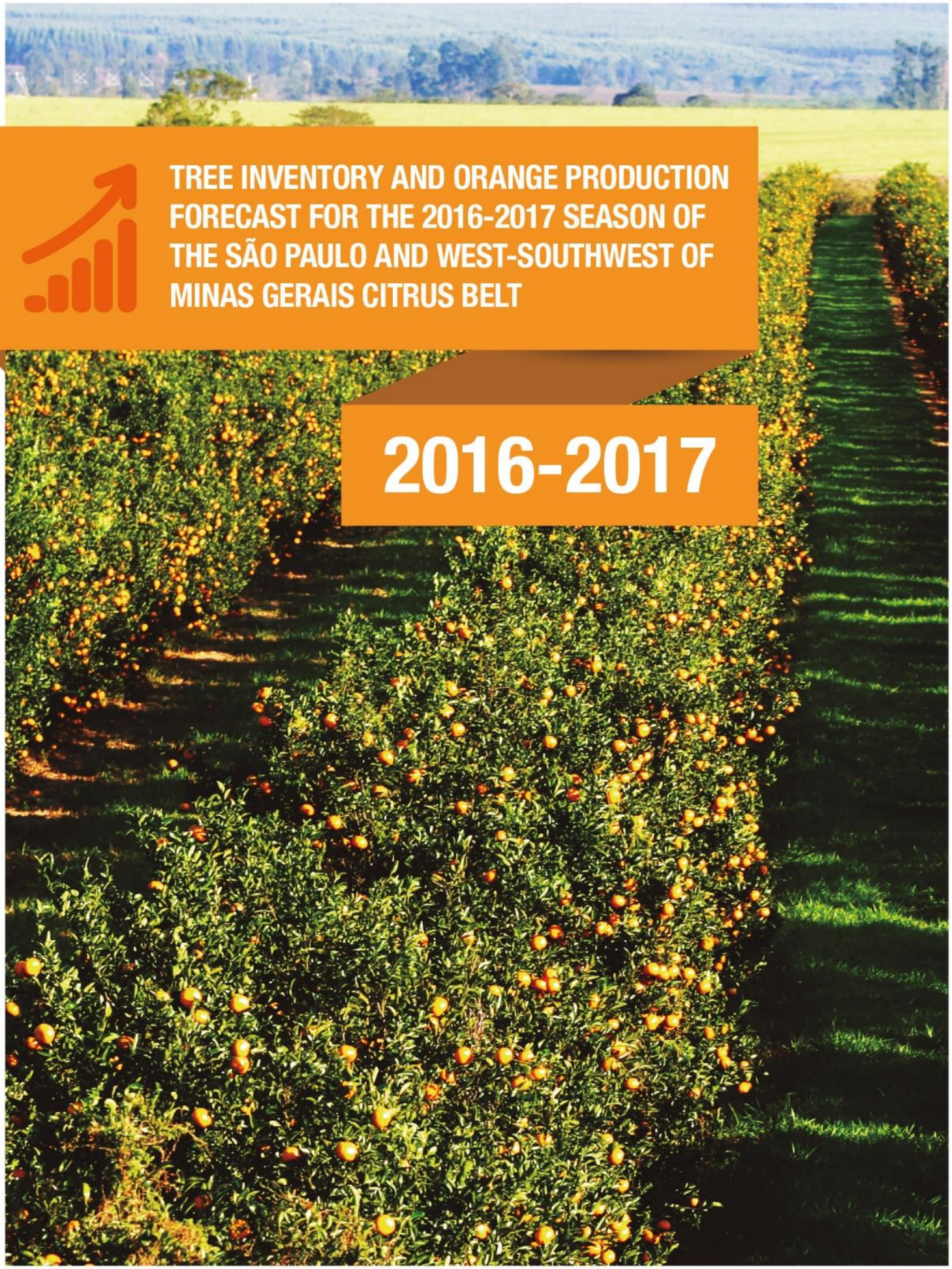
TREE INVENTORY AND ORANGE PRODUCTION FORECAST FOR THE 2016-2017 SEASON OF THE SÃO PAULO AND WEST-SOUTHWEST OF MINAS GERAIS CITRUS BELT



2016-2017

FUNDECITRUS
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TREE INVENTORY
AND ORANGE PRODUCTION FORECAST FOR THE 2016-2017 SEASON OF THE SÃO PAULO AND WEST-SOUTHWEST OF MINAS GERAIS CITRUS BELT

SECTION I

TREE INVENTORY

SECTION II

ORANGE PRODUCTION FORECAST

TREE INVENTORY OF THE SÃO PAULO AND WEST-SOUTHWEST OF MINAS GERAIS CITRUS BELT

SNAPSHOT OF GROVES IN MARCH/2016

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value generation

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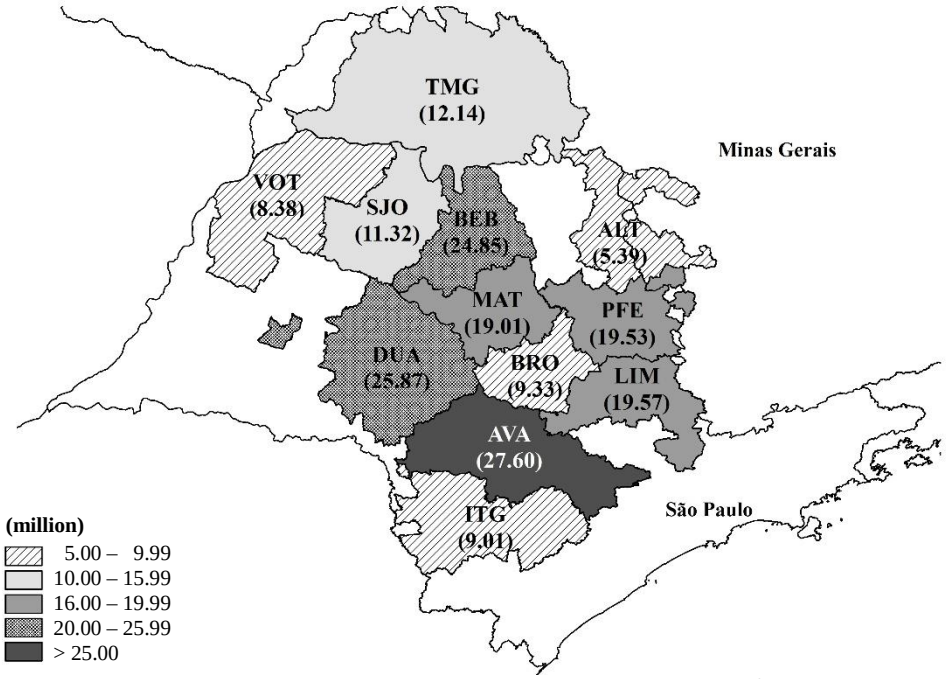
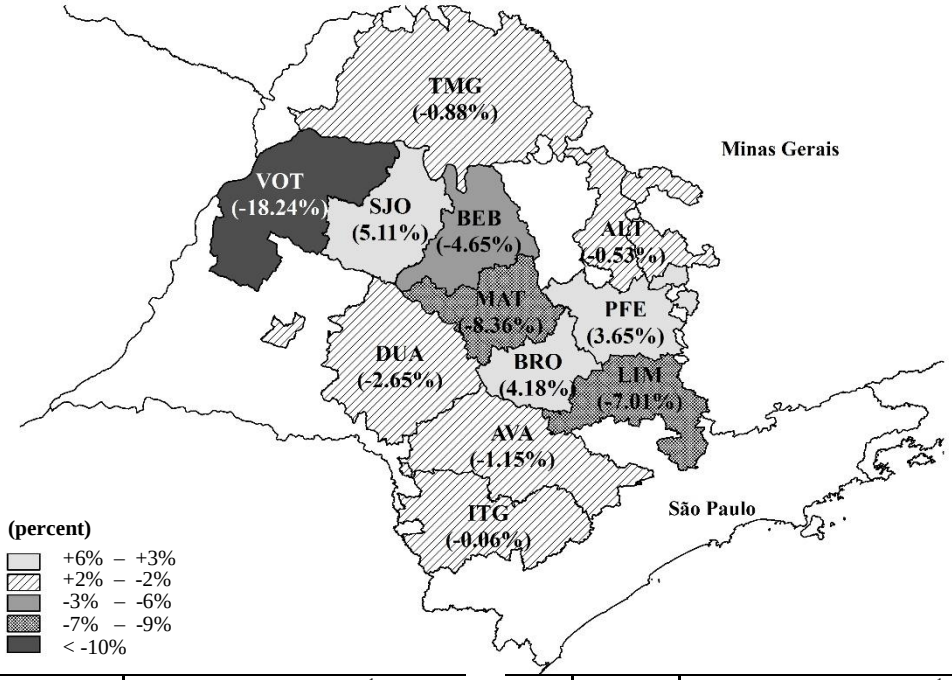
TOTAL ORANGE TREES[1] BY REGION
Total: 192.01 million trees



CHANGE OF TOTAL ORANGE TREES[1] BETWEEN THE 2015 AND 2016 INVENTORIES



Abbreviations	Region	Total orange trees[1]		
		2015 inventory[2]	2016 inventory[2]	Change
		(million)	(million)	(%)
TMG	Triâng. Mineiro	12.25	12.14	-0.88%
VOT	Votuporanga	10.24	8.38	-18.24%
SJO	S. J. do Rio Preto	10.77	11.32	5.11%
DUA	Duartina	26.58	25.87	-2.65%
AVA	Avaré	27.92	27.60	-1.15%
ITG	Itapetininga	9.02	9.01	-0.06%

Abbreviations	Region	Total orange trees[1]		
		2015 inventory[2]	2016 inventory[2]	Change
		(million)	(million)	(%)
BEB	Bebedouro	26.06	24.85	-4.65%
ALT	Altinópolis	5.41	5.39	-0.53%
MAT	Matão	20.75	19.01	-8.36%
PFE	P.Ferreira	18.85	19.53	3.65%
BRO	Brotas	8.96	9.33	4.18%
LIM	Limeira	21.04	19.57	-7.01%

[1] Sweeet orange varieties: Hamlin, Westin, Rubi, Valencia Americana, Valencia Argentina, Seleta, Pineapple, Pera Rio, João Nunes, Valencia sweeet orange, Natal e Valencia Folha Murcha.
[2] Snapshot of groves in March.

TREE INVENTORY OF THE SÃO PAULO AND WEST-SOUTHWEST OF MINAS GERAIS CITRUS BELT – SNAPSHOT OF GROVES IN MARCH/2016

Published on May 10, 2016[1]

Forecast Dates

2016-2017 Season
March/2016 tree inventory: May 10, 2016
May forecast (orange production forecast): May 10, 2016
September forecast (1st orange production forecast update): September 12, 2016
December forecast (2nd orange production forecast update): December 12, 2016
February forecast (3rd orange production forecast update): February 10, 2017
April forecast (final orange production estimate): April 10, 2017

This is a living document, insofar as it serves to know and explore all the wealth of details of the citrus belt and provide support to agents in the sector. In this regard, seeking to meet the demands of the citrus segment and of the press, we reserve the right to enlarge, revise and expand on the information already published. Therefore, we recommend always using the most recent publication available on the site www.fundecitrus.com.br.

[1] Year 2 – Nº 1 – May 10, 2016 (Portuguese version only)

Expanded and revised versions:
Year 2 – Nº 2 – May 17, 2016 (Portuguese version only)
Year 2 – Nº 3 – May 25, 2016 (Portuguese and English versions)

Prepared by FUNDECITRUS with cooperation from MARKESTRAT, FEA-RP/USP and the Exact Sciences Department of FCAV/Unesp

TREE INVENTORY OF THE SÃO PAULO AND WEST-SOUTHWEST OF MINAS GERAIS CITRUS BELT

SNAPSHOT OF GROVES IN MARCH/2016

Fundecitrus
Araraquara, São Paulo
2016

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PREFACES

Dr. Lourival Carmo Monaco
President of Fundecitrus

Fundecitrus, with the same responsibility and transparency, once again endeavors to estimate the production of our citrus industry, following the original plan approved by the Board of Directors' citrus growers. The results of the estimates for the 2015-2016 season – from its first presentation to the April 2016 revision – showed reliable numbers accepted by the links of the production chain. The dedication by those responsible for data collection and processing is worth stressing due to their respect to the concepts defined by the original plan and continuously assessed by the Technical Committee, always faithful to the reliability of the process.

This report aims to expand the information about procedures, although it maintains the discretion of only making available to all citrus growers and entities related to the citrus industry, in a simultaneous and public manner, the results forecast in the first estimate so as to preserve this extensive work from any individual or unilateral exploration of partial data. The final data of the 2015-2016 season revealed the adequacy of the basic data, initially provided by growers as well as the industry, used in projections and which are incorporated into proprietary databases, respecting the characteristics of the different growing regions and wide access to interested parties.

The trust shown on the PES allows us to visualize its contribution to expand the actions to all links of the orange production chain and increasingly drive towards good commercial practices, which is an old need of the industry. This is a process to be worked on in order to provide citrus growing with enough strength to face the threats of pests and diseases and to meet in a more complete manner the market demands for a quality product produced in a sustainable manner.

Thus, we are living through another positive stage in the solidary work of the citrus agribusiness links. The adopted model undoubtedly opens up opportunity windows for citrus growers regardless of their structure and size. The numbers contained in this document are carefully kept in order to maintain information confidentiality up to its disclosure, and we hope they become part of the culture embedded in the industry's day-to-day activities.

Antonio Juliano Ayres
General manager of Fundecitrus

Providing the most accurate and useful information for the citrus grower is a responsibility that Fundecitrus has undertaken as part of its mission since its foundation. The determination to carry out an ethical, precise and professional work underpins the whole process of Production Forecast Research (PES) and further consolidates another service provided to citrus growing by Fundecitrus, now in a new but strategically important area. The result can be capitalized by citrus growers and all the links of the citrus growing chain through unbiased, transparent and qualitative information, thus contributing to citrus growing sustainability. The knowledge amassed by Fundecitrus experience along its almost 40 years is its biggest asset, which we endeavor to share with all those interested in the advancement of citrus growing.

Marcos Fava Neves
PES political-institucional and methodology coordinator, FEA-RP/USP full professor and member of the administrative board of Markestrat

Despite the amazing efficiency and productivity gains in many sectors, the bumper agricultural income, which grew from R$ 257 billion in 2004 to probably more than R$ 515 billion in 2016 and the leap in exports, which went from US$ 20 billion in 2000 to roughly US$ 100 billion in the last few years, Brazilian agriculture underwent some transformations, among which the considerable increase in production costs, namely:

- Labor cost (100-percent increase in dollars within 10 years) and increasing labor demands and issues;
- Costs related to environmental aspects, growing demands and complex regulations;
- Costs of crime, such as cargo thefts, property thefts, growing need of insurance and security at properties and deplorable growth of organized crime in Brazil;
- Costs of logistical operations, much beyond the possibilities and low capacity to store the Brazilian crops;
- Costs related to taxes, mainly due to tax complexity;

- General costs of governmental bureaucracy, the time spent on excessive procedures, the government's excessive size and low efficiency;
- Lower capital availability, with increased interest rates and difficult access to governmental credit;
- Cost of corruption in state-owned companies and in the government, which encumbers the production sector;
- Inflation's comeback;
- Lack of proper understanding by the Judiciary Branch of the operation of the production chains and the recent cases of inadequate interventions in citrus and sugarcane operations, in addition to problems of invasions by native Indians, landless people and others which give rise to legal insecurity;
- Loss of efficiency on the part of Regulating Agencies, as evidenced by ANVISA's slow action to approve procedures, thus hampering the access to important products both for planting and protecting crops;
- Increasing ideological cost, with movements against production, against companies and against profit making, affecting Brazilian students and youngsters.

Public and private sectors need to vigorously work to reduce such costs aiming to make the country more competitive and growers more capable of withstanding lower-price periods and continue to conquer greater influence in the international market, thus generating dollars to drive Brazil's growth. Failure to do so will cause Brazil to run the risk of not becoming the winner in the unarguable increase of food consumption to take place in the world.

Citrus growing once again gives Brazil an example by organizing, in a collective effort, the issue of crop estimating. A consortium of organizations, led by reinvigorated Fundecitrus, involving USP, UNESP, Markestrat, industrial companies and growers, solves an old problem of the industry, namely the shortage of information, in a much clearer, more efficient manner than in the past. In this second year, the project went forward with fewer drawbacks, a consequence of the learning curve, greatly decreasing conflicts, meetings, friction, since it attained society's widespread trust and support. Thus, we have all become more competitive. Let's proceed to our third year. Good crop to all of us!

Vinícius Gustavo Trombin
PES executive coordinator and member of Markestrat

This second publication keeps bringing subsidies for citrus growers to assess their business amidst the reality of the citrus industry published in this survey, but it goes beyond: the set of information provided by means of the PES is not only current but also points to the future. The advanced view of the crop greatly reduces the uncertainties of the scenario and brings transparency to the industry. However, nothing of this kind would have occurred without the steady cooperation of citrus growers and all the professionals who lent their service to this survey in the last two years. Together, they are giving a remarkable lesson as to how to take greater advantage of the efficiencies arising from cooperation. Citrus growing is the top beneficiary, since it is creating, by means of the consolidation of this initiative, a more thoughtful, sound, and collaborative industry.

José Carlos Barbosa
Methodology analyst and full professor at the Exact Sciences Department of FCAV/Unesp

In this second year of our participation in the team in charge of the methodology to be utilized to assess the tree inventory of the citrus belt and orange production forecast for the state of São Paulo, we share our knowledge with citrus growers, representatives of the processing companies and technicians who work in the industry, perfect our methodologies and generate new knowledge that will be utilized in future works. Additionally, we are forming two post-doctoral students. In this manner, our work in this project represents a contribution from UNESP to the production sector, involving teaching, research and extension of services to the community.

ACKNOWLEDGEMENTS

We are proud to present the update to the Tree Inventory and Orange Production Forecast for the 2016-2017 Season of the São Paulo and West-Southwest Minas Gerais Citrus Belt. In order for this survey to be published within the expected deadline, many people devoted their efforts, to whom we offer our most sincere gratitude. Among them are citrus growers and the three orange juice processing companies associated to Fundecitrus – Citrosuco, Cutrale and Louis Dreyfus – who opened the gates to their properties and allowed their groves to be included in the sampling required for the whole process.

Another outstanding contribution comes from the São Paulo State Agricultural and Livestock Defense Coordination (CDA-SP), reporting to the São Paulo State Agriculture and Supply Office, by supplying information concerning their work throughout the state's citrus growing areas.

We hereby acknowledge the fundamental role played by the members of the Technical Committee by donating their time and precious knowledge needed for this survey. Also, the remarkable effort by all Fundecitrus employees, who strived to meet deadlines and fulfill their tasks within the highest quality standards, and within that group we include all outsourced workers who engaged themselves and combined their efforts, especially the researchers and their aides and all those who participated in the stripping lab.

Our thanks to all radio and TV stations, specialized magazines and other media, for their respect, follow-up and publicizing of the evolution of the Production Forecast Research (PES) along the months, treating the issues with relevance and prominence.

Finally, our thanks to Fundecitrus Advisory Board for being the strongest encouragers of this research and acting to foster the whole citrus industry by bringing transparency and reliable information to the entire citrus production chain.

SUMMARY

LIST OF CHARTS

LIST OF TABELS

1 – INTRODUCTION

This publication presents the results of the second study of the tree inventory conducted by Fundecitrus with the cooperation of Markestrat, FEA-RP/USP and the Exact Sciences Department of FCAV/Unesp, during the period from January/2016 to May/2016 to update the information concerning orange groves.

Fundecitrus was responsible for performing all the activities involving gathering data in the field, laboratory, and processing this information. Professor José Carlos Barbosa, of the Exact Sciences Department of FCAV/Unesp, assumed responsibility for the analysis of the methodologies. Markestrat, through Vinícius Gustavo Trombin was in charge of project governance, and Professor Marcos Fava Neves from FEA-RP/USP contributed with the political, institutional and methodological coordination.

Created since the previous crop season, the Technical Committee, made up of citrus growers, representatives from orange juice processing companies, faculty members, Fundecitrus researchers and supervisors, continued with their commitment to follow up on the activities carried out by PES and propose operating enhancements.

The results compiled from the inventory, obtained throughout the research, were kept restricted, until the date of this publication, only to the professionals connected to Fundecitrus, such as Fundecitrus general manager, PES supervisors and service providers specifically hired for the project, all of whom subject to terms of confidentiality regarding PES information until its public disclosure, pursuant to the confidentiality agreement executed between each one of them and Fundecitrus. Regarding antitrust practices, all of them were complied with throughout all the work phases, through the adoption of the measures necessary to prevent any sharing of individual information with a competitive content, among the orange juice companies members of Fundecitrus, and between these and the citrus growers.

1.1 – BUDGET

On May 27, 2015, the Fundecitrus Advisory Board decided to conduct this study, having approved a budget of R$ 5.013 million, of which 57% refers to expenses for the technical and administrative staff, labor related charges, travel, accommodations, meals, etc., 24% allocated for travel, accommodations, meals and maintenance, and the remaining 20% for materials, stripping indemnities and others. This budget provides the financial support required for the activities scheduled until May 31, 2016.

1.2 – OVERALL NUMBERS

- **127 professionals directly involved in the study;**
  Field personnel: 39 agents, 51 field assistants.
  Laboratory personnel: 33 assistants.
  Office personnel: 1 coordinator and 3 supervisors.
- **More than 476 thousand kilometers covered;**
  Accumulated distance when counting 5% of citrus blocks to update the inventory: 226,899 km.
  Accumulated distance travelled for stripping: 249,110 km.

1.3 – DEFINITION OF TECHNICAL TERMS

Citrus belt: region in Brazil containing the highest concentration of groves dedicated to commercial orange production, including municipalities in the state of São Paulo as well as some municipalities of Minas Gerais located in the West and Southwest regions of this state.

Grove: rural property covering a continuous area (there may be physical interruptions such as roads or waterways) held by the same landowner, containing at least 200 citrus trees. There may be areas in the same grove used for another purpose, such as raising other crops or livestock.

Block: fraction or section of a grove separated by, highways, rows, turn-rows (endrows) or other means, generally with a width greater than the spacing between rows.

Bearing tree: tree planted in 2013 or in previous years.

Non-bearing tree: tree planted in 2014 or 2015 that has not yet begun to produce.

Dead tree: defoliated tree with at least 75% of dried branches, with no evidence of recovery.

Vacancy: empty space in the planting row which should be occupied by a citrus tree, according to the spacing between plants adopted when implementing the block.

Hole: central point of the space occupied by each tree (plant area), where the soil is dug and prepared to accommodate a seedling; point on the planting alignment where potentially there is a tree.

Young grove: grove implemented in 2014 or 2015. Groves implemented in 2016 were not included in this inventory since the data collection in the field ended in the first quarter of the year in question.

Mature grove: grove implemented in 2013 or in previous years.

Grove removed: area where citrus trees have been eliminated, possibly covering the whole block or just part of it.

Box: one orange box is equivalente to 40.8 kg or 90 lb.

Hectare: one hectare is equivalente to 2.4710439 US acres.

Kilometer: one kilometer is equivalente to 0.621371192 mile.

2 – METHODOLOGICAL PROCEDURES

2.1 – OBJECTIVE METHOD FOR MAPPING CITRUS GROVES

The first mapping of groves carried out by Fundecitrus used orthorectified, georeferenced high-definition images collected by satellites *Pleiades 1A* and *1B* from French operator *Airbus Defence and Space* from May to October 2014. The georeferenced mapping was performed by research agents *in situ*, that is, in person at each of the citrus properties, located in the 349 municipalities contained in the 152,000 km^2 of images, between October 27, 2014 and March 6, 2015.

The data gathered from each block were: area occupied solely by the trees, spacing, variety, planting year and irrigation method. Only for a small portion of the properties which did not allow access to them were the data estimated from remote sensing and statistical inference. Such volume of data was encrypted and recorded into Fundecitrus Geographic Information System, making up the primary base on March 6, 2015, which was preserved for use in future updates. At this registration stage, no information was collected that could identify the owner or the grove by name, in order to protect the privacy of the citrus grower.

2.2 – OBJECTIVE METHOD TO PREPARE THE TREE INVENTORY

In order to generate the inventory published in 2015 and those for subsequent years, 5% of the blocks in the primary base (2015) are randomly chosen to be visited and have their holes classified and quantified into four categories: bearing trees, non-bearing trees, dead trees and vacancies. However, if this random choice finds removed blocks, their areas are used to calculate the proportion of removal in the sample. Such proportion, called removal rate, is applied to the primary base. The same calculation is made if abandoned blocks are found. After applying those two rates to the primary base, one obtains the estimated area occupied by groves in the current season. That new area multiplied by the tree density of the primary base updates its amount of holes. These in turn are corrected using the index generated from the comparison between the amount of holes found in the sample and its respective amount in the primary base. To these holes one applies the indices of bearing trees, non-bearing trees, dead trees and vacancies, aiming to determine the new tree inventory.

Blocks are chosen randomly using the stratified proportional sampling technique. The stratification variables are: 12 regions, five orange variety groups and four age groups, totaling 240 strata. Details of the variables are found in item 2.4 – Stratification of the Citrus Belt.

In all properties visited for the sample, one verifies the existence of groves implemented after the visit by the research agent as of the 2015 mapping which gave rise to the primary base. The index of new plantings is created by variety from the proportion between the added area and the respective total area of the variety on the property. Such indices by variety are extrapolated to their regions. The result of such sampling can be ascertained vis-à-vis other data sources. In the 2016 inventory, for instance, a comparison was made between the data provided by the São Paulo State Agricultural and Livestock Defense Coordination (CDA-SP), reporting to the São Paulo State Agriculture and Supply Office, and the amount of citrus seedlings marketed authorized for plant transportation in the State of São Paulo as of March 2015.

The method further contemplates the survey of intended reoccupation of removed groves. If the intention is to replant with citrus, the survey must go deeper in terms of type: orange, lemon/acid lime, or tangerine.

Finally, the entire field process is audited to evaluate the quality of the collected data.

2.3 – PERIOD OF FIELD RESEARCH OF THE 2016 INVENTORY

In 2016, the period of visits to the 5-percent randomly chosen blocks was concentrated between February 1, 2016 and March 18, 2016. The data collected during that period and further processed gave rise to the Tree Inventory of the São Paulo and West-Southwest Minas Gerais Citrus Belt – Snapshot of Groves in March/2016.

2.4 – STRATIFICATION OF THE CITRUS BELT

Sectors and regions

The citrus belt was sub-divided into 12 regions. Each of them covers several municipalities and was given one of their names for reference. The division took into consideration the edaphoclimatic characteristics and the historical aspects linked to the development of citrus growing, which, generally speaking, resulted in a similar technological standard of the groves in the region. To facilitate the composition of the data, the 12 regions were grouped into five sectors. Figures 1 and 2 present the sectors and regions of the citrus belt; next, Chart 1 provides details on the municipalities and the abbreviations used to designate the regions.

