



The orange juice business

A Brazilian perspective

Marcos Fava Neves
Vinícius Gustavo Trombin
(coordinators)

Frederico Fonseca Lopes
Rafael Kalaki
Patrícia Milan



The orange juice business



The orange juice business

A Brazilian perspective

Marcos Fava Neves

Vinícius Gustavo Trombin

(coordinators)

Frederico Fonseca Lopes

Rafael Kalaki

Patrícia Milan

Prepared by: MARKESTRAT

Centro de Pesquisa e Projetos em Marketing e Estratégia

[Center for Research and Projects in Marketing and Strategy]



**Wageningen Academic
P u b l i s h e r s**

This publication is a translation of 'O retrato da citricultura brasileira', CitrusBR, 2010.
Some tables and graphs have been updated with data from 2009/10.

Editing Coordination

Ibiapaba Netto

Prole Gestão de Imagem

Graphic Design

Typodesign

Art Coordination

Typodesign

Art Editor

Alexandre Fedrizzi Ana

Maria Hitomi

Infographics

Ana Emme

Nilson Cardoso

Image Treatment

Marcio Uva

Examination

Arlete Mendes de Souza

Photography

Lau Polinésio

Getty Images

Istockphoto

This work is subject to copyright. All rights are reserved, whether the whole or part of the material is concerned. Nothing from this publication may be translated, reproduced, stored in a computerised system or published in any form or in any manner, including electronic, mechanical, reprographic or photographic, without prior written permission from the publisher:

Wageningen Academic Publishers

P.O. Box 220

6700 AE Wageningen

The Netherlands

www.WageningenAcademic.com

copyright@WageningenAcademic.com

ISBN: 978-90-8686-181-1
e-ISBN: 978-90-8686-739-4
DOI: 10.3920/978-90-8686-739-4

First published, 2011

The individual contributions in this publication and any liabilities arising from them remain the responsibility of the authors.

© **Wageningen Academic Publishers**
The Netherlands, 2011

The publisher is not responsible for possible damages, which could be a result of content derived from this publication.







Table of contents

Initial message	10
An overview	12
Mapping of the citrus economy	17
1. The citrus sector in Brazil	18
2. Brazilian GDP versus agricultural GDP	21
3. Brazilian leadership	22
4. Citrus exports	23
5. Destinations of exports	27
6. Tariff barriers	30
7. Phytosanitary barriers and technical requirements	31
8. Exchange rate	32
Citrus fruit production mapping	35
9. Evolution of global orange production	36
10. Evolution of Brazilian orange production	46
11. Specialty of the major producing countries	46
12. Orange juice production	48
13. Brazil's citrus belt (São Paulo and Triângulo Mineiro)	52
14. Comparison between the production in São Paulo/ Triângulo Mineiro region and Florida	57
15. Stratification of production by producer profile in Brazil's citrus belt	62
16. Varieties in the orchards	65
17. Pests and diseases in the Brazil's citrus belt	67
18. Impact of climate change on citrus growing	68
19. Cost of orange production	69
20. Pesticides in citrus farming	77
21. Use of fertilizers in citrus growing	78
22. Minimum wage	80
23. Jobs and working conditions	81
24. Production incentive policies	83
25. Cycle of working capital and available funding sources	85
26. Price of oranges	86
27. Price of orange juice: an incredible volatility	92
28. Breakdown of the price of orange juice on the retail market	97

**Mapping and quantification of the citrus sector –
2008/09 harvest** **105**

Mapping the consumption of citrus products **115**

29. Nutritional benefits of oranges	116
30. Definition of juice, nectar and still drink	116
31. World consumption of beverages	117
32. World consumption of fruit juices, nectars, and still drinks	118
33. Orange flavor	120
34. Orange flavor in Europe	129
35. Orange flavor in North America	131
36. The orange flavor in the BRIC group countries plus Mexico	136
37. The growth potential of Brazil's domestic market	138
38. The power of international retail	140
39. Concentration of juice bottlers	149
40. Concentration in the Brazilian orange juice industry	153
Closing message	156
Markestrat	160

Appendix **163**



Brazil has already achieved high efficiency in its citrus production chain. This efficiency includes everything from certified plant nurseries and seedlings, to the planting and cultivation of oranges, to the production and international distribution of orange juice through integrated bulk cargo systems that include tanker-trucks, port terminals, and dedicated ocean vessels that ship citrus products to consumers in Europe, North America and Asia, with dozens of different specifications and blends for the most diversified applications and unmatched excellence. All with Brazilian competence and know-how. Brazil produces half of the orange juice on the planet, the exports of which generate US\$ 1.5-2.5 billion for Brazil every year. In roughly 50 years, the supply chain has generated nearly US\$ 60 billion (at today's prices) for Brazil, directly from the world's orange juice consumers.

