CITRUS TREE INVENTORY
AND ORANGE PRODUCTION FORECAST FOR THE 2015-2016 SEASON OF THE SÃO PAULO AND WEST-SOUTHWEST OF MINAS GERAIS CITRUS BELT

SECTION I

CITRUS TREE INVENTORY

SECTION II

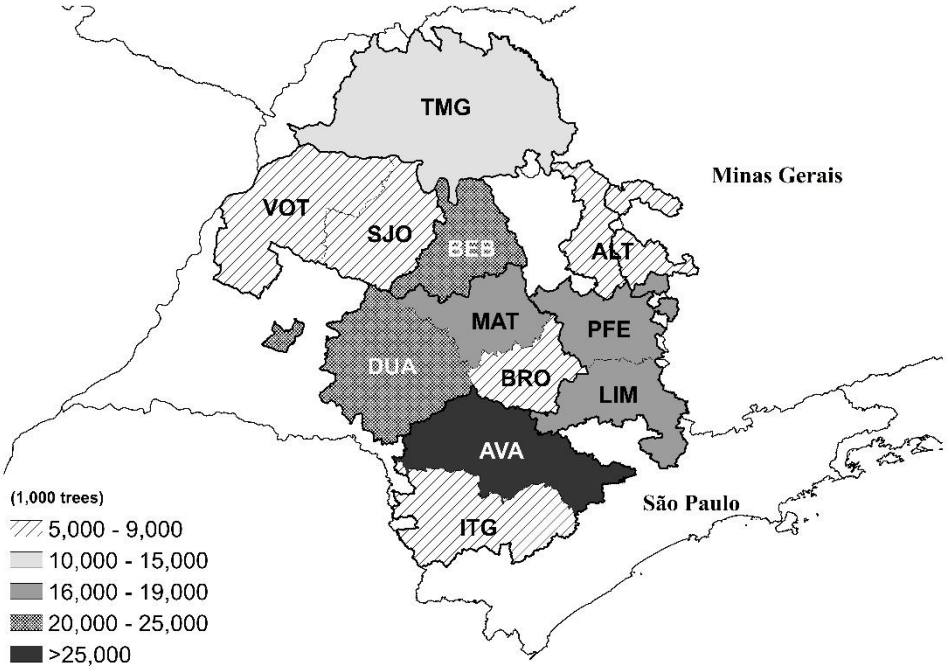
ORANGE PRODUCTION FORECAST

SECTION III

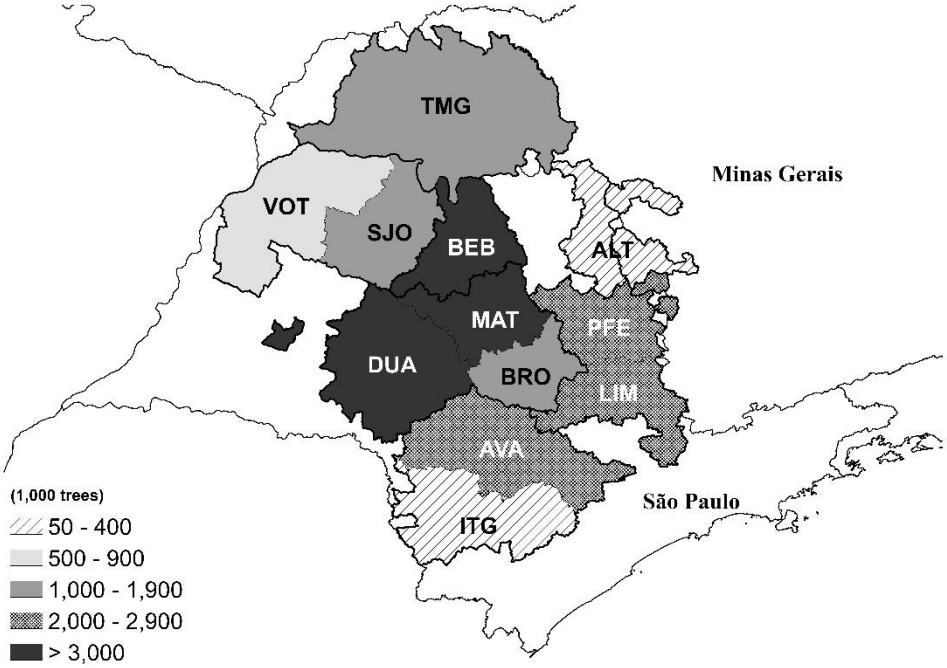
CITRUS TREE INVENTORY OF THE SÃO PAULO AND WEST-SOUTHWEST OF MINAS GERAIS CITRUS BELT

SNAPSHOT OF GROVES IN MARCH/2015

ORANGE BEARING TREES[1] BY REGION
Total: 174.126 million trees



NON-BEARING ORANGE TREES[1] BY REGION
Total 23.733 million trees



Abbreviations	Region	Orange trees[1]		
		Bearing	Non-bearing	Total
		(1,000)	(1,000)	(1,000)
TMG	Triâng. Mineiro	10,565.79	1,686.10	12,251.89
VOT	Votuporanga	9,317.17	927.73	10,244.90
SJO	S. J. do Rio Preto	9,736.91	1,034.62	10,771.53
DUA	Duartina	22,936.38	3,640.71	26,577.09
AVA	Avaré	25,755.22	2,168.66	27,923.88
ITG	Itapetininga	8,533.76	482.24	9,016.00