Figure 1 – Division of the citrus belt into five sectors

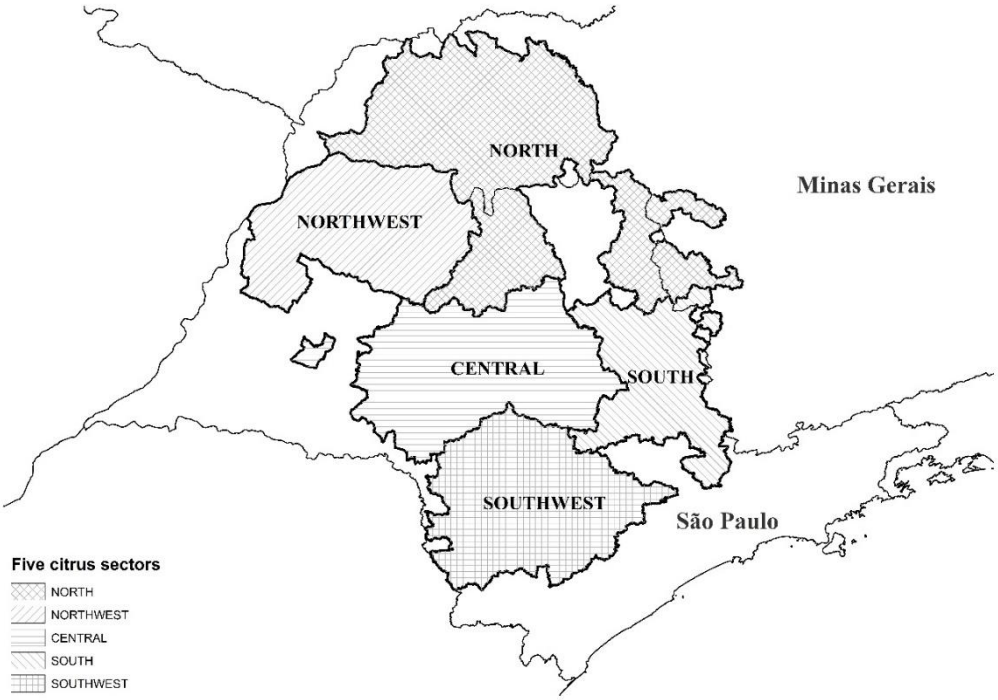


Figura 2 – Division of the citrus belt into twelve regions and respective sectors

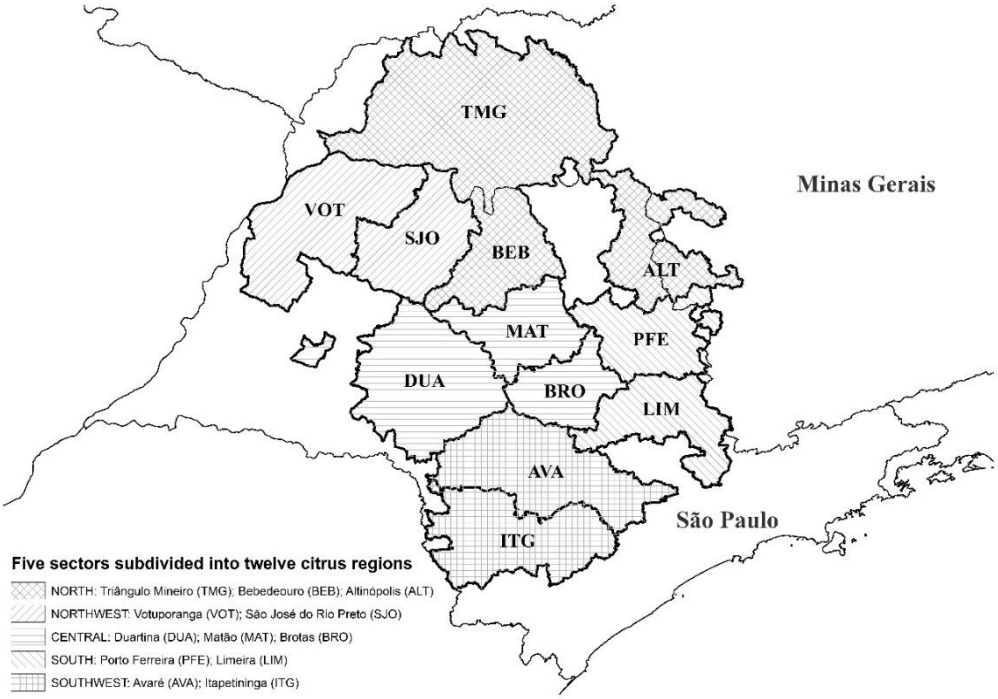


Chart 1 – Division of municipalities with citrus groves into sectors and regions

Sector and number of municipalities	Region (abbreviation) and number of municipalities	Municipalities
North 73 municipalities	Triângulo Mineiro (TMG), the West region of Minas Gerais 16 municipalities	Campina Verde, Campo Florido, Canápolis, Comendador Gomes, Conceição das Alagoas, Frutal, Gurinhatã, Itapagipe, Ituiutaba, Iturama, Monte Alegre de Minas, Planura, Prata, São Francisco de Sales, Uberaba, Uberlândia
	Bebedouro (BEB) 35 municipalities	Ariranha, Barretos, Bebedouro, Cajobi, Catanduva, Catiguá, Colina, Colômbia, Elisiário, Embaúba, Guaraci, Ibirá, Irapuã, Itajobi, Marapoama, Monte Azul Paulista, Novais, Olímpia, Palmares Paulista, Paraíso, Pindorama, Pirangi, Pitangueiras, Sales, Santa Adélia, Severínia, Tabapuã, Taiaçu, Taiúva, Taquaral, Terra Roxa, Uchoa, Urupês, Viradouro, Vista Alegre do Alto
	Altinópolis (ALT) 22 municipalities, of which 13 are located in São Paulo and 9 in the Southwest region of Minas Gerais	Altinópolis, Batatais, Brodowski, Cajuru, Cássia dos Coqueiros, Cristais Paulista, Delfinópolis, Fortaleza de Minas, Franca, Ibiraci, Igarapava, Jacuí, Jeriquara, Monte Santo de Minas, Nova Resende, Patrocínio Paulista, Pedregulho, Restinga, Santo Antônio da Alegria, São Pedro da União, São Sebastião do Paraíso, São Tomás de Aquino
Northwest 91 municipalities	Votuporanga (VOT) 55 municipalities	Álvares Florence, Américo de Campos, Andradina, Aparecida d'Oeste, Aspásia, Auriflama, Cardoso, Dirce Reis, Dolcinópolis, Estrela d'Oeste, Fernandópolis, General Salgado, Guaraçaí, Guarani d'Oeste, Guzolândia, Indiaporã, Jales, Macedônia, Marinópolis, Meridiano, Mesópolis, Mira Estrela, Mirandópolis, Murutinga do Sul, Nova Canaã Paulista, Nova Castilho, Ouroeste, Palmeira d'Oeste, Paranapuã, Parisi, Pedranópolis, Pereira Barreto, Pontalinda, Pontes Gestal, Populina, Riolândia, Rubinéia, Santa Albertina, Santa Clara d'Oeste, Santa Fé do Sul, Santa Rita d'Oeste, Santa Salete, Santana da Ponte Pensa, Santo Antônio do Aracanguá, São Francisco, São João das Duas Pontes, São João de Iracema, Sud Mennucci, Suzanápolis, Três Fronteiras, Turmalina, Urânia, Valentim Gentil, Vitória Brasil, Votuporanga
	São José do Rio Preto (SJO) 36 municipalities	Adolfo, Altair, Bady Bassitt, Bálsamo, Cedral, Cosmorama, Floreal, Guapiaçu, Icém, Ipiguá, Jaci, José Bonifácio, Macaubal, Magda, Mendonça, Mirassol, Mirassolândia, Monções, Monte Aprazível, Neves Paulista, Nhandeara, Nipoã, Nova Aliança, Nova Granada, Onda Verde, Orindiúva, Palestina, Paulo de Faria, Planalto, Poloni, Potirendaba, São José do Rio Preto, Tanabi, Ubarana, União Paulista, Zacarias
Central 81 municipalities	Matão (MAT) 22 municipalities	Américo Brasiliense, Araraquara, Bariri, Boa Esperança do Sul, Borborema, Cândido Rodrigues, Fernando Prestes, Gavião Peixoto, Ibitinga, Itajú, Itápolis, Jaboticabal, Matão, Monte Alto, Motuca, Nova Europa, Novo Horizonte, Rincão, Santa Ernestina, Santa Lúcia, Tabatinga, Taquaritinga
	Duartina (DUA) 44 municipalities	Agudos, Álvaro de Carvalho, Alvinlândia, Arealva, Avaí, Balbinos, Bastos, Bauru, Boracéia, Cabrália Paulista, Cafelândia, Campos Novos Paulista, Duartina, Echaporã, Espírito Santo do Turvo, Fernão, Gália, Garça, Getulina, Guaiçara, Guaimbê, Guarantã, Iacanga, Iacri, Júlio Mesquita, Lins, Lucianópolis, Lupércio, Marília, Ocauçu, Parapuã, Paulistânia, Pederneiras, Pirajuí, Piratininga, Pongaí, Presidente Alves, Promissão, Reginópolis, Sabino, Santa Cruz do Rio Pardo, São Pedro do Turvo, Ubirajara, Uru
	Brotas (BRO) 15 municipalities	Analândia, Bocaina, Brotas, Corumbataí, Dois Córregos, Dourado, Ibaté, Itirapina, Mineiros do Tietê, Ribeirão Bonito, Santa Maria da Serra, São Carlos, São Pedro, Torrinha, Trabiju
South 51 municipalities	Porto Ferreira (PFE) 19 municipalities	Aguaí, Caconde, Casa Branca, Cravinhos, Descalvado, Guatapará, Guaxupé, Luiz Antônio, Mococa, Pirassununga, Porto Ferreira, Santa Cruz da Conceição, Santa Cruz das Palmeiras, Santa Rita do Passa Quatro, Santa Rosa de Viterbo, São José do Rio Pardo, São Simão, Tambaú, Vargem Grande do Sul
	Limeira (LIM) 32 municipalities	Águas de Lindóia, Americana, Amparo, Araras, Artur Nogueira, Itatiba, Bragança Paulista, Charqueada, Conchal, Cordeirópolis, Cosmópolis, Engenheiro Coelho, Espírito Santo do Pinhal, Estiva Gerbi, Holambra, Ipeúna, Iracemápolis, Itapira, Jaguariúna, Jarinu, Leme, Limeira, Lindóia, Mogi Guaçu, Mogi Mirim, Paulínia, Piracicaba, Rio Claro, Santa Gertrudes, Santo Antônio de Posse, Serra Negra, Socorro
Southwest 53 municipalities	Avaré (AVA) 33 municipalities	Águas de Santa Bárbara, Angatuba, Anhembi, Araçoiaba da Serra, Arandu, Avaré, Bofete, Borebi, Botucatu, Cabreúva, Capela do Alto, Cerqueira César, Cesário Lange, Conchas, Guareí, Iaras, Iperó, Itatinga, Laranjal Paulista, Lençóis Paulista, Manduri, Óleo, Pardinho, Piraju, Porangaba, Porto Feliz, Pratânia, Quadra, Salto de Pirapora, São Manuel, Sorocaba, Tatuí, Tietê
	Itapetininga (ITG) 20 municipalities	Alambari, Buri, Campina do Monte Alegre, Capão Bonito, Coronel Macedo, Itaberá, Itaí, Itapetininga, Itapeva, Itaporanga, Itararé, Nova Campina, Paranapanema, Pilar do Sul, São Miguel Arcanjo, Sarapuí, Sarutaiá, Taquarituba, Taquarivaí, Tejupá
5 sectors	12 regions	349 municipalities with citrus groves

Group of varieties

Chart 2 – Division of oranges by group of varieties

Oranges	Varieties
Sweet oranges.....	Early season: Hamlin, Westin and Rubi Other early season: Valencia Americana, Valencia Argentina, Seleta and Pineapple Mid-season: Pera Rio and João Nunes Late season: Valencia and Valencia Folha Murcha Other late season: Natal
Sweet oranges (Washington Navel, Baianinha, Shamouti), acidless sweet oranges and sweet limes.....	Washington Navel, Baianinha, Shamouti, Lima Verde, Lima Tardia, Piralima, Lima Sorocaba, Lima Roque, Palestine sweet lime and other sweet oranges/sweet limes

Group of ages

Chart 3 – Classification of grove planting years by age groups

Age groups	Planting years
1 to 2 years.....	2015, 2014
3 to 5 years.....	2013, 2012, 2011
6 to 10 years.....	2010, 2009, 2008, 2007, 2006
Above 10 years.....	Before 2006

Data organization period

Data was organized for publication between March 21, 2016 and May 09, 2016.

3 – RESULTS

3.1 – MAIN CONCLUSIONS ABOUT THE TREE INVENTORY

The result of the field research shows a current photo which portrays the reality of orange groves one year after the first inventory carried out by Fundecitrus. The estimated profile of the groves presented in this publication is precisely that of March 2016. The analyses are a comparison between the current situation and that of March 2015. The structure of the tables remains similar, and the organization of the 349 municipalities of the citrus belt is kept in 5 sectors, which are subdivided into 12 regions, namely: North (Triângulo Mineiro, Bebedouro and Altinópolis), Northwest (Votuporanga and São José do Rio Preto), Central (Duartina, Matão and Brotas), South (Porto Ferreira and Limeira) and Southwest (Avaré and Itapetininga). Acid limes, lemons and tangerines are not included into this publication but will be contemplated in the next imaging of the whole citrus belt.

The area with orange groves, including all the varieties, is 416,703 hectares, 6% smaller as compared to that of the 2015 inventory. From that total, 97% are from the Hamlin, Westin, Rubi, Valencia Americana, Valencia Argentina, Seleta, Pineapple, Pera Rio, Valencia, Valencia Folha Murcha and Natal varieties. As with the previous inventory, the information presented herein deals with those varieties, which are simply called "oranges" in the tables which make up this report. The exceptions appear in Table 1 and Chart 1, which show the data of 3% of the remaining groves, which include the Bahia, Baianinha, Shamouti, acidless sweet oranges, sweet limes, among others.

The groves of all the orange varieties implemented in 2015, which totaled 9,583 hectares, were added to the inventory this year. The decreasing trend for new plantings seen in the last few years continues. The removed blocks, together with abandoned ones, estimated at 37,465 hectares were subtracted from the total. Abandoned blocks are shown in Table 59. The loss of groves was fourfold greater than the entry of new plantings. In the group of varieties with greater representativeness, net variation, that is, the difference between groves entering and leaving the inventory, was negative by 26,759 hectares. In the group of orange varieties of lesser expression, the net variation also remained negative by 1,123 hectares. All sectors of the citrus belt presented a net area reduction for the main types of oranges.

From this point of the text forward, the observations carried out are limited to the main orange varieties.

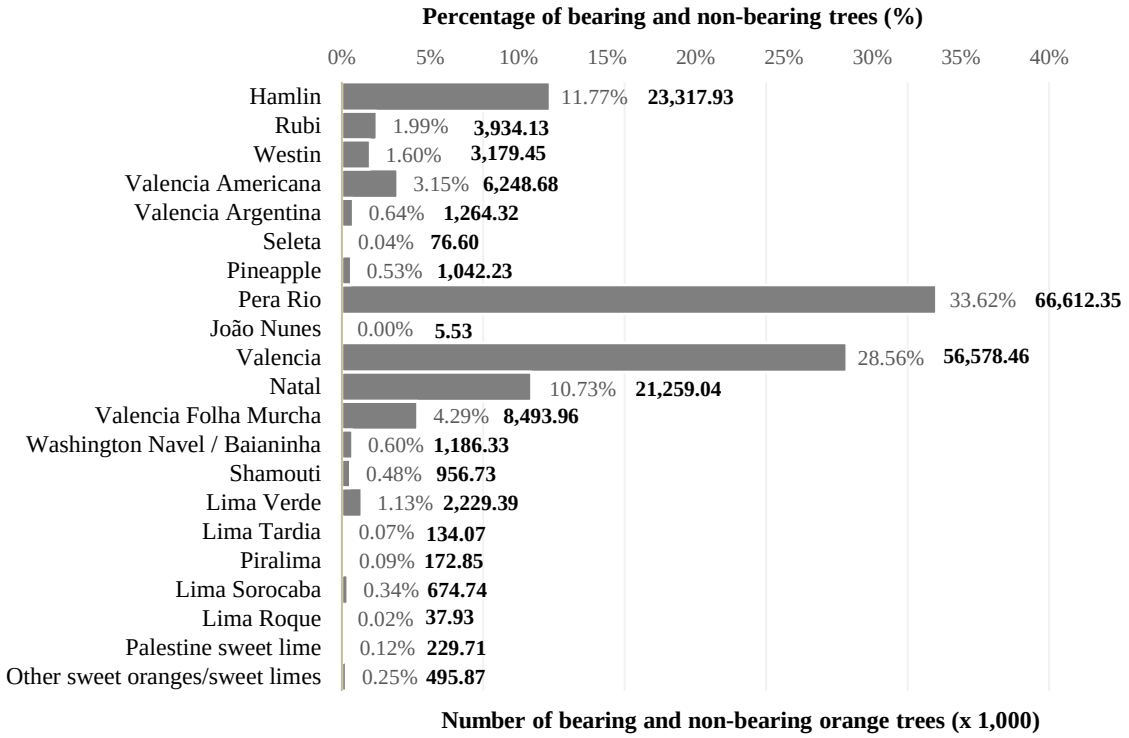
The largest losses of groves due to removal or abandonment took place in the following regions: Matão -6,429 hectares (18% of the total), Limeira -5,107 hectares (14% of the total), Bebedouro -4,820 hectares (14% of the total), Porto Ferreira -4,677 hectares (13% of the total), and Votuporanga -4,670 hectares (13% of the total).

The average removal rate in the citrus belt, taken separately from abandoned groves, was 4.96% in the period from April/2015 to March/2016 and 6.69% as accumulated since October/2014, when the first mapping was carried out. The largest removal was observed on properties with up to 10,000 trees, which presented a rate of 25.22%.

According to the declarations about intention to reoccupy the removed groves, 20% of the area will be replanted with citrus still in this season – with 17% being oranges, 1% with lemon/acid lime and 2% with tangerine – 53% intend to plant another crop in the short term, and in 27% of them, their decision makers were not found.

Orange trees total 175.55 million bearing trees and 16.46 non-bearing trees, totaling 192.01 million orange trees. The distribution of the varieties per maturation stage shows that 39.06 million trees are of early varieties, normally picked between May and August, 66.62 million are mid-season varieties, normally picked between July and October, and 86.33 million are of late varieties, normally picked from October to January. Climate variations may advance or extend harvesting periods from one season to another.

Four varieties account for roughly 90% of the citrus belt. Pera Rio, with 34% of the total, has been leading as the most planted variety since 2007, surpassing the Valencia variety, with 29%, which holds the second place. Varieties Hamlin, with 12%, and Natal, with 11%, remain in third and fourth place, respectively. Graph 1 presents the complete distribution of volume of trees by variety.



Graph 1 – Distribution of bearing and non-bearing orange trees by variety

Expressive differences in density have been observed again between regions. Young groves, with a higher average density, are located in the Altinópolis region, with 781 trees/hectare, followed by Itapetininga, with 712 trees/hectare. On the opposite side are those from the Votuporanga region, with 445 trees/hectare. The average density of young groves is 654 trees/hectare, thus maintaining the level of 600 trees/hectare attained as of 2013.

The average density of mature groves, that is, implemented before 2014, is 467 trees/hectare, a 4-percent increase as compared to the previous inventory (448 trees/hectare). In this grove category, taking into account the average density per region, variation ranges from 419 trees/hectare in the Votuporanga region up to 518 trees/hectare in Itapetininga. When analyzed by age, older groves present a lower average density; for instance, groves older than 10 years have in average 392 trees/hectare, whereas those planted during the last decade present an average of 538 trees/hectare.

The average age of mature groves remains at 9.8 years, which shows a relatively young population. However, 35,566 hectares, or 9% of the total area of orange groves, are older than 20 years of age, with an average density of 336 trees/hectare, lagging behind the currently adopted one (656 trees/hectare). This shows that, along the last two decades, little by little, groves have become denser and, in 2015, they reached twice as many trees planted in the same area.

The revision of the number of properties depends on a new imaging to scan the whole citrus areas. While this does not happen, the total of 7,588 orange properties remains unchanged, but the data on their groves are updated by sampling assessment, which reassesses the area and proportion of bearing trees, non-bearing tress, dead trees and vacancies in such groves. Of that total, 5,442 properties, or 72%, hold less than 10,000 trees, said number increasing to 83% if one considers properties having up to 20,000 trees. The 83% of properties account for only 16% of the total trees of the whole areas. Therefore, the 1,295 remaining properties, which have more than 20,000 trees each, equal 17% of the total properties, but encompass 84% of the trees. In average, orange properties have 53 hectares with 9 blocks. The use of irrigation technology is present in almost 100,000 hectares, and half of them are found in the North region.

The stratification of the 201.61 million holes of orange groves results in the following estimates: 175.55 million bearing trees (87% of holes), 16.46 million non-bearing trees (8.2%), 2.99 million dead trees (1.5%), 6.61 million vacancies (3.3%).

3.2 – TABELS

The calculations were based on whole numbers, with all decimal places, as stored in the data bases, and any discrepancies between the amounts in the tables are the result of rounding.

Table 1 – All oranges: Grove areas by sector [2015, 2016 inventories and changes observed]

Sector	Sweet oranges[1]					Washington Navel, Baianinha, Shamouti, acidless sweet oranges, sweet limes and others[2]				
	2015 Inventory	2016 Inventory	Change			2015 Inventory	2016 Inventory	Change		
			New plantings[3]	Loss of Groves[4]	Net change			New plantings[3]	Loss of Groves[4]	Net change
	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)
North.....	92,651	87,908	884	5,828	-4,944	884	280	-	96	-96
Northwest.	48,495	44,019	1,314	5,766	-4,452	265	908	114	2	112
Central.....	126,849	115,299	1,228	12,347	-11,119	3,519	2,989	104	584	-480
South.....	88,941	83,835	4,429	9,784	-5,355	5,535	5,202	273	613	-340
Southwest.	73,686	72,802	710	1,599	-889	3,760	3,461	527	846	-319
Total.....	**430,622**	**403,863**	**8,565**	**35,324**	**-26,759**	**13,963**	**12,840**	**1,018**	**2,141**	**-1,123**

1 Sweet oranges: Hamlin, Westin, Rubi, Valencia Americana, Valencia Argentina, Seleta, Pineapple, Pera Rio, João Nunes, Valencia, Natal and Valencia Folha Murcha.
2 Sweet oranges (Washington Navel, Baianinha, Shamouti), Lima Verde, Lima Tardia, Piralima, Lima Sorocaba, Lima Roque, Palestine sweet lime and other sweet oranges/sweet limes.
3 Estimate of groves implemented in 2015.
4 Estimate of groves removed since October/2014 and abandoned from April/2015 to March/2016.

Table 2 – Oranges: Area of groves by variety group [2015, 2016 inventories and changes observed]

Variety group	2015 Inventory	2016 Inventory	Change		
			New plantings[1]	Loss of Groves[2]	Net change
	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)
Hamlin, Westin and Rubi.....	69,454	66,430	1,226	4,266	-3,040
Other early season[3].....	19,784	18,519	80	1,360	-1,280
Pera Rio.....	141,596	132,413	3,984	13,181	-9,197
Valencia e V.Folha Murcha...	149,903	138,985	1,450	12,418	-10,968
Natal.....	49,885	47,516	1,825	4,099	-2,274
Total.....	**430,622**	**403,863**	**8,565**	**35,324**	**-26,759**

1 Estimate of groves implemented in 2015.
2 Estimate of groves removed since October/2014 and abandoned from April/2015 to March/2016.
3 Valencia Americana, Valencia Argentina, Seleta and Pineapple.

Table 3 – Orange: Trees by sector and region [2015, 2016 inventories and changes observed]

Sector and region	Non-bearing trees				Bearing trees			
	2015 Inventory	2016 Inventory	Change		2015 Inventory	2016 Inventory	Change	
			Trees	Percentage			Trees	Percentage
	(1,000 trees)	(1,000 trees)	(1,000 trees)	(%)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(%)
NORTH								
Triângulo Mineiro.....	1,686.10	345.10	-1,341.00	-79.53	10,565.79	11,798.88	1,233.09	11.67
Bebedouro.....	3,758.25	2,083.06	-1,675.19	-44.57	22,303.43	22,765.53	462.10	2.07
Altinópolis.....	320.36	346.03	25.67	8.01	5,094.15	5,039.77	-54.38	-1.07
Subtotal.....	**5,764.71**	**2,774.19**	**-2,990.52**	**-51.88**	**37,963.37**	**39,604.18**	**1,640.81**	**4.32**
NORTHWEST								
Votuporanga.....	927.73	173.78	-753.95	-81.27	9,317.18	8,202.62	-1,114.56	-11.96
São José do Rio Preto.....	1,034.62	1,469.60	434.98	42.04	9,736.90	9,852.68	115.78	1.19
Subtotal.....	**1,962.35**	**1,643.38**	**-318.97**	**-16.25**	**19,054.08**	**18,055.30**	**-998.78**	**-5.24**
CENTRAL								
Matão.....	3,844.61	1,726.18	-2,118.43	-55.10	16,903.03	17,286.10	383.07	2.27
Duartina.....	3,640.71	2,053.72	-1,586.99	-43.59	22,936.38	23,817.95	881.57	3.84
Brotas.....	1,344.87	949.65	-395.22	-29.39	7,614.27	8,383.73	769.46	10.11
Subtotal.....	**8,830.19**	**4,729.55**	**-4,100.64**	**-46.44**	**47,453.68**	**49,487.78**	**2,034.10**	**4.29**
SOUTH								
Porto Ferreira.....	2,428.23	3,827.07	1,398.84	57.61	16,418.85	15,707.58	-711.27	-4.33
Limeira.....	2,096.92	1,543.58	-553.34	-26.39	18,946.92	18,025.95	-920.97	-4.86
Subtotal.....	**4,525.15**	**5,370.65**	**845.50**	**18.68**	**35,365.77**	**33,733.53**	**-1,632.24**	**-4.62**
SOUTHWEST								
Avaré.....	2,168.66	1,566.92	-601.74	-27.75	25,755.22	26,036.22	281.00	1.09
Itapetininga.....	482.24	380.23	-102.01	-21.15	8,533.76	8,630.75	96.99	1.14
Subtotal.....	**2,650.90**	**1,947.15**	**-703.75**	**-26.55**	**34,288.98**	**34,666.97**	**377.99**	**1.10**
TOTAL.....	**23,733.30**	**16,464.92**	**-7,268.38**	**-30.63**	**174,125.88**	**175,547.76**	**1,421.88**	**0.82**

Table 4 – Oranges: Properties[1] stratified by number of orange trees [2016 inventory]

Range of the number of orange trees in the property	Properties	Properties percentage	Non-bearing and bearing trees	Percentage of non-bearing and bearing trees
(number)	(number)	(%)	(1,000 trees)	(%)
Below 10 thousand	5,442	71.72	18,525.31	9.65
10 – 19 thousand	851	11.22	12,527.11	6.52
20 – 29 thousand	378	4.98	9,634.88	5.02
30 – 49 thousand	314	4.14	12,532.08	6.53
50 – 99 thousand	289	3.81	21,172.69	11.03
100 – 199 thousand	156	2.06	23,924.55	12.46
Above 200 thousand	158	2.08	93,696.06	48.80
TOTAL	**7,588**	**100.00**	**192,012.68**	**100.00**
	(hectares)			
AVERAGE	**53.22**			

[1] This inventory was generated by a sampling technique covering 5% of the blocks in the primary base finished on 2015. The number of properties will remain until a new sweep is conducted to scan the whole citrus areas using updated images, therefore, the reclassification of the properties in the seven ranges shown in the table is due to the updating of the holes at those properties, deducting the removed and abandoned groves, following the application of the indices obtained in the assessment (bearing trees, non-bearing trees, dead trees and vacancies). Since this is a new sampling, the reclassification of the number of properties in each range presents variations due to the assessment in each year.

Table 5 – Oranges: Orange blocks stratified by area of block [2015 and 2016 inventories]

Orange block area	2015 inventory		2016 inventory	
	Orange blocks	Percentage	Orange blocks	Percentage
(hectares)	(number)	(%)	(number)	(%)
Below 1	3,336	6.58	2,663	5.90
1.1 – 4	14,300	28.22	11,689	25.88
4.1 – 10	17,953	35.43	16,466	36.46
10.1 – 20	10,391	20.51	9,791	21.68
Above 20	4,688	9.25	4,555	10.09
TOTAL	**50,668**	**100.00**	**45,164**	**100.00**
	(hectares)		(hectares)	
AVERAGE	**8.50**		**8.94**	

Table 6 – Oranges: Average age[1] of mature groves by sector and region [2015 and 2016 inventories]

Sector and region	2015 inventory	2016 inventory
	Average age of mature groves[2]	Average age of mature groves[3]
	(years)	(years)
NORTH		
Triângulo Mineiro	11.1	7.8
Bebedouro	9.2	9.5
Altinópolis	9.5	10.3
Average	**9.6**	**9.1**
NORTHWEST		
Votuporanga	7.9	8.3
São José do Rio Preto	8.0	8.0
Average	**7.9**	**8.2**
CENTRAL		
Matão	9.3	8.9
Duartina	9.6	9.3
Brotas	7.6	10.9
Average	**9.0**	**9.4**
SOUTH		
Porto Ferreira	10.2	9.9
Limeira	10.6	11.7
Average	**10.3**	**10.8**
SOUTHWEST		
Avaré	11.7	10.7
Itapetininga	11.2	10.6
Average	**11.5**	**10.7**
GENERAL AVERAGE	**9.8**	**9.8**

[1] Average age weighted by sector trees.
[2] Groves implemented in 2012 or in previous years.
[3] Groves implemented in 2013 or in previous years.

Table 7 – Oranges: Stratification of the entire holes of orange groves [2016 inventory] (continues on the next page)

Region	Bearing trees	Non-bearing trees	Dead trees	Vacancies	Total
	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 holes)	(1,000 trees/holes)
Triângulo Mineiro					
Hamlin, Westin and Rubi....	2,239.74	29.87	4.19	7.51	2,281.31
Other early season[1].....	125.44	1.59	1.33	0.91	129.27
Pera Rio.....	3,651.49	222.11	37.03	34.32	3,944.95
Natal.....	1,569.34	10.07	5.40	6.18	1,590.99
Valencia e V.Folha Murcha[2]	4,212.87	81.46	13.03	6.87	4,314.23
Subtotal.....	**11,798.88**	**345.10**	**60.98**	**55.79**	**12,260.75**
Bebedouro					
Hamlin, Westin and Rubi....	4,977.83	201.98	51.84	212.70	5,444.35
Other early season[1].....	1,809.66	84.04	16.16	71.16	1,981.02
Pera Rio.....	6,286.88	616.93	31.92	237.55	7,173.28
Natal.....	1,997.68	185.07	13.01	69.13	2,264.89
Valencia e V.Folha Murcha[2]	7,693.48	995.04	61.85	244.31	8,994.68
Subtotal.....	**22,765.53**	**2,083.06**	**174.78**	**834.85**	**25,858.22**
Altinópolis					
Hamlin, Westin and Rubi....	777.99	148.01	26.19	12.47	964.66
Other early season[1].....	89.86	5.99	2.52	3.53	101.90
Pera Rio.....	1,885.42	43.76	29.65	39.37	1,998.20
Natal.....	217.66	34.24	0.38	17.73	270.01
Valencia e V.Folha Murcha[2]	2,068.84	114.03	19.86	35.33	2,238.06
Subtotal.....	**5,039.77**	**346.03**	**78.60**	**108.43**	**5,572.83**
Votuporanga					
Hamlin, Westin and Rubi....	445.51	3.91	18.71	41.98	510.11
Other early season[1].....	199.97	0.92	5.15	3.06	209.10
Pera Rio.....	6,073.01	130.37	82.26	204.48	6,490.12
Natal.....	458.49	23.99	4.44	11.62	498.54
Valencia e V.Folha Murcha[2]	1,025.64	14.59	26.91	41.11	1,108.25
Subtotal.....	**8,202.62**	**173.78**	**137.47**	**302.25**	**8,816.12**
São José do Rio Preto					
Hamlin, Westin and Rubi....	2,364.74	171.70	33.32	77.88	2,647.64
Other early season[1].....	1,183.60	28.31	11.27	24.66	1,247.84
Pera Rio.....	2,235.99	466.25	13.22	113.22	2,828.68
Natal.....	1,231.60	472.24	23.09	39.74	1,766.67
Valencia e V.Folha Murcha[2]	2,836.75	331.10	31.24	48.31	3,247.40
Subtotal.....	**9,852.68**	**1,469.60**	**112.14**	**303.81**	**11,738.23**
Matão					
Hamlin, Westin and Rubi....	2,708.38	86.88	50.00	134.25	2,979.51
Other early season[1].....	1,957.75	39.08	116.17	60.75	2,173.75
Pera Rio.....	5,497.11	1,121.18	99.45	212.27	6,930.01
Natal.....	1,324.46	105.31	67.50	79.32	1,576.59
Valencia e V.Folha Murcha[2]	5,798.40	373.73	85.01	225.43	6,482.57
Subtotal.....	**17,286.10**	**1,726.18**	**418.13**	**712.02**	**20,142.43**
Duartina					
Hamlin, Westin and Rubi....	3,394.95	222.80	185.35	132.42	3,935.52
Other early season[1].....	1,048.81	36.92	20.44	41.15	1,147.32
Pera Rio.....	9,393.07	828.21	175.88	308.80	10,705.96
Natal.....	2,608.44	161.60	47.42	122.23	2,939.69
Valencia e V.Folha Murcha[2]	7,372.68	804.19	150.58	269.60	8,597.05
Subtotal.....	**23,817.95**	**2,053.72**	**579.67**	**874.20**	**27,325.54**
Brotas					
Hamlin, Westin and Rubi....	1,344.56	73.73	23.16	111.06	1,552.51
Other early season[1].....	208.00	38.96	4.07	6.79	257.82
Pera Rio.....	2,373.27	497.79	49.25	136.23	3,056.54
Natal.....	714.15	213.01	8.73	96.50	1,032.39
Valencia e V.Folha Murcha[2]	3,743.75	126.16	71.43	310.44	4,251.78
Subtotal.....	**8,383.73**	**949.65**	**156.64**	**661.02**	**10,151.04**

Table 7 – Oranges: Stratification of the entire holes of orange groves [2016 inventory] (continued)

Region	Bearing trees	Non-bearing trees	Dead trees	Vacancies	Total
	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 holes)	(1,000 trees/holes)
Porto Ferreira					
Hamlin, Westin and Rubi....	2,213.04	820.41	27.25	164.76	3,225.46
Other early season[1].....	359.99	19.71	12.31	20.02	412.03
Pera Rio.....	5,406.43	1,631.42	80.16	235.39	7,353.40
Natal.....	1,564.25	525.13	44.76	87.41	2,221.55
Valencia e V.Folha Murcha[2]	6,163.87	830.40	77.22	388.55	7,460.04
Subtotal.....	**15,707.58**	**3,827.07**	**241.70**	**896.13**	**20,672.48**
Limeira					
Hamlin, Westin and Rubi....	2,796.55	121.40	44.03	138.41	3,100.39
Other early season[1].....	186.51	5.16	3.56	7.90	203.13
Pera Rio.....	6,666.14	543.67	99.71	343.10	7,652.62
Natal.....	1,330.45	408.69	18.26	62.82	1,820.22
Valencia e V.Folha Murcha[2]	7,046.30	464.66	106.17	414.48	8,031.61
Subtotal.....	**18,025.95**	**1,543.58**	**271.73**	**966.71**	**20,807.97**
Avaré					
Hamlin, Westin and Rubi....	4,196.21	201.90	111.59	130.10	4,639.80
Other early season[1].....	693.13	43.32	11.32	19.52	767.29
Pera Rio.....	7,522.79	682.45	174.68	263.43	8,643.35
Natal.....	4,028.09	211.03	132.48	106.45	4,478.05
Valencia e V.Folha Murcha[2]	9,596.00	428.22	182.56	263.63	10,470.41
Subtotal.....	**26,036.22**	**1,566.92**	**612.63**	**783.13**	**28,998.90**
Itapetininga					
Hamlin, Westin and Rubi....	846.09	43.33	8.16	11.66	909.24
Other early season[1].....	391.96	73.15	9.79	1.96	476.86
Pera Rio.....	2,676.48	165.66	68.28	45.87	2,956.29
Natal.....	1,842.43	21.62	20.79	17.47	1,902.31
Valencia e V.Folha Murcha[2]	2,873.79	76.47	40.75	33.45	3,024.46
Subtotal.....	**8,630.75**	**380.23**	**147.77**	**110.41**	**9,269.16**
Total	**175,547.76**	**16,464.92**	**2,992.24**	**6,608.75**	**201,613.67**
Percentange	**87.07**	**8.17**	**1.48**	**3.28**	**100.00**

[1] Valencia Americana, Valencia Argentina, Seleta and Pineapple.
[2] V.Folha Murcha – Valencia Folha Murcha.

