 Mineiro (31,000 tonnes). Despite such decrease, these regions continue to lead world production
 192 of orange juice, accounting for 81% of all production.

193
 194 Orange juice originating in Brazil is known for its high quality. Brazil is the largest producer and
 195 exporter, responsible for 53% of world production and exporting roughly 98% of this production.

196 In 2011, exports from the Brazilian citrus complex totaled 2.4 million tonnes of product and
 197 US\$ 2.7 billion in revenue, representing about 3% of Brazilian agribusiness exports (Table 3).
 198

199 **Table 3.** Exports from the Brazilian citrus complex

Year	Value (FOB)		Volume	
	Total exports from the citrus complex	FCOJ & NFC Conv. 66° Brix	Processed products	
			Other products & derivatives	Fresh oranges - Volume Exported
US\$ Total	Tonnes	Tonnes	40.8-kg boxes	
2001	\$ 985,955,684	1,348,196	1,260,641	3,421,150
2003	\$ 1,374,742,812	1,362,331	1,014,696	1,667,050
2005	\$ 1,272,929,023	1,403,468	929,029	751,326
2007	\$ 2,506,795,880	1,415,523	961,577	1,219,331
2009	\$ 1,838,972,527	1,300,554	851,411	641,795
2011	\$ 2,721,604,184	1,154,754	435,440	816,445

200 Source: Prepared by Markestrat based on data from SECEX/MIDC.

201
 202 The issue of devaluation of the US dollar, coupled with rising costs in the most diverse origins,
 203 caused the average cost of processing oranges to rise 224% over the period from 2003 to 2010,
 204 jumping from US\$ 347.54 to US\$ 534.28 per tonne of FCOJ.
 205

206 A major influence of the citrus chain is price, which often undergoes large fluctuations during
 207 the year, thereby affecting income. Proof of this lies in the fact that, in the period analyzed,
 208 there was an overall price amplitude of around 313% in the physical market in Europe, with
 209 the lowest average price recorded in January 2001 (US\$ 712 per tonne of FCOJ) and highest
 210 average price recorded in July 2007 (US\$ 2,230 per tonne of FCOJ). On the New York Stock
 211 Exchange there was an even greater amplitude – 614%. In addition to prices, dynamics in this
 212 sector are influenced by several events:

- 213 ▪ Climatic variability strongly impacts the volume of annual global production and global
 214 inventories of orange juice at the end of each growing season (carry-over stocks);
- 215 ▪ The demand for orange juice has shown slight changes in consumption from year to year,
 216 relatively independent from the amount of orange juice offered on the global market, since
 217 the final prices on store shelves undergo little change;
- 218 ▪ The accentuated volatility of orange juice prices on the New York Stock Exchange and on
 219 the physical market in Europe is due to expectations of production and carry-over stocks of
 220 subsequent harvests;
- 221 ▪ The increased power of retailers in a scenario of excess idle capacity on the part of juice
 222 bottlers (now estimated at more than 50% in Europe and roughly 30% in North America)
 223 causes negative pressure on selling prices to bottlers;
- 224 ▪ The excess supply of orange juice to a small and increasingly concentrated portfolio of
 225 bottlers, which are idle and crushed by the retailers in turn, also causes negative pressure on
 226 selling prices of FCOJ from the orange juice producing industries, particularly in times of
 227 large harvests and oversupply of orange juice on the world market;
- 228 ▪ In spite of a direct correlation, one can also see a natural lag between the monthly average
 229 quotes on the New York Stock Exchange and the average prices received by the industries
 230 on the European physical market, the main destination of Brazilian exports. Such lag stems
 231 from the fact that contract prices in Europe and Asia are locked with bottlers for periods

232 ranging from 6 months to 24 months, instead of the futures market that has low liquidity in
 233 periods longer than 6 months in the future.