This wealth is distributed in hundreds of enterprises directly involved in the sector, on thousands of farms, generating over 200,000 direct and indirect jobs, paying taxes, and serving as a driving force for establishments such as Escola Técnica Edson Galvão, in Itapetininga-SP; Qualiciclo Agrícola, in Limeira-SP; Citrograf Mudanças Cítricas, in Ipeúna-SP; André Brinquedos, Morada do Sol & FMC, in Araraquara-SP; Restaurante Pantheon and Casa da Cultura, in Matão-SP; Supermercado Alvorada, Itápolis-SP; Fido Construções Metálicas, in Olímpia-SP; Guarnieri Veículos, in Colina-SP; Mercado dos Tratores, in São José do Rio Preto-SP; Bar Café da Esquina, in Catanduva-SP; Auto Posto Pratão, in Prata-MG; and many other companies located in nearly 400 municipalities in the state of São Paulo dedicated to orange growing, accounting for 80% of Brazil's overall production. In fact, oranges are grown in more than 3,000 municipalities across Brazil.

Oranges compete with other fruits in consumers' choices, and domestic consumption of fresh oranges is increasing, assured by the fact that freshly squeezed orange juice is regularly prepared in homes, bakeries and restaurants throughout the nation, in addition to the market for pasteurized juice, which is produced at factories that operate regionally. Today the domestic market for fresh oranges has become a major consumer of Brazil's total production. More than 100 million boxes of oranges (40.8 kg) – equivalent to approximately 30% of Brazil's production – are consumed by the Brazilian population.

The biggest challenge of this production chain is in exported juice, the destination of the other 70% of Brazil's orange harvest. Orange juice has been losing ground to other juices and beverages, introduced to the market with increasing frequency and steadily gaining market share, whether because they offer fewer calories or lower costs to consumers, or because they represent an opportunity for better profit margins to bottlers and wholesale/retail networks. In the United States, the world's foremost consumer, the demand per capita has decreased by 23% in the last seven years, falling from 23 liters to 17 liters per capita. In the top 14 Western European markets, the decline was from 13 to 12 liters per capita. In Germany, Europe's highest ranking country in orange juice consumption, the decrease was 26%.

So, one option left for orange juice exporters is to look toward emerging nations. But the solution could still be a long way off, because in those countries – with lower per capita income – the categories of nectars and still drinks have the strongest presence on the market. The explanation is the more affordable price to the consumer, because of the low juice content in these beverages. Along with nectars and still drinks, there are the other fruit flavors and

other beverage categories, such as sports drinks, teas, coffee-based drinks, flavored milk, and flavored waters, which have experienced higher growth rates in consumption.

Moreover, consolidation in the retail segment is increasing the power of large supermarket chains to push down margins. In Western Europe, 66% of orange juice is sold under retail brand names. In Germany, for example, where the five biggest retailers control 80% of the sale of non-alcoholic beverages, the prices of orange juice to the consumer have varied between €0.59 and €1.00 per liter over the past decade. Striving for higher sales per square foot and greater operational efficiency, these retailers control the availability of space on their shelves, giving preference to those products with higher turnover and that provide greater revenue and profit per square foot of shelf space, thus influencing the consumption patterns in each market.

This strong concentration in retail over the last two decades eventually forced consolidation among bottlers and brands, which are direct buyers of orange juice exported from Brazil. Today, 35 bottlers alone buy 80% of the annual global production of orange juice, the remaining 20% being purchased by 565 bottlers.