Table 8 – Oranges: Area of young and mature groves by sector and region [2016 inventory and changes observed in relation to the 2015 inventory]

Sector and region	2016 inventory			Change (△) in relation to the 2015 inventory in each category of grove age		
	Area of young groves[1]	Area of mature groves[2]	Total			
	(A)	(B)	(C)	(△ A)	(△ B)	(△ C)
	(hectares)	(hectares)	(hectares)	(%)	(%)	(%)
NORTH						
Triângulo Mineiro.....	399	24,837	25,236	-84.17	6.92	-2,00
Bebedouro.....	2,077	49,756	51,833	-52.00	-3.70	-7,43
Altinópolis.....	6	10,833	10,839	-94.83	0.40	-0,61
Subtotal	**2,482**	**85,426**	**87,908**	**-64.36**	**-0.30**	**-5.12**
NORTHWEST						
Votuporanga.....	205	19,738	19,943	-86.69	-14.45	-18,97
São José do Rio Preto.....	1,997	22,079	24,076	42.64	-1.79	0,81
Subtotal.....	**2,202**	**41,817**	**44,019**	**-25.10**	**-8.21**	**-9.23**
CENTRAL						
Matão.....	1,648	39,593	41,241	-64.97	-7.40	-13,10
Duartina.....	1,746	52,249	53,995	-60.58	-0.25	-4,95
Brotas.....	1,031	19,032	20,063	-29.96	-9.84	-11,15
Subtotal.....	**4,425**	**110,874**	**115,299**	**-58.27**	**-4.62**	**-9.11**
SOUTH						
Porto Ferreira.....	4,509	36,078	40,587	85.56	-8.93	-3,47
Limeira.....	1,799	41,449	43,248	1.58	-8.15	-7,78
Subtotal.....	**6,308**	**77,527**	**83,835**	**50.15**	**-8.51**	**-5.74**
SOUTHWEST						
Avaré.....	1,277	54,333	55,610	-27.73	0.30	-0,59
Itapetininga.....	470	16,722	17,192	-28.02	-2.17	-3,12
Subtotal	**1,747**	**71,055**	**72,802**	**-27.81**	**-0.30**	**-1.20**
TOTAL.....	**17,164**	**386,699**	**403,863**	**-36.73**	**-4.16**	**-6.21**
PERCENTAGE.....	**4.25**	**95.75**	**100.00**	**(X)**	**(X)**	**(X)**

(X) Not applicable.
[1] Groves implemented in 2014 and 2015.
[2] Groves implemented in 2013 or in previous years.

Table 9 – Oranges: Non-bearing and bearing trees by sector and region [2016 inventory and changes observed in relation to the 2015 inventory]

Sector and region	2016 inventory					Change (△) in relation to the 2015 inventory in each category of grove age				
	Non-bearing trees[1]			Bearing trees[4]	Total					
	In young groves[2]	In mature groves[3] (resets)	Total							
	(A)	(B)	(C)	(D)	(E)	(△A)	(△B)	(△C)	(△D)	(△E)
	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(%)	(%)	(%)	(%)	(%)
NORTH										
Triângulo Mineiro..	235.32	109.78	345.10	11,798.88	12,143.98	-84.34	-40.23	-79.53	11.67	-0.88
Bebedouro.....	1,297.73	785.33	2,083.06	22,765.53	24,848.59	-54.18	-15.17	-44.57	2.07	-4.65
Altinópolis.....	4.33	341.70	346.03	5,039.77	5,385.80	-93.07	32.48	8.01	-1.07	-0.53
Subtotal	**1,537.38**	**1,236.81**	**2,774.19**	**39,604.18**	**42,378.37**	**-65.04**	**-9.55**	**-51.88**	**4.32**	**-3.09**
NORTHWEST										
Votuporanga.....	91.78	82.00	173.78	8,202.62	8,376.40	-88.00	-49.59	-81.27	-11.96	-18.24
S. J. do Rio Preto....	1,279.84	189.76	1,469.60	9,852.68	11,322.28	55.46	-10.23	42.04	1.19	5.11
Subtotal.....	**1,371.62**	**271.76**	**1,643.38**	**18,055.30**	**19,698.68**	**-13.64**	**-27.35**	**-16.25**	**-5.24**	**-6.27**
CENTRAL										
Matão.....	1,157.32	568.86	1,726.18	17,286.10	19,012.28	-62.03	-28.61	-55.10	2.27	-8.36
Duartina.....	1,157.56	896.16	2,053.72	23,817.95	25,871.67	-57.24	-3.99	-43.59	3.84	-2.65
Brotas.....	696.98	252.67	949.65	8,383.73	9,333.38	-25.94	-37.43	-29.39	10.11	4.18
Subtotal.....	**3,011.86**	**1,717.69**	**4,729.55**	**49,487.78**	**54,217.33**	**-55.02**	**-19.51**	**-46.44**	**4.29**	**-3.67**
SOUTH										
Porto Ferreira.....	3,109.85	717.22	3,827.07	15,707.58	19,534.65	93.16	-12.35	57.61	-4.33	3.65
Limeira.....	1,001.82	541.76	1,543.58	18,025.95	19,569.53	-14.04	-41.84	-26.39	-4.86	-7.01
Subtotal	**4,111.67**	**1,258.98**	**5,370.65**	**33,733.53**	**39,104.18**	**48.15**	**-28.05**	**18.68**	**-4.62**	**-1.97**
SOUTHWEST										
Avaré.....	893.48	673.44	1,566.92	26,036.22	27,603.14	-29.25	-25.65	-27.75	1.09	-1.15
Itapetininga.....	334.42	45.81	380.23	8,630.75	9,010.98	-19.98	-28.79	-21.15	1.14	-0.06
Subtotal.....	**1,227.90**	**719.25**	**1,947.15**	**34,666.97**	**36,614.12**	**-26.94**	**-25.86**	**-26.55**	**1.10**	**-0.88**
TOTAL.....	**11,260.43**	**5,204.49**	**16,464.92**	**175,547.76**	**192,012.68**	**-34.30**	**-21.09**	**-30.63**	**0.82**	**-2.95**
PERCENTAGE.....	**5.90**	**2.70**	**8.60**	**91.40**	**100.00**	**(X)**	**(X)**	**(X)**	**(X)**	**(X)**

(X) Not applicable.

[1] Trees planted in 2014 or 2015.

[2] Groves implemented in 2014 or 2015.

[3] Groves implemented in 2013 or in previous years.

[4] Trees planted in 2013 or in previous years.

Table 10 – Oranges: Area of groves by age, sector and region [2016 inventory]

Sector and region	Ages				Total
	1 – 2 years[1]	3 – 5 years	6 – 10 years	More than 10 years	
	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)
NORTH					
Triângulo Mineiro.....	399	7,859	9,078	7,900	25,236
Bebedouro.....	2,077	8,052	20,326	21,378	51,833
Altinópolis.....	6	410	5,509	4,914	10,839
Subtotal	**2,482**	**16,321**	**34,913**	**34,192**	**87,908**
NORTHWEST					
Votuporanga.....	205	4,210	12,034	3,494	19,943
São José do Rio Preto..	1,997	5,368	9,682	7,029	24,076
Subtotal.....	**2,202**	**9,578**	**21,716**	**10,523**	**44,019**
CENTRAL					
Matão.....	1,648	9,149	14,117	16,327	41,241
Duartina.....	1,746	7,994	21,031	23,224	53,995
Brotas.....	1,031	2,395	5,215	11,422	20,063
Subtotal.....	**4,425**	**19,538**	**40,363**	**50,973**	**115,299**
SOUTH					
Porto Ferreira.....	4,509	5,342	10,802	19,934	40,587
Limeira.....	1,799	4,784	14,132	22,533	43,248
Subtotal.....	**6,308**	**10,126**	**24,934**	**42,467**	**83,835**
SOUTHWEST					
Avaré.....	1,277	3,288	23,667	27,378	55,610
Itapetininga.....	470	2,762	6,112	7,848	17,192
Subtotal	**1,747**	**6,050**	**29,779**	**35,226**	**72,802**
TOTAL.....	**17,164**	**61,613**	**151,705**	**173,381**	**403,863**
PERCENTAGE.....	**4.25**	**15.26**	**37.56**	**42.93**	**100.00**

[1] Area of young orange groves.

Table 11 – Oranges: Trees by age, sector and region [2016 inventory]

Sector and Region	Ages							Total
	Non-bearing trees			Bearing trees				
	Resets[1]	1 – 2 year[2]	Total non-bearing	3 – 5 years	6 –10 years	More than 10 years	Total bearing	
	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)
NORTH								
Triâng.Mineiro	109.78	235.32	345.10	4,530.59	4,316.39	2,951.90	11,798.88	12,143.98
Bebedouro.....	785.33	1,297.73	2,083.06	4,764.72	10,069.92	7,930.89	22,765.53	24,848.59
Altinópolis.....	341.70	4.33	346.03	256.83	2,664.95	2,117.99	5,039.77	5,385.80
Subtotal.....	**1,236.81**	**1,537.38**	**2,774.19**	**9,552.14**	**17,051.26**	**13,000.78**	**39,604.18**	**42,378.37**
NORTHWEST								
Votuporanga....	82.00	91.78	173.78	1,967.27	5,023.82	1,211.53	8,202.62	8,376.40
S. J. Rio Preto...	189.76	1,279.84	1,469.60	2,757.20	4,615.10	2,480.38	9,852.68	11,322.28
Subtotal.....	**271.76**	**1,371.62**	**1,643.38**	**4,724.47**	**9,638.92**	**3,691.91**	**18,055.30**	**19,698.68**
CENTRAL								
Matão.....	568.86	1,157.32	1,726.18	5,580.39	6,588.73	5,116.98	17,286.10	19,012.28
Duartina.....	896.16	1,157.56	2,053.72	4,668.34	10,222.98	8,926.63	23,817.95	25,871.67
Brotas.....	252.67	696.98	949.65	1,386.00	2,500.36	4,497.37	8,383.73	9,333.38
Subtotal.....	**1,717.69**	**3,011.86**	**4,729.55**	**11,634.73**	**19,312.07**	**18,540.98**	**49,487.78**	**54,217.33**
SOUTH								
Porto Ferreira...	717.22	3,109.85	3,827.07	3,327.79	5,153.74	7,226.05	15,707.58	19,534.65
Limeira.....	541.76	1,001.82	1,543.58	2,617.02	6,737.82	8,671.11	18,025.95	19,569.53
Subtotal.....	**1,258.98**	**4,111.67**	**5,370.65**	**5,944.81**	**11,891.56**	**15,897.16**	**33,733.53**	**39,104.18**
SOUTHWEST								
Avaré.....	673.44	893.48	1,566.92	2,060.25	12,428.67	11,547.30	26,036.22	27,603.14
Itapetininga.....	45.81	334.42	380.23	1,817.54	3,512.55	3,300.66	8,630.75	9,010.98
Subtotal.....	**719.25**	**1,227.90**	**1,947.15**	**3,877.79**	**15,941.22**	**14,847.96**	**34,666.97**	**36,614.12**
TOTAL.....	**5,204.49**	**11,260.43**	**16,464.92**	**35,733.94**	**73,835.03**	**65,978.79**	**175,547.76**	**192,012.68**
PERCENTAGE.	**2.71**	**5.86**	**8.57**	**18.61**	**38.45**	**34.36**	**91.43**	**100.00**

[1] Non-bearing trees in mature groves.
[2] Non-bearing trees in young groves.

Table 12 – Oranges: Grove area of early season varieties by sector and region [2016 inventory]

Sector and region	Varieties							
	Hamlin	Westin	Rubi	Valencia Americana	Valencia Argentina	Seleta	Pineapple	Total
	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)
NORTH								
Triângulo Mineiro	4,615	228	247	216	12	-	3	5,321
Bebedouro.....	9,349	1,294	1,077	2,859	527	1	249	15,356
Altinópolis.....	1,603	43	160	169	1	-	15	1,991
Subtotal	**15,567**	**1,565**	**1,484**	**3,244**	**540**	**1**	**267**	**22,668**
NORTHWEST								
Votuporanga.....	877	127	159	409	-	-	91	1,663
S. J. Rio Preto...	4,157	451	905	2,027	481	-	173	8,194
Subtotal.....	**5,034**	**578**	**1,064**	**2,436**	**481**	**-**	**264**	**9,857**
CENTRAL								
Matão.....	5,490	253	756	2,482	2,022	-	513	11,516
Duartina.....	6,713	330	894	2,003	-	60	79	10,079
Brotas.....	2,918	241	76	251	52	-	152	3,690
Subtotal.....	**15,121**	**824**	**1,726**	**4,736**	**2,074**	**60**	**744**	**25,285**
SOUTH								
Porto Ferreira....	3,676	1,326	726	662	208	12	9	6,619
Limeira.....	4,381	1,644	378	181	162	64	18	6,828
Subtotal.....	**8,057**	**2,970**	**1,104**	**843**	**370**	**76**	**27**	**13,447**
SOUTHWEST								
Avaré.....	6,855	926	1,722	826	677	23	112	11,141
Itapetininga.....	1,353	148	332	292	13	-	413	2,551
Subtotal	**8,208**	**1,074**	**2,054**	**1,118**	**690**	**23**	**525**	**13,692**
TOTAL.....	**51,987**	**7,011**	**7,432**	**12,377**	**4,155**	**160**	**1,827**	**84,949**
PERCENTAGE.....	**61.20**	**8.25**	**8.75**	**14.57**	**4.89**	**0.19**	**2.15**	**100.00**

- Represents zero.

Table 13 – Oranges: Trees of early season varieties by sector and region [2016 inventory]

Sector and region	Early varieties							
	Hamlin	Westin	Rubi	Valencia Americana	Valencia Argentina	Seleta	Pineapple	Total
	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)
NORTH								
Triângulo Mineiro	2,019.59	104.52	145.50	121.06	4.84	-	1.13	2,396.64
Bebedouro.....	4,057.11	529.81	592.89	1,563.58	206.65	0.58	122.89	7,073.51
Altinópolis.....	807.03	23.85	95.12	84.86	0.65	-	10.34	1,021.85
Subtotal	**6,883.73**	**658.18**	**833.51**	**1,769.50**	**212.14**	**0.58**	**134.36**	**10,492.00**
NORTHWEST								
Votuporanga.....	334.59	38.46	76.37	175.30	-	-	25.59	650,31
S. J. Rio Preto.	1,913.17	153.33	469.94	1,000.20	123.94	-	87.77	
Subtotal.....	**2,247.76**	**191.79**	**546.31**	**1,175.50**	**123.94**	-	**113.36**	**4,398.66**
CENTRAL								
Matão.....	2,316.83	98.83	379.60	1,178.88	513.47	-	304.48	4,792.09
Duartina.....	3,005.50	136.34	475.91	1,016.87	-	35.11	33.75	4,703.48
Brotas.....	1,278.08	108.15	32.06	116.38	27.68	-	102.90	1,665.25
Subtotal.....	**6,600.41**	**343.32**	**887.57**	**2,312.13**	**541.15**	**35.11**	**441.13**	**11,160.82**
SOUTH								
Porto Ferreira.....	1,862.32	750.94	420.19	300.90	67.24	6.36	5.20	3,413.15
Limeira.....	1,963.07	742.87	212.01	91.16	66.54	26.09	7.88	3,109.62
Subtotal.....	**3,825.39**	**1,493.81**	**632.20**	**392.06**	**133.78**	**32.45**	**13.08**	**6,522.77**
SOUTHWEST								
Avaré.....	3,132.53	421.29	844.29	429.61	246.63	8.46	51.75	5,134.56
Itapetininga.....	628.11	71.06	190.25	169.88	6.68	-	288.55	1,354.53
Subtotal	**3,760.64**	**492.35**	**1,034.54**	**599.49**	**253.31**	**8.46**	**340.30**	**6,489.09**
TOTAL.....	**23,317.93**	**3,179.45**	**3,934.13**	**6,248.68**	**1,264.32**	**76.60**	**1,042.23**	**39,063.34**
PERCENTAGE.....	**59.69**	**8.14**	**10.07**	**16.00**	**3.24**	**0.20**	**2.67**	**100.00**

- Represents zero.

Table 14 – Oranges: Grove area of mid-season and late varieties by sector and region [2016 inventory]

Sector and region	Mid-season and late varieties				
	Pera Rio[1]	Valencia	Natal	Valencia Folha Murcha	Total
	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)
NORTH					
Triângulo Mineiro.....	7,215	8,803	3,563	334	19,915
Bebedouro.....	12,771	16,056	5,282	2,368	36,477
Altinópolis.....	3,699	4,233	554	362	8,848
Subtotal	**23,685**	**29,092**	**9,399**	**3,064**	**65,240**
NORTHWEST					
Votuporanga.....	14,844	1,670	1,199	567	18,280
São José do Rio Preto.....	5,641	5,244	3,764	1,233	15,882
Subtotal.....	**20,485**	**6,914**	**4,963**	**1,800**	**34,162**
CENTRAL					
Matão.....	12,444	11,471	4,197	1,613	29,725
Duartina.....	20,253	15,234	6,109	2,320	43,916
Brotas.....	5,525	8,000	2,120	728	16,373
Subtotal.....	**38,222**	**34,705**	**12,426**	**4,661**	**90,014**
SOUTH					
Porto Ferreira.....	13,831	13,667	4,628	1,842	33,968
Limeira.....	14,679	15,592	3,747	2,402	36,420
Subtotal.....	**28,510**	**29,259**	**8,375**	**4,244**	**70,388**
SOUTHWEST					
Avaré.....	15,805	18,552	8,529	1,583	44,469
Itapetininga.....	5,706	4,298	3,824	813	14,641
Subtotal.....	**21,511**	**22,850**	**12,353**	**2,396**	**59,110**
TOTAL.....	**132,413**	**122,820**	**47,516**	**16,165**	**318,914**
PERCENTAGE.....	**41.52**	**38.51**	**14.90**	**5.07**	**100.00**

[1] The orange groves area of João Nunes variety was added to the area of the Pera Rio variety, because both areas present the same maturation stage.

Table 15 – Oranges: Trees of mid-season and late varieties by sector and region [2016 inventory]

Sector and region	Mid-season and late varieties				
	Pera Rio[1]	Valencia	Natal	Valencia Folha Murcha	Total
	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)
NORTH					
Triângulo Mineiro.....	3,873.60	4,106.56	1,579.41	187.77	9,747.34
Bebedouro.....	6,903.81	7,413.13	2,182.75	1,275.39	17,775.08
Altinópolis.....	1,929.18	1,999.10	251.90	183.77	4,363.95
Subtotal	**12,706.59**	**13,518.79**	**4,014.06**	**1,646.93**	**31,886.37**
NORTHWEST					
Votuporanga.....	6,203.38	755.99	482.48	284.24	7,726.09
São José do Rio Preto.....	2,702.24	2,489.02	1,703.84	678.83	7,573.93
Subtotal.....	**8,905.62**	**3,245.01**	**2,186.32**	**963.07**	**15,300.02**
CENTRAL					
Matão.....	6,618.29	5,251.29	1,429.77	920.84	14,220.19
Duartina.....	10,221.28	6,931.89	2,770.04	1,244.98	21,168.19
Brotas.....	2,871.06	3,508.33	927.16	361.58	7,668.13
Subtotal.....	**19,710.63**	**15,691.51**	**5,126.97**	**2,527.40**	**43,056.51**
SOUTH					
Porto Ferreira.....	7,037.85	6,061.82	2,089.38	932.45	16,121.50
Limeira.....	7,209.81	6,446.58	1,739.14	1,064.38	16,459.91
Subtotal.....	**14,247.66**	**12,508.40**	**3,828.52**	**1,996.83**	**32,581.41**
SOUTHWEST					
Avaré.....	8,205.24	9,123.60	4,239.12	900.62	22,468.58
Itapetininga.....	2,842.14	2,491.15	1,864.05	459.11	7,656.45
Subtotal.....	**11,047.38**	**11,614.75**	**6,103.17**	**1,359.73**	**30,125.03**
TOTAL.....	**66,617.88**	**56,578.46**	**21,259.04**	**8,493.96**	**152,949.34**
PERCENTAGE.....	**43.56**	**36.99**	**13.90**	**5.55**	**100.00**

[1] The orange trees of the João Nunes variety were added to the area of the Pera Rio variety, because both areas present the same maturation stage.

Table 16 – Oranges: Grove area by age, region and variety – North Sector [2016 inventory]

Region and variety	Ages				Total
	1 – 2 years[1]	3 – 5 years	6 – 10 years	More than 10 years	
	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)
TMG[2]					
Hamlin.....	-	439	1,658	2,518	4,615
Westin.....	-	30	124	74	228
Rubi.....	-	161	86	-	247
V.Americana[3].....	-	49	166	1	216
V.Argentina[4].....	-	-	-	12	12
Seleta.....	-	-	-	-	-
Pineapple.....	3	-	-	-	3
Pera Rio	294	3,150	2,536	1,226	7,206
João Nunes.....	-	3	5	1	9
Valencia.....	93	3,342	2,717	2,651	8,803
Natal.....	4	567	1,589	1,403	3,563
V.Folha Murcha[5]	5	118	197	14	334
Subtotal.....	**399**	**7,859**	**9,078**	**7,900**	**25,236**
Percentage.....	**1.58**	**31.14**	**35.97**	**31.30**	**100.00**
BEB[6]					
Hamlin.....	49	525	4,156	4,619	9,349
Westin.....	-	46	435	813	1,294
Rubi.....	38	538	291	210	1,077
V.Americana[3].....	11	522	1,898	428	2,859
V.Argentina[4].....	-	-	-	527	527
Seleta.....	1	-	-	-	1
Pineapple.....	16	39	121	73	249
Pera Rio	649	3,594	5,847	2,681	12,771
João Nunes.....	-	-	-	-	-
Valencia.....	747	1,856	5,425	8,028	16,056
Natal.....	209	713	960	3,400	5,282
V.Folha Murcha[5]	357	219	1,193	599	2,368
Subtotal.....	**2,077**	**8,052**	**20,326**	**21,378**	**51,833**
Percentage.....	**4.01**	**15.53**	**39.21**	**41.24**	**100.00**
ALT[7]					
Hamlin.....	-	2	773	828	1,603
Westin.....	-	-	29	14	43
Rubi.....	1	40	100	19	160
V.Americana[3].....	3	40	99	27	169
V.Argentina[4].....	-	-	1	-	1
Seleta.....	-	-	-	-	-
Pineapple.....	-	-	15	-	15
Pera Rio	2	202	1,906	1,589	3,699
João Nunes.....	-	-	-	-	-
Valencia.....	-	41	1,930	2,262	4,233
Natal.....	-	52	361	141	554
V.Folha Murcha[5]	-	33	295	34	362
Subtotal.....	**6**	**410**	**5,509**	**4,914**	**10,839**
Percentage.....	**0.06**	**3.78**	**50.83**	**45.34**	**100.00**
TOTAL.....	**2,482**	**16,321**	**34,913**	**34,192**	**87,908**

- Represents zero.
1 Areas of young orange groves.
2 TMG – Triângulo Mineiro.
3 V.Americana – Valencia Americana.
4 V.Argentina – Valencia Argentina.
5 V.Folha Murcha – Valencia Folha Murcha.
6 BEB – Bebedouro.
7 ALT – Altinópolis.

Table 17 – Oranges: Trees by age, region and variety – North Sector [2016 inventory]

Region and variety	Ages							Total
	Non-bearing trees			Bearing trees				
	Resets[1]	1 – 2 years[2]	Total non-bearing	3 – 5 years	6 – 10 years	More than 10 years	Total bearing	
	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)
TMG[3]								
Hamlin.....	26.07	-	26.07	257.22	769.48	966.82	1,993.52	2,019.59
Westin.....	2.68	-	2.68	10.32	64.88	26.64	101.84	104.52
Rubi.....	1.12	-	1.12	99.64	44.74	-	144.38	145.50
V.Americana[4].....	0.46	-	0.46	29.20	91.06	0.34	120.60	121.06
V.Argentina[5].....	-	-	-	-	-	4.84	4.84	4.84
Seleta.....	-	-	-	-	-	-	-	-
Pineapple.....	-	1.13	1.13	-	-	-	-	1.13
Pera Rio	45.85	176.21	222.06	1,931.68	1,263.74	450.59	3,646.01	3,868.07
João Nunes.....	0.05	-	0.05	1.91	3.41	0.16	5.48	5.53
Valencia.....	24.56	52.62	77.18	1,827.26	1,227.41	974.71	4,029.38	4,106.56
Natal.....	7.97	2.10	10.07	305.21	742.03	522.10	1,569.34	1,579.41
V.Folha Murcha[6]	1.02	3.26	4.28	68.15	109.64	5.70	183.49	187.77
Subtotal.....	**109.78**	**235.32**	**345.10**	**4,530.59**	**4,316.39**	**2,951.90**	**11,798.88**	**12,143.98**
Percentage.....	**0.90**	**1.94**	**2.84**	**37.31**	**35.54**	**24.31**	**97.16**	**100.00**
BEB[7]								
Hamlin.....	107.62	32.10	139.72	295.41	1,940.57	1,681.41	3,917.39	4,057.11
Westin.....	10.68	-	10.68	27.67	197.70	293.76	519.13	529.81
Rubi.....	11.67	39.91	51.58	329.25	151.39	60.67	541.31	592.89
V.Americana[4].....	57.38	7.37	64.75	326.89	982.74	189.20	1,498.83	1,563.58
V.Argentina[5].....	4.73	-	4.73	-	-	201.92	201.92	206.65
Seleta.....	-	0.58	0.58	-	-	-	-	0.58
Pineapple.....	3.14	10.84	13.98	21.40	53.81	33.70	108.91	122.89
Pera Rio	213.82	403.11	616.93	2,203.29	3,079.36	1,004.23	6,286.88	6,903.81
João Nunes.....	-	-	-	-	-	-	-	-
Valencia.....	266.71	438.08	704.79	1,022.16	2,626.22	3,059.96	6,708.34	7,413.13
Natal.....	59.11	125.96	185.07	413.76	432.42	1,151.50	1,997.68	2,182.75
V.Folha Murcha[6]	50.47	239.78	290.25	124.89	605.71	254.54	985.14	1,275.39
Subtotal.....	**785.33**	**1,297.73**	**2,083.06**	**4,764.72**	**10,069.92**	**7,930.89**	**22,765.53**	**24,848.59**
Percentage.....	**3.16**	**5.22**	**8.38**	**19.18**	**40.53**	**31.92**	**91.62**	**100.00**
ALT[8]								
Hamlin.....	122.65	-	122.65	1.38	332.01	350.99	684.38	807.03
Westin.....	6.78	-	6.78	-	10.26	6.81	17.07	23.85
Rubi.....	17.57	1.01	18.58	26.69	40.69	9.16	76.54	95.12
V.Americana[4].....	3.87	1.74	5.61	24.56	42.64	12.05	79.25	84.86
V.Argentina[5].....	0.02	-	0.02	-	0.63	-	0.63	0.65
Seleta.....	-	-	-	-	-	-	-	-
Pineapple.....	0.36	-	0.36	-	9.98	-	9.98	10.34
Pera Rio	42.18	1.58	43.76	133.67	1,031.04	720.71	1,885.42	1,929.18
João Nunes.....	-	-	-	-	-	-	-	-
Valencia.....	104.78	-	104.78	25.95	912.28	956.09	1,894.32	1,999.10
Natal.....	34.24	-	34.24	26.03	142.12	49.51	217.66	251.90
V.Folha Murcha[6]	9.25	-	9.25	18.55	143.30	12.67	174.52	183.77
Subtotal.....	**341.70**	**4.33**	**346.03**	**256.83**	**2,664.95**	**2,117.99**	**5,039.77**	**5,385.80**
Percentage.....	**6.34**	**0.08**	**6.42**	**4.77**	**49.48**	**39.33**	**93.58**	**100.00**
TOTAL.....	**1,236.81**	**1,537.38**	**2,774.19**	**9,552.14**	**17,051.26**	**13,000.78**	**39,604.18**	**42,378.37**

- Represents zero.
1 Non-bearing trees in mature groves.
2 Non-bearing trees in young grovess.
3 TMG – Triângulo Mineiro.
4 V.Americana – Valencia Americana.
5 V.Argentina – Valencia Argentina.
6 V.Folha Murcha – Valencia Folha Murcha.
7 BEB – Bebedouro.
8 ALT – Altinópolis.

Table 18 – Oranges: Grove area by age, region and variety – Northwest Sector [2016 inventory]

Region and variety	Ages				Total
	1 – 2 years[1]	3 – 5 years	6 – 10 years	More than 10 years	
	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)
VOT[2]					
Hamlin.....	-	151	551	175	877
Westin.....	9	12	84	22	127
Rubi.....	-	50	107	2	159
V.Americana[3].....	-	105	268	36	409
V.Argentina[4].....	-	-	-	-	-
Seleta.....	-	-	-	-	-
Pineapple.....	-	3	88	-	91
Pera Rio	148	3,599	9,076	2,021	14,844
João Nunes.....	-	-	-	-	-
Valencia.....	28	139	1,000	503	1,670
Natal.....	20	120	467	592	1,199
V.Folha Murcha[5]	-	31	393	143	567
Subtotal.....	**205**	**4,210**	**12,034**	**3,494**	**19,943**
Percentage.....	**1.03**	**21.11**	**60.34**	**17.52**	**100.00**
SJO[6]					
Hamlin.....	171	1,005	2,286	695	4,157
Westin.....	-	10	156	285	451
Rubi.....	3	290	331	281	905
V.Americana[3].....	6	1,029	907	85	2,027
V.Argentina[4].....	-	-	-	481	481
Seleta.....	-	-	-	-	-
Pineapple.....	-	33	89	51	173
Pera Rio	731	745	2,231	1,934	5,641
João Nunes.....	-	-	-	-	-
Valencia.....	469	1,829	2,135	811	5,244
Natal.....	580	244	860	2,080	3,764
V.Folha Murcha[5]	37	183	687	326	1,233
Subtotal.....	**1,997**	**5,368**	**9,682**	**7,029**	**24,076**
Percentage.....	**8.29**	**22.30**	**40.21**	**29.20**	**100.00**
TOTAL.....	**2,202**	**9,578**	**21,716**	**10,523**	**44,019**

- Represents zero.
1 Areas of young orange groves.
2 VOT – Votuporanga.
3 V.Americana – Valencia Americana.
4 V.Argentina – Valencia Argentina.
5 V.Folha Murcha – Valencia Folha Murcha.
6 SJO – São José do Rio Preto.