234 It is significant that the final income of the citrus production chain destined to industrialization
 235 of orange juice and by-products at the delivery gates of the end purchasing customers – the
 236 bottlers – has been oscillating based on historical minimum and maximum prices between
 237 US\$ 1.37 billion (or US\$ 4.57 per box of oranges industrialized) and US\$ 2.83 billion (or
 238 US\$ 9.45 per box of oranges industrialized). Such revenues – with the convergence of efforts
 239 between orange growers and their respective buyers, i.e. processing industries, in favor of a
 240 positive agenda through Consecitrus – may reach US\$ 3.72 billion, or US\$ 12.41 per box of
 241 oranges industrialized.

242

243 *Producers*

244

245 Orange growing is present in all Brazilian states. With more than 800,000 hectares of crop land,
 246 orange is the most widely grown fruit in the country. Orange groves are expanding outside the
 247 state of São Paulo state, which now accounts for 70% (2009/10) of the overall area cultivated.
 248 Although there has been growth in the area of orange groves in these regions, the total area
 249 dedicated to orange growing in Brazil has dropped by around 8% since the early 1990s. This
 250 decrease has not been accompanied by a reduction in the amount of boxes harvested. On the
 251 contrary, there has been a 22% increase. This inversion is the result of an impressive gain in
 252 productivity. The national average of 380 boxes per hectare, in 1990, jumped to 475 boxes per
 253 hectare by 2010. If today's citrus industry were the same as existed 20 years ago, it would take
 254 nearly 280,000 hectares more to reach today's production levels.

255

256 Some problems can also be seen in orange production in Brazil, including rising production costs,
 257 decreasing profit margins, as well as pests and diseases. For the first time, the average operating
 258 cost of producing 100% of the oranges produced by industries in each growing season from
 259 2002/03 to 2009/10 has been calculated. These figures represent the operating cost of producing
 260 around 35% of the oranges processed by industries in the state of São Paulo which come from
 261 their own orchards scattered throughout the citrus belt.

262

263 **Table 4.** Average operating cost of orange production of industry-owned orange groves (40.8-kg box)

Breakdown of production costs of company-owned orchards	2000/01	2004/05	2008/09	2009/10
Wages, comp. & fac. expenses, ppe, outsourced manpower	R\$ 0.57	R\$ 1.03	R\$ 1.58	R\$ 1.66
Pesticides and herbicides	R\$ 0.74	R\$ 0.72	R\$ 0.90	R\$ 0.89
Fertilizers (organic/chemical fertilizers, and soil additives)	R\$ 0.42	R\$ 0.65	R\$ 0.81	R\$ 0.75
Electricity	R\$ 0.05	R\$ 0.07	R\$ 0.13	R\$ 0.11
Expenditures on company-own vehicles and third-party services	R\$ 0.39	R\$ 0.25	R\$ 0.39	R\$ 0.32
Maintenance, conservation and other expenses	R\$ 0.11	R\$ 0.39	R\$ 0.49	R\$ 0.31
Total expenditure on the trees	R\$ 2.29	R\$ 3.11	R\$ 4.30	R\$ 4.05
Harvest (wages, com. & fac. Expenses, nr 31, ppe)	R\$ 0.69	R\$ 1.06	R\$ 1.91	R\$ 2.19
Fruit Shipping Costs (Internal Removal, Shipping to Factories and Tolls)	R\$ 0.31	R\$ 0.81	R\$ 1.07	R\$ 1.02
Total costs ex-factory (r\$)	R\$ 3.30	R\$ 4.98	R\$ 7.28	R\$ 7.26
Average exchange rate of disbursement during harvest period	R\$ 1.90	R\$ 2.84	R\$ 1.97	R\$ 1.83

Total costs ex-factory (us\$)	U\$ 1.74	U\$ 1.75	U\$ 3.67	U\$ 3.96
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Source: CitrusBR.

Based on the analysis of the operating cost of production for the ten-year period from 2000/01 to 2009/10, one can see that the cost of harvesting and shipping rose from 30% to 44% of the overall operating cost of orange production. Altogether, the operating cost of production went up around 120% between the 2000/01 and 2009/10 crop years, from R\$ 3.30/box to R\$ 7.26/box.