Abbreviations	Region	Orange trees[1]		
		Bearing	Non-bearing	Total
		(1,000)	(1,000)	(1,000)
BEB	Bebedouro	22,303.43	3,758.25	26,061.68
ALT	Altinópolis	5,094.15	320.36	5,414.51
MAT	Matão	16,903.03	3,844.61	20,747.64
PFE	P.Ferreira	16,418.85	2,428.23	18,847.08
BRO	Brotas	7,614.27	1,344.87	8,959.14
LIM	Limeira	1,946.92	2,096.92	21,043.84

[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.tr

CITRUS TREE INVENTORY OF THE SÃO PAULO AND WEST-SOUTHWEST OF MINAS GERAIS CITRUS BELT – SNAPSHOT OF GROVES IN MARCH/2015

Published on May 19, 2015[1]

Forecast Dates

2015-2016 Season
May forecast (orange production forecast): May 19, 2015
September forecast (1st orange production forecast update): September 10, 2015
December forecast (2nd orange production forecast update): December 10, 2015
February forecast (3rd orange production forecast update): February 11, 2016
April forecast (final orange production estimate): April 11, 2016

2016-2017 Season
March/2016 citrus 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 1 – No. 1 – May 19, 2015 (Portuguese version only)

Expanded and revised versions:
Year 1 – No. 2 – May 28, 2015 (Portuguese version only)
Year 1 – No. 3 – July 1, 2015 (Portuguese and English versions)

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

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

SNAPSHOT OF GROVES IN MARCH/2015

Fundecitrus
Araraquara, São Paulo
2015

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Lourival Carmo Monaco
President of Fundecitrus

Antonio Juliano Ayres
General manager of Fundecitrus

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

Vinícius Gustavo Trombin
PES executive coordinator and member of Markestrat

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

PREFACES

THE CITRUS BELT SEEN UNDER A NEW LENS

Up-to-date and broad-based information is essential to assist in recognizing unconventional patterns and to interpret the world around us. The detailed presentation about the citrus belt contained in this publication will broaden the vision of everyone in the industry, and provide a new focus to render decision-making more technical and rational.

Dr. Lourival Carmo Monaco
President of Fundecitrus and citrus grower

Fundecitrus, created 37 years ago, has evolved within the vision that led to its founding, incorporating new technologies, adding value to existing technology and seeking ways to contribute to creating a dynamic and competitive citrus industry, and to promoting productivity and sustainability in time and space. Over the years, citrus growers had a constant partnership facing demands with a wide variety of characteristics, principally from the standpoint of pests and diseases. In addition to technology, it is dedicated to the training of professionals at all levels. The evolution of its strategies, which reflect the demands of citrus growers, indicated the need to improve crop knowledge, particularly the profile of citrus growing, its dynamics and principally, the democratic access to production forecasts. This is a very important phase for providing citrus growers with the elements they need to lead to sustainability and continuous improvement of good economic practices. For this reason, in-depth studies on the technology of gathering the profile of citrus growers, who are strongly affected by agronomic cycles and particularly by greening, led Fundecitrus to become involved in the Production Forecast Research (PES) associated with the experience of field research and the generation of relevant information for citrus growers, whether it be technical, sanitary and, now, strategic information. This experience in dealing with economically sensitive problems, safely measuring, evaluating and disclosing the data was essential for us to feel confident about producing this unique study, which will change the relationship between the major links of the production chain, making it more transparent and reliable. For Fundecitrus, the end of this project stages brings us the satisfaction of having achieved this product, which should continue over the years, and be periodically reviewed, creating a reliable database for the ongoing improvement of information to enable citrus growers to benefit economically and society to preserve this important source of jobs.

Antonio Juliano Ayres
General manager of Fundecitrus

The role of Fundecitrus in the preparation of this work was to apply its knowledge and to ensure the quality of the execution of a project of this magnitude in such a short period of time, through the coordinated effort of its team; as well as to ensure the security of the information, making it available in a neutral and transparent manner for all the links in the production chain simultaneously, thus upholding its values of ethics and professionalism, always with its doors open to citrus growers and to all who can contribute to strengthening the citrus industry. The success of the PES with such high standards was due to several factors, including the knowledge accumulated by Fundecitrus team over time and the synergy and proximity of technicians to citrus growers, which enabled them to obtain reliable and more precise data. Publication of the PES report has inaugurated another victorious phase for the institution, enabling it to transfer impartial information in an underserved and strategic area of citrus tree inventory and crop forecast, which data serves for more assertive decision-making. As the manager of the company, it was a privilege to be able to rely on Fundecitrus team of committed and trained professionals, and at the same time, on the select and experienced group of advisors from FCAV-Unesp, USP and Markestrat. The unconditional support of citrus growers and Fundecitrus board members also deserve to be highlighted, and will certainly make all the difference for the success of this project.