Table 19 – Oranges: Trees by age, region and variety – Northwest Sector [2016 inventory]

Region and variety	Ages							Total
	Non-bearing trees			Bearing trees				
	Resets[1]	1 – 2 years[2]	Total non-bearing	3 – 5 years	6 – 10 years	More than 10 years	Total bearing	
	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)
VOT[3]								
Hamlin.....	0.66	-	0.66	88.24	196.62	49.07	333.93	334.59
Westin.....	0.06	3.02	3.08	6.08	23.59	5.71	35.38	38.46
Rubi.....	0.17	-	0.17	25.91	49.56	0.73	76.20	76.37
V.Americana[4].....	0.90	-	0.90	48.19	113.27	12.94	174.40	175.30
V.Argentina[5].....	-	-	-	-	-	-	-	-
Seleta.....	-	-	-	-	-	-	-	-
Pineapple.....	0.02	-	0.02	1.60	23.97	-	25.57	25.59
Pera Rio	64.72	65.65	130.37	1,679.95	3,689.93	703.13	6,073.01	6,203.38
João Nunes.....	-	-	-	-	-	-	-	-
Valencia.....	2.00	12.12	14.12	74.16	486.16	181.55	741.87	755.99
Natal.....	13.00	10.99	23.99	29.58	228.81	200.10	458.49	482.48
V.Folha Murcha[6]	0.47	-	0.47	13.56	211.91	58.30	283.77	284.24
Subtotal.....	**82.00**	**91.78**	**173.78**	**1,967.27**	**5,023.82**	**1,211.53**	**8,202.62**	**8,376.40**
Percentage.....	**0.98**	**1.10**	**2.07**	**23.49**	**59.98**	**14.46**	**97.93**	**100.00**
SJO[7]								
Hamlin.....	17.07	139.00	156.07	479.94	1,043.18	233.98	1,757.10	1,913.17
Westin.....	0.91	-	0.91	5.13	71.58	75.71	152.42	153.33
Rubi.....	12.07	2.65	14.72	196.64	160.43	98.15	455.22	469.94
V.Americana[4].....	21.73	3.78	25.51	493.12	452.17	29.40	974.69	1,000.20
V.Argentina[5].....	-	-	-	-	-	123.94	123.94	123.94
Seleta.....	-	-	-	-	-	-	-	-
Pineapple.....	2.80	-	2.80	15.72	45.61	23.64	84.97	87.77
Pera Rio	69.75	396.50	466.25	434.83	1,066.12	735.04	2,235.99	2,702.24
João Nunes.....	-	-	-	-	-	-	-	-
Valencia.....	28.46	271.52	299.98	910.18	981.53	297.33	2,189.04	2,489.02
Natal.....	27.60	444.64	472.24	118.90	417.56	695.14	1,231.60	1,703.84
V.Folha Murcha[6]	9.37	21.75	31.12	102.74	376.92	168.05	647.71	678.83
Subtotal.....	**189.76**	**1,279.84**	**1,469.60**	**2,757.20**	**4,615.10**	**2,480.38**	**9,852.68**	**11,322.28**
Percentage.....	**1.68**	**11.30**	**12.98**	**24.35**	**40.76**	**21.91**	**87.02**	**100.00**
TOTAL.....	**271.76**	**1,371.62**	**1,643.38**	**4,724.47**	**9,638.92**	**3,691.91**	**18,055.30**	**19,698.68**

- Represents zero.
1 Non-bearing trees in mature groves.
2 Non-bearing trees in young groves.
3 VOT – Votuporanga.
4 V.Americana – Valencia Americana.
5 V.Argentina – Valencia Argentina.
6 V.Folha Murcha – Valencia Folha Murcha.
7 SJO – São José do Rio Preto.

Table 20 – Oranges: Grove area by age, region and variety – Central Sector [2016 inventory]

Region and variety	Ages				Total
	1 – 2 years[1]	3 – 5 years	6 – 10 years	More than 10 years	
	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)
MAT[2]					
Hamlin.....	16	955	2,835	1,684	5,490
Westin.....	-	45	92	116	253
Rubi.....	-	223	516	17	756
V.Americana[3].....	-	220	1,550	712	2,482
V.Argentina[4].....	-	26	154	1,842	2,022
Seleta.....	-	-	-	-	-
Pineapple.....	-	513	-	-	513
Pera Rio	1,135	3,397	3,882	4,030	12,444
João Nunes.....	-	-	-	-	-
Valencia.....	176	2,832	3,692	4,771	11,471
Natal.....	125	388	874	2,810	4,197
V.Folha Murcha[5]	196	550	522	345	1,613
Subtotal.....	**1,648**	**9,149**	**14,117**	**16,327**	**41,241**
Percentage.....	**4.00**	**22.18**	**34.23**	**39.59**	**100.00**
DUA[6]					
Hamlin.....	81	654	3,203	2,775	6,713
Westin.....	-	19	151	160	330
Rubi.....	1	352	483	58	894
V.Americana[3].....	-	572	1,116	315	2,003
V.Argentina[4].....	-	-	-	-	-
Seleta.....	4	-	49	7	60
Pineapple.....	-	-	40	39	79
Pera Rio	864	3,332	7,995	8,062	20,253
João Nunes.....	-	-	-	-	-
Valencia.....	567	1,633	5,406	7,628	15,234
Natal.....	61	1,079	1,716	3,253	6,109
V.Folha Murcha[5]	168	353	872	927	2,320
Subtotal.....	**1,746**	**7,994**	**21,031**	**23,224**	**53,995**
Percentage.....	**3.23**	**14.81**	**38.95**	**43.01**	**100.00**
BRO[7]					
Hamlin.....	-	370	1,120	1,428	2,918
Westin.....	10	35	6	190	241
Rubi.....	-	-	31	45	76
V.Americana[3].....	-	19	100	132	251
V.Argentina[4].....	-	-	-	52	52
Seleta.....	-	-	-	-	-
Pineapple.....	48	104	-	-	152
Pera Rio	641	1,087	1,443	2,354	5,525
João Nunes.....	-	-	-	-	-
Valencia.....	96	612	1,583	5,709	8,000
Natal.....	218	57	720	1,125	2,120
V.Folha Murcha[5]	18	111	212	387	728
Subtotal.....	**1,031**	**2,395**	**5,215**	**11,422**	**20,063**
Percentage.....	**5.14**	**11.94**	**25.99**	**56.93**	**100.00**
TOTAL.....	**4,425**	**19,538**	**40,363**	**50,973**	**115,299**

- Represents zero.
1 Areas of young orange groves.
2 MAT – Matão.
3 V.Americana – Valencia Americana.
4 V.Argentina – Valencia Argentina.
5 V.Folha Murcha – Valencia Folha Murcha.
6 DUA – Duartina.
7 BRO – Brotas.

Table 21 – Oranges: Trees by age, region and variety – Central Sector [2016 inventory]

Region and variety	Ages							Total
	Non-bearing trees			Bearing trees				
	Resets[1]	1 – 2 years[2]	Total non-bearing	3 – 5 years	6 – 10 years	More than 10 years	Total bearing	
	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)
MAT[3]								
Hamlin.....	69.99	8.95	78.94	562.85	1,132.72	542.32	2,237.89	2,316.83
Westin.....	3.97	-	3.97	20.63	34.99	39.24	94.86	98.83
Rubi.....	3.97	-	3.97	127.54	241.58	6.51	375.63	379.60
V.Americana[4].....	35.22	-	35.22	122.02	797.28	224.36	1,143.66	1,178.88
V.Argentina[5].....	1.10	-	1.10	15.60	76.93	419.84	512.37	513.47
Seleta.....	-	-	-	-	-	-	-	-
Pineapple.....	2.76	-	2.76	301.72	-	-	301.72	304.48
Pera Rio	300.45	820.73	1,121.18	2,103.29	2,028.50	1,365.32	5,497.11	6,618.29
João Nunes.....	-	-	-	-	-	-	-	-
Valencia.....	120.83	115.33	236.16	1,765.87	1,648.07	1,601.19	5,015.13	5,251.29
Natal.....	20.07	85.24	105.31	191.97	339.83	792.66	1,324.46	1,429.77
V.Folha Murcha[6]	10.50	127.07	137.57	368.90	288.83	125.54	783.27	920.84
Subtotal.....	**568.86**	**1,157.32**	**1,726.18**	**5,580.39**	**6,588.73**	**5,116.98**	**17,286.10**	**19,012.28**
Percentage.....	**2.99**	**6.09**	**9.08**	**29.35**	**34.66**	**26.91**	**90.92**	**100.00**
DUA[7]								
Hamlin.....	159.69	52.07	211.76	356.06	1,462.97	974.71	2,793.74	3,005.50
Westin.....	2.36	-	2.36	9.83	70.01	54.14	133.98	136.34
Rubi.....	8.37	0.31	8.68	196.23	250.59	20.41	467.23	475.91
V.Americana[4].....	31.98	-	31.98	345.10	537.38	102.41	984.89	1,016.87
V.Argentina[5].....	-	-	-	-	-	-	-	-
Seleta.....	1.32	2.68	4.00	-	28.75	2.36	31.11	35.11
Pineapple.....	0.94	-	0.94	-	19.92	12.89	32.81	33.75
Pera Rio	252.90	575.31	828.21	1,989.39	4,002.56	3,401.12	9,393.07	10,221.28
João Nunes.....	-	-	-	-	-	-	-	-
Valencia.....	275.66	367.78	643.44	907.88	2,614.18	2,766.39	6,288.45	6,931.89
Natal.....	118.77	42.83	161.60	663.57	765.57	1,179.30	2,608.44	2,770.04
V.Folha Murcha[6]	44.17	116.58	160.75	200.28	471.05	412.90	1,084.23	1,244.98
Subtotal.....	**896.16**	**1,157.56**	**2,053.72**	**4,668.34**	**10,222.98**	**8,926.63**	**23,817.95**	**25,871.67**
Percentage.....	**3.46**	**4.47**	**7.94**	**18.04**	**39.51**	**34.50**	**92.06**	**100.00**
BRO[8]								
Hamlin.....	64.15	-	64.15	178.92	512.91	522.10	1,213.93	1,278.08
Westin.....	0.73	7.57	8.30	24.64	2.42	72.79	99.85	108.15
Rubi.....	1.28	-	1.28	-	15.24	15.54	30.78	32.06
V.Americana[4].....	5.25	-	5.25	9.65	55.61	45.87	111.13	116.38
V.Argentina[5].....	0.83	-	0.83	-	-	26.85	26.85	27.68
Seleta.....	-	-	-	-	-	-	-	-
Pineapple.....	0.08	32.80	32.88	70.02	-	-	70.02	102.90
Pera Rio	69.17	428.62	497.79	610.60	761.21	1,001.46	2,373.27	2,871.06
João Nunes.....	-	-	-	-	-	-	-	-
Valencia.....	45.11	62.96	108.07	390.72	763.19	2,246.35	3,400.26	3,508.33
Natal.....	62.20	150.81	213.01	27.79	280.34	406.02	714.15	927.16
V.Folha Murcha[6]	3.87	14.22	18.09	73.66	109.44	160.39	343.49	361.58
Subtotal.....	**252.67**	**696.98**	**949.65**	**1,386.00**	**2,500.36**	**4,497.37**	**8,383.73**	**9,333.38**
Percentage.....	**2.71**	**7.47**	**10.17**	**14.85**	**26.79**	**48.19**	**89.83**	**100.00**
TOTAL.....	**1,717.69**	**3,011.86**	**4,729.55**	**11,634.73**	**19,312.07**	**18,540.98**	**49,487.78**	**54,217.33**

- Represents zero.
1 Non-bearing trees in mature groves.
2 Non-bearing trees in young groves.
3 MAT – Matão.
4 V.Americana – Valencia Americana.
5 V.Argentina – Valencia Argentina.
6 V.Folha Murcha – Valencia Folha Murcha.
7 DUA – Duartina.
8 BRO – Brotas.

Table 22 – Oranges: Grove area by age, region and variety – South Sector [2016 inventory]

Region and variety	Ages				Total
	1 – 2 years[1]	3 – 5 years	6 – 10 years	More than 10 years	
	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)
PFE[2]					
Hamlin.....	496	306	1,353	1,521	3,676
Westin.....	233	173	620	300	1,326
Rubi.....	152	168	234	172	726
V.Americana[3].....	-	64	252	346	662
V.Argentina[4].....	-	-	18	190	208
Seleta.....	-	-	12	-	12
Pineapple.....	-	1	8	-	9
Pera Rio	2,054	2,513	3,668	5,596	13,831
João Nunes.....	-	-	-	-	-
Valencia.....	517	1,378	3,439	8,333	13,667
Natal.....	710	588	720	2,610	4,628
V.Folha Murcha[5]	347	151	478	866	1,842
Subtotal.....	**4,509**	**5,342**	**10,802**	**19,934**	**40,587**
Percentage.....	**11.11**	**13.16**	**26.61**	**49.11**	**100.00**
LIM[6]					
Hamlin.....	23	307	1,353	2,698	4,381
Westin.....	12	280	950	402	1,644
Rubi.....	3	180	105	90	378
V.Americana[3].....	1	34	90	56	181
V.Argentina[4].....	-	-	-	162	162
Seleta.....	-	3	3	58	64
Pineapple.....	-	-	9	9	18
Pera Rio	558	2,410	5,635	6,076	14,679
João Nunes.....	-	-	-	-	-
Valencia.....	440	852	4,327	9,973	15,592
Natal.....	661	409	871	1,806	3,747
V.Folha Murcha[5]	101	309	789	1,203	2,402
Subtotal.....	**1,799**	**4,784**	**14,132**	**22,533**	**43,248**
Percentage.....	**4.16**	**11.06**	**32.68**	**52.10**	**100.00**
TOTAL.....	**6,308**	**10,126**	**24,934**	**42,467**	**83,835**

- Represents zero.
1 Areas of young orange groves.
2 PFE – Porto Ferreira.
3 V.Americana – Valencia Americana.
4 V.Argentina – Valencia Argentina.
5 V.Folha Murcha – Valencia Folha Murcha.
6 LIM – Limeira.

Table 23 – Oranges: Trees by age, region and variety – South Sector [2016 inventory]

Region and variety	Ages							Total
	Non-bearing trees			Bearing trees				
	Resets[1]	1 – 2 years[2]	Total non-bearing	3 – 5 years	6 – 10 years	More than 10 years	Total bearing	
	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)
PFE[3]								
Hamlin.....	105.01	390.96	495.97	201.03	625.49	539.83	1,366.35	1,862.32
Westin.....	31.12	181.61	212.73	131.54	293.74	112.93	538.21	750.94
Rubi.....	15.85	95.86	111.71	119.26	135.96	53.26	308.48	420.19
V.Americana[4].....	17.46	-	17.46	38.37	122.58	122.49	283.44	300.90
V.Argentina[5].....	1.78	-	1.78	-	13.01	52.45	65.46	67.24
Seleta.....	0.25	-	0.25	0.11	6.00	-	6.11	6.36
Pineapple.....	0.22	-	0.22	0.71	4.27	-	4.98	5.20
Pera Rio	251.14	1,380.28	1,631.42	1,509.23	1,754.50	2,142.70	5,406.43	7,037.85
João Nunes.....	-	-	-	-	-	-	-	-
Valencia.....	205.57	357.59	563.16	879.64	1,646.01	2,973.01	5,498.66	6,061.82
Natal.....	63.04	462.09	525.13	342.80	306.29	915.16	1,564.25	2,089.38
V.Folha Murcha[6]	25.78	241.46	267.24	105.10	245.89	314.22	665.21	932.45
Subtotal.....	**717.22**	**3,109.85**	**3,827.07**	**3,327.79**	**5,153.74**	**7,226.05**	**15,707.58**	**19,534.65**
Percentage.....	**3.67**	**15.92**	**19.59**	**17.04**	**26.38**	**36.99**	**80.41**	**100.00**
LIM[7]								
Hamlin.....	64.74	11.22	75.96	154.82	643.29	1,089.00	1,887.11	1,963.07
Westin.....	26.28	6.23	32.51	132.72	418.70	158.94	710.36	742.87
Rubi.....	11.75	1.18	12.93	110.31	50.96	37.81	199.08	212.01
V.Americana[4].....	1.15	0.42	1.57	18.37	49.49	21.73	89.59	91.16
V.Argentina[5].....	1.96	-	1.96	-	-	64.58	64.58	66.54
Seleta.....	1.57	-	1.57	1.35	2.13	21.04	24.52	26.09
Pineapple.....	0.06	-	0.06	-	4.64	3.18	7.82	7.88
Pera Rio	186.10	357.57	543.67	1,349.77	2,941.33	2,375.04	6,666.14	7,209.81
João Nunes.....	-	-	-	-	-	-	-	-
Valencia.....	158.88	222.11	380.99	464.08	1,872.32	3,729.19	6,065.59	6,446.58
Natal.....	61.83	346.86	408.69	220.15	420.28	690.02	1,330.45	1,739.14
V.Folha Murcha[6]	27.44	56.23	83.67	165.45	334.68	480.58	980.71	1,064.38
Subtotal.....	**541.76**	**1,001.82**	**1,543.58**	**2,617.02**	**6,737.82**	**8,671.11**	**18,025.95**	**19,569.53**
Percentage.....	**2.77**	**5.12**	**7.89**	**13.37**	**34.43**	**44.31**	**92.11**	**100.00**
TOTAL.....	**1,258.98**	**4,111.67**	**5,370.65**	**5,944.81**	**11,891.56**	**15,897.16**	**33,733.53**	**39,104.18**

- Represents zero.
1 Non-bearing trees in mature groves.
2 Non-bearing trees in young groves.
3 PFE – Porto Ferreira.
4 V.Americana – Valencia Americana.
5 V.Argentina – Valencia Argentina.
6 V.Folha Murcha – Valencia Folha Murcha.
7 LIM – Limeira.

Table 24 – Oranges: Grove area by age, region and variety – Southwest Sector [2016 inventory]

Region and variety	Ages				Total
	1 – 2 years[1]	3 – 5 years	6 – 10 years	More than 10 years	
	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)
AVA[2]					
Hamlin.....	82	176	3,297	3,300	6,855
Westin.....	8	64	445	409	926
Rubi.....	41	198	1,085	398	1,722
V.Americana[3].....	11	195	357	263	826
V.Argentina[4].....	-	-	-	677	677
Seleta.....	-	-	-	23	23
Pineapple.....	-	-	51	61	112
Pera Rio	750	942	6,971	7,142	15,805
João Nunes.....	-	-	-	-	-
Valencia.....	138	854	7,559	10,001	18,552
Natal.....	200	474	3,364	4,491	8,529
V.Folha Murcha[5]	47	385	538	613	1,583
Subtotal.....	**1,277**	**3,288**	**23,667**	**27,378**	**55,610**
Percentage.....	**2.30**	**5.91**	**42.56**	**49.23**	**100.00**
ITG[6]					
Hamlin.....	-	185	384	784	1,353
Westin.....	-	23	67	58	148
Rubi.....	58	101	120	53	332
V.Americana[3].....	91	68	95	38	292
V.Argentina[4].....	-	-	13	-	13
Seleta.....	-	-	-	-	-
Pineapple.....	7	347	42	17	413
Pera Rio	208	966	1,532	3,000	5,706
João Nunes.....	-	-	-	-	-
Valencia.....	88	590	2,046	1,574	4,298
Natal.....	18	267	1,399	2,140	3,824
V.Folha Murcha[5]	-	215	414	184	813
Subtotal.....	**470**	**2,762**	**6,112**	**7,848**	**17,192**
Percentage.....	**2.73**	**16.07**	**35.55**	**45.65**	**100.00**
TOTAL.....	**1,747**	**6,050**	**29,779**	**35,226**	**72,802**

- Represents zero.
[1] Areas of young orange groves.
[2] AVA – Avaré.
[3] V.Americana – Valencia Americana.
[4] V.Argentina – Valencia Argentina.
[5] V.Folha Murcha – Valencia Folha Murcha.
[6] ITG – Itapetininga.

Table 25 – Oranges: Trees by age, region and variety – Southwest Sector [2016 inventory]

Region and variety	Ages							Total
	Non-bearing trees			Bearing trees				
	Resets[1]	1 – 2 years[2]	Total non-bearing	3 – 5 years	6 – 10 years	More than 10 years	Total bearing	
	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)
AVA[3]								
Hamlin.....	90.48	46.49	136.97	112.53	1,568.64	1,314.39	2,995.56	3,132.53
Westin.....	7.00	5.98	12.98	36.37	216.22	155.72	408.31	421.29
Rubi.....	15.92	36.03	51.95	127.54	522.03	142.77	792.34	844.29
V.Americana[4].....	30.52	9.28	39.80	110.78	155.02	124.01	389.81	429.61
V.Argentina[5].....	2.73	-	2.73	-	-	243.90	243.90	246.63
Seleta.....	0.03	-	0.03	-	-	8.43	8.43	8.46
Pineapple.....	0.76	-	0.76	-	26.58	24.41	50.99	51.75
Pera Rio	169.84	512.61	682.45	570.29	3,812.91	3,139.59	7,522.79	8,205.24
João Nunes.....	-	-	-	-	-	-	-	-
Valencia.....	257.10	93.30	350.40	555.95	4,065.26	4,151.99	8,773.20	9,123.60
Natal.....	70.07	140.96	211.03	284.12	1,757.45	1,986.52	4,028.09	4,239.12
V.Folha Murcha[6]	28.99	48.83	77.82	262.67	304.56	255.57	822.80	900.62
Subtotal.....	**673.44**	**893.48**	**1,566.92**	**2,060.25**	**12,428.67**	**11,547.3**	**26,036.22**	**27,603.14**
Percentage.....	**93.63**	**72.76**	**80.47**	**53.13**	**77.97**	**77.77**	**75.10**	**75.39**
ITG[7]								
Hamlin.....	0.96	-	0.96	109.25	195.06	322.84	627.15	628.11
Westin.....	0.18	-	0.18	13.68	31.49	25.71	70.88	71.06
Rubi.....	0.63	41.56	42.19	63.39	59.91	24.76	148.06	190.25
V.Americana[4].....	2.98	64.50	67.48	39.64	46.25	16.51	102.40	169.88
V.Argentina[5].....	0.16	-	0.16	-	6.52	-	6.52	6.68
Seleta.....	-	-	-	-	-	-	-	-
Pineapple.....	1.01	4.50	5.51	248.05	30.44	4.55	283.04	288.55
Pera Rio	17.81	147.85	165.66	649.79	926.84	1,099.85	2,676.48	2,842.14
João Nunes.....	-	-	-	-	-	-	-	-
Valencia.....	9.47	65.24	74.71	406.16	1,180.36	829.92	2,416.44	2,491.15
Natal.....	10.85	10.77	21.62	147.47	794.03	900.93	1,842.43	1,864.05
V.Folha Murcha[6]	1.76	-	1.76	140.11	241.65	75.59	457.35	459.11
Subtotal.....	**45.81**	**334.42**	**380.23**	**1,817.54**	**3,512.55**	**3,300.66**	**8,630.75**	**9,010.98**
Percentage.....	**6.37**	**27.24**	**19.53**	**46.87**	**22.03**	**22.23**	**24.90**	**24.61**
TOTAL.....	**719.25**	**1,227.90**	**1,947.15**	**3,877.79**	**15,941.22**	**14,847.96**	**34,666.97**	**36,614.12**

- Represents zero.
1 Non-bearing trees in mature groves.
2 Non-bearing trees in young groves.
3 AVA – Avaré.
4 V.Americana – Valencia Americana.
5 V.Argentina – Valencia Argentina.
6 V.Folha Murcha – Valencia Folha Murcha.
7 ITG – Itapetininga.

Table 26 – Oranges: Grove areas by sector and variety [2016 inventory]

Variety	Sector					Total	Group percentage	Total percentage
	North	Northwest	Central	South	Southwest			
	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)	(%)	(%)
EARLY SEASON								
Hamlin.....	15,567	5,034	15,121	8,057	8,208	51,987	61.20	12.87
Westin.....	1,565	578	824	2,970	1,074	7,011	8.25	1.74
Rubi.....	1,484	1,064	1,726	1,104	2,054	7,432	8.75	1.84
Valencia Americana.	3,244	2,436	4,736	843	1,118	12,377	14.57	3.06
Valencia Argentina...	540	481	2,074	370	690	4,155	4.89	1.03
Seleta.....	1	-	60	76	23	160	0.19	0.04
Pineapple.....	267	264	744	27	525	1,827	2.15	0.45
Subtotal.....	**22,668**	**9,857**	**25,285**	**13,447**	**13,692**	**84,949**	**100.00**	**21.03**
MID-SEASON								
Pera Rio	23,676	20,485	38,222	28,510	21,511	132,404	99.99	32.78
João Nunes.....	9	-	-	-	-	9	0.01	0.00
Subtotal.....	**23,685**	**20,485**	**38,222**	**28,510**	**21,511**	**132,413**	**100.00**	**32.79**
LATE SEASON								
Valencia.....	29,092	6,914	34,705	29,259	22,850	122,820	65.85	30.41
Natal.....	9,399	4,963	12,426	8,375	12,353	47,516	25.48	11.77
V.Folha Murcha[1].....	3,064	1,800	4,661	4,244	2,396	16,165	8.67	4.00
Subtotal.....	**41,555**	**13,677**	**51,792**	**41,878**	**37,599**	**186,501**	**100.00**	**46.18**
TOTAL.....	**87,908**	**44,019**	**115,299**	**83,835**	**72,802**	**403,863**	**(X)**	**100.00**
PERCENTAGE.....	**21.77**	**10.90**	**28.55**	**20.76**	**18.03**	**100.00**	**(X)**	**(X)**

- Represents zero.
(X) Not applicable.
[1] V.Folha Murcha – Valencia Folha Murcha.

Table 27 – Oranges: Trees by sector and variety [2016 inventory]

Variety	Sector					Total	Group percentage	Total percentage
	North	Northwest	Central	South	Southwest			
	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(%)	(%)
EARLY SEASON								
Hamlin.....	6,883.73	2,247.76	6,600.41	3,825.39	3,760.64	23,317.93	59.69	12.14
Westin.....	658.18	191.79	343.32	1,493.81	492.35	3,179.45	8.14	1.66
Rubi.....	833.51	546.31	887.57	632.20	1,034.54	3,934.13	10.07	2.05
Valencia Americana.	1,769.50	1,175.50	2,312.13	392.06	599.49	6,248.68	16.00	3.25
Valencia Argentina...	212.14	123.94	541.15	133.78	253.31	1,264.32	3.24	0.66
Seleta.....	0.58	-	35.11	32.45	8.46	76.60	0.20	0.04
Pineapple.....	134.36	113.36	441.13	13.08	340.30	1,042.23	2.67	0.54
Subtotal.....	**10,492.00**	**4,398.66**	**11,160.82**	**6,522.77**	**6,489.09**	**39,063.34**	**100.00**	**20.34**
MID-SEASON								
Pera Rio	12,701.06	8,905.62	19,710.63	14,247.66	11,047.38	66,612.35	99.99	34.69
João Nunes.....	5.53	-	-	-	-	5.53	0.01	-
Subtotal.....	**12,706.59**	**8,905.62**	**19,710.63**	**14,247.66**	**11,047.38**	**66,617.88**	**100.00**	**34.69**
TARDIAS								
Valencia.....	13,518.79	3,245.01	15,691.51	12,508.40	11,614.75	56,578.46	65.54	29.47
Natal.....	4,014.06	2,186.32	5,126.97	3,828.52	6,103.17	21,259.04	24.62	11.07
V.Folha Murcha[1].....	1,646.93	963.07	2,527.40	1,996.83	1,359.73	8,493.96	9.84	4.42
Subtotal.....	**19,179.78**	**6,394.40**	**23,345.88**	**18,333.75**	**19,077.65**	**86,331.46**	**100.00**	**44.96**
TOTAL.....	**42,378.37**	**19,698.68**	**54,217.33**	**39,104.18**	**36,614.12**	**192,012.68**	**(X)**	**100.00**
PERCENTAGE.....	**22.07**	**10.26**	**28.24**	**20.37**	**19.07**	**100.00**	**(X)**	**(X)**

- Represents zero.
(X) Not applicable.
[1] V.Folha Murcha – Valencia Folha Murcha.

Table 28 – Oranges: Grove areas by planting year [2015 and 2016 inventories and changes observed]

Planting year[1]	2015 Inventory[2]	2016 Inventory[2]	Loss of groves[3]: changes between the 2025 and 2016 inventories observed in each planting year	
	(hectares)	(hectares)	(hectares)	(%)
1979 or previous years	1,591	1,525	-66	-4.15
1980	177	149	-28	-15.82
1981	131	117	-14	-10.69
1982	191	159	-32	-16.75
1983	547	494	-53	-9.69
1984	264	245	-19	-7.20
1985	2,395	2,075	-320	-13.36
1986	2,325	1,718	-607	-26.11
1987	1,542	1,422	-120	-7.78
1988	1,558	1,368	-190	-12.20
1989	3,093	2,381	-712	-23.02
1990	5,337	4,440	-897	-16.81
1991	4,585	4,038	-547	-11.93
1992	3,750	3,340	-410	-10.93
1993	4,888	4,308	-580	-11.87
1994	4,436	3,796	-640	-14.43
1995	4,652	3,991	-661	-14.21
1996	4,069	3,487	-582	-14.30
1997	5,766	5,328	-438	-7.60
1998	8,723	7,614	-1,109	-12.71
1999	9,701	8,289	-1,412	-14.56
2000	15,460	13,538	-1,922	-12.43
2001	11,844	10,833	-1,011	-8.54
2002	18,586	16,056	-2,530	-13.61
2003	22,693	20,447	-2,246	-9.90
2004	28,064	25,087	-2,977	-10.61
2005	29,891	27,136	-2,755	-9.22
2006	32,997	30,991	-2,006	-6.08
2007	37,050	34,870	-2,180	-5.88
2008	40,333	38,229	-2,104	-5.22
2009	28,210	26,570	-1,640	-5.81
2010	22,840	21,045	-1,795	-7.86
2011	22,498	21,783	-715	-3.18
2012	23,305	22,536	-769	-3.30
2013[4]	(X)	17,294	17,294	-2.70
Mature groves	**403,492**	**386,699**	**-16,793**	**-4.16**
2013[4]	17,774	(X)	(X)	(X)
2014	9,356	8,599	-757	-8.09
2015	(X)	8,565	8,565	(X)
Young groves	**27,130**	**17,164**	**-9,966**	**-36.73**
Total	**430,622**	**403,863**	**-26,759**	**-6.21**

(X) Not applicable.