Most orange juice buyers are also responsible for bottling and distribution, and the manufacturing infrastructure is also used for other non-alcoholic beverages, for example, other fruit juices, dairy-based beverages, soft drinks, sports drinks, and bottled water. This competition forces them to prioritize bottling of beverages with higher profit margins or those using the cheapest raw materials.

The main objective of this book is to present an X-ray vision of the citrus production chain, providing the reader with a greater understanding of this business, the variables that impact it, as well as its trends and challenges. It gives a thorough outline of the production chain and a number of its principal players.

This book is the result of 12 months of work involving, directly or indirectly, around ten researchers associated with the Center for Research and Projects in Marketing and Strategy (Markestrat), comprised of professors, PhD, Master's, and undergraduate students of the University of São Paulo (USP).

Numerous visits were made to large, medium and small companies in order to collect data and information. There were also numerous debates with the executives of major companies in the industry and discussions at Citrus-BR. Two international trips were also part of the study, one to Nice (France) to participate in the World Juice Congress; and another to the Tetra Pak Worldwide Center for Research & Development and Business Intelligence, in Modena (Italy), for immersion into global data regarding fruit juices. For this we would especially like to thank TetraPak, represented by Paulo Nigro, Eduardo Eisler, Alexandre Carvalho, Bettina Scatamachia, Carol Eckel and Heloisa Rios.

Marcos Fava Neves

Full Professor of Planning and Strategy at FEA/USP, Ribeirão Preto Campus

An overview

Main conclusions of the study

Since 1962, when the first exports began, citrus production has contributed to the development of Brazil in a definitive manner. During this period, the sector has generated US\$ 60 billion in exports; in 2010 alone, these exports surpassed US\$ 2 billion.

International orange juice prices suffer incredible volatility, capable of fluctuating between US\$ 700 and US\$ 2,600 per ton within a short period of time.

In 2009, the citrus sector's exports totaled 2.9 million tons, of which 1.129 million tons were in the form of frozen concentrated orange juice (FCOJ), 939,000 tons of not-from-concentrate (NFC) juice, and 851,000 tons of orange by-products.

Consumption

- Three out of every five glasses of orange juice consumed in the world are produced at Brazilian factories.
- Brazil accounts for 50% of global production of orange juice, exports 98% of what it produces, and has achieved an amazing 85% market share worldwide.
- The cost of frozen concentrated orange juice (FCOJ) is only 28% of the shelf price of one liter of juice on the Europe retail market.
- Thirty-five bottlers in Europe purchase 80% of the orange juice exported by Brazil. In the United States, the four largest bottlers retain a 75% market share.
- Orange flavor represents only 0.91% of the worldwide beverage market.
- Orange juice is the world's most-widely consumed fruit-based drink, with a 35% market share among juices.
- Orange flavor has been losing market share to other fruits, with a decline of 1.6% per year. Worldwide demand for orange juice fell by 6% in five years. On the other hand, nectars – which have less soluble solids (fruit sugars) – increased 4% a year.
- In the USA, the world's largest consumer of orange juice, with 38% of the total, consumption decreased by 11.5% in five years. Over ten years, the decline was 24%.
- Florida and São Paulo account for 81% of world production of orange juice. The state of São Paulo alone is responsible for 53% of the total. In the last 15 harvests, global juice production fell by 13%.

Brazil accounts for **50%** of global orange juice production, exports **98%** of what it produces, and has achieved an amazing **85%** market share worldwide.

Florida and São Paulo account for **81%** of world production of orange juice. The state of São Paulo alone is responsible for **53%** of the total.

Impact on Brazil

- GDP in the citrus sector is US\$ 6.5 billion (2009), with US\$ 4.39 billion on the domestic market and US\$ 2.15 billion on foreign markets.
- The citrus industry generates – between direct and indirect employment – around 230,000 jobs and an annual payroll of around R\$ 676 million.
- Citrus producers invoiced US\$ 2 billion in 2009.
- Total sales of all of the links in the citrus production chain were US\$ 14.6 billion in 2009.
- Highway concessionaires earned US\$ 18.3 million in tolls paid by the citrus industry. The industry spends around US\$ 300 million per year on freight costs alone. Roughly one truck per minute passes through toll booths while carrying orange juice from factories in São Paulo to the Port of Santos.
- In the 2009/2010 growing season, Brazilian production totaled 397 million boxes of oranges (40.8 kg each).