Marcos Fava Neves
PES methodology coordinator, full professor at USP and Markestrat board member

The PES project represents a watershed in the history of Brazilian agribusiness. The private sector, involving the links of the orange juice production chain, took this major initiative, which allowed the transparency and planning of the thousands of agents involved, and with the use of high technology and presence in the field, has presented Brazilian society with a meticulous study of the quantity, tree age and crop forecast in the main Brazilian citrus belt. A top-notch team of technicians was brought together for this project; they organized the ideas and travelled thousands of kilometers, and used a great deal of both inspiration and perspiration to bring forth these results. The contribution by industry and citrus growers exceeded our best expectations and today much learning takes place in the hands of the industry. As a scientist at the University of São Paulo (USP), I must express my gratitude for the trust placed in me by the production chain, and principally by Fundecitrus, to be a part of this great team, which has delivered this result. By so doing, we feel we are useful and cooperative with the demands of society. With this unique information in our hands, and the consensus among the different areas, agents can properly plan. With this work, the citrus growing community has given an example of coordination and harmony to Brazilian agribusiness.

Vinícius Gustavo Trombin
PES executive coordinator and member of Markestrat

The PES project presented the challenge of determining the real size of citrus growing in the main orange-producing area of the world. I had knowledge about estimating models and some understanding of the citrus industry, but for the first time I was in charge of structuring a project of this degree of complexity. Today, I see that I did not only receive an invitation to work, but the privilege of being involved in a project of this magnitude. I had the opportunity to work with people of the highest technical ability, who played an essential role in overcoming the challenges. We set up a team of excellence, with monitoring committees, supervisors, data analysts and professionals with in-depth experience in the field. We visited all the citrus groves in the belt; we gathered data and produced the information that is now being simultaneously shared with the industry. In this manner, this publication ends the first cycle of the project with the certainty that it has accomplished its mission. Here is the largest and most updated data base on the citrus belt, created based on a group effort, using a transparent and reliable method.

José Carlos Barbosa
Methodology analyst and full professor titular at FCAV/Unesp

When I received the invitation from Fundecitrus to join the team responsible for the methodology to be used in the citrus tree inventory of the citrus belt and orange production forecast for the state of São Paulo, I felt it would be an opportunity for the University to give back to Brazilian society, applying a little of the knowledge acquired in these 38 years teaching at Unesp. The creation of a citrus tree inventory of the citrus park, detailed by region, variety and planting year and the orange production forecast, obtained through the use of scientific methods, can bring countless benefits to the industry. For example, its results will be able to be used in planning the expansion of citrus growing, in the development of methodologies to study, eradicate or control citrus pests and diseases, in planning the sale and distribution of inputs for citrus growing. During the development of the project, we shared our knowledge with citrus growers, industry representative and technicians who work in this industry, and we were able to improve our knowledge and contribute to generating a product with the highest degree of reliability, based on the knowledge and resources available.

ACKNOWLEDGEMENTS

This study is another achievement of Brazilian knowledge that became reality thanks to the hard work and dedication of many. It would not be possible to name them all here, but we must thank the citrus growers and orange juice companies that provided and financed this study and voluntarily opened their farms so that everyone could benefit from the reliable and up-to-date information. We must also thank the orange juice companies that are members of Fundecitrus – Citrosuco, Cutrale and Louis Dreyfus, for having transferred all their experience in mapping of the citrus area and in crop forecasting that had been done individually and in isolation, since 1988. This transfer made it possible to bring together and to share all the knowledge and allow all agents in the industry to have access to the same information. We thank the technicians of the Institute of Agricultural Economics of the Agriculture and Supply Office of São Paulo (IEA/SAA-SP) and the members of the United States Department of Agriculture (USDA) for starting a dialogue on their methodologies and sharing the results of their research. We hereby acknowledge the fundamental role played by the members of the Technical and Management committees by donating their time and sharing the highest quality technical knowledge. We must also recognize the exceptional efforts of the employees of Fundecitrus who carried out the project within the established schedule with the quality that a mission of this magnitude demands. Finally, Fundecitrus Advisory Board deserves special thanks for having believed in this study, which contributed to strengthening harmonious and transparent related in the citrus industry.

SPECIAL THANKS TO STUDY AGENTS AND SUPERVISORS

We would like to give our special thanks to all the study agents who overcame limitations and made this project possible. We would also like to give our special thanks to the supervisors who shared all their knowledge acquired over many years in the citrus industry. When they joined Fundecitrus to found this new area in the institution, each of them had already accumulated at least 15 years of experience in the industry. Here, they have demonstrated much more than just technique and the capacity to deliver; they have shown above all integrity and ethics. Thus, they helped us to make history, completely and transparently.