[1] The information on planting year refers to the groves remaining at the time of data collection for this publication; in other words, it does not portray all the groves formed in these years, as a result of eradication and renewal over time.

[2] Snapshot of groves in March of the year mentioned.

[3] Estimate of removed and abandoned groves from April/2015 to March/2016.

[4] The groves implemented in 2013 belonged to the group of young groves in the 2015 inventory and began to be part of the mature groves in this 2016 inventory.

Table 29 – Oranges: Trees by planting year [2015 and 2016 inventories and changes observed]

Planting year[1]	2015 Inventory[2]	2016 Inventory[2]	Loss of groves[3]: changes between the 2025 and 2016 inventories observed in each planting year	
	(1,000 trees)	(1,000 trees)	(1,000 trees)	(%)
1979 or previous years	450.71	452.70	1.99	0.44
1980	59.16	50.65	-8.51	-14.38
1981	42.21	40.23	-1.98	-4.69
1982	67.16	57.64	-9.52	-14.18
1983	162.49	152.58	-9.91	-6.10
1984	78.24	76.05	-2.19	-2.80
1985	573.87	536.10	-37.77	-6.58
1986	663.27	543.32	-119.95	-18.08
1987	486.71	460.84	-25.87	-5.32
1988	474.71	453.20	-21.51	-4.53
1989	960.86	811.41	-149.45	-15.55
1990	1,682.88	1,522.09	-160.79	-9.55
1991	1,425.69	1,301.13	-124.56	-8.74
1992	1,235.23	1,162.14	-73.09	-5.92
1993	1,567.64	1,442.68	-124.96	-7.97
1994	1,485.40	1,329.29	-156.11	-10.51
1995	1,721.15	1,540.81	-180.34	-10.48
1996	1,417.44	1,265.16	-152.28	-10.74
1997	2,078.84	1,962.11	-116.73	-5.62
1998	3,169.90	2,881.00	-288.90	-9.11
1999	3,367.30	3,069.42	-297.88	-8.85
2000	5,273.02	4,949.89	-323.13	-6.13
2001	4,311.43	4,132.59	-178.84	-4.15
2002	6,411.57	6,132.44	-279.13	-4.35
2003	8,391.43	7,922.77	-468.66	-5.58
2004	10,746.29	10,039.69	-706.60	-6.58
2005	12,925.17	11,690.86	-1,234.31	-9.55
2006	14,575.50	13,876.05	-699.45	-4.80
2007	17,392.03	16,666.29	-725.74	-4.17
2008	19,493.31	18,897.54	-595.77	-3.06
2009	13,734.37	13,171.86	-562.51	-4.10
2010	12,195.31	11,223.29	-972.02	-7.97
2011	12,458.29	12,240.70	-217.59	-1.75
2012	13,047.36	12,827.19	-220.17	-1.69
2013[4]	(X)	10,666.05	-488.44	-4.38
Bearing trees	**174,125.94**	**175,547.76**	**1,421.82**	**0.82**
Resets[5]	6,595.38	5,204.49	-1,390.89	-21.09
2013[4]	11,154.49	(X)	(X)	(X)
2014	5,983.45	5,620.29	-363.16	-6.07
2015	(X)	5,640.14	5,640.14	(X)
Non-bearing trees	**23,733.32**	**16,464.92**	**-7,268.40**	**-30.63**
Total	**197,859.26**	**192,012.68**	**-5,846.58**	**-2.95**

(X) Not applicable.
- Represents zero.
1 The information on planting year refers to the groves remaining at the time of data collection for this publication; in other words, it does not portray all the groves formed in these years, as a result of eradication and renewal over time.
2 Snapshot of groves in March of the year mentioned.
3 Estimate of removed and abandoned groves from April/2015 to March/2016.
4 The groves implemented in 2013 belonged to the group of young groves in the 2015 inventory and began to be part of the mature groves in this 2016 inventory.
5 Non-bearing trees in mature groves.

Table 30 – Oranges: Grove areas by sector and planting year [2016 inventory]

Planting year[1]	Sector					Total
	North	Northwest	Central	South	Southwest	
	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)
1979 or previous years	223	85	213	971	33	1,525
1980	24	9	-	116	-	149
1981	19	7	-	31	60	117
1982	20	6	7	110	16	159
1983	292	7	10	185	-	494
1984	117	10	11	70	37	245
1985	406	255	887	493	34	2,075
1986	221	325	158	971	43	1,718
1987	176	41	149	686	370	1,422
1988	135	261	570	290	112	1,368
1989	111	395	504	882	489	2,381
1990	488	294	1,222	1,561	875	4,440
1991	85	165	601	1,291	1,896	4,038
1992	418	46	276	1,053	1,547	3,340
1993	290	118	1,213	830	1,857	4,308
1994	224	363	673	1,347	1,189	3,796
1995	428	215	770	1,867	711	3,991
1996	344	77	1,299	1,162	605	3,487
1997	710	21	2,051	1,214	1,332	5,328
1998	1,201	235	3,022	2,343	813	7,614
1999	2,805	109	2,374	2,221	780	8,289
2000	3,628	716	3,959	3,768	1,467	13,538
2001	2,776	1,358	2,815	2,808	1,076	10,833
2002	2,303	706	6,768	3,512	2,767	16,056
2003	4,889	1,284	6,521	3,525	4,228	20,447
2004	5,884	2,171	6,389	4,694	5,949	25,087
2005	5,975	1,244	8,511	4,466	6,940	27,136
2006	7,585	3,121	7,944	5,312	7,029	30,991
2007	7,691	3,515	9,871	6,196	7,597	34,870
2008	7,258	6,751	10,789	4,989	8,442	38,229
2009	7,010	4,096	6,993	4,022	4,449	26,570
2010	5,369	4,233	4,766	4,415	2,262	21,045
2011	4,947	4,464	6,143	3,930	2,299	21,783
2012	6,064	3,448	6,552	4,125	2,347	22,536
2013	5,310	1,666	6,843	2,071	1,404	17,294
Mature groves	**85,426**	**41,817**	**110,874**	**77,527**	**71,055**	**386,699**
2014	1,598	888	3,197	1,879	1,037	8,599
2015	884	1,314	1,228	4,429	710	8,565
Young groves	**2,482**	**2,202**	**4,425**	**6,308**	**1,747**	**17,164**
Total	**87,908**	**44,019**	**115,299**	**83,835**	**72,802**	**403,863**
Percentage	**21.77**	**10.90**	**28.55**	**20.76**	**18.03**	**100.00**

- Represents zero.

[1] The information on planting year refers to the groves remaining at the time of data collection for this publication; in other words, it does not portray all the groves formed in these years, as a result of eradication and renewal over time.

Table 31 – Oranges: Trees by sector and planting year [2016 inventory]

Planting year[1]	Sector					Total
	North	Northwest	Central	South	Southwest	
	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)
1979 or previous years	78.76	25.50	66.59	270.37	11.48	452.70
1980	9.29	4.30	-	37.06	-	50.65
1981	5.75	2.00	-	7.59	24.89	40.23
1982	6.92	2.18	1.31	41.06	6.17	57.64
1983	80.63	1.91	4.06	65.98	-	152.58
1984	29.45	5.10	3.65	23.33	14.52	76.05
1985	104.51	77.77	201.86	137.86	14.10	536.10
1986	68.52	105.10	47.11	308.53	14.06	543.32
1987	39.84	14.86	45.79	198.62	161.73	460.84
1988	36.55	83.22	195.40	98.16	39.87	453.20
1989	31.80	127.46	183.80	308.05	160.30	811.41
1990	159.54	103.61	436.39	522.60	299.95	1,522.09
1991	26.86	48.97	207.05	427.54	590.71	1,301.13
1992	157.58	14.35	92.57	364.65	532.99	1,162.14
1993	86.69	41.18	305.48	298.07	711.26	1,442.68
1994	80.33	127.13	212.84	476.95	432.04	1,329.29
1995	168.03	78.44	296.49	684.20	313.65	1,540.81
1996	126.40	24.66	452.93	423.72	237.45	1,265.16
1997	295.55	9.34	668.89	458.35	529.98	1,962.11
1998	462.50	93.14	1,117.55	891.65	316.16	2,881.00
1999	1,050.14	39.82	876.13	793.96	309.37	3,069.42
2000	1,299.29	248.56	1,379.50	1,431.95	590.59	4,949.89
2001	1,073.54	396.79	1,026.19	1,108.85	527.22	4,132.59
2002	813.40	249.85	2,478.54	1,375.26	1,215.39	6,132.44
2003	2,010.45	488.14	2,265.79	1,412.20	1,746.19	7,922.77
2004	2,336.28	768.82	2,455.80	1,873.61	2,605.18	10,039.69
2005	2,362.18	509.71	3,519.27	1,856.99	3,442.71	11,690.86
2006	3,309.33	1,284.18	3,434.64	2,399.10	3,448.80	13,876.05
2007	3,753.57	1,408.83	4,594.55	2,810.94	4,098.40	16,666.29
2008	3,579.89	3,125.19	5,264.35	2,315.38	4,612.73	18,897.54
2009	3,595.83	1,854.62	3,392.17	1,937.43	2,391.81	13,171.86
2010	2,812.64	1,966.10	2,626.36	2,428.71	1,389.48	11,223.29
2011	2,823.54	2,183.99	3,591.55	2,199.66	1,441.96	12,240.70
2012	3,472.08	1,675.97	3,703.08	2,481.76	1,494.30	12,827.19
2013	3,256.52	864.51	4,340.10	1,263.39	941.53	10,666.05
Bearing trees	**39,604.18**	**18,055.30**	**49,487.78**	**33,733.53**	**34,666.97**	**175,547.76**
Resets[2]	1,236.81	271.76	1,717.69	1,258.98	719.25	5,204.49
2014	1,037.11	534.41	2,124.85	1,175.70	748.22	5,620.29
2015	500.27	837.21	887.01	2,935.97	479.68	5,640.14
Non-bearing trees	**2,774.19**	**1,643.38**	**4,729.55**	**5,370.65**	**1,947.15**	**16,464.92**
Total	**42,378.37**	**19,698.68**	**54,217.33**	**39,104.18**	**36,614.12**	**192,012.68**
Percentange	**22.07**	**10.26**	**28.24**	**20.37**	**19.07**	**100.00**

- Represents zero.

1 The information on planting year refers to the groves remaining at the time of data collection for this publication; in other words, it does not portray all the groves formed in these years, as a result of eradication and renewal over time.

2 Non-bearing trees in mature groves.

Table 32 – Oranges: Grove area of early season varieties by planting year [2016 inventory]

Planting year[1]	Early season varieties							Total
	Hamlin	Westin	Rubi	Valencia Americana	Valencia Argentina	Seleta	Pineapple	
	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)
1979 or previous years.....	327	-	-	-	-	26	-	353
1980.....	-	-	-	-	-	-	-	-
1981.....	19	-	-	-	-	-	-	19
1982.....	4	-	-	-	-	-	-	4
1983.....	28	-	-	-	-	-	-	28
1984.....	10	-	-	-	-	-	-	10
1985.....	228	8	95	-	-	-	-	331
1986.....	106	15	67	75	-	-	-	263
1987.....	145	-	-	-	27	-	-	172
1988.....	213	-	-	-	-	-	-	213
1989.....	52	43	-	-	-	-	-	95
1990.....	224	72	-	73	-	1	-	370
1991.....	278	59	-	42	-	-	-	379
1992.....	688	-	-	16	-	-	11	715
1993.....	831	-	-	68	769	-	61	1,729
1994.....	864	82	22	2	175	-	-	1,145
1995.....	341	74	-	23	-	3	-	441
1996.....	431	18	5	161	-	-	2	617
1997.....	346	176	7	7	465	-	33	1,034
1998.....	928	268	44	69	63	-	21	1,393
1999.....	1,486	315	47	18	256	-	-	2,122
2000.....	1,404	142	18	161	158	2	-	1,885
2001.....	701	45	51	30	473	7	24	1,331
2002.....	2,089	376	178	223	655	6	11	3,538
2003.....	3,246	307	244	263	524	23	11	4,618
2004.....	3,570	573	382	548	220	8	23	5,324
2005.....	4,466	270	185	660	158	12	53	5,804
2006.....	5,629	608	778	983	-	-	85	8,083
2007.....	6,233	720	335	1,642	145	3	31	9,109
2008.....	6,499	791	782	1,921	22	-	128	10,143
2009.....	2,908	714	841	1,380	-	25	119	5,987
2010.....	1,700	326	753	972	19	36	100	3,906
2011.....	2,019	310	1,048	1,476	22	-	247	5,122
2012.....	2,283	305	990	866	4	3	471	4,922
2013.....	773	122	263	575	-	-	322	2,055
Mature groves.....	**51,069**	**6,739**	**7,135**	**12,254**	**4,155**	**155**	**1,753**	**83,260**
2014.....	142	37	82	43	-	5	74	383
2015.....	776	235	215	80	-	-	-	1,306
Young groves.....	**918**	**272**	**297**	**123**	**-**	**5**	**74**	**1,689**
Total.....	**51,987**	**7,011**	**7,432**	**12,377**	**4,155**	**160**	**1,827**	**84,949**
Percentage.....	**61.20**	**8.25**	**8.75**	**14.57**	**4.89**	**0.19**	**2.15**	**100.00**

- Represents zero.

[1] The information on planting year refers to the groves remaining at the time of data collection for this publication; in other words, it does not portray all the groves formed in these years, as a result of eradication and renewal over time.

Table 33 – Oranges: Trees of early season varieties by planting year [2016 inventory]

Planting year[1]	Early season varieties							Total
	Hamlin	Westin	Rubi	Valencia Americana	Valencia Argentina	Seleta	Pineapple	
	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)
1979 or previous years.....	108.45	-	-	-	-	7.05	-	115.50
1980.....	-	-	-	-	-	-	-	-
1981.....	5.75	-	-	-	-	-	-	5.75
1982.....	1.81	-	-	-	-	-	-	1.81
1983.....	9.67	-	-	-	-	-	-	9.67
1984.....	4.78	-	-	-	-	-	-	4.78
1985.....	59.26	2.32	27.96	-	-	-	-	89.54
1986.....	30.44	3.00	21.40	26.00	-	-	-	80.84
1987.....	42.70	-	-	-	8.35	-	-	51.05
1988.....	66.78	-	-	-	-	-	-	66.78
1989.....	22.28	12.88	-	-	-	-	-	35.16
1990.....	75.13	24.89	-	20.06	-	1.06	-	121.14
1991.....	70.91	19.08	-	17.57	-	-	-	107.56
1992.....	253.03	-	-	3.37	-	-	5.92	262.32
1993.....	288.37	-	-	22.62	142.99	-	23.58	477.56
1994.....	292.95	24.02	7.68	0.58	46.96	-	-	372.19
1995.....	122.50	25.13	-	7.20	-	1.10	-	155.93
1996.....	136.43	6.86	1.76	42.96	-	-	1.05	189.06
1997.....	122.53	65.84	2.35	3.30	91.17	-	10.76	295.95
1998.....	315.13	96.54	15.04	23.88	24.64	-	7.35	482.58
1999.....	518.74	121.08	13.53	6.01	105.48	-	-	764.84
2000.....	503.32	54.15	8.60	61.12	33.23	0.95	-	661.37
2001.....	249.17	17.96	24.54	12.31	109.49	2.36	9.21	425.04
2002.....	782.84	151.82	67.38	72.14	244.29	2.21	4.00	1,324.68
2003.....	1,280.01	112.18	74.10	89.09	187.45	8.43	4.35	1,755.61
2004.....	1,368.49	181.76	126.44	218.91	81.61	3.29	9.65	1,990.15
2005.....	1,855.99	108.59	78.99	274.19	62.66	5.38	26.50	2,412.30
2006.....	2,347.89	247.68	364.76	477.74	-	0.30	40.68	3,479.05
2007.....	2,851.86	321.38	148.00	764.58	73.67	1.63	14.59	4,175.71
2008.....	3,033.94	353.90	392.49	957.13	9.78	-	48.21	4,795.45
2009.....	1,347.65	334.66	403.47	712.26	-	12.82	57.86	2,868.72
2010.....	841.60	177.96	414.36	533.78	13.64	22.13	57.88	2,061.35
2011.....	1,079.62	171.46	637.36	779.13	14.00	-	182.29	2,863.86
2012.....	1,257.30	181.38	613.03	466.41	1.60	1.35	277.06	2,798.13
2013.....	460.73	65.77	172.01	360.35	-	0.11	199.87	1,258.84
Bearing trees.....	**21,808.05**	**2,882.29**	**3,615.25**	**5,952.69**	**1,251.01**	**70.17**	**980.81**	**36,560.27**
Resets[2].....	829	93	100	209	13	3	12	1,260
2014.....	94	19	69	30	-	3	49	264
2015.....	587	186	149	58	-	-	-	979
Non-bearing trees.....	**1,509.88**	**297.16**	**318.88**	**295.99**	**13.31**	**6.43**	**61.42**	**2,503.07**
Total.....	**23,317.93**	**3,179.45**	**3,934.13**	**6,248.68**	**1,264.32**	**76.60**	**1,042.23**	**39,063.34**
Percentage.....	**59.69**	**8.14**	**10.07**	**16.00**	**3.24**	**0.20**	**2.67**	**100.00**

- Represents zero.

[1] The information on planting year refers to the groves remaining at the time of data collection for this publication; in other words, it does not portray all the groves formed in these years, as a result of eradication and renewal over time.

[2] Non-bearing trees in mature groves.

Table 34 – Oranges: Grove area of mid-season and late season varieties by planting year [2016 inventory]

Planting year[1]	Mid-season and late season varieties				Total
	Pera Rio[2]	Valencia	Natal	Valencia Folha Murcha	
	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)
1979 or previous years.....	234	712	226	-	1,172
1980.....	37	55	48	9	149
1981.....	10	31	57	-	98
1982.....	66	52	37	-	155
1983.....	151	85	230	-	466
1984.....	62	90	83	-	235
1985.....	428	440	876	-	1,744
1986.....	476	440	507	32	1,455
1987.....	368	286	559	37	1,250
1988.....	425	249	456	25	1,155
1989.....	866	891	454	75	2,286
1990.....	1,221	1,750	873	226	4,070
1991.....	1,352	1,099	1,163	45	3,659
1992.....	1,256	809	485	75	2,625
1993.....	979	877	585	138	2,579
1994.....	1,108	910	471	162	2,651
1995.....	1,331	1,598	425	196	3,550
1996.....	1,019	1,082	501	268	2,870
1997.....	1,241	2,379	578	96	4,294
1998.....	1,973	3,322	447	479	6,221
1999.....	2,083	3,358	401	325	6,167
2000.....	3,451	5,717	1,637	848	11,653
2001.....	2,543	4,278	2,110	571	9,502
2002.....	3,026	6,656	2,457	379	12,518
2003.....	5,879	7,393	2,327	230	15,829
2004.....	6,697	8,743	3,693	630	19,763
2005.....	7,430	8,942	4,165	795	21,332
2006.....	8,174	9,761	3,775	1,198	22,908
2007.....	10,404	10,563	3,493	1,301	25,761
2008.....	12,616	9,530	3,955	1,985	28,086
2009.....	11,289	6,369	1,649	1,276	20,583
2010.....	10,244	5,036	1,029	830	17,139
2011.....	8,802	5,704	1,353	802	16,661
2012.....	9,080	6,114	1,688	732	17,614
2013.....	8,058	4,140	1,917	1,124	15,239
Mature groves.....	**124,379**	**119,461**	**44,710**	**14,889**	**303,439**
2014.....	4,050	2,170	981	1,015	8,216
2015.....	3,984	1,189	1,825	261	7,259
Young groves.....	**8,034**	**3,359**	**2,806**	**1,276**	**15,475**
Total.....	**132,413**	**122,820**	**47,516**	**16,165**	**318,914**
Percentage.....	**41.52**	**38.51**	**14.90**	**5.07**	**100.00**

- Represents zero.

[1] The information on planting year refers to the groves remaining at the time of data collection for this publication; in other words, it does not portray all the groves formed in these years, as a result of eradication and renewal over time.

[2] The area covered by orange groves of the João Nunes variety was added to the area of the Pera Rio variety, since they both have the same maturation stage.

Table 35 – Oranges: Trees of mid-season and late season varieties by planting year [2016 inventory]

Planting year[1]	Mid-season and late season varieties				Total
	Pera Rio[2]	Valencia	Natal	Valencia Folha Murcha	
	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)
1979 or previous years.....	61.23	206.37	69.60	-	337.20
1980.....	14.92	15.76	17.90	2.07	50.65
1981.....	2.65	7.59	24.24	-	34.48
1982.....	24.77	17.97	13.09	-	55.83
1983.....	54.05	29.92	58.94	-	142.91
1984.....	18.81	22.63	29.83	-	71.27
1985.....	122.61	137.87	186.08	-	446.56
1986.....	156.57	141.70	152.28	11.93	462.48
1987.....	153.31	97.94	150.46	8.08	409.79
1988.....	143.07	84.76	150.85	7.74	386.42
1989.....	298.31	308.72	144.49	24.73	776.25
1990.....	439.31	577.24	302.42	81.98	1,400.95
1991.....	452.76	360.83	362.27	17.71	1,193.57
1992.....	417.93	290.20	165.95	25.74	899.82
1993.....	359.57	310.95	243.75	50.85	965.12
1994.....	429.51	307.54	155.29	64.76	957.10
1995.....	569.05	577.41	156.95	81.47	1,384.88
1996.....	387.13	389.46	173.94	125.57	1,076.10
1997.....	516.86	918.48	186.92	43.90	1,666.16
1998.....	742.01	1,279.96	156.87	219.58	2,398.42
1999.....	793.74	1,234.53	145.78	130.53	2,304.58
2000.....	1,304.84	2,054.86	576.02	352.80	4,288.52
2001.....	1,004.56	1,766.98	698.24	237.77	3,707.55
2002.....	1,117.83	2,579.07	963.81	147.05	4,807.76
2003.....	2,337.86	2,838.55	902.51	88.24	6,167.16
2004.....	2,813.33	3,469.78	1,507.27	259.16	8,049.54
2005.....	3,402.35	3,740.61	1,793.21	342.39	9,278.56
2006.....	3,867.97	4,343.33	1,623.55	562.15	10,397.00
2007.....	5,063.18	5,071.99	1,680.39	675.02	12,490.58
2008.....	6,291.31	4,772.31	1,978.08	1,060.39	14,102.09
2009.....	5,616.59	3,184.55	812.54	689.46	10,303.14
2010.....	5,522.40	2,650.81	532.17	456.56	9,161.94
2011.....	4,884.37	3,268.36	756.74	467.37	9,376.84
2012.....	5,250.93	3,432.36	890.31	455.46	10,029.06
2013.....	5,032.39	2,529.29	1,124.30	721.23	9,407.21
Bearing trees.....	**59,668.08**	**53,020.68**	**18,887.04**	**7,411.69**	**138,987.49**
Resets[3].....	1,683.78	1,499.13	548.75	213.09	3,944.75
2014.....	2,641.45	1,338.59	678.27	698.07	5,356.38
2015.....	2,624.57	720.06	1,144.98	171.11	4,660.72
Non-bearing trees.....	**6,949.80**	**3,557.78**	**2,372.00**	**1,082.27**	**13,961.85**
Total.....	**66,617.88**	**56,578.46**	**21,259.04**	**8,493.96**	**152,949.34**
Percentage.....	**43.56**	**36.99**	**13.90**	**5.55**	**100.00**

- Represents zero.

[1] The information on planting year refers to the groves remaining at the time of data collection for this publication; in other words, it does not portray all the groves formed in these years, as a result of eradication and renewal over time.

[2] The area covered by orange groves of the João Nunes variety was added to the area of the Pera Rio variety, since they both have the same maturation stage.

[3] Non-bearing trees in mature groves.

Table 36 – Oranges: Density[1] planting of mature and young groves by sector and region [2015 and 2016 inventories]

Sector and region	2015 inventory		2016 inventory	
	Young groves[2]	Mature groves[3]	Young groves[2]	Mature groves[3]
	(trees/hectare)	(trees/hectare)	(trees/hectare)	(trees/hectare)
NORTH				
Triângulo Mineiro	596	463	591	479
Bebedouro	655	450	623	473
Altinópolis	540	496	781	496
Average	**631**	**459**	**618**	**478**
NORTHWEST				
Votuporanga	497	411	445	419
São José do Rio Preto	588	443	639	455
Average	**540**	**426**	**621**	**438**
CENTRAL				
Matão	648	414	700	451
Duartina	611	456	663	473
Brotas	639	380	670	454
Average	**631**	**427**	**679**	**462**
SOUTH				
Porto Ferreira	662	435	688	455
Limeira	658	441	555	448
Average	**661**	**438**	**650**	**451**
SOUTHWEST				
Avaré	711	492	698	491
Itapetininga	640	503	712	518
Average	**692**	**495**	**702**	**498**
AVERAGE GENERAL	**631**	**448**	**654**	**467**

[1] Average density planting weighted per stratum area.
[2] Groves implemented in 2014 or 2015.
[3] Groves implemented in 2013 or in previous years. The calculation considers the total number of trees of the block, that is, bearing and non-bearing trees (2014 or 2015 resets).

Table 37 – Oranges: Density[1] planting of mature and young groves by variety and maturation stage [2015 and 2016 inventories]

Variety	2015 inventory		2016 inventory	
	Young groves[2]	Mature groves[3]	Young groves[2]	Mature groves[3]
	(trees/hectare)	(trees/hectare)	(trees/hectare)	(trees/hectare)
EARLY SEASON				
Hamlin	624	432	742	443
Westin	649	431	741	441
Rubi	746	510	738	521
Valencia Americana	653	480	710	503
Valencia Argentina	(NA)	300	(NA)	304
Seleta	725	447	695	464
Pineapple	545	523	664	565
Average	**637**	**440**	**735**	**454**
MID-SEASON				
Pera Rio	637	472	654	493
João Nunes	(NA)	544	(NA)	594
Average	**637**	**472**	**654**	**493**
LATE SEASON				
Valencia	622	435	611	456
Natal	607	418	649	434
Valencia Folha Murcha	652	489	675	511
Average	**624**	**435**	**636**	**455**
GENERAL AVERAGE	**631**	**448**	**654**	**467**

NA, Not Available.

1 Average density planting weighted per stratum area.

2 Groves implemented in 2014 or 2015.

3 Groves implemented in 2013 or in previous years. The calculation considers the total number of trees of the block, that is, bearing and non-bearing trees (2014 or 2015 resets).

Table 38 – Oranges: Density[1] planting of young groves by variety and region [2016 inventory]

Variety	Region												Average
	TMG[2]	BEB[3]	ALT[4]	VOT[5]	SJO[6]	MAT[7]	DUA[8]	BRO[9]	PFE[10]	LIM[11]	AVA[12]	ITG[13]	
	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)
EARLY SEASON													
Hamlin.....	(NA)	659	(NA)	(NA)	811	548	643	(NA)	786	472	582	(NA)	742
Westin.....	(NA)	(NA)	(NA)	351	(NA)	(NA)	(NA)	765	774	460	641	(NA)	741
Rubi.....	(NA)	1048	1049	(NA)	766	(NA)	465	(NA)	632	369	889	721	738
Valencia Americana..	(NA)	666	673	(NA)	581	(NA)	(NA)	(NA)	(NA)	577	880	707	710
Valencia Argentina....	(NA)	567	(NA)	(NA)	(NA)	(NA)	732	(NA)	(NA)	(NA)	(NA)	(NA)	695
Seleta.....	337	683	(NA)	(NA)	(NA)	(NA)	(NA)	685	(NA)	(NA)	(NA)	631	664
Pineapple.....	337	791	775	351	802	548	646	699	757	462	697	709	735
**Average……..... **	**598**	**622**	**792**	**441**	**542**	**721**	**666**	**664**	**672**	**635**	**685**	**710**	**654**
MID-SEASON													
Pera Rio.....	598	622	792	441	542	721	666	664	672	635	685	710	654
João Nunes.....	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
**Average……..... **	**598**	**622**	**792**	**441**	**542**	**721**	**666**	**664**	**672**	**635**	**685**	**710**	**654**
LATE SEASON													
Valencia.....	572	586	(NA)	432	577	653	648	650	689	503	660	747	611
Natal.....	583	593	(NA)	530	767	679	707	689	649	526	704	587	649
V.Folha Murcha[14].....	723	668	(NA)	(NA)	563	649	696	686	692	554	971	(NA)	675
**Average……..... **	**579**	**609**	**(NA)**	**474**	**677**	**658**	**663**	**678**	**671**	**520**	**723**	**719**	**636**
GENERAL AVERAGE	**591**	**623**	**781**	**445**	**639**	**700**	**663**	**670**	**688**	**555**	**698**	**712**	**654**

NA, Not Available.
1 Average density planting weighted per stratum area.
2 TMG – Triângulo Mineiro.
3 BEB – Bebedouro.
4 ALT – Altinópolis.
5 VOT – Votuporanga.
6 SJO – São José do Rio Preto.
7 MAT – Matão.
8 DUA – Duartina.
9 BRO – Brotas.
10 PFE – Porto Ferreira.
11 LIM – Limeira.
12 AVA – Avaré.
13 ITG – Itapetininga.
14 V.Folha Murcha – Valencia Folha Murcha.

Table 39 – Oranges: Density[1] planting of mature groves by variety and region [2016 inventory]

Variety	Region												Average
	TMG[2]	BEB[3]	ALT[4]	VOT[5]	SJO[6]	MAT[7]	DUA[8]	BRO[9]	PFE[10]	LIM[11]	AVA[12]	ITG[13]	
	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)
EARLY SEASON													
Hamlin.....	437	433	503	380	445	422	445	438	463	447	455	464	443
Westin.....	462	409	535	298	340	389	414	434	521	451	452	476	441
Rubi.....	588	532	592	479	518	503	533	419	566	568	480	539	521
Valencia Americana..	559	546	499	428	494	475	508	466	455	502	515	524	503
Valencia Argentina....	412	393	488	(NA)	258	254	(NA)	528	322	412	365	515	304
Seleta.....	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	577	(NA)	522	395	361	(NA)	464
Pineapple.....	(NA)	478	653	277	507	594	420	673	602	423	463	700	565
Average……..	**450**	**458**	**511**	**390**	**450**	**416**	**465**	**447**	**478**	**455**	**458**	**519**	**454**
MID-SEASON													
Pera Rio.....	534	536	522	418	469	513	497	500	480	485	511	490	493
João Nunes.....	594	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	594
Average……..	**534**	**536**	**522**	**418**	**469**	**513**	**497**	**500**	**480**	**485**	**511**	**490**	**493**
LATE SEASON													
Valencia.....	465	456	472	452	464	455	448	436	434	411	490	576	456
Natal.....	443	405	450	399	395	330	451	409	415	450	492	487	434
V.Folha Murcha[14].....	558	515	504	500	548	560	524	489	462	438	554	561	511
Average……..	**461**	**450**	**472**	**442**	**451**	**433**	**456**	**435**	**432**	**420**	**494**	**536**	**455**
GENERAL AVERAGE	**479**	**473**	**496**	**419**	**455**	**451**	**473**	**454**	**455**	**448**	**491**	**518**	**467**

NA, Not Available.

1 Average density planting weighted per stratum area. The calculation for groves older than 2 years considers the total number of trees of the block, that is, bearing and non-bearing trees (2014 or 2015 resets).