The citrus industry generates – between direct and indirect employment – around **230,000 jobs**, and annual payroll of around **R\$ 676 million**

In the **2009/2010** growing season, Brazil's production was **397 million** boxes of oranges (40.8 kg each).

Taxes and contributions

- The citrus chain brings in around US\$ 189 million in taxes to Brazil.
- The foreign exchange rate is a major enemy of the citrus industry. Taking exports from 2006 to 2009, if the exchange rate were US\$ 1.00 to R\$ 2.32, the sector would have earned R\$ 760 million more per year, representing an additional R\$ 2.30 per box processed during this period.
- In 2009, R\$ 518 million were paid in tariffs, equivalent to R\$ 1.90 per box processed.

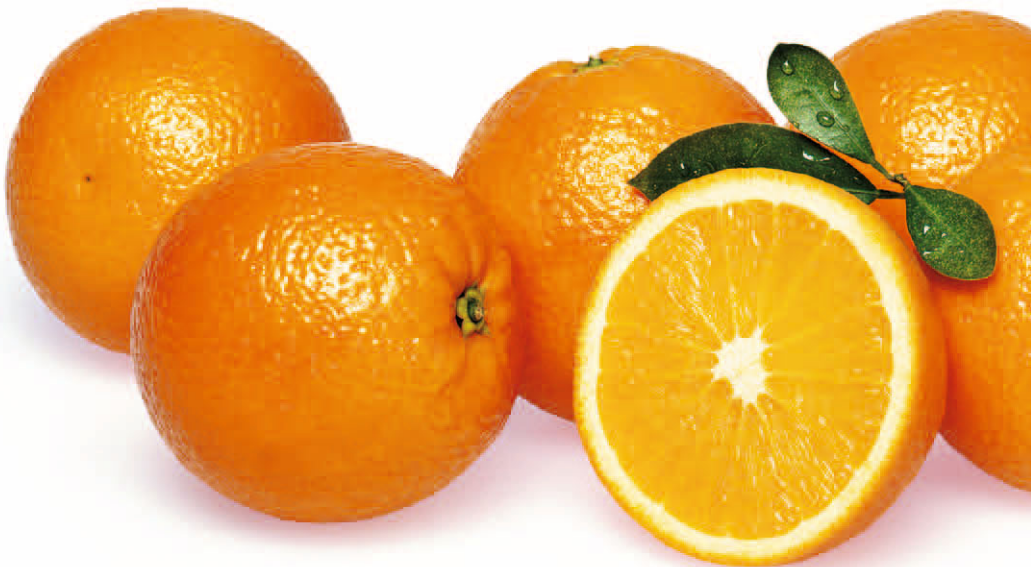
The citrus chain **accounts for US\$ 189 million** in taxes to the Brazilian Government.