Fernando Alvarinho Delgado, PES supervisor, 19 years of experience in citrus growing
Francisco Carlos Cianflone, PES supervisor, 25 years of experience in citrus growing
Renato Tadeu Rovarotto, PES supervisor, 26 years of experience in citrus growing
Roseli Reina, PES supervisor, 16 years of experience in citrus growing
Sebastião Roberto Bertolucci, PES supervisor, 29 years of experience in citrus growing

SUMMARY

LIST OF CHARTS

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1 – INTRODUCTION

This publication presents the results of the first study of the citrus 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 October/2014 to May/2015.

Fundecitrus was given the attribution to perform all the activities involving gathering data in the field, laboratory, and processing this information. For this purpose, a new area was created at Fundecitrus, called the Production Forecast Research (PES – *Pesquisa de Estimativa de Safra*), dedicated exclusively to mapping the citrus area and estimating orange production. Professor José Carlos Barbosa, of the Exact Sciences Department of FCAV/Unesp, assumed responsibility for analysis of the methodologies. Markestrat, through Vinícius Gustavo Trombin and Professor Marcos Fava Neves from FEA-RP/USP, were in charge of project governance, which covered methodology standardization, coordination of activities and establishment of measures to guarantee transparency, information security and orientation by consensus.

One of the governance measures adopted was the structuring of committees composed of citrus growers, representatives of the orange juice companies, attorneys and scholars. Throughout the development of this inventory, several meetings were held in which the actions, goals and indicators were analyzed in order to propose technical improvements for conducting project activities. The partial results were publicly broadcast until February 24, at which time the management committee unanimously approved the suspension of broadcasting of the size of the mapped citrus area until the official publication of this inventory. This decision was made to ensure that all interested parties could have simultaneous access to the information. From then on, and until this inventory was published, only the PES office supervisors, project coordinators, methodology analyst and general manager of Fundecitrus had access to the actual compiled research data, and they were all under a formal confidentiality agreement, subject to legal penalties for the failure to protect the confidentiality of the information.

Throughout all the work phases, antitrust practices were complied with through the adoption of measures necessary to prevent any sharing of sensitive information and competitive content among the participating orange juice companies and between them and the citrus growers.

1.1 – BUDGET

On September 18, 2014, the Fundecitrus Advisory Board decided to conduct this study, having approved a budget of R$ 9.476 million, of which 71% refers to expenses for the technical and administrative staff, labor related charges, travel, accommodations, meals, etc., and 29% are allocated for investments that include satellite images, computers, software, etc. This budget provides the financial support required for the activities scheduled until May 31, 2015. Accounts were rendered at the Board meetings on the following dates: 12/09/2014; 03/19/2015 and 04/28/2015.

1.2 – OVERALL NUMBERS

- **151 professionals directly involved in the study;**
  Field personnel: 2 supervisors, 43 agents, 60 field assistants, 4 agronomists and 5 technicians.
  Laboratory personnel: 30 assistants.
  Office personnel: 7 people (1 coordinator, 3 supervisors, 1 analyst and 2 assistants).
- **More than 1 million kilometers covered;**
  Distance travelled for mapping citrus groves: 803,274 km.
  Distance travelled for stripping: 243,172 km.
- **481 municipalities visited;**
- **349 municipalities with mapped citrus groves** (mature groves, young groves and abandoned);
- **152 thousand square kilometers in continuous and orthorectified satellite images.**

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 2012 or in previous years.

Non-bearing tree: tree planted in 2013 or 2014 that has not yet begun to produce.

Young grove: grove implemented in 2013 or 2014. Groves implemented in 2015 were not included in this inventory since the data collection in the field ended in the first quarter of the year in question. Groves implemented in 2014 may have not all been identified, if they were planted after the visit by the study agent in the respective municipality.

Mature grove: grove implemented in 2012 or in previous years.

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

Hectare: one hectare is equivalent to 2.4710439 US acres.

Kilometer: one kilometer is equivalent to 0.621371192 mile.

2 – OBJECTIVE SURVEY METHOD FOR CITRUS TREE INVENTORY

This study was conducted using the objective method. This method was used in order to generate and publish quality and impartial technical information under strict scientific standards, with the lowest possibility of subjective interference.

The method can be divided into four phases: (1) collection of satellite images, (2) collection of data at the groves, (3) verification of the data at the office and in the field, (4) organization of data for publication.

2.1 – GATHERING OF SATELLITE IMAGES

Collection of satellite images covered 152,000 km^2 in 481 municipalities in the state of São Paulo, West and Southwest of Minas Gerais (Figure 1). The definition of the area took into account the knowledge of Fundecitrus members about the location of the citrus groves, which led to the exclusion of the metropolitan region of Campinas and the sugar cane fields surrounding Ribeirão Preto and Barra Bonita. This led to savings on imaging; however, these regions were visited.