2 TMG – Triângulo Mineiro.

3 BEB – Bebedouro.

4 ALT – Altinópolis.

5 VOT – Votuporanga.

6 SJO – São José do Rio Preto.

7 MAT – Matão.

8 DUA – Duartina.

9 BRO – Brotas.

10 PFE – Porto Ferreira.

11 LIM – Limeira.

12 AVA – Avaré.

13 ITG – Itapetininga.

14 V.Folha Murcha – Valencia Folha Murcha.

Table 40 – Oranges: Density[1] planting of groves younger than 11 years by variety and region [2016 inventory]

Variety	Region												Average
	TMG[2]	BEB[3]	ALT[4]	VOT[5]	SJO[6]	MAT[7]	DUA[8]	BRO[9]	PFE[10]	LIM[11]	AVA[12]	ITG[13]	
	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)
EARLY SEASON													
Hamlin.....	492	489	541	405	485	454	511	504	584	497	497	535	497
Westin.....	494	480	487	311	466	404	479	687	611	465	506	503	507
Rubi.....	588	612	605	480	595	505	545	521	656	603	529	592	568
Valencia Americana…..	559	561	504	433	500	539	542	559	532	558	543	605	535
Valencia Argentina.....	(NA)	(NA)	488	(NA)	(NA)	514	(NA)	(NA)	721	(NA)	(NA)	515	532
Seleta.....	(NA)	567	(NA)	(NA)	(NA)	(NA)	619	(NA)	522	511	(NA)	(NA)	592
Pineapple.....	337	504	653	277	517	594	511	677	602	498	540	718	594
**Average…..…….....	**506**	**522**	**544**	**406**	**500**	**491**	**523**	**527**	**597**	**496**	**510**	**599**	**517**
MID-SEASON													
Pera Rio.....	571	575	569	429	527	609	555	585	581	556	577	642	553
João Nunes.....	610	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	610
**Average…..…….....	**571**	**575**	**569**	**429**	**527**	**609**	**555**	**585**	**581**	**556**	**577**	**642**	**553**
LATE SEASON													
Valencia.....	508	526	513	492	494	531	538	544	561	466	566	609	530
Natal.....	487	524	429	442	584	456	538	522	569	526	551	569	531
V.Folha Murcha[14]……..	568	566	517	531	562	622	585	579	623	478	652	608	578
**Average…..…….....	**505**	**532**	**501**	**485**	**524**	**532**	**543**	**541**	**570**	**481**	**568**	**596**	**536**
GENERAL AVERAGE	**528**	**543**	**533**	**434**	**516**	**546**	**543**	**554**	**580**	**515**	**558**	**610**	**538**

NA, Not Available.

1 Average density planting weighted per stratum area. The calculation for groves older than 2 years considers the total number of trees of the block, that is, bearing and non-bearing trees (2014 or 2015 resets).

2 TMG – Triângulo Mineiro.

3 BEB – Bebedouro.

4 ALT – Altinópolis.

5 VOT – Votuporanga.

6 SJO – São José do Rio Preto.

7 MAT – Matão.

8 DUA – Duartina.

9 BRO – Brotas.

10 PFE – Porto Ferreira.

11 LIM – Limeira.

12 AVA – Avaré.

13 ITG – Itapetininga.

14 V.Folha Murcha – Valencia Folha Murcha.

Table 41 – Oranges: Density[1] planting of groves older than 10 years by variety and region [2016 inventory]

Variety	Region												Average
	TMG[2]	BEB[3]	ALT[4]	VOT[5]	SJO[6]	MAT[7]	DUA[8]	BRO[9]	PFE[10]	LIM[11]	AVA[12]	ITG[13]	
	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)
EARLY SEASON													
Hamlin.....	392	377	467	279	338	350	358	370	397	417	413	412	388
Westin.....	395	367	640	257	266	370	344	383	410	407	388	434	373
Rubi.....	(NA)	297	525	400	350	410	354	347	336	448	361	461	357
Valencia Americana..	389	462	486	370	361	315	326	382	385	383	470	426	380
Valencia Argentina....	412	393	(NA)	(NA)	258	228	(NA)	528	283	412	365	(NA)	292
Seleta.....	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	338	(NA)	(NA)	381	361	(NA)	372
Pineapple.....	(NA)	459	(NA)	(NA)	484	(NA)	327	(NA)	(NA)	348	400	264	412
Average…..……...	**392**	**381**	**472**	**292**	**313**	**294**	**354**	**376**	**384**	**415**	**403**	**414**	**374**
MID-SEASON													
Pera Rio.....	368	409	460	348	386	371	429	431	403	398	448	368	408
João Nunes.....	325	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	325
Average…….	**368**	**409**	**460**	**348**	**386**	**371**	**429**	**431**	**403**	**398**	**448**	**368**	**408**
LATE SEASON													
Valencia.....	370	398	437	359	366	355	373	396	368	384	428	527	393
Natal.....	374	351	509	359	346	284	379	362	361	397	449	422	377
V.Folha Murcha[14]…..	397	455	383	407	513	385	462	418	373	408	433	404	424
Average.....……...	**371**	**387**	**440**	**365**	**368**	**331**	**382**	**392**	**367**	**388**	**434**	**464**	**390**
GENERAL AVERAGE	**378**	**388**	**452**	**350**	**358**	**331**	**394**	**398**	**379**	**395**	**432**	**421**	**392**

NA, Not Available.

1 Average density planting weighted per stratum area. The calculation for groves older than 2 years considers the total number of trees of the block, that is, bearing and non-bearing trees (2014 or 2015 resets).

2 TMG – Triângulo Mineiro.

3 BEB – Bebedouro.

4 ALT – Altinópolis.

5 VOT – Votuporanga.

6 SJO – São José do Rio Preto.

7 MAT – Matão.

8 DUA – Duartina.

9 BRO – Brotas.

10 PFE – Porto Ferreira.

11 LIM – Limeira.

12 AVA – Avaré.

13 ITG – Itapetininga.

14 V.Folha Murcha – Valencia Folha Murcha.

Table 42 – Oranges: Density[1] planting of groves by planting year [2016 inventory]

Planting year[2]	Orange groves
	(trees/hectare)
1979 or previous years.....	325
1980.....	366
1981.....	355
1982.....	373
1983.....	325
1984.....	318
1985.....	270
1986.....	326
1987.....	332
1988.....	342
1989.....	352
1990.....	356
1991.....	331
1992.....	354
1993.....	342
1994.....	361
1995.....	398
1996.....	373
1997.....	377
1998.....	391
1999.....	384
2000.....	376
2001.....	390
2002.....	393
2003.....	399
2004.....	412
2005.....	443
2006.....	463
2007.....	496
2008.....	510
2009.....	510
2010.....	548
2011.....	576
2012.....	582
2013.....	630
Mature groves.....	**467**
2014.....	653
2015.....	656
Young groves.....	**654**
Average.....	**475**

[1] Average density planting weighted per stratum area. The calculation for mature groves considers the total number of trees of the block, that is, bearing and non-bearing trees (2014 or 2015 resets).

[2] The information on planting year refers to the groves remaining at the time of data collection for this publication; in other words, it does not portray all the groves formed in these years, as a result of eradication and renewal over time.

Table 43 – Oranges: Area of groves irrigated, non-irrigated or without information by sector and region[1] [2016 inventory]

Sector and region	Irrigated groves	Non-irrigated groves or without irrigation information
	(hectares)	(hectares)
NORTH		
Triângulo Mineiro	16,111	8.563
Bebedouro	28,887	22.802
Altinópolis	192	10.965
Subtotal	**45,190**	**42,330**
NORTHWEST		
Votuporanga	5,212	15.129
São José do Rio Preto	9,090	14.299
Subtotal	**14,302**	**29,428**
CENTRAL		
Matão	13,748	27.836
Duartina	8,581	46.452
Brotas	641	19.111
Subtotal	**22,970**	**93,399**
SOUTH		
Porto Ferreira	7,359	30.793
Limeira	4,237	38.690
Subtotal	**11,596**	**69,483**
SOUTHWEST		
Avaré	5,008	51.754
Itapetininga	147	18.254
Subtotal	**5,155**	**70,008**
TOTAL	**99,214**	**304,649**
PERCENTAGE	**24.57**	**75.43**

[1] The area of irrigated groves, non-irrigated groves and those with no information about irrigation – by sector, region, variety, age, and method – was updated by applying the proportion of groves in each category obtained from the 2015 assessment to the area of orange groves mesasured in the 2016 assessment.

Table 44 – Oranges: Area of groves irrigated, non-irrigated or without information by variety[1] [2016 inventory]

Variety	Irrigated groves	Non-irrigated groves or without information
	(hectares)	(hectares)
EARLY SEASON		
Hamlin	12,880	40,232
Westin	1,839	5,236
Rubi	1,737	5,386
Valencia Americana	2,782	9,922
Valencia Argentina	2,793	1,775
Seleta	31	132
Pineapple	229	1,625
Subtotal	**22,291**	**64,308**
MID-SEASON		
Pera Rio	29,800	101,685
João Nunes	-	9
Subtotal	**29,800**	**101,694**
LATE SEASON		
Valencia	29,474	93,233
Natal	14,816	13,623
Valencia Folha Murcha	2,833	31,791
Subtotal	**47,123**	**138,647**
TOTAL	**99,214**	**304,649**

- Represents zero.

[1] The area of irrigated groves, non-irrigated groves and those with no information about irrigation – by sector, region, variety, age, and method – was updated by applying the proportion of groves in each category obtained from the 2015 assessment to the area of orange groves mesasured in the 2016 assessment.

Table 45 – Oranges: Area of groves irrigated, non-irrigated or without information by age groups[1] [2016 inventory]

Ages	Irrigated groves	Non-irrigated groves or without irrigation information
	(hectares)	(hectares)
1 – 2 years.....	5,459	19,524
3 – 5 years.....	15,938	52,816
6 – 10 years.....	31,226	130,305
More than 10 years.....	46,591	102,004
Total.....	**99,214**	**304,649**

[1] The area of irrigated groves, non-irrigated groves and those with no information about irrigation – by sector, region, variety, age, and method – was updated by applying the proportion of groves in each category obtained from the 2015 assessment to the area of orange groves mesasured in the 2016 assessment.

Table 46 – Oranges: Area of irrigated groves by irrigation method[1] [2016 inventory]

Irrigation method	Irrigated groves	Percentage
	(hectares)	(%)
Sprinkling.....	11,585	11.68
Localized.....	87,629	88.32
Total.....	**99,214**	**100.00**

[1] The area of irrigated groves, non-irrigated groves and those with no information about irrigation – by sector, region, variety, age, and method – was updated by applying the proportion of groves in each category obtained from the 2015 assessment to the area of orange groves mesasured in the 2016 assessment.

Table 47 – Oranges: Area of groves removed by sector and region [2015 and 2016 inventories and accumulated total]

Sector and region	2015 assessment (Removal assessed between : October/2014 and March/2015)		2016 assessment (Removal assessed between : April/2015 and March/2016)		Accumulated removed area from October/2014 to March/2016	
	Area of groves removed	Removal rate	Area of groves removed	Removal rate	Area of groves removed	Removal rate
	(hectares)	(%)	(hectares)	(%)	(hectares)	(%)
NORTH						
Triângulo Mineiro....	-	-	342	1.33	342	1.33
Bebedouro.....	-	-	4,015	7.17	4,015	7.17
Altinópolis.....	-	-	80	0.73	80	0.73
Subtotal.....	**-**	**-**	**4,437**	**4.79**	**4,437**	**4.79**
NORTHWEST						
Votuporanga.....	480	1.95	4,000	16.26	4,480	18.21
S. J. do Rio Preto.....	318	1.33	400	1.67	718	3.01
Subtotal.....	**798**	**1.65**	**4,400**	**9.07**	**5,198**	**10.72**
CENTRAL						
Matão.....	1,343	2.83	3,988	8.40	5,331	11.23
Duartina.....	343	0.60	1,989	3.50	2,332	4.11
Brotas.....	2,645	11.71	202	0.89	2,847	12.60
Subtotal.....	**4,331**	**3.41**	**6,179**	**4.87**	**10,510**	**8.28**
SOUTH						
Porto Ferreira.....	1,089	2.59	3,279	7.80	4,368	10.39
Limeira.....	1,101	2.35	2,025	4.32	3,126	6.67
Subtotal.....	**2,190**	**2.46**	**5,304**	**5.96**	**7,494**	**8.42**
SOUTHWEST						
Avaré.....	154	0.28	255	0.46	409	0.73
Itapetininga.....	-	-	765	4.31	765	4.31
Subtotal.....	**154**	**0.21**	**1,020**	**1.38**	**1,174**	**1.59**
TOTAL[1].....	**7,473**	**1.74**	**21,340**	**4.96**	**28,813**	**6.69**

- Represents zero.
[1] Citrus Belt.

Table 48 – Oranges: Area of groves removed by variety [2015 and 2016 inventories and accumulated total]

Variety	2015 assessment (Removal assessed between : October/2014 and March/2015)		2016 assessment (Removal assessed between : April/2015 and March/2016)		Accumulated removed area from October/2014 to March/2016	
	Area of groves removed	Removal rate	Area of groves removed	Removal rate	Area of groves removed	Removal rate
	(hectares)	(%)	(hectares)	(%)	(hectares)	(%)
EARLY SEASON	225	0.41	3,041	5.55	3,266	5.96
Hamlin.....	52	0.71	310	4.25	362	4.96
Westin.....	60	0.82	93	1.27	153	2.08
Rubi.....	375	2.88	297	2.28	672	5.16
Valencia Americana	11	0.23	296	6.32	307	6.55
Valencia Argentina.	-	-	3	1.81	3	1.81
Seleta.....	7	0.37	77	4.06	84	4.43
Pineapple.....	225	0.41	3,041	5.55	3,266	5.96
Subtotal.....	**730**	**0.82**	**4,117**	**4.61**	**4,847**	**5.43**
MID-SEASON						
Pera Rio	2,729	1.93	8,627	6.09	11,356	8.02
João Nunes.....	-	-	-	-	-	-
Subtotal.....	**2,729**	**1.93**	**8,627**	**6.09**	**11,356**	**8.02**
LATE SEASON						
Valencia.....	3,004	2.27	5,682	4.30	8,686	6.57
Natal.....	714	1.43	1,923	3.86	2,637	5.29
V.Folha Murcha[1]....	296	1.67	991	5.60	1,287	7.27
Subtotal.....	**4,014**	**2.01**	**8,596**	**4.30**	**12,610**	**6.31**
TOTAL.....	**7,473**	**1.74**	**21,340**	**4.96**	**28,813**	**6.69**

- Represents zero.
[1] V.Folha Murcha – Valencia Folha Murcha.

Table 49 – Oranges: Area of groves removed by age [2015 and 2016 inventories and accumulated total]

Ages	2015 assessment (Removal assessed between : October/2014 and March/2015)		2016 assessment (Removal assessed between : April/2015 and March/2016)		Accumulated removed area from October/2014 to March/2016	
	Area of groves removed	Removal rate	Area of groves removed	Removal rate	Area of groves removed	Removal rate
	(hectares)	(%)	(hectares)	(%)	(hectares)	(%)
1 – 2 years	-	-	953	3,51	953	3,51
3 – 5 years	415	0,60	620	0,90	1.035	1,51
6 – 10 years	1.132	0,67	7.535	4,47	8.667	5,14
More than 10 years	5.926	3,56	12.232	7,35	18.158	10,91
Total	**7.473**	**1,74**	**21.340**	**4,96**	**28.813**	**6,69**

- Represents zero.

Table 50 – Oranges: Removal rate stratified by number of orange trees [accumulated total]

Range of the number of orange trees in the grove	Accumulated removed area from October/2014 to March/2016	Removal rate
(number)	(hectares)	(%)
Below 10 thousand.....	12,406	25.22
10 – 19 thousand.....	3,179	10.23
20 – 29 thousand.....	1,241	5.50
30 – 49 thousand.....	2,430	8.42
50 – 99 thousand.....	3,054	6.48
100 – 199 thousand.....	2,993	5.70
Above 200 thousand	3,510	1.76
Total.....	**28,813**	**6.69**

Table 51 – Oranges: Intention to reoccupy the area of removed groves, by grove size [2106 inventory and accumulated total]

Range of the number of orange trees in the grove	Area that may be occupied with citrus					Area that may be occupied with another crop	Area with not information about intention to reoccupy[1]	Total removed
	Intention to replant oranges	Intention to replant acid lime or lemon	Intention to replant tangerine	Total with Intention to replant	Percentage with Intention to replant in relation to removed total			
(number)	(hectares)	(hectares)	(hectares)	(hectares)	(%)	(hectares)	(hectares)	(hectares)
Below 10 thousand...	-	34	442	476	1.65	7,271	4,659	12,406
10 – 19 thousand.....	407	-	159	566	1.96	1,200	1,413	3,179
20 – 29 thousand.....	134	-	-	134	0.47	673	434	1,241
30 – 49 thousand.....	703	-	-	703	2.44	1,371	356	2,430
50 – 99 thousand.....	1,337	-	-	1,337	4.64	1,378	339	3,054
100 – 199 thousand....	225	279	-	504	1.75	2,184	305	2,993
Above 200 thousand...	2,131	-	-	2,131	7.40	1,143	236	3,510
Total.....	**4,937**	**313**	**601**	**5,851**	**20.31**	**15,220**	**7,742**	**28,813**

[1] Decision maker was not present at the time of assessment or did not know how to answer.

- Represents zero.

Table 52 – Oranges: Dead trees by sector and region [2015 and 2016 inventories]

Sector and region	2015 assessment (snapshot in March/2015)		2016 assessment (snapshot in March/2016)	
	Dead trees	Tree mortality rate	Dead trees	Tree mortality rate
	(1,000 trees)	(%)	(1,000 trees)	(%)
NORTH				
Triângulo Mineiro	89.88	0.70	60.98	0.50
Bebedouro	301.67	1.09	174.78	0.68
Altinópolis	25.44	0.44	78.60	1.41
Subtotal	**416.99**	**0.90**	**314.36**	**0.72**
NORTHWEST				
Votuporanga	100.31	0.92	137.47	1.56
S. J. do Rio Preto	82.42	0.73	112.14	0.96
Subtotal	**182.73**	**0.83**	**249.61**	**1.21**
CENTRAL				
Matão	193.15	0.86	418.13	2.08
Duartina	192.29	0.68	579.67	2.12
Brotas	242.31	2.45	156.64	1.54
Subtotal	**627.75**	**1.03**	**1,154.44**	**2.00**
SOUTH				
Porto Ferreira	162.73	0.81	241.70	1,17
Limeira	261.88	1.16	271.73	1,31
Subtotal	**424.61**	**0.99**	**513.43**	**1.24**
SOUTHWEST				
Avaré	185.74	0.63	612.63	2.11
Itapetininga	155.81	1.61	147.77	1.59
Subtotal	**341.55**	**0.87**	**760.40**	**1.99**
TOTAL	**1,993.63**	**0.94**	**2,992.24**	**1.48**

Table 53 – Oranges: Dead trees by variety [2015 and 2016 inventories]

Variety	2015 assessment (snapshot in March/2015)		2016 assessment (snapshot in March/2016)	
	Dead trees	Tree mortality rate	Dead trees	Tree mortality rate
	(1,000 trees)	(%)	(1,000 trees)	(%)
EARLY SEASON				
Hamlin	280.79	1.08	482.57	1.96
Westin	42.73	1.25	42.79	1.27
Rubi	26.21	0.64	58.43	1.41
Valencia Americana	43.06	0.64	71.39	1.09
Valencia Argentina	27.60	1.58	130.35	9.18
Seleta	0.78	0.91	0.88	1.09
Pineapple	39.92	3.33	11.47	1.08
Subtotal	**461.09**	**1.06**	**797.88**	**1.93**
MID-SEASON				
Pera Rio	621.30	0.85	941.49	1.35
João Nunes	0.03	0.56	-	-
Subtotal	**621.33**	**0.85**	**941.49**	**1.35**
LATE SEASON				
Valencia	487.26	0.78	792.46	1.34
Natal	369.14	1.58	74.15	0.83
V.Folha Murcha[1]	54.81	0.58	386.26	1.73
Subtotal	**911.21**	**0.96**	**1,252.87**	**1.38**
TOTAL	**1,993.63**	**0.94**	**2,992.24**	**1.48**

- Represents zero.
[1] V.Folha Murcha – Valencia Folha Murcha.

Table 54 – Oranges: Dead trees by age [2015 and 2016 inventories]

Ages	2015 assessment (snapshot in March/2015)		2016 assessment (snapshot in March/2016)	
	Dead trees	Tree mortality rate	Dead trees	Tree mortality rate
	(1,000 trees)	(%)	(1,000 trees)	(%)
1 – 2 years.....	87.57	0.49	49.56	0.44
3 – 5 years.....	97.96	0.24	182.44	0.49
6 – 10 years.....	628.40	0.73	881.85	1.11
More than 10 years.....	1,179.70	1.75	1,878.39	2.57
Total.....	**1,993.63**	**0.94**	**2,992.24**	**1.48**

Table 55 – Oranges: Vacancies by sector and region [2015 and 2016 inventories]

Sector and region	2015 assessment (snapshot in March/2015)		2016 assessment (snapshot in March/2016)	
	Vacancies	Percentage of vacancies	Vacancies	Percentage of vacancies
	(1,000 holes)	(%)	(1.000 holes)	(%)
NORTE				
Triângulo Mineiro.....	527.73	4.10	55.79	0.46
Bebedouro.....	1,293.68	4.68	834.85	3.23
Altinópolis.....	375.85	6.46	108.43	1.95
Subtotal.....	**2,197.26**	**4.74**	**999.07**	**2.29**
NOROESTE				
Votuporanga.....	526.01	4.84	302.25	3.43
S. J. do Rio Preto.....	410.43	3.64	303.81	2.59
Subtotal.....	**936.44**	**4.23**	**606.06**	**2.95**
CENTRO				
Matão.....	1,600.59	7.10	712.02	3.53
Duartina.....	1,606.00	5.66	874.20	3.20
Brotas.....	704.79	7.11	661.02	6.51
Subtotal.....	**3,911.38**	**6.43**	**2,247.24**	**3.90**
SUL				
Porto Ferreira.....	1,147.63	5.69	896.13	4.33
Limeira.....	1,258.64	5.58	966.71	51.89
Subtotal.....	**2,406.27**	**5.63**	**1,862.84**	**56.23**
SUDOESTE				
Avaré.....	1,608.13	5.41	783.13	2.70
Itapetininga.....	484.49	5.02	110.41	1.19
Subtotal.....	**2,092.62**	**5.31**	**893.54**	**2.33**
TOTAL.....	**11,543.97**	**5.46**	**6,608.75**	**3.28**

Table 56 – Oranges: Vacancies by variety [2015 and 2016 inventories]

Variety	2015 assessment (snapshot in March/2015)		2016 assessment (snapshot in March/2016)	
	Vacancies	Percentage of vacancies	Vacancies	Percentage of vacancies
	(1,000 holes)	(%)	(1,000 holes)	(%)
EARLY SEASON				
Hamlin.....	1,896.91	7.29	870.24	3.53
Westin.....	198.25	5.79	156.22	4.62
Rubi.....	227.09	5.55	148.74	3.59
Valencia Americana.....	340.16	5.04	222.11	3.39
Valencia Argentina.....	316.41	18.09	25.56	1.80
Seleta.....	9.04	10.53	3.41	4.21
Pineapple.....	156.77	13.08	10.33	0.97
Subtotal.....	**3,144.63**	**7.26**	**1,436.61**	**3.48**
MID-SEASON				
Pera Rio	3,321.93	4.56	2,173.98	3.12
João Nunes.....	0.07	1.31	0.05	0.99
Subtotal.....	**3,322.00**	**4.56**	**2,174.03**	**3.12**
LATE SEASON				
Valencia.....	3,066.65	4.92	1,937.42	3.27
Natal.....	1,646.92	7.03	716.6	3.2
V.Folha Murcha[1].....	363.77	3.85	344.09	3.86
Subtotal.....	**5,077.34**	**5.34**	**2,998.11**	**3.31**
TOTAL.....	**11,543.97**	**5.46**	**6,608.75**	**3.28**

- Represents zero.
[1] V.Folha Murcha – Valencia Folha Murcha.

Table 57 – Oranges: Vacancies by tree age group [2015 and 2016 inventories]

Ages	2015 assessment (snapshot in March/2015)		2016 assessment (snapshot in March/2016)	
	Vacancies	Percentage of vacancies	Vacancies	Percentage of vacancies
	(1,000 holes)	(%)	(1,000 holes)	(%)
1 – 2 years.....	501.44	2.83	43.68	0.38
3 – 5 years.....	1,202.30	2.99	787.85	2.10
6 – 10 years.....	4,267.23	4.95	2,534.90	3.18
More than 10 years.....	5,573.00	8.29	3,242.32	4.44
Total.....	**11,543.97**	**5.46**	**6,608.75**	**3.28**

Table 58 – Oranges: Municipalities with groves by sector and region [2016 inventory]

Sector and number of municipalities	Region and number of municipalities	Municipalities
North 68 municipalities	Triângulo Mineiro (TMG) 15 municipalities	Campina Verde, Campo Florido, Canápolis, Comendador Gomes, Conceição das Alagoas, Frutal, Gurinhatã, Itapagipe, Ituiutaba, Monte Alegre de Minas, Planura, Prata, São Francisco de Sales, Uberaba, Uberlândia.
	Bebedouro (BEB) 34 municipalities	Ariranha, Barretos, Bebedouro, Cajobi, Catanduva, Catiguá, Colina, Colômbia, Elisiário, Embaúba, Guaraci, Ibirá, Irapuã, Itajobi, Marapoama, Monte Azul Paulista, Novais, Olímpia, Paraíso, Pindorama, Pirangi, Pitangueiras, Sales, Santa Adélia, Severínia, Tabapuã, Taiaçu, Taiúva, Taquaral, TerraRoxa, Uchoa, Urupês, Viradouro, Vista Alegre do Alto.
	Altinópolis (ALT) 19 municipalities	Altinópolis, Batatais, Brodowski, Cajuru, Cássia dos Coqueiros, Cristais Paulista, Fortaleza de Minas, Franca, Ibiraci, Igarapava, Jacuí, Monte Santo de Minas, Nova Resende, Patrocínio Paulista, Pedregulho, Restinga, Santo Antônio da Alegria, São Pedro da União, São Sebastião do Paraíso.
Northwest 90 municipalities	Votuporanga (VOT) 55 municipalities	Álvares Florence, Américo de Campos, Andradina, Aparecida d'Oeste, Aspásia, Auriflama, Cardoso, Dirce Reis, Dolcinópolis, Estrela d'Oeste, Fernandópolis, General Salgado, Guaraçaí, Guarani d'Oeste, Guzolândia, Indiaporã, Jales, Macedônia, Marinópolis, Meridiano, Mesópolis, Mira Estrela, Mirandópolis, Murutinga do Sul, Nova Canaã Paulista, Nova Castilho, Ouroeste, Palmeira d'Oeste, Paranapuã, Parisi, Pedranópolis, Pereira Barreto, Pontalinda, Pontes Gestal, Populina, Riolândia, Rubinéia, Santa Albertina, Santa Clara d'Oeste, Santa Fé do Sul, Santa Rita d'Oeste, Santa Salete, Santana da Ponte Pensa, Santo Antônio do Aracanguá, São Francisco, São João das Duas Pontes, São João de Iracema, Sud Mennucci, Suzanápolis, Três Fronteiras, Turmalina, Urânia, Valentim Gentil, Vitória Brasil, Votuporanga.
	São José do Rio Preto (SJO) 35 municipalities	Adolfo, Altair, Bady Bassitt, Bálsamo, Cedral, Cosmorama, Floreal, Guapiaçu, Icém, Ipiguá, Jaci, José Bonifácio, Magda, Mendonça, Mirassol, Mirassolândia, Monções, Monte Aprazível, Neves Paulista, Nhandeara, Nipoã, Nova Aliança, Nova Granada, Onda Verde, Orindiúva, Palestina, Paulo de Faria, Planalto, Poloni, Potirendaba, São José do Rio Preto, Tanabi, Ubarana, União Paulista, Zacarias.
Central 71 municipalities	Matão (MAT) 20 municipalities	Américo Brasiliense, Araraquara, Bariri, Boa Esperança do Sul, Borborema, Cândido Rodrigues, Fernando Prestes, Gavião Peixoto, Ibitinga, Itajú, Itápolis, Matão, Monte Alto, Motuca, Nova Europa, Novo Horizonte, Rincão, SantaLúcia, Tabatinga, Taquaritinga.
	Duartina (DUA) 38 municipalities	Agudos, Alvinlândia, Arealva, Avaí, Balbinos, Bauru, Cabrália Paulista, Cafelândia, Campos Novos Paulista, Duartina, Echaporã, Espírito Santo do Turvo, Fernão, Gália, Garça, Getulina, Guaiçara, Guaimbê, Guarantã, Iacanga, Júlio Mesquita, Lins, Lucianópolis, Lupércio, Marília, Ocauçu, Paulistânia, Pederneiras, Pirajuí, Piratininga, Pongaí, Presidente Alves, Reginópolis, Sabino, Santa Cruz do Rio Pardo, São Pedro do Turvo, Ubirajara, Uru.
	Brotas (BRO) 13 municipalities	Analândia, Bocaina, Brotas, Corumbataí, Dourado, Ibaté, Itirapina, Ribeirão Bonito, Santa Maria da Serra, São Carlos, São Pedro, Torrinha, Trabiju.
South 45 municipalities	Porto Ferreira (PFE) 19 municipalities	Aguaí, Caconde, Casa Branca, Cravinhos, Descalvado, Guatapará, Guaxupé, Luiz Antônio, Mococa, Pirassununga, Porto Ferreira, Santa Cruz da Conceição, Santa Cruz das Palmeiras, Santa Rita do Passa Quatro, Santa Rosa de Viterbo, São José do Rio Pardo, São Simão, Tambaú, Vargem Grande do Sul.
	Limeira (LIM) 26 municipalities	Amparo, Araras, Artur Nogueira, Bragança Paulista, Conchal, Cordeirópolis, Cosmópolis, Engenheiro Coelho, Espírito Santo do Pinhal, Estiva Gerbi, Holambra, Iracemápolis, Itapira, Jaguariúna, Jarinu, Leme, Limeira, Mogi Guaçu, Mogi Mirim, Paulínia, Piracicaba, Rio Claro, Santa Gertrudes, Santo Antônio de Posse, Serra Negra, Socorro.
Southwest 47 municipalities	Avaré (AVA) 29 municipalities	Águas de Santa Bárbara, Angatuba, Anhembi, Araçoiaba da Serra, Arandu, Avaré, Bofete, Borebi, Botucatu, Capela do Alto, Cerqueira César, Cesário Lange, Conchas, Iaras, Iperó, Itatinga, Lençóis Paulista, Manduri, Óleo, Pardinho, Porangaba, Porto Feliz, Pratânia, Quadra, Salto de Pirapora, São Manuel, Sorocaba, Tatuí, Tietê.
	Itapetininga (ITG) 18 municipalities	Alambari, Buri, Capão Bonito, Coronel Macedo, Itaberá, Itaí, Itapetininga, Itapeva, Itaporanga, Itararé, Nova Campina, Paranapanema, São Miguel Arcanjo, Sarapuí, Sarutaiá, Taquarituba, Taquarivaí, Tejupá.
Total 5 sectors	Total 12 regions	Total 321 municipalities

3.3 – ABANDONED ORANGE GROVES

Abandoned groves are blocks of orange trees in which no signs of handling are seen, such as pruning/cutting; they present unsatisfactory phytosanitary control, with a high degree of infestation with pests and diseases, frequently with rotten fruit on the ground and cattle on the block. The areas of these groves are accounted for separately and are not part of the bearing and non-bearing tree inventory.