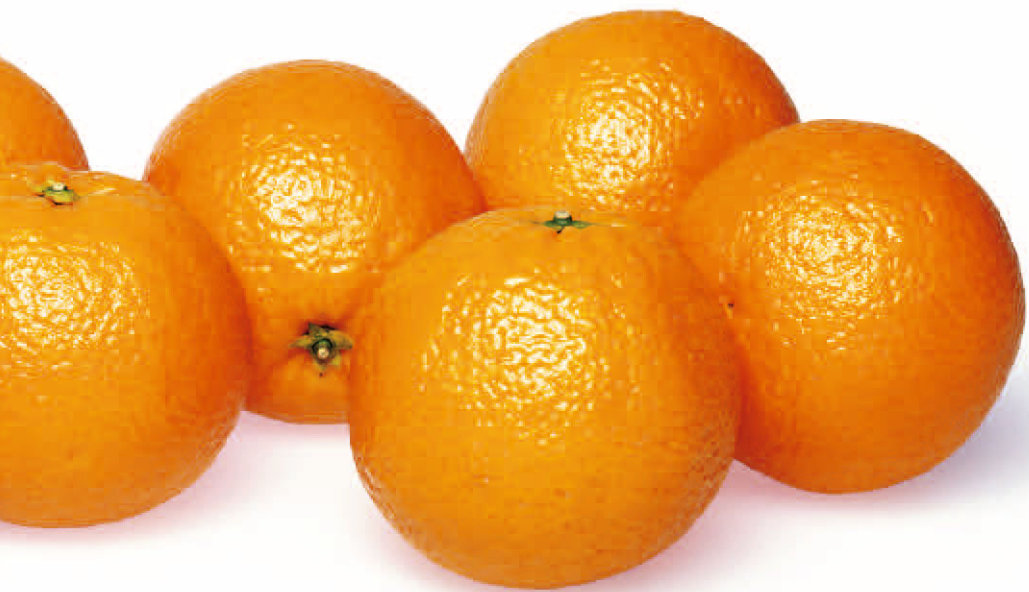
Orange groves

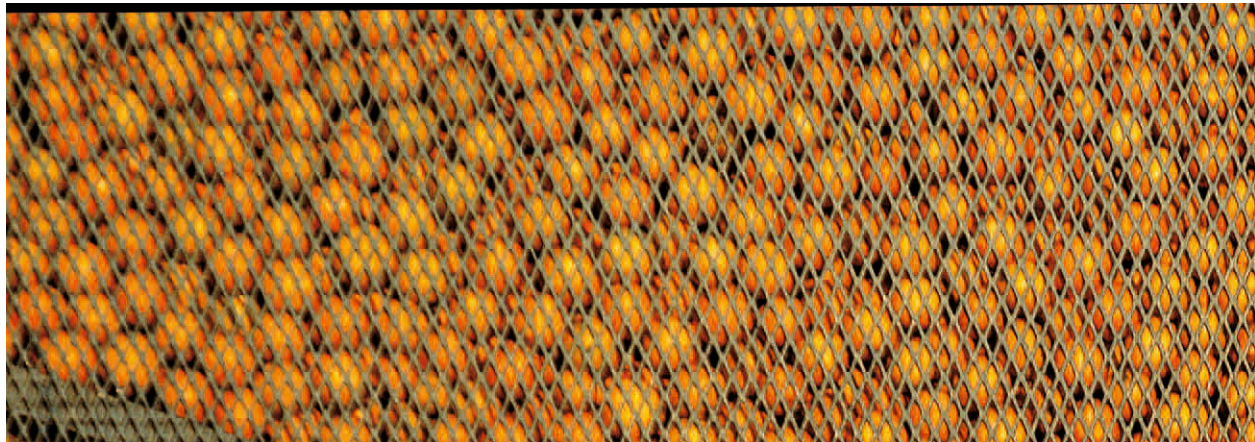
- In Brazil, in 2010, there were nearly 165 million trees producing oranges; in Florida there are around 60 million.
- The density of trees per hectare has increased significantly. In 1980 the density was 250 trees per hectare, rising to 357 trees in 1990, 476 trees in 2000, and today there are orange groves with nearly 850 trees per hectare. These days, better seedlings are available, coming from screened nurseries, and nearly 130,000 hectares are already irrigated.
- Roughly 11,000 producers with fewer than 20,000 trees (87% of the total) account for 21% of the existing trees in Brazil's citrus belt. Another 32% of the trees are in the hands of 1,500 producers, who manage between 20,000 and 199,000 trees. In all, 120 producers have more than 200,000 trees, already representing 47% of all orange trees in Brazil.

- The operating cost of production of the industry's orange groves is R\$ 7.26 per box. This cost is up from R\$ 4.25/box in 2002/2003 (an increase of 70% compare to the current cost of R\$ 7.26). Among the costs that increased the most are manpower, which jumped from R\$ 0.86 per box to R\$ 1.66, and harvesting costs, which climbed from R\$ 0.84/box to R\$ 2.19/box (a 160% increase). Between 1994 and 2010, minimum wages increased by 628%.
- Pests and diseases were responsible for the eradication of 40 million trees in this decade. The mortality rate jumped from 4% to an alarming 7.5%. These diseases were responsible for losses of nearly 80 million boxes per year. One of the industry's most serious concerns is citrus greening, which is advancing extremely rapidly.

Pests and diseases were responsible for the eradication of 40 million trees in this decade









***Mapping of the citrus
economy***