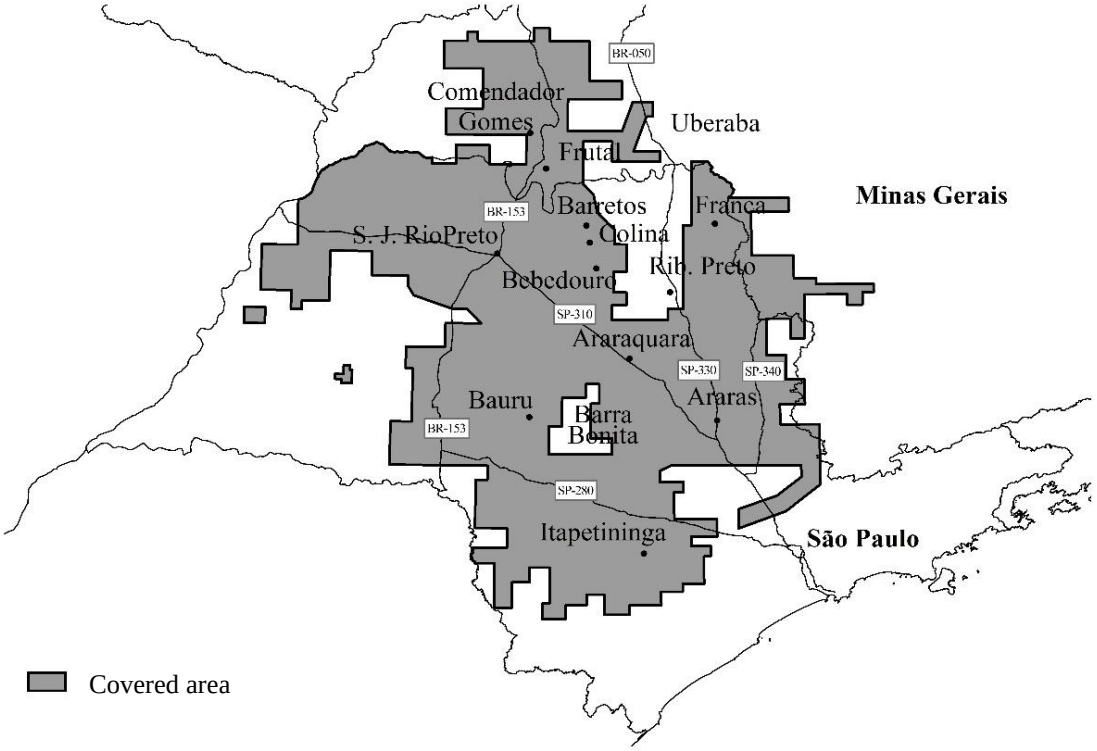


Figure 1 – Area captured by satellite images covering regions of São Paulo and Minas Gerais

These views were obtained by the satellites *Pléiades 1A* and *1B* owned by French operator *Airbus Defence and Space* between May 1 and October 31, 2014. These months were chosen due to the favorable meteorological conditions, with low cloud cover and a dry period that allowed for better contrast of the vegetation areas compared to exposed soil areas, such as rows and turn-rows (endrows).

The spatial resolution of the views is 50 centimeters per pixel, which provides a fairly clear view of the blocks. The tonality and the diameter of the tree crowns seen in the images made it possible to differentiate groves in the mature phase from those that were beginning to develop, and facilitated the interpretation of the citrus planting from other fruit crops, such as mangoes, avocados and guava significantly present in the citrus belt. In addition, the images are orthorectified, which made it possible to take precise measures for the spacing between rows or plants, in regard to calculation of the blocks areas. The images were geo-referenced into geographical coordinates with Datum WGS 84, allowing the synchronism of images with GPS, which served to guide the trips to the groves and to outline the groves planted between November 2014 and March 2015, which had not been captured in the images due to the period in which they were collected. The mapping of the totally or partially eradicated blocks was also facilitated by this technology.

2.2 – DATA COLLECTION AT THE GROVES

High definition satellite images were provided to the study agents. Before going into the field, these agents conducted a sweep or visual inspection of the images, which resulted in the pre-identification of the citrus groves to be visited to collect onsite data. To ensure that the groves were detected, especially those planted after the images were taken; the agents sought information about the location of recent plantings from agricultural technicians, cooperatives, and citrus growers.

After collecting the images, and using a computer with geo-processing software, GPS and other tools to aid in data collection, the agents went into the fields. When they arrived at the groves, they requested permission to go block by block to collect the data. If the owner or person responsible could not be found after several attempts or did not authorize them to enter, the data for these groves was estimated based on the remote sensing and statistical inference. If these producers provided information on their groves, without allowing the agents to enter to do their work, this data was submitted to the same remote sensing and statistical inference processes in order to ensure the reliability of all the data collected.

After receiving authorization to enter and disinfecting the vehicle, personnel and materials, the study agents began mapping the grove. The design of the shape of each block was placed over the images with the aid of the geo-processing software. The areas relative to any improvement inside the blocks, such as main buildings, dams or support locations for distribution of agricultural inputs were discounted, and thus the net areas of each block were obtained; that is, only those areas occupied by the plants, which were automatically calculated by the geo-processing software.[1]

The configuration of planting (arrangement of spaces between trees) was also collected. For this purpose, measurements were taken of the spaces between lines and between plants located in the center of the blocks. In regard to the spaces between lines, measurements were taken of the length covered by three trees on parallel streets, and for spacing between plants, measurements were taken of 11 consecutive holes (spaces allocated to each tree) in the same line. The averages were found for these measurements and then the densities were calculated to estimate the number of holes in each block. The holes thus calculated were then classified into four categories: bearing trees, non-bearing trees, vacancies and dead trees based on the sampling of three lines of the block, with one line at the beginning (close to the limit), one intermediary line (between the limit and the center) and one at the center of the block. At each of these, all the holes were classified and the proportions were found in the classification categories used to extrapolate to all the holes of that block.