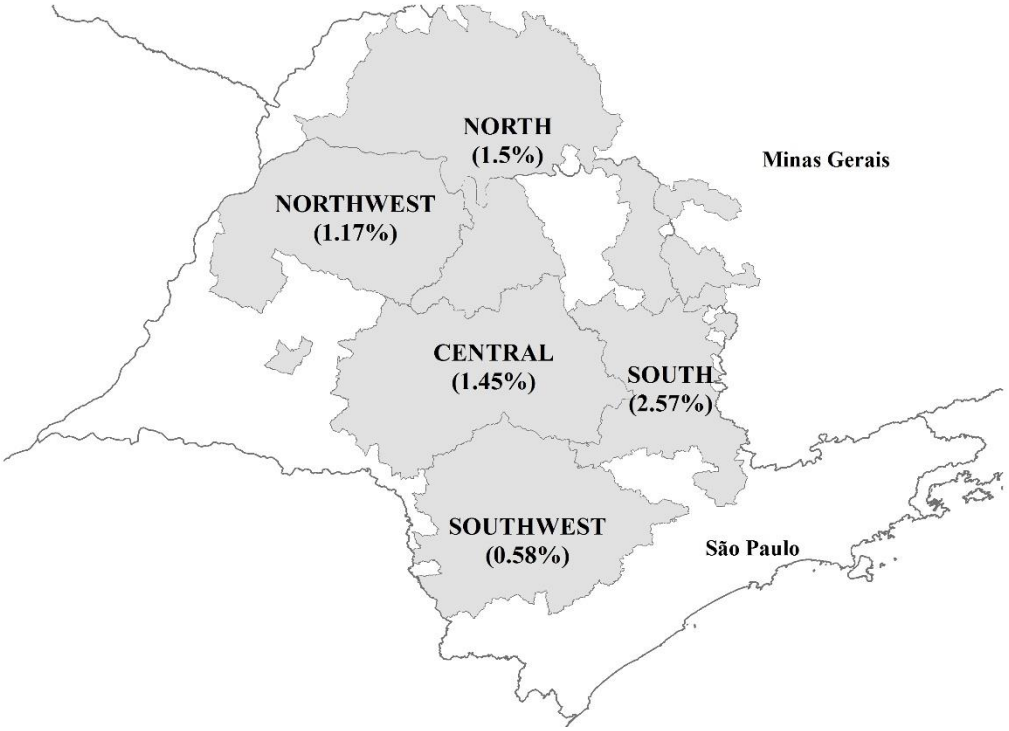
In the Altinópolis and Itapetininga regions, no abandoned blocks were found on the sampling, which indicates that the incidence of abandoned groves in said regions must be minimal or close to zero.

Tabel 59 – Oranges: Area of abandoned groves by sector and region [2016 inventory]

Sector and region	Abandoned groves	Percentage in relation to the total area of orange groves
	(hectares)	(%)
NORTH		
Triângulo Mineiro (TMG).....	586	2.28
Bebedouro (BEB).....	805	1.44
Altinópolis (ALT).....	-	-
Subtotal	**1,390**	**1.50**
NORTHWEST		
Votuporanga (VOT).....	190	0.77
São José do Rio Preto (SJO).....	378	1.58
Subtotal.....	**568**	**1.17**
CENTRAL		
Matão (MAT).....	1,098	2.31
Duartina (DUA).....	722	1.27
Brotas (BRO).....	17	0.08
Subtotal.....	**1,837**	**1.45**
SOUTH		
Porto Ferreira (PFE).....	309	0.73
Limeira (LIM).....	1,981	4.22
Subtotal.....	**2,290**	**2.57**
SOUTHWEST		
Avaré (AVA).....	425	0.76
Itapetininga (ITG).....	-	-
Subtotal	**425**	**0.58**
TOTAL.....	**6,511**	**1.51**

- Represents zero.

Figura 3 – Percentage of abandoned groves by sector

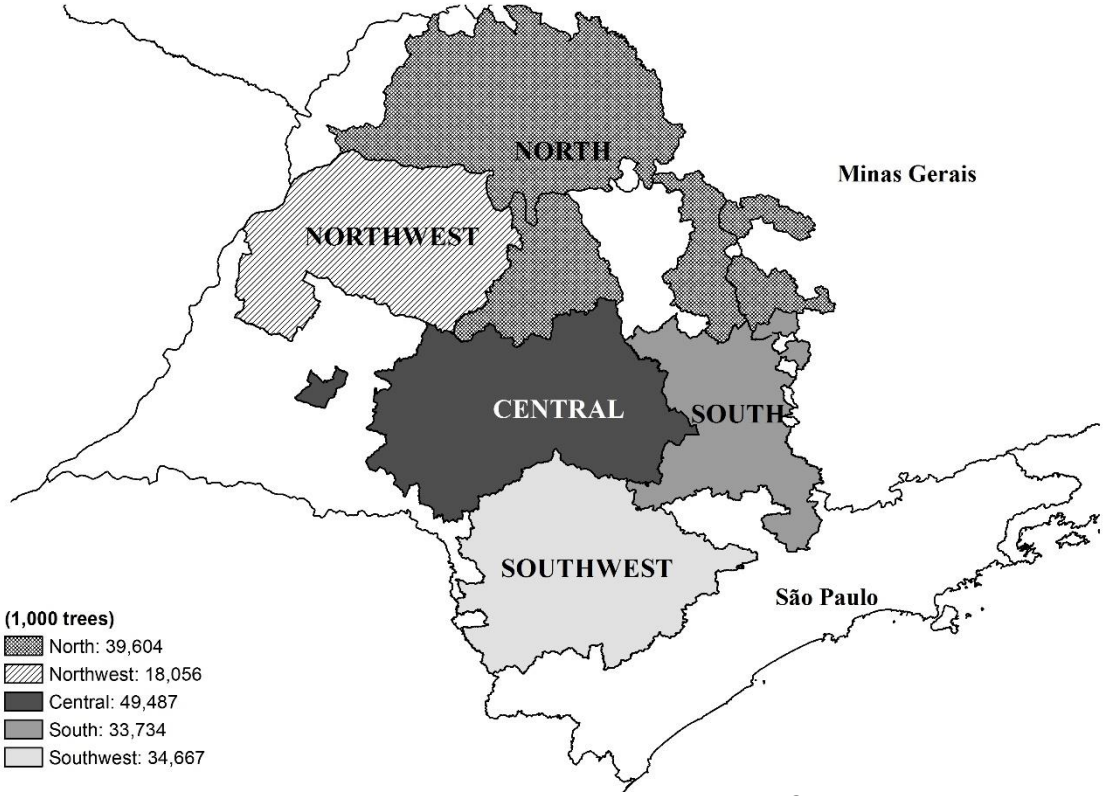


ORANGE PRODUCTION FORECAST FOR THE 2016-2017 SEASON OF THE SÃO PAULO AND WEST-SOUTHWEST OF MINAS GERAIS CITRUS BELT

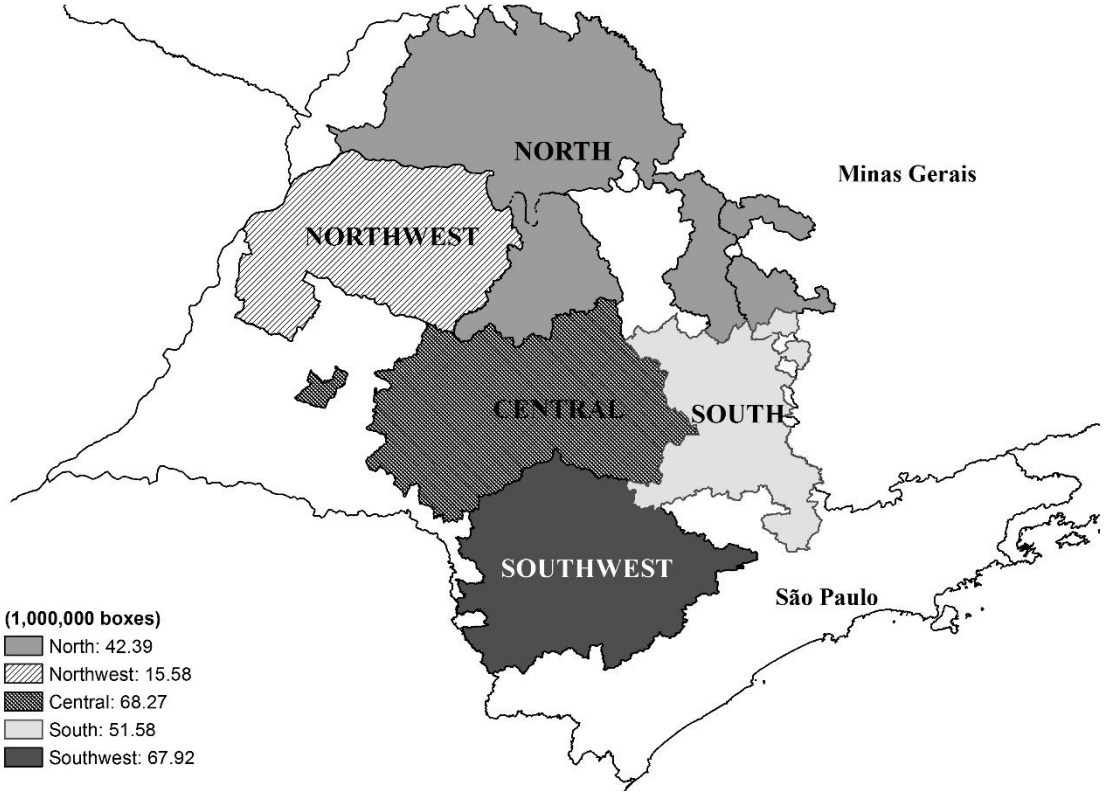
MAY/2016 FORECAST

FUNDECITRUS
FUNDO DE DEFESA DA CITRICULTURA
PES
Markestrat
value generation
fea RP
unesp

ORANGE BEARING TREES[1] BY SECTOR
Total: 175.55 million trees



2015-2016 ORANGE PRODUCTION FORECAST[2] BY SECTOR
Total: 245.74 million 40.8 kg box



[1] Snapshot of March/2016. Sweet orange varieties: Hamlin, Westin, Rubi, Valencia Americana, Valencia Argentina, Seleta, Pineapple, Pera Rio, João Nunes, Valencia, Natal and Valencia Folha Murcha.

[2] May/2016 forecast.

ORANGE PRODUCTION FORECAST FOR THE 2016-2017 SEASON OF THE SÃO PAULO AND WEST-SOUTHWEST OF MINAS GERAIS CITRUS BELT – MAY/2016 FORECAST

Published on May 10, 2016[1]

Forecast Dates

2016-2017 Season
March/2016 tree inventory: May 10, 2016
May forecast (orange production forecast): May 10, 2016
September forecast (1st orange production forecast update): September 12, 2016
December forecast (2nd orange production forecast update): December 12, 2016
February forecast (3rd orange production forecast update): February 10, 2017
April forecast (final orange production estimate): April 10, 2017

During the course of the season, the crop will be updated in the months mentioned in the preceding schedule using the droppage and fruit size (fruits per box) data collected in the months prior to these forecasts. In order to meet the demands of the citrus sector and the press, we reserve the right to expand and deepen the information already published. Therefore, we recommend always the use of the most recent publication available at www.fundecitrus.com.br.

[1] Year 2 – Nº 1 – May 10, 2016 (Portuguese version only)

Expanded and revised versions:
Year 2 – Nº 2 – May 17, 2016 (Portuguese version only)
Year 2 – Nº 3 – May 25, 2016 (Portuguese and English versions)

Prepared by FUNDECITRUS with cooperation from MARKESTRAT, FEA-RP/USP and the Exact Sciences Department of FCAV/Unesp

ORANGE PRODUCTION FORECAST FOR THE 2016-2017 SEASON OF THE SÃO PAULO AND WEST-SOUTHWEST OF MINAS GERAIS CITRUS BELT

MAY/2016 FORECAST

Fundecitrus
Araraquara, São Paulo
2016

Av. Adhemar Pereira de Barros, 201 | Vila Melhado | CEP: 14807-040 | Araraquara | São Paulo | Brazil
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SUMARRY

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1 – ORANGE PRODUCTION FORECAST FOR THE 2016-2017 SEASON

The 2016-2017 orange production forecast published on May 10, 2016 by Fundecitrus with the cooperation of Markestrat, FEA-RP/USP and FCAV/Unesp[1] is 245.74 million boxes (40.8 kg). This total includes:

- 45.86 million boxes of the Hamlin, Westin and Rubi varieties;
- 13.48 million of the Valencia Americana, Valencia Argentina, Seleta and Pineapple varieties;
- 70.38 million of the Pera Rio variety;
- 84.48 million of the Valencia and Valencia Folha Murcha varieties;
- 31.54 million of the Natal variety.

This production is 18% smaller than that of the previous season[2]. The comparison per maturation stage of the varieties results in the following differences: minus 19% for early varieties, minus 14% for mid-season varieties and minus 20% for late varieties.

As regards the locations where such production is to be harvested, 9.59 million boxes are estimated for the Triângulo Mineiro region, a 45-percent drop as compared to the 2015-2016 season, when the final production estimate was 17.48 million boxes.

The Central and Southwest sectors together account for 55% of the estimated production with roughly equal number of boxes, specifically 68.27 and 67.92 million boxes, respectively. However, the extensions of the areas with mature groves is very different: the Central sector presents 110,874 hectares, and the Southwest has 71,055 hectares (36% less). The explanation for those sectors attaining similar products lies on the productivity of 956 boxes/hectare attained in the Southwest, which surpasses by 340 boxes/hectare that of the Central sector. The Northwest sector, with 41,817 hectares of mature groves, representing 11% of the total, has the lowest average productivity of all sectors, with 373 boxes/hectare, which is only 40% of the 956 boxes/hectare of the Southwest sector, the most productive one.

As regards the 2015-2016 season, the North sector presented the highest percentage slump in the average productivity per hectare, going from 792 boxes/hectare down to 496 boxes/hectare in this 2016-2017 season, a 37-percent reduction. The Northwest, South, and Southwest sectors also had decreased average productivities, by 17%, 15%, and 9%, respectively. Only the Central sector presented a discrete increase, going from 613 boxes/hectare to 616 boxes/hectare in this season.

The average productivity per tree decreased by 19% in the current season, with a forecast of 1.40 boxes/tree, as compared to 1.73 boxes/tree in the past season.

2 – OBJECTIVE SURVEY METHOD FOR ORANGE PRODUCTION FORECAST

In order to carry out this forecast, we maintained the objective method used in the last season, based on quantitative data – field measurements, counting and weighing of fruit – applied in the direct expansion model, whose formula is shown below.

$$\text{Production forecast} = \frac{\text{Bearing trees} \times \text{Fruit per tree} \times (1 - \text{Fruit loss from droppage})}{\text{Fruit size}}$$

For the purpose of bringing a critical mass and transparency, this survey has had, since its implementation, its activities followed up by a technical committee, which had been organized since the previous season aiming to propose operating improvements. The committee is formed by citrus growers, representatives from orange juice processing companies, faculty members, and Fundecitrus researchers and supervisors.

[1] Exact Sciences Department.
[2] The orange production final estimate is 300.65 million boxes (40.8 kg), as disclosed on April 11, 2016, available on www.fundecitrus.com.br

The results compiled from the inventory and stripping of the trees, obtained throughout the research, were kept restricted, until the date of this publication, only to the professionals connected to Fundecitrus, such as Fundecitrus general manager, PES supervisors and service providers specifically hired for the project, all of whom subject to terms of confidentiality regarding PES information until its public disclosure, pursuant to the confidentiality agreement executed between each one of them and Fundecitrus. Regarding antitrust practices, all of them were complied with throughout all the work phases, through the adoption of the measures necessary to prevent any sharing of individual information with a competitive content, among the orange juice companies members of Fundecitrus, and between these and the citrus growers.

This team completed the production forecast on May 10, 2016 at 9:40 a.m., in a closed meeting, devoid of any communication channel beyond Fundecitrus participants. Only then did Fundecitrus chairman, Lourival Carmo Monaco, became aware of the final information and then, at 10 a.m., started the public disclosure at the Fundecitrus auditorium, in Araraquara-SP. The presentation was shown live on the internet, and afterwards, the information was made available on Fundecitrus website.

The detailed forecast for the four model components is shown below.

BEARING TREES

The estimated total of bearing trees is 175.55 million, a 0.8-percent increase as compared to the 2015-2016 season. Trees planted in 2013 and in previous years are considered to be bearing in this season. The varieties contemplated in this forecast represent 97% of the trees and also 97% of the orange grove area which make up the current agricultural year's inventory.

The information about bearing trees were extracted from the Tree Inventory of the São Paulo and West-Southwest Minas Gerais Citrus Belt: Snapshot of Groves in March/2016, which was updated by the field assessment carried out from February to March 2016.

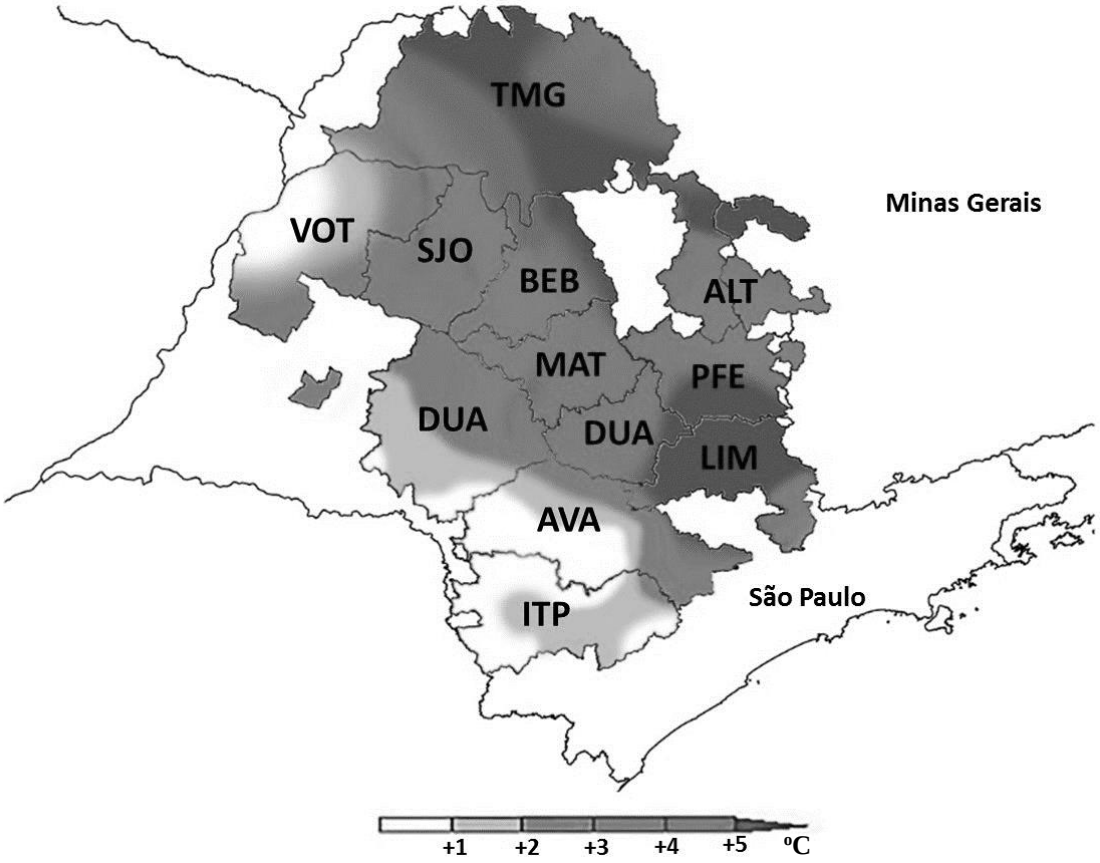
FRUIT PER TREE

The average number of fruit per tree in April/2016, not considering the droppage to occur during the season, was measured at 430 fruit per tree, 14% less than April/2015. The current season, therefore, had a low fruit set, although it presented high bloom intensity. Such reduction was triggered by the weather conditions observed from October 2015 to beginning of April 2016, influenced by El Niño, a phenomenon linked to warming of the Pacific Ocean waters, which, among other consequences, increases the air temperature around the globe and alters rainfall.

Blooming that started to appear by the end of August and intensified in September and October was abundant throughout the producing regions, because trees were less loaded with fruit from the previous season – therefore with higher levels of energy reserve – and because of favorable weather conditions in the beginning of the season. However, the high temperatures seen in September and October 2015 in most of the citrus belt contributed to the hormonal imbalance, ending up in a marked abortion of pea-sized fruit. Data from the weather monitoring done by Somar Meteorologia[3] showed that the average maximum temperature recorded in the afternoons in October reached 4.63ºC above the historical average[4], with larger deviations in the Porto Ferreira, Brotas, Altinópolis, Triângulo Mineiro and Limeira regions, as shown in Figure 1.

[3] The data observed by Somar Meteorologia were obtained from weather stations from the Instituto Nacional de Meteorologia (INMET) and Instituto Agronômico de Campinas (IAC) scattered throughout the State of São Paulo. In the case of the Triângulo Mineiro, the data were obtained only through the INMET stations.
[4] Interpolated data, period from 1960 to 1990.

Figure 1 – Difference between the maximum average temperature observed and the historical average temperature (1960 to 1990) in the citrus belt, in October/2016.



Source: Somar Meteorologia.

In seven of the 12 regions, the average of maximum temperatures attained values above 35ºC; in September, the Votuporanga region had 6 consecutive days in this temperature range, and in October, there were 10 consecutive days in the Triangulo Mineiro region. It is worth stressing that the actual temperature observed at the groves may vary from 1ºC to 3ºC above those recorded by the weather stations thermometers, since they are located in shelters in the shade. Table 1 shows, on a monthly basis, the difference between the maximum average temperature observed and the historical average in the citrus belt growing regions.

Table 1 – Difference between the maximum average temperature observed and the historical average temperature [1] in the citrus belt, from September/2015 to April/2016, by month and region

Month/year	TMG	BEB	ALT	VOT	SJO	MAT	DUA	BRO	PFE	LIM	AVA	ITP	Average/ month
	(ºC)	(ºC)	(ºC)	(ºC)	(ºC)	(ºC)	(ºC)	(ºC)	(ºC)	(ºC)	(ºC)	(ºC)	(ºC)
Sept./2015.....	+1.6	+0.5	+1.9	+0.9	+0.2	+1.1	+2.6	+2.7	+2.7	+3.5	+1.3	+2.4	+1.8
Oct./2015.....	+4.1	+2.9	+4.3	+1.1	-1.6	+1.2	+1.7	+4.5	+4.6	+3.4	-0.1	+0.5	+2.2
Nov./2015.....	+1.2	-0.1	+1.9	+0.1	-3.2	-1.5	-1.1	+1.5	+1.3	+1.4	-1.3	+0.4	+0.1
Dec./2015.....	+1.9	+2.3	+2.8	+0.7	+0.2	+1.7	+1.0	+3.0	+2.4	+2.7	+0.7	+2.8	+1.8
Jan./2016.....	+1.3	+1.3	+2.3	+0.9	+1.1	+1.4	+2.1	+2.3	+2.3	+3.1	+1.0	+1.1	+1.7
Feb./2016.....	+0.4	+0.5	+1.6	+0.7	+0.5	+0.3	-0.2	+1.0	+1.4	+1.8	-0.2	+0.2	+0.7
Mar./2016.....	-0.7	-0.7	+0.1	-0.1	-0.7	-0.8	-0.9	+0.1	-0.1	+0.3	-1.3	-0.6	-0.5
Apr./2016.....	+0.4	+1.4	+1.7	+1.3	+1.5	+1.4	+2.1	+1.5	+1.6	+3.0	+1.2	+1.5	+1.6
Average/region	+1.3	+1.0	+2.1	+0.7	-0.3	+0.6	+0.9	+2.1	+2.0	+2.4	+0.1	+1.0	+1.2

Source: Somar Meteorologia.
[1] Interpolated data, period from 1960 to 1990.

After the period when the pea-sized fruit abortion occurred, frequent, above the historical average rain was observed throughout the citrus belt. Due to this atypical rainfall regime, trees were not exposed to water deficiency in the months from November to March and, thus, the necessary conditions for triggering the induction of new significant blooming were not present. According to Somar Meteorologia, the

accumulated rainfall increased starting in November, reaching its peak in January 2016. In some municipalities in the São José do Rio Preto region, for example, the accumulated rainfall between October 2015 and March 2016 exceeded 2,000 millimeters, but as a whole, it rained between 1,000 and 1,500 millimeters in the production regions, which figures attained in average 300 millimeters above normal for this time of the year. Bebedouro and Matão were the regions which presented a shortage during the period vis-à-vis the historical average, with -30 mm and -70 mm, respectively.

Such weather conditions resulted in a production forecast concentrated primarily in the first and second blooms, with 90% of the total, with 78% and 11%, respectively. The third bloom corresponds to 6%, and the fourth one to 5%. To calculate such forecast, the fruit of the first, second, and third blooms were totally considered. Fruit from the 4th bloom received a 50-percent set rate. Upon separating fruit per bloom, off-season fruit from the previous season were also identified but not accounted for in the forecast for the current season. In comparison with the previous season, the main difference lies in the first-bloom fruit set, which had been lower in 2015-2016 due to the drought and high temperatures which hit the groves at that time. Consequently, the proportion of first bloom in the previous season was lower than the second: 30% and 60%, in this order. Another fact that was not repeated in the current season was the occurrence of the fifth bloom, which had been noticed, albeit in a subtle manner, in some regions.

The number of fruit per tree, although under the influence of other factors such as plant age was strongly related to the variety. In April/2016 – when trees were stripped – the early-season group (Hamlin, Westin, and Rubi) presented, in average 523 fruit/tree. As it is already known, the varieties in this group are more productive than the others, with a forecast of 22% above the average for this crop year. Next come: the late-season Natal variety, with 500 fruit per tree, the other early-season varieties with 475 fruit per tree, late-season Valencia and Valencia Folha Murcha with 409 fruit per tree, and lastly, the Pera Rio variety, with 378 fruit per tree.

The method utilized to estimate the number of fruit per tree is the same one employed for the 2015-2016 season. Basically, it consists of stripping, that is, picking all the fruit on the tree, regardless of the blooming that originated them. The stripping in this season was carried out from March 28 to April 27, 2016. The harvested fruit were taken to a laboratory in Araraquara, where they were separated, counted through an automatic process and weighed, according to the bloom.

To determine the trees that are stripped, groves are first stratified by region and variety and age. Afterwards, the relative weight (%) of each of the strata in the citrus belt is calculated, and through a random, stratified sampling procedure blocks are chosen (at the same proportion they exist in the citrus belt) to be integrated into the sample. From each block chosen, a tree is stripped with the grower`s authorization, who receives R$ 30.00 per tree. This season comprises 2,200 samples, a size determined from the variance of the number of fruit per tree (historical data) and the expected error of 2% to 3% of the average.

The “region” stratification factor is composed of 12 groups covering the 328 municipalities with rural properties containing mature orange groves. In addition to the subdivision of the 12 regions, the following charts present the five subdivisions of the “variety” factor and the three subdivisions of the “age” factor. The combinations of these factors lead to 180 strata.

Chart 1 – Composition by sector of the citrus belt regions covered in the drawing

Sector	Region	Abbreviation
North	Triângulo Mineiro	TMG
	Bebedouro	BEB
	Altinópolis	ALT
Northwest	Votuporanga	VOT
	São José do Rio Preto	SJO
Central	Matão	MAT
	Duartina	DUA
	Brotas	BRO
South	Porto Ferreira	PFE
	Limeira	LIM
Southwest	Avaré	AVA
	Itapetininga	ITG

Chart 2 – Composition by maturation stage of the groups of varieties covered in the drawing

Maturation stage	Grupo de variedades
Early season	Hamlin Westin Rubi
Other early season	Valencia Americana Valencia Argentina Seleta Pineapple
Mid-season	Pera Rio[1]
Late season	Valencia Valencia Folha Murcha
	Natal

[1] The orange trees of João Nunes variety were added to the Pera Rio variety trees, because both areas present the same maturation stage.

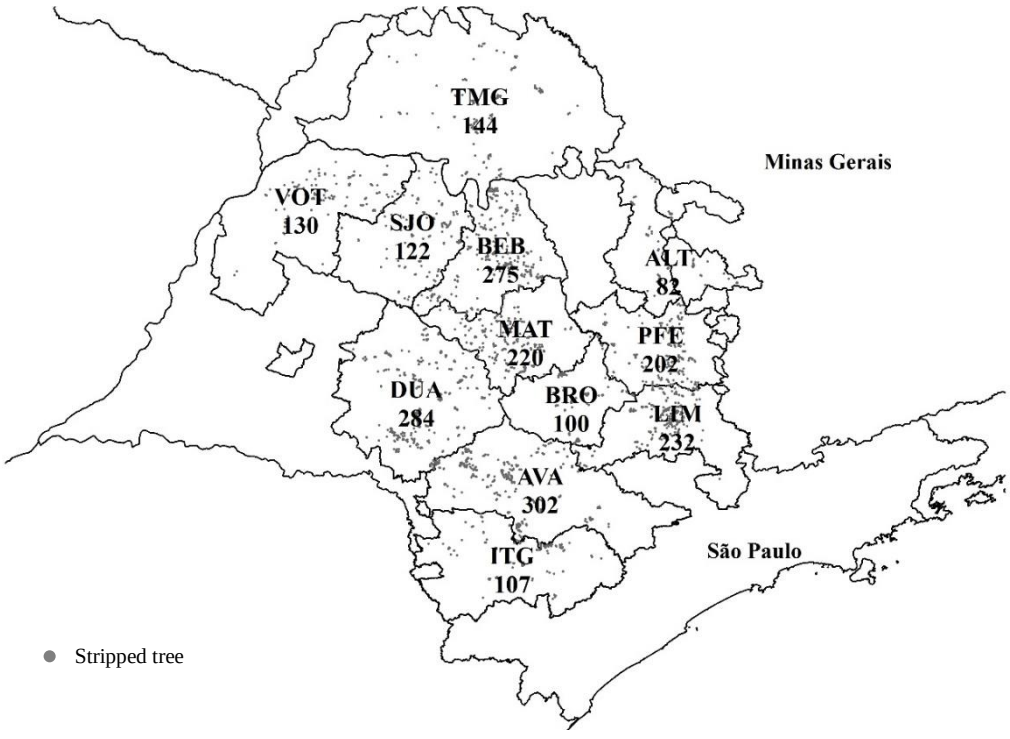
Chart 3 – Composition of the planting years by age groups covered in the drawing

Age group	Planting years
3 to 5 years.....	2013, 2012, 2011
6 to 10 years.....	2010, 2009, 2008, 2007, 2006
Above 10 years.....	Before 2006

The position of the tree to be stripped in the chosen block is predetermined per season. This procedure causes trees to be selected in an impartial manner, that is, with no interference from the research agent. Otherwise, the choice could be biased, by opting for trees with fewer or more fruit. For the 2016/2017, the tree in the chosen block is that located in the 20th hole of the 15th row. If in that position there is a vacancy, dead tree or tree of a different age than the one originally planted in the block, researchers moved forward to the third tree. If the situation were the same, they moved to the next third tree until the researchers found a tree of the chosen age. If the block does not have 15 or more planting lines, the count will be re-started on the existing rows until number 15 is reached.