The higher costs of orange production underscores the need to rethink the management of citrus enterprises and the adoption of solid production planning, involving the determination of long-term objectives and targets as well as implementation of actions and allocation of resources to achieve such goals. It is also up to the government to undertake integrated actions of support in this rethinking of production activity, because of this sector's importance in generating jobs and income.

In citrus farming, as well as in any economic activity, when facing tight margins, there is a pressing need to increase productivity, in such a way as to reduce production cost per box of oranges. In order for there to be profitability by sending the fruit to industrial processing, there needs to be scale production, as well as compliance with relevant labor and environmental legislation. These requirements are more easily met by larger farms that use high technology and generally have an ideal size for a proper dimensioning of equipment, as well as stronger purchasing power for supplies. However, 87% of the growers in Brazil's citrus belt are small-scale growers (11,011 producers), producing on farms with fewer than 20,000 trees. This group of producers owns only 21% of the total number of trees in the citrus belt.

Table 5. Stratification of growers in the citrus belt, by number of trees

Parameter	2001			2009			
	Trees (%)	Growers (%)	Number of Growers	Trees (%)	Growers (%)	Number of Growers	
> 400,000 trees	16.15	0.15	23	39.25	0.4	51	
200,000 to 399,000 trees	7.65	0.25	38	7.35	0.55	69	
100,000 to 199,000 trees	10.6	0.7	105	8.95	1.3	164	
50,000 to 99,000 trees	12.4	1.75	263	10.75	2.95	372	
30,000 to 49,000 trees	12.3	3.15	473	7	3.5	442	
20,000 to 29,000 trees	8.95	3.9	585	5.3	4.1	518	
10,000 to 19,000 trees	16.45	14.5	2.175	8	11.15	1.408	
< 10,000 trees	15.45	75.55	11333	13.4	76.05	9603	
Total	100.00%	100.00%	15.000	100.00%	100.00%	12.627	

Source: Compiled by Markestrat based on data from CitrusBR, considering data from member organizations.

In 2009, 44% of the overall area planted in the citrus belt exhibited productivity below what is necessary to turn a profit. An average of 280 boxes per hectare is produced in this area. This is a major difference when compared to the other properties that make up the other 56% of orange grove acreage, which on average produce 909 boxes per hectare.

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Table 6. Stratification of orange production per range of productivity in the 2009/10 growing season

Range of Productivity	% of area (hectares)	% of boxes	Volume of boxes produced per range of productivity	Productivity - boxes per hectare
Over 1,400 boxes per hectare	2%	5%	16 million boxes	1,655
from 1,100 to 1,399 boxes per hectare	7%	13%	41 million boxes	1,209
From 800 to 1,099 boxes per hectare	19%	29%	92 million boxes	933
From 500 to 799 boxes per hectare	28%	30%	95 million boxes	639
From 200 to 499 boxes per hectare	36%	21%	67 million boxes	345
Below 200 boxes per hectare	8%	2%	6 million boxes	138
Total	100%	100%	317.4 million boxes	607
Total over 500 boxes per hectare	56%	77%	244.4 million boxes	909
Total boxes below 499 per hectare	44%	23%	73 million boxes	280

303 Source: Prepared by Markestrat based on data from CitrusBR.

304
 305 This dynamic that is taking place in the Brazilian citrus industry explains why less efficient
 306 producers, unable to compete with more efficient ones, have left the sector to focus on other
 307 crops. Those who remain in the citrus-growing activity must find a more appropriate path for
 308 each property profile, i.e., definition of a particular strategy to run their farms, which could
 309 consist of cost leadership, differentiation, or diversification.

310
 311 In addition to the cost of production, pests and diseases affect citrus production in Brazil and,
 312 undoubtedly, are a major threat to the nation's citrus industry. During the last decade, four
 313 diseases were responsible for the eradication of 39 million trees in the citrus-growing centers of
 314 São Paulo and Triângulo Mineiro. Thus, the average annual rate of mortality, which previously
 315 hovered around 4.5% a year, jumped to 7.3%. Adopting an average yield of two boxes of oranges
 316 per tree, it is estimated that citrus canker (CVC), sudden death, and citrus greening were
 317 responsible for an annual reduction of around 78 million boxes, compared to the 317 million
 318 boxes harvested in 2009/10, representing a decrease in harvest of roughly 20%.