Producers or those responsible for the grove were asked to provide information on the variety and planting year for each of the blocks. In some cases, recognition was done in the field by the agent himself, considering a series of factors, such as characteristics of the leaves, shape of the tree canopy, presence and shape of the fruit, tree size, presence or absence of dwarfing citrus rootstock, thickness of the bark, and others. Finally, data was collected at each of blocks on use and method of irrigation.

Information storage and security

In this phase of citrus grove registration, no data was collected that could identify the owner or the grove by name, in order to protect the privacy of the citrus grower. In addition, all data that was collected and entered by the agents was transferred after being encrypted on a private network, and every day, this data was securely transferred from the agent's computer to the Fundecitrus server. Confidentiality policies and restricted access were also established for all collaborators in order to guarantee reliability of the individualized data.

Data collection period at groves

The data was collected between October 27, 2014 and March 6, 2015.

[1] The procedures described based on this point were only used for orange production. For the other citrus fruits, which are limes, lemons and tangerines, the mapping method was simplified.

2.3 – FIELD AND OFFICE DATA VERIFICATION

Auditing of data

After the data from all the blocks of a given municipality had been collected by the agents, a series of checks were performed to avoid errors that could influence the results.

The technicians responsible for data processing assigned to the office conducted new sweeps of the images to adjust the shapes of the blocks and to confirm whether the citrus growing areas were fully mapped by the research agents. The agents and supervisor were informed of the differences and returned to the municipalities to conduct field checks and to register these groves if the office information was confirmed. More than 300 mapped groves were randomly drawn and had their data audited onsite by the field supervisors.

Refining of data

Data refining consisted of the counting and classification all the holes existing in blocks that were randomly assigned. The sampling was proportionately stratified and covered 5% of the blocks mapped. Due to the technique used from the drawing, the blocks of the citrus belt were subdivided into 240 strata. The random sample drawing respected the proportion in relation to the number of trees of each stratum. The stratification variables were 12 regions, five variety groups and four age groups. The regions and the age groups are presented in detail in item "2.4 – Organization of the data for publication," and the five variety groups are: (1) Hamlin, Westin, Rubi, (2) Valencia Americana, Valencia Argentina, Seleta and Pineapple, (3) Pera Rio, (4) Valencia and Valencia Folha Murcha and (5) Natal.

Based on the counting and classification results, four indexes were generated for each stratum: bearing trees, non-bearing trees, dead trees and vacancies. The indexes were prepared based on the total number of each of the elements counted in relation to the total number of holes existing. Later, the indexes obtained in the sampling were applied to all the holes of the respective stratum. Before applying these indexes, the mapped area was corrected by the eradication found in the sample. These procedures made it possible for the data collected in the period from October 2014 to February 2015 to be updated to March 2015.

Designation of the agent for the counting and classification of the blocks drawn was done in accordance with the crossed audit principles in order to further increase the reliability of the information.

Field and office data verification period

Field data verification was conducted between March 9, 2015 and April 10, 2015 and at the office, the verification/refining of the data ended on May 14, 2015.

2.4 – ORGANIZATION OF DATA FOR PUBLICATION

After undergoing verification, the data collected were gathered and organized into regions, variety groups and age groups. In this manner, the data in each block or grove was not published individually, in order to preserve the privacy of each citrus grower.

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 2 and 3 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 2 – Division of the citrus belt into five sectors

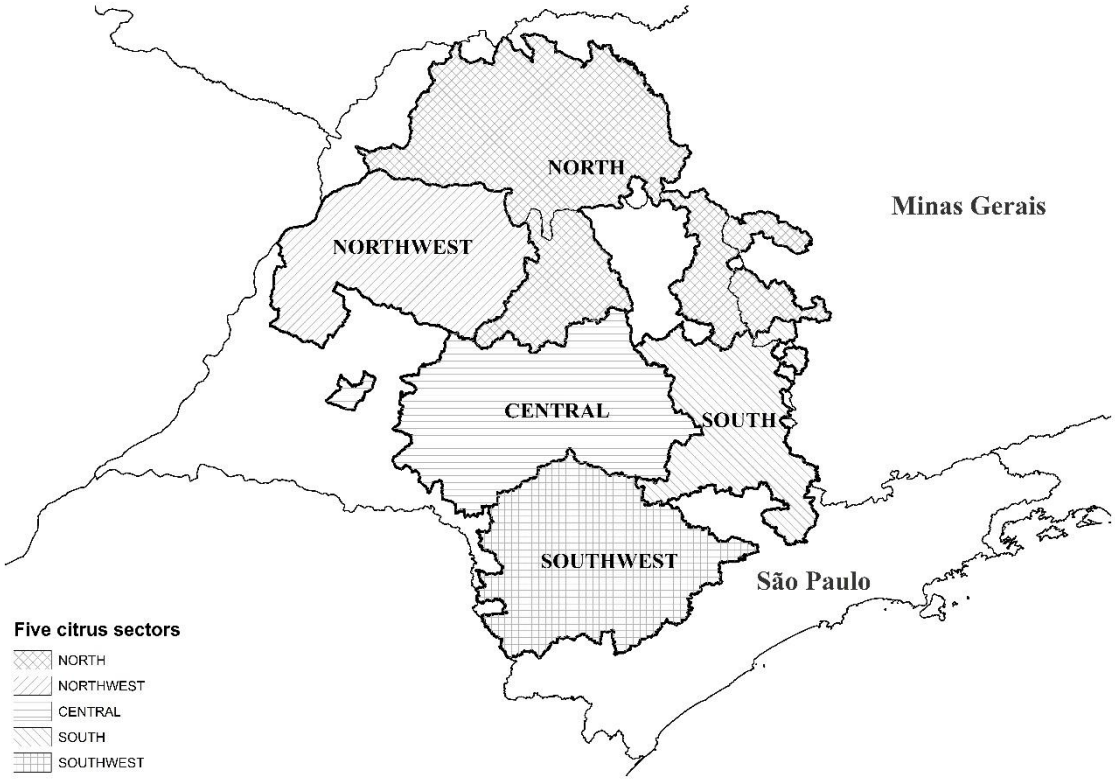


Figure 3 – Division of the citrus belt into twelve regions and respective sectors

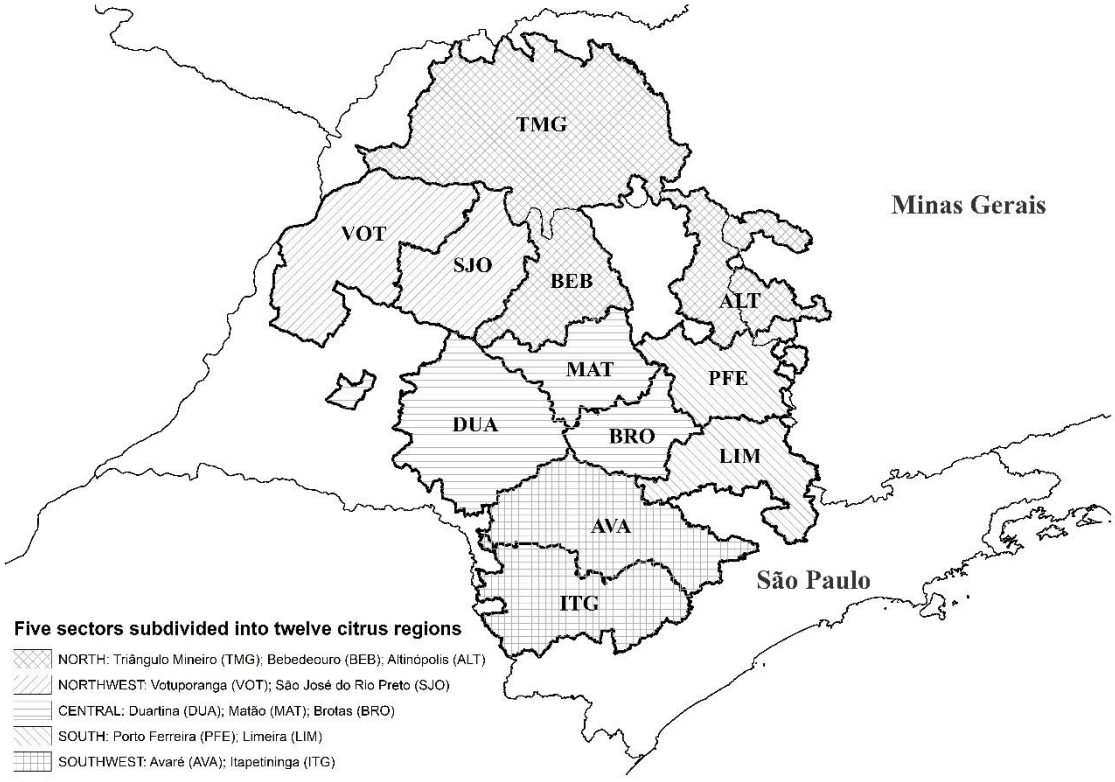


Chart 1 – Division of municipalities with citrus groves into sectors and regions

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

Grouped by varieties

Chart 2 – Division of citrus by group of varieties

Group of varieties	Varieties
Sweet oranges	Hamlin, Westin, Rubi, Valencia Americana, Valencia Argentina, Seleta, Pineapple, Pera Rio, João Nunes, Valencia, Natal and Valencia Folha Murcha
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
Acid limes and lemons	Persian/Tahiti lime, Sicilian lemon, Mexican lime, Rangpur lime and other acid limes/lemons
Mandarins and hybrids	Ponkan, Murcott tangor, Mexerica-do-Rio, Cravo, Clementina and other mandarins

Grouped by ages

Chart 3 – Classification of grove planting years by age groups

Age Groups	Planting years
1 to 2 years	2014, 2013
3 to 5 years	2012, 2011, 2010
6 to 10 years	2009, 2008, 2007, 2006, 2005
Above 10 years	Before 2005

Data organization period

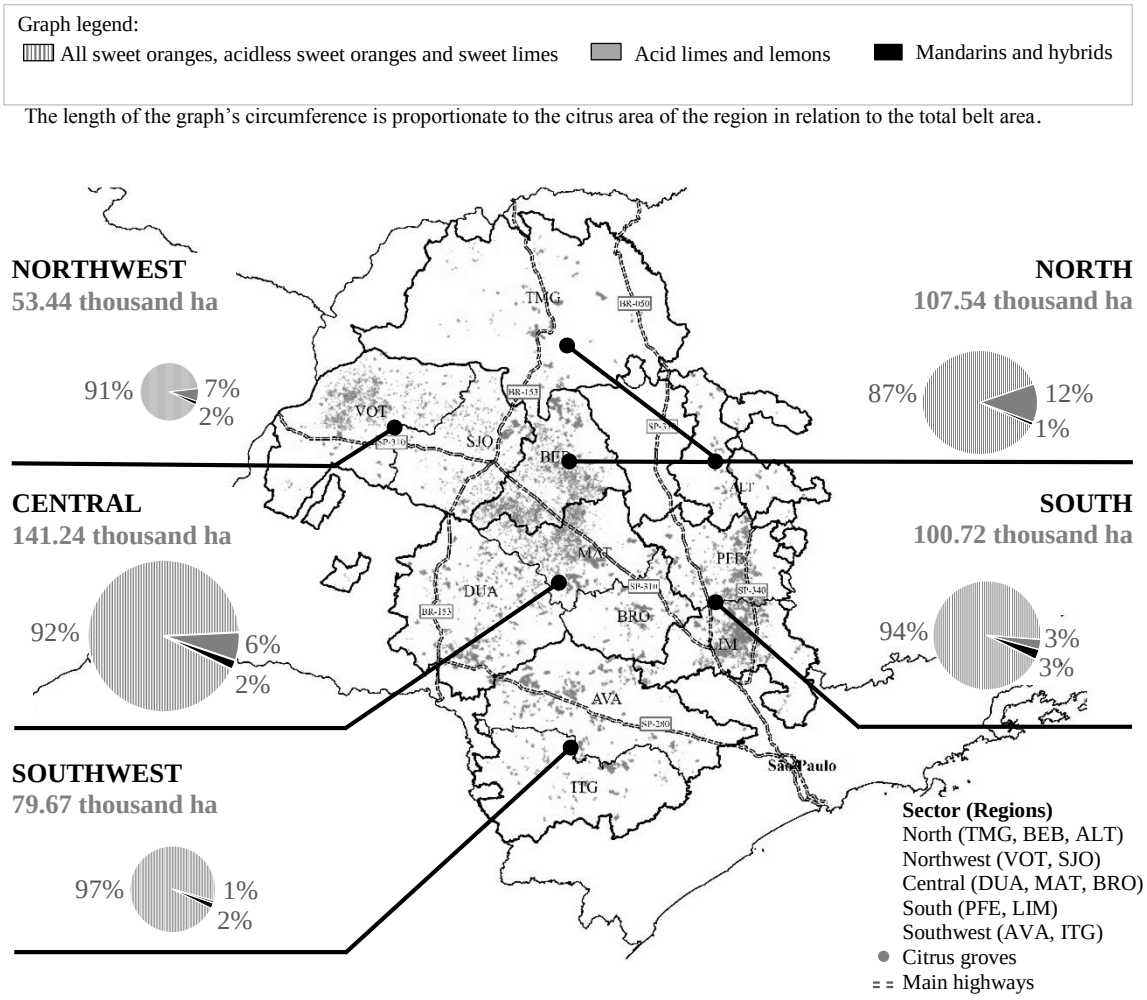
Data was organized for publication between May 14, 2015 and May 18, 2015.

3 – RESULTS

3.1 – MAIN CONCLUSIONS ABOUT THE CITRUS TREE INVENTORY

This study resulted in the snapshot of groves in March 2015, thus providing a reliable and updated view of citrus growing in the citrus belt for this date. The total area of citrus groves is 482,591 hectares in the citrus belt and is distributed among 11,561 groves located in 349 municipalities in the state of São Paulo, West and Southwest regions of Minas Gerais. Figure 4 shows the citrus groves in the belt.

Figure 4 – Citrus belt subdivided into sectors with emphasis on the grove areas



Covering 444,585 hectares, oranges (sweet oranges, acidless sweet oranges and sweet limes) are the most frequently planted citrus fruit, followed by acid limes and lemons, covering 27,938 hectares and mandarins, with 10,070 hectares. Of all the 349 citrus growing municipalities, only three exclusively produce mandarins,[2] and only one[3] exclusively grows acid limes or lemons.