The map in Figure 2 shows the location and number of stripped trees per region. The full names of the regions are shown in Chart 1.

Figure 2 – Location and total number of stripped trees per region



FRUIT LOSS FROM DROPPAGE – rate of fruit droppage, from the time of stripping until the final harvest of the block, caused naturally or by other means

The estimated average droppage rate is 15%, with 10% for early varieties Hamlin, Westin, and Rubi, 11% for the other early varieties, 16% for the Pera Rio mid-season variety, and 17% for all the late-season varieties. This rate is applied to the number of fruit found on the tree in April/2016, when the stripping is carried out. The result of this calculation is the number of fruit that will be available on the tree at harvesting, since part of the oranges that are present on the tree at the beginning of the season drop during the season due to natural droppage, pests and diseases, weather conditions, among other reasons.

To estimate such rate, weather forecast and droppage rates as assessed during the 2015-2016 season were taken into consideration, by means of continuous monitoring done by Fundecitrus starting in June at 900 orange blocks, which were no longer visited as they were completely harvested. The monitoring to be started on June/2016 will serve as a basis to update the rate estimated at the time of this publication and, consequently, update the production forecast.

The average fruit weight obtained on stripping in April/2016, together with the weather forecast data provided by Somar Meteorologia, signaled that the harvest should be less prolonged than the previous harvest. Consequently, fruit droppage tends also to be a little lower.

In addition to the information already mentioned to forecast the fruit droppage rate, consideration was also given to the historical series of the seasons from 2004-2005 to 2014-2015, already used in the past season. The data for this series were provided by orange juice companies associated to Fundecitrus – Citrosuco, Cutrale, and Louis Dreyfus – which, in an isolated manner, have carried out this follow-up in the citrus belt since 1988. The supply was carried out, individually and under formal confidentiality agreement, to the independent consulting firm to ascertain the average, with the individual data supplied by each company remaining confidential.

Based on the average deviations from orange production forecasts of citrus belt over the past 10 years, the correction factor was forecast to be 5%, which is mainly justified by pest-triggered premature fruit drop and uneven age of bearing trees (resets that have already reached producing age).

FRUIT SIZE – number of oranges to reach the weight of 40.8 kg (box) at harvest

The estimated average size of the fruit was 248 fruit per 40.8 kg box, with 275 fruit/box for the group of Hamlin, Westin, and Rubi early varieties, 245 fruit/box for the group of other early varieties, 255 fruit/box for the Pera Rio mid-season variety, 230 fruit/box for the Valencia and Valencia Folha Murcha late-season varieties, and 235 fruit/box for the Natal late-season variety.

For the purpose of forecasting the citrus belt production, among all the factors influencing the growth of fruit and, consequently, altering the number per box, two of them stand out: the number of fruit per tree, which is assessed in April, and the volume of monthly rainfall, that will take place from May till the block is harvested.

As mentioned, the number of fruit per tree in the 2016-2017 season is low, therefore this factor contributed to fruit growth, since the orange tree tends to compensate the lower amount of fruit with their larger development. On the other hand, the volume of rain forecast along the harvesting period may not contribute to its above-average development, as observed in the last season. Based on the information obtained from Somar Meteorologia as of the issuance of this publication, the average rainfall forecast for the citrus belt between May/2016 and November/2016 is 457 millimeters, 3% below the historical average. If we consider the historical average for the months from December/2016 to April/2016, the accumulated rainfall may total 1,330 millimeters, or 9% below the historical average. Analysis of the rainfall forecast is essential, since only one fourth of the São Paulo and West-Southwest of Minas Gerais citrus belt are irrigated.

Table 2 – Average rainfall forecast for the citrus belt from May/2016 to November/2016 and average historical rainfall[1] from December/2016 to April/2017, by month and region

Month/year	TMG	BEB	ALT	VOT	SJO	MAT	DUA	BRO	PFE	LIM	AVA	ITP	Average/ month
	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)
May/2016.....	45	71	61	72	73	74	88	74	71	84	92	113	77
Jun./2016.....	18	23	19	19	22	29	40	31	29	37	40	52	30
Jul./2016.....	4	9	13	6	7	11	17	13	14	20	27	52	16
Aug./2016.....	6	3	2	6	5	10	18	8	14	27	19	64	15
Sept./2016.....	27	30	36	26	30	35	50	42	44	61	71	111	47
Oct./2016.....	102	92	108	63	81	125	153	142	151	163	163	172	126
Nov./2016.....	152	110	140	115	132	124	128	140	160	177	169	210	146
Dec./2016.....	252	247	273	235	244	247	222	243	263	235	213	214	239
Jan./2017.....	208	215	221	186	213	205	209	201	209	212	195	159	204
Feb./2017.....	190	173	180	159	177	154	137	158	163	141	122	123	154
Mar./2017.....	81	64	81	75	72	56	67	62	66	58	60	65	66
Apr./2017.....	248	227	274	221	223	224	159	239	239	204	172	160	210
Total.....	1,331	1,263	1,407	1,183	1,278	1,294	1,287	1,352	1,425	1,417	1,343	1,495	1,330

Source: Somar Meteorologia.
[1] Interpolated data, period from 1960 to 1990.

According to Table 3, only in May is the forecast rainfall 25 millimeters above the historical average. The deviation shall be positive also in the months of October and November, but with values close to zero. In the other months, forecast is for water shortage in practically all regions of the citrus belt.

Table 3 – Difference between the estimated and historical average[1] rainfall from May/2016 to November/2016, by month and region

Month/year	TMG	BEB	ALT	VOT	SJO	MAT	DUA	BRO	PFE	LIM	AVA	ITP	Average/ month
	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)	(mm)
May/2016.....	+3,3	+27,2	+18,0	+22,3	+28,9	+28,9	+26,6	+20,8	+28,3	+36,5	+27,2	+32,7	+25,1
Jun./2016.....	+1,4	-5,8	-3,2	-16,3	-6,3	-7,4	-13,6	-10,9	-4,2	-7,3	-17,1	-20,2	-10,1
Jul./2016.....	-6,1	-6,9	-4,7	-17,6	-7,9	-9,5	-17,5	-10,9	-7,9	-6,3	-16,0	+1,1	-9,6
Aug./2016.....	-3,5	-12,3	-11,4	-11,2	-9,8	-12,4	-9,8	-19,3	-9,8	+0,9	-16,3	+20,2	-8,3
Sept./2016.....	-19,6	-25,5	-25,4	-22,2	-22,1	-24,5	-19,8	-20,1	-16,4	-2,1	+0,1	+23,1	-14,8
Oct./2016.....	-25,3	-34,4	-23,3	-55,2	-42,5	-3,4	+32,6	+4,6	19,6	+38,8	+43,3	+54,6	+1,1
Nov./2016.....	-35,2	-44,9	-58,9	-30,9	-31,1	-18,6	+20,6	-15,0	-5,4	+37,7	+43,8	+84,0	+0,4
Total.....	-85,0	-102,8	-108,8	-131,2	-90,8	-46,8	+19,0	-50,8	+4,3	+98,4	+65,0	+195,4	-16,3

Source: Somar Meteorologia.
[1] Interpolated data, period from 1960 to 1990.

In order to forecast fruit size, we also considered the historical series of the seasons from 2004-2005 to 2014-2015 previously mentioned. The analysis of that series shows that the size of the fruit varies significantly from one season to another due to the weather conditions taken place in each season. This fact, added to the lesser reliability of weather forecast in the long run, reinforces the need to continuously monitor the groves during the season, in order to update the crop.

3 – TABELS

The following tables present the orange forecast for 2016-2017 by variety, sector, age and bloom. In tables 15 to 19, the number of fruit per tree during stripping is shown separately for the 12 regions, but if the forecast were calculated at the region level, the number of stripped trees would be statistically insufficient. For this reason, the maximum detailing of the forecast is at the sector level. Despite this, the margin of error in the production forecast by sector is greater than that of the production forecast for the citrus belt as a whole.

Variations that may occur in fruit size and droppage rates could alter the forecast, and these will be calculated throughout the season by constant monitoring in the field to carry out the production updates. The calculations made used whole numbers, with all the decimal places. Any discrepancies between the amounts in the tables are the result of rounding.

Table 4 – Orange production forecast for the 2016-2017 season by sector

Sector	Mature groves area	Average density planting[1] of mature groves	Bearing trees	Fruits per tree at stripping[2]	Orange production forecast 2016-2017		
					By tree	By area	Total
	(hectares)	(trees/ hectare)	(1,000 trees)	(number)	(boxes/ tree)	(boxes/ hectare)	(1,000,000 boxes)
North.....	85,426	478	39,604	328	1.07	496	42.39
Northwest.....	41,817	438	18,056	268	0.86	373	15.58
Central.....	110,874	462	49,487	423	1.38	616	68.27
South.....	77,527	451	33,734	470	1.53	665	51.58
Southwest.....	71,055	498	34,667	601	1.96	956	67.92
Total.....	**386,699**	**467**	**175,548**	**430**	**1.40**	**635**	**245.74**

[1] The calculation considers the total number of trees of the block, that is, bearing and non-bearing trees (2014 or 2015 resets).
[2] Weighted average per stratum fruits.

Table 5 – Orange production forecast for the 2016-2017 season by tree age group

Age	Mature groves area	Average density planting[1] of mature groves	Bearing trees	Fruits per tree at stripping[2]	Orange production forecast 2016-2017		
					By tree	By area	Total
	(hectares)	(trees/ hectare)	(1,000 trees)	(number)	(boxes/ tree)	(boxes/ hectare)	(1,000,000 boxes)
3 to 5 years.....	61,613	594	35,734	166	0.54	313	19.27
6 to 10 years.....	151,705	503	73,835	388	1.26	611	92.74
Above 10 years.....	173,381	392	65,979	620	2.03	771	133.73
Total.....	**386,699**	**467**	**175,548**	**430**	**1.40**	**635**	**245.74**

[1] The calculation considers the total number of trees of the block, that is, bearing and non-bearing trees (2014 or 2015 resets).
[2] Weighted average per stratum fruits.

Table 6 – Orange production forecast for the 2016-2017 season by bloom

Bloom	Orange production forecast 2016-2017	Percentage of orange production forecast by bloom
	(1,000,000 boxes)	(percentage)
1st	192.52	78.3
2nd	27.58	11.2
3rd	13.96	5.7
4th	11.69	4.8
Total.....	**245.74**	**100.0**

Table 7 – Orange production forecast for 2016-2017 season as bloom percentage by region

Bloom	North[1]				Northwest[2]			Central[3]				South[4]			Sudoeste[5]			**AVE**[6]
	TMG	BEB	ALT	**AVE**[6]	VOT	SJO	**AVE**[6]	MAT	DUA	BRO	**AVE**[6]	PFE	LIM	**AVE**[6]	AVA	ITG	**AVE**[6]	
	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
1st	62.3	76.2	79.6	**73.6**	74.2	68.5	**71.2**	73.1	82.5	77.1	**78.4**	75.0	76.2	**75.6**	84.0	87.5	**85.0**	**78.3**
2nd	11.6	13.8	8.7	**12.4**	16.7	10.0	**13.1**	16.3	10.8	10.1	**12.5**	13.3	12.0	**12.7**	8.4	5.5	**7.6**	**11.2**
3rd	13.7	6.7	4.5	**7.9**	6.1	4.8	**5.4**	7.0	4.3	6.3	**5.5**	6.3	5.4	**5.9**	4.1	5.2	**4.4**	**5.7**
4th	12.4	3.3	7.2	**6.0**	3.0	16.7	**10.3**	3.7	2.5	6.5	**3.6**	5.4	6.3	**5.8**	3.5	1.8	**3.0**	**4.8**

[1] North: TMG – Triângulo Mineiro, BEB – Bebedouro, ALT – Altinópolis.
[2] Northwest: VOT – Votuporanga, SJO – São José do Rio Preto.
[3] Central: MAT – Matão, DUA – Duartina, BRO – Brotas.
[4] South: PFE – Porto Ferreira, LIM – Limeira.
[5] Southwest: AVA – Avaré, ITG – Itapetininga.
[6] AVE – Weighted average per stratum fruits.

Table 8 – Orange production forecast for the 2016-2017 season and its components by variety group

Variety group	Mature groves area	Average density planting[1]	Components of May/2016 forecast				Orange production forecast 2016-2017		
			Bearing trees	Fruits per tree at stripping[2]	Fruits forecasted by box	Fruit loss from droppage forecast	By tree	By area	Total
	(hectares)	(trees/ hectare)	(1,000 trees)	(number)	(number)	(%)	(boxes/ tree)	(boxes/ hectare)	(1,000,000 boxes)
Early season:									
Hamlin, Westin e Rubi.....	64,943	452	28,304	523	275	10.0	1.62	706	45.86
Other early season:									
Valencia Americana, Valencia Argentina, Seleta, Pineapple.....	18,317	464	8,256	475	245	11.0	1.63	736	13.48
Mid-season:									
Pera Rio.....	124,379	493	59,668	378	255	16.0	1.18	566	70.38
Late season:									
Valencia e V.Folha Murcha[3]	134,350	463	60,432	409	230	17.0	1.40	629	84.48
Natal.....	44,710	435	18,888	500	235	17.0	1.67	705	31.54
Average.....	(X)	**467**	(X)	**430**	**248**	**15.0**	**1.40**	**635**	(X)
Total.....	**386,699**	(X)	**175,548**	(X)	(X)	(X)	(X)	(X)	**245.74**

(X) Not applicable.
[1] The calculation considers the total number of trees of the block, that is, bearing and nonbearing trees (2014 or 2015 resets).
[2] Weighted average per stratum fruits.
[3] V.Folha Murcha – Valencia Folha Murcha.

Table 9 – Orange production forecast for the 2016-2017 season by variety group and sector

Variety group	Orange production forecast 2016-2017					
	Sector					
	North	Northwest	Central	South	Southwest	Total
	(1,000,000 boxes)	(1,000,000 boxes)	(1,000,000 boxes)	(1,000,000 boxes)	(1,000,000 boxes)	(1,000,000 boxes)
Early season:						
Hamlin, Westin e Rubi.....	10.91	1.77	11.08	8.98	13.12	45.86
Other early season:						
Valencia Americana, Valencia Argentina, Seleta, Pineapple.....	2.84	1.22	6.36	0.79	2.27	13.48
Mid-season:						
Pera Rio.....	8.67	7.36	20.76	15.92	17.67	70.38
Late season:						
Valencia e V.Folha Murcha[3]	15.26	2.89	22.4	20.49	23.43	84.48
Natal.....	4.71	2.34	7.67	5.4	11.43	31.54
Total.....	**42.39**	**15.58**	**68.27**	**51.58**	**67.92**	**245.74**

[1] V.Folha Murcha – Valencia Folha Murcha.

Table 10 – Orange production forecast for the 2016-2017 season by variety group – North Sector

Variety group	Mature groves area	Average density planting[1]	Bearing trees	Fruits per tree at stripping[2]	Orange production forecast 2016-2017		
					By tree	By area	Total
	(hectares)	(trees/ hectare)	(1,000 trees)	(number)	(boxes/ tree)	(boxes/ hectare)	(1,000,000 boxes)
Early season:							
Hamlin, Westin e Rubi.....	18,528	448	7,995	440	1.36	589	10.91
Other early season:							
Valencia Americana, Valencia Argentina, Seleta, Pineapple.....	4,018	521	2,025	407	1.40	707	2.84
Mid-season:							
Pera Rio.....	22,740	533	11,824	235	0.73	381	8.67
Late season:							
Valencia e V.Folha Murcha[3]	30,954	466	13,975	320	1.09	493	15.26
Natal.....	9,186	423	3,785	372	1.24	513	4.71
Average.....	(X)	**478**	(X)	**328**	**1.07**	**496**	(X)
Total.....	**85,426**	(X)	**39,604**	(X)	(X)	(X)	**42.39**

(X) Not applicable.
[1] The calculation considers the total number of trees of the block, that is, bearing and nonbearing trees (2014 or 2015 resets).
[2] Weighted average per stratum fruits.
[3] V.Folha Murcha – Valencia Folha Murcha.

Table 11 – Orange production forecast for the 2016-2017 season by variety group – Northwest Sector

Variety group	Mature groves area	Average density planting[1]	Bearing trees	Fruits per tree at stripping[2]	Orange production forecast 2016-2017		
					By tree	By area	Total
	(hectares)	(trees/ hectare)	(1,000 trees)	(number)	(boxes/ tree)	(boxes/ hectare)	(1,000,000 boxes)
Early season:							
Hamlin, Westin e Rubi.....	6,493	438	2,811	203	0.63	273	1.77
Other early season:							
Valencia Americana, Valencia Argentina, Seleta, Pineapple.....	3,175	444	1,384	257	0.88	384	1.22
Mid-season:							
Pera Rio.....	19,606	431	8,309	284	0.89	375	7.36
Late season:							
Valencia e V.Folha Murcha[3]	8,180	477	3,862	219	0.75	353	2.89
Natal.....	4,363	397	1,690	414	1.38	536	2.34
Average.....	(X)	**438**	(X)	**268**	**0.86**	**373**	(X)
Total.....	**41,817**	(X)	**18,056**	(X)	(X)	(X)	**15.58**

(X) Not applicable.
[1] The calculation considers the total number of trees of the block, that is, bearing and nonbearing trees (2014 or 2015 resets).
[2] Weighted average per stratum fruits.
[3] V.Folha Murcha – Valencia Folha Murcha.

Table 12 – Orange production forecast for the 2016-2017 season by variety group – Central Sector

Variety group	Mature groves area	Average density planting[1]	Bearing trees	Fruits per tree at stripping[2]	Orange production forecast 2016-2017		
					By tree	By area	Total
	(hectares)	(trees/ hectare)	(1,000 trees)	(number)	(boxes/ tree)	(boxes/ hectare)	(1,000,000 boxes)
Early season:							
Hamlin, Westin e Rubi.....	17,563	442	7,447	481	1.49	631	11.08
Other early season:							
Valencia Americana, Valencia Argentina, Seleta, Pineapple.....	7,562	436	3,215	576	1.98	841	6.36
Mid-season:							
Pera Rio.....	35,582	503	17,263	386	1.20	583	20.76
Late season:							
Valencia e V.Folha Murcha[3]	38,145	457	16,915	388	1.32	587	22.40
Natal.....	12,022	403	4,647	494	1.65	638	7.67
Average.....	(X)	**462**	(X)	**423**	**1.38**	**616**	(X)
Total.....	**110,874**	(X)	**49,487**	(X)	(X)	(X)	**68.27**

(X) Not applicable.
[1] The calculation considers the total number of trees of the block, that is, bearing and nonbearing trees (2014 or 2015 resets).
[2] Weighted average per stratum fruits.
[3] V.Folha Murcha – Valencia Folha Murcha.

Table 13 – Orange production forecast for the 2016-2017 season by variety group – South Sector

Variety group	Mature groves area	Average density planting[1]	Bearing trees	Fruits per tree at stripping[2]	Orange production forecast 2016-2017		
					By tree	By area	Total
	(hectares)	(trees/ hectare)	(1,000 trees)	(number)	(boxes/ tree)	(boxes/ hectare)	(1,000,000 boxes)
Early season:							
Hamlin, Westin e Rubi.....	11,212	470	5,009	579	1.79	801	8.98
Other early season:							
Valencia Americana, Valencia Argentina, Seleta, Pineapple.....	1,315	434	547	418	1.45	601	0.79
Mid-season:							
Pera Rio.....	25,898	483	12,073	423	1.32	615	15.92
Late season:							
Valencia e V.Folha Murcha[3]	32,098	425	13,210	454	1.55	638	20.49
Natal.....	7,004	431	2,895	558	1.87	771	5.40
Average.....	(X)	**451**	(X)	**470**	**1.53**	**665**	(X)
Total.....	**77,527**	(X)	**33,734**	(X)	(X)	(X)	**51.58**

(X) Not applicable.
[1] The calculation considers the total number of trees of the block, that is, bearing and nonbearing trees (2014 or 2015 resets).
[2] Weighted average per stratum fruits.
[3] V.Folha Murcha – Valencia Folha Murcha.

Table 14 – Orange production forecast for the 2016-2017 season by variety group – Southwest Sector

Variety group	Mature groves area	Average density planting[1]	Bearing trees	Fruits per tree at stripping[2]	Orange production forecast 2016-2017		
					By tree	By area	Total
	(hectares)	(trees/ hectare)	(1,000 trees)	(number)	(boxes/ tree)	(boxes/ hectare)	(1,000,000 boxes)
Early season:							
Hamlin, Westin e Rubi.....	11,147	463	5,042	840	2.60	1.177	13.12
Other early season:							
Valencia Americana, Valencia Argentina, Seleta, Pineapple.....	2,247	500	1,085	610	2.09	1.010	2.27
Mid-season:							
Pera Rio.....	20,553	505	10,199	556	1.73	860	17.67
Late season:							
Valencia e V.Folha Murcha[3]	24,973	511	12,470	550	1.88	938	23.43
Natal.....	12,135	490	5,871	583	1.95	942	11.43
Average.....	(X)	**498**	(X)	**630**	**1.96**	**956**	(X)
Total.....	**71,055**	(X)	**34,667**	(X)	(X)	(X)	**67.92**

(X) Not applicable.
[1] The calculation considers the total number of trees of the block, that is, bearing and nonbearing trees (2014 or 2015 resets).
[2] Weighted average per stratum fruits.
[3] V.Folha Murcha – Valencia Folha Murcha.

Table 15 – Fruits per tree at stripping[1], by tree age, region and variety groups – North Sector [April/2016 stripping and alteration observed in relation to April/2015]

Region and variety group	Ages			Average	Change between the average measured in April/2016 and that of April/2015
	3 to 5 years	6 to 10 years	Above 10 years		
	(number)	(number)	(number)	(number)	(%)
TMG[2]					
Early season: Hamlin, Westin e Rubi.....	70	394	355	324	-16.90
Other early season: V. Americana[3], V. Argentina[4], Seleta, Pineapple	58	312	211	247	-24.50
Mid-season: Pera Rio.....	147	154	695	217	-24.70
Late season:	139	281	318	226	-46.60
Valencia e V.Folha Murcha[5]	264	273	328	289	-33.60
Natal.....	**145**	**266**	**390**	**250**	**-48.30**
Average[6].....					
BEB[7]					
Early season: Hamlin, Westin e Rubi.....	114	369	624	440	-29.40
Other early season: V. Americana[3], V. Argentina[4], Seleta, Pineapple	67	421	723	423	-11.50
Mid-season: Pera Rio.....	105	231	339	204	-44.30
Late season:	179	328	477	370	-10.20
Valencia e V.Folha Murcha[5]	85	333	565	415	9.20
Natal.....	**119**	**317**	**523**	**348**	**-22.70**
Average[6].....					
ALT[8]					
Early season: Hamlin, Westin e Rubi.....	199	737	870	780	-53.80
Other early season: V. Americana[3], V. Argentina[4], Seleta, Pineapple	260	218	776	304	-10.30
Mid-season: Pera Rio.....	187	338	460	374	-50.10
Late season:					
Valencia e V.Folha Murcha[5]	141	366	290	325	-61.20
Natal.....	159	652	583	577	-24.40
Average[6].....	**184**	**421**	**458**	**424**	**-54.20**
SECTOR AVERAGE [6]	**133**	**321**	**482**	**328**	**-37.30**

[1] Weighted average per stratum fruits.
[2] TMG – Triângulo Mineiro.
[3] V.Americana – Valencia Americana.
[4] V.Argentina – Valencia Argentina.
[5] V.Folha Murcha – Valencia Folha Murcha.
[6] Weighted average per stratum fruits.
[7] BEB – Bebedouro.
[8] ALT – Altinópolis.

Table 16 – Fruits per tree at stripping[1], by tree age, region and variety groups – Northwest Sector [April/2016 stripping and alteration observed in relation to April/2015]

Region and variety group	Ages			Average	Change between the average measured in April/2016 and that of April/2015
	3 to 5 years	6 to 10 years	Above 10 years		
	(number)	(number)	(number)	(number)	(%)
VOT[2]					
Early season:					
Hamlin, Westin e Rubi	72	394	256	290	-22.70
Other early season:					
V. Americana[3], V. Argentina[4], Seleta, Pineapple	314	361	780	377	52.00
Mid-season:					
Pera Rio	177	281	434	270	-3.60
Late season:					
Valencia e V.Folha Murcha[5]	174	121	327	174	-31.50
Natal	58	339	698	478	14.60
Average[6]	**172**	**270**	**452**	**273**	**-5.20**
SJO[7]					
Early season:					
Hamlin, Westin e Rubi	83	237	204	187	-44.70
Other early season:					
V. Americana[3], V. Argentina[4], Seleta, Pineapple	80	277	572	236	-40.90
Mid-season:					
Pera Rio	151	344	392	322	6.30
Late season:					
Valencia e V.Folha Murcha[5]	177	273	253	236	22.90
Natal	158	393	429	391	-40.80
Average[6]	**131**	**291**	**358**	**263**	**-20.30**
SECTOR AVERAGE [6]	**148**	**280**	**389**	**268**	**-13.50**

1 Weighted average per stratum fruits.
2 VOT – Votuporanga.
3 V.Americana – Valencia Americana.
4 V.Argentina – Valencia Argentina.
5 V.Folha Murcha – Valencia Folha Murcha.
6 Weighted average per stratum fruits.
7 SJO – São José do Rio Preto.

Table 17 – Fruits per tree at stripping[1], by tree age, region and variety groups – Central Sector [April/2016 stripping and alteration observed in relation to April/2015]

Region and variety group	Ages			Average	Change between the average measured in April/2016 and that of April/2015
	3 to 5 years	6 to 10 years	Above 10 years		
	(number)	(number)	(number)	(number)	(%)
MAT[2]					
Early season:					
Hamlin, Westin e Rubi	200	402	563	384	17,80
Other early season:					
V. Americana[3], V. Argentina[4], Seleta, Pineapple	176	474	1.392	709	40,70
Mid-season:					
Pera Rio	153	352	574	331	-8,60
Late season:					
Valencia e V.Folha Murcha[5]	176	399	610	380	22,60
Natal	84	294	669	488	-28,10
Average[6]	**167**	**390**	**703**	**410**	**8,80**
DUA[7]					
Early season:					
Hamlin, Westin e Rubi	130	484	651	477	-4,40
Other early season:					
V. Americana[3], V. Argentina[4], Seleta, Pineapple	298	416	351	370	-58,00
Mid-season:					
Pera Rio	216	431	559	431	14,00
Late season:					
Valencia e V.Folha Murcha[5]	180	410	496	413	-11,90
Natal	220	397	727	501	11,80
Average[6]	**203**	**430**	**567**	**437**	**-2,90**
BRO[8]					
Early season:					
Hamlin, Westin e Rubi	40	584	990	686	-10,10
Other early season:					
V. Americana[3], V. Argentina[4], Seleta, Pineapple	138	340	619	360	22,00
Mid-season:					
Pera Rio	162	338	431	332	-18,00
Late season:					
Valencia e V.Folha Murcha[5]	190	353	382	351	-20,20
Natal	127	585	427	477	-11,50
Average[6]	**152**	**423**	**483**	**411**	**-16,30**
SECTOR AVERAGE [6]	**180**	**416**	**584**	**423**	**-1,90**

1 Weighted average per stratum fruits.
2 MAT – Matão.
3 V.Americana – Valencia Americana.
4 V.Argentina – Valencia Argentina.
5 V.Folha Murcha – Valencia Folha Murcha.
6 DUA – Duartina.
6 Weighted average per stratum fruits.
7 BRO – Brotas.

Table 18 – Fruits per tree at stripping[1], by tree age, region and variety groups – South Sector [April/2016 stripping and alteration observed in relation to April/2015]

Region and variety group	Ages			Average	Change between the average measured in April/2016 and that of April/2015
	3 to 5 years	6 to 10 years	Above 10 years		
	(number)	(number)	(number)	(number)	(%)
PFE[2]					
Early season:					
Hamlin, Westin e Rubi	104	536	1.235	671	54.30
Other early season:					
V. Americana[3], V. Argentina[4], Seleta, Pineapple	384	259	349	316	-60.00
Mid-season:					
Pera Rio	197	393	658	443	-35.60
Late season:					
Valencia e V.Folha Murcha[5]	185	354	648	484	-23.70
Natal	179	504	707	552	-27.70
Average[6]	**181**	**411**	**709**	**499**	**-15.70**
LIM[7]					
Early season:					
Hamlin, Westin e Rubi	126	419	698	506	-23.70
Other early season:					
V. Americana[3], V. Argentina[4], Seleta, Pineapple	328	298	827	614	0.00
Mid-season:					
Pera Rio	185	327	632	407	0.00
Late season:					
Valencia e V.Folha Murcha[5]	170	300	534	428	-15.60
Natal	120	392	812	565	20.20
Average[6]	**168**	**337**	**611**	**444**	**-8.10**
SECTOR AVERAGE [6]	**176**	**369**	**656**	**470**	**-12.00**

1 Weighted average per stratum fruits.
2 PFE – Porto Ferreira.
3 V.Americana – Valencia Americana.
4 V.Argentina – Valencia Argentina.
5 V.Folha Murcha – Valencia Folha Murcha.
6 Weighted average per stratum fruits.
7 LIM – Limeira.

Table 19 – Fruits per tree at stripping[1], by tree age, region and variety groups – Soutwest Sector [April/2016 stripping and alteration observed in relation to April/2015]

Region and variety group	Ages			Average	Change between the average measured in April/2016 and that of April/2015
	3 to 5 years	6 to 10 years	Above 10 years		
	(number)	(number)	(number)	(number)	(%)
AVA[2]					
Early season:					
Hamlin, Westin e Rubi	314	687	923	753	-24.20
Other early season:					
V. Americana[3], V. Argentina[4], Seleta, Pineapple	620	438	905	737	-26.60
Mid-season:					
Pera Rio	163	475	630	516	9.80
Late season:					
Valencia e V.Folha Murcha[5]	150	435	728	545	-10.20
Natal	177	396	724	542	-15.60
Average[6]	**204**	**489**	**734**	**575**	**-11.00**
ITG[7]					
Early season:					
Hamlin, Westin e Rubi	151	794	2.199	1.273	79.30
Other early season:					
V. Americana[3], V. Argentina[4], Seleta, Pineapple	284	398	1.712	385	0.00
Mid-season:					
Pera Rio	271	562	991	668	12.30
Late season:					
Valencia e V.Folha Murcha[5]	160	524	878	566	12.70
Natal	202	560	846	671	-8.10
Average[6]	**222**	**561**	**1.061**	**681**	**16.80**
SECTOR AVERAGE [6]	**213**	**505**	**807**	**601**	**-4.60**

1 Weighted average per stratum fruits.
2 AVA – Avaré.
3 V.Americana – Valencia Americana.
4 V.Argentina – Valencia Argentina.
5 V.Folha Murcha – Valencia Folha Murcha.
6 Weighted average per stratum fruits.
7 ITG – Itapetininga.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