319
 320 *Facts, Impacts e acts*

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 322 The final frame is a synthesis of the facts, impacts and acts to the orange juice chain, illustrating
 323 what happens (facts) and if fact is positive negative or neutral to the chain (impact) and what
 324 should be done (act).

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Facts	Impact	Act
<p>Fall drastic consumption orange juice in Germany (-22.8%), U.S. (-19.3%), Japan (-18%) and in some other traditional markets.</p> <p>Although is still small, the consumption of FCOJ increases in emerging countries (40,000 tons years).</p>	<p>Reduces the need of import of FCOJ Brazil.</p> <p>Opportunity for input of Brazilian juice in these regions.</p>	<p>Concentration of marketing efforts aimed at recovering consumption in major downturn markets.</p> <p>Project development in emerging markets involving industries, CitrusBR and the Brazilian agency to encourage exportations trade and investment promotion agency (APEX-Brazil).</p>
<p>Incredible growth of launches of innovative drinks.</p>	<p>These innovations take great markets of FCOJ.</p>	<p>Redeem consumers traditional and repositioning orange juice as liquid food.</p>
<p>Retail concentration (supermarkets) in large companies and also central purchasing.</p>	<p>Difficult negotiation centered in prices and growth supermarkets own brands, that reduce margins to the chain.</p>	<p>Diversification of distribution channels and efforts to development the brand "Drink Brazil", creating intimacy with final consumer.</p>
<p>Large companies bottling, which dominate the link in the chain of packaging and distribution in retail, are multinational companies of drinks.</p>	<p>How orange juice represents only one more item in its vast portfolio, the attention to this product decreased strongly, prioritizing innovation and marketing investments in products with greater profit margin.</p>	<p>Supporting strategies to create consumer pull effect through establishing one communication program working one brand positioning for juice orange produced in Brazil. Such a mark could be used by bottlers international in order to add value to the product</p>
<p>Due to lack of positioning, strategic vision and an understanding of harmony between the links of the chain in Brazil, the orange juice is sold to final consumers in Europe at the same price of water in times of high production and oversupply and stocks in the world market.</p>	<p>Removed margins and brought loss of value to the consumer.</p>	<p>Implementation of the regulations to rebuild inventory, such as the newly created LEC (special line of credit) developed by the Ministry of Agriculture, stabilizing prices at levels that are economically sustainable for the entire chain and repositioning the selling price of the product on the shelves in Europe.</p>
<p>Explosion of agricultural and industrial costs.</p>	<p>Total operating cost of the FCOJ delivered in Europe or U.S. from the orchards of industries rose from US\$ 458 per ton in 2002/03 to \$1,575 per ton in 2009/10, an increase of 244%, or, U \$ 1,117 per ton.</p>	<p>Implementation of Policy inventory restocking preventing cycles of production that impact the entire chain.</p>

338 **Figure 1. Facts, impacts and acts.**

339 *Source: Developed by the authors.*

340 **Conclusions**

341
342 Faced all data raised, it can be realize that citrus chain changed and much, and the authors of this
343 paper has gratitude for be sharers of this change because were chosen to imersion and analysis
344 unpublished data, proposing actions and strategies, in part already implemented, as the policy of
345 transparency, marketing, stock and new positioning.

346 In this sense, this paper presented an economic balance the height of reality and the challenges
347 that are out there put to the Brazilian citrus chain. The facts show that the sector of orange juice
348 will not present the same growth like other important sectors of Brazilian agribusiness. So good
349 question that be raised is how remain with current dimension? As seen this question depends a
350 series acts needing be taken. There is optimism about the changes of recent years. Gradually, Is
351 falling behind the issues already addressed in five, ten or twenty years ago, to turn definitely in
352 implemented strategies and leave the sector agenda. It is necessary because new problems come
353 and need to be anticipated for the chain in Brazil. New challenges lie ahead.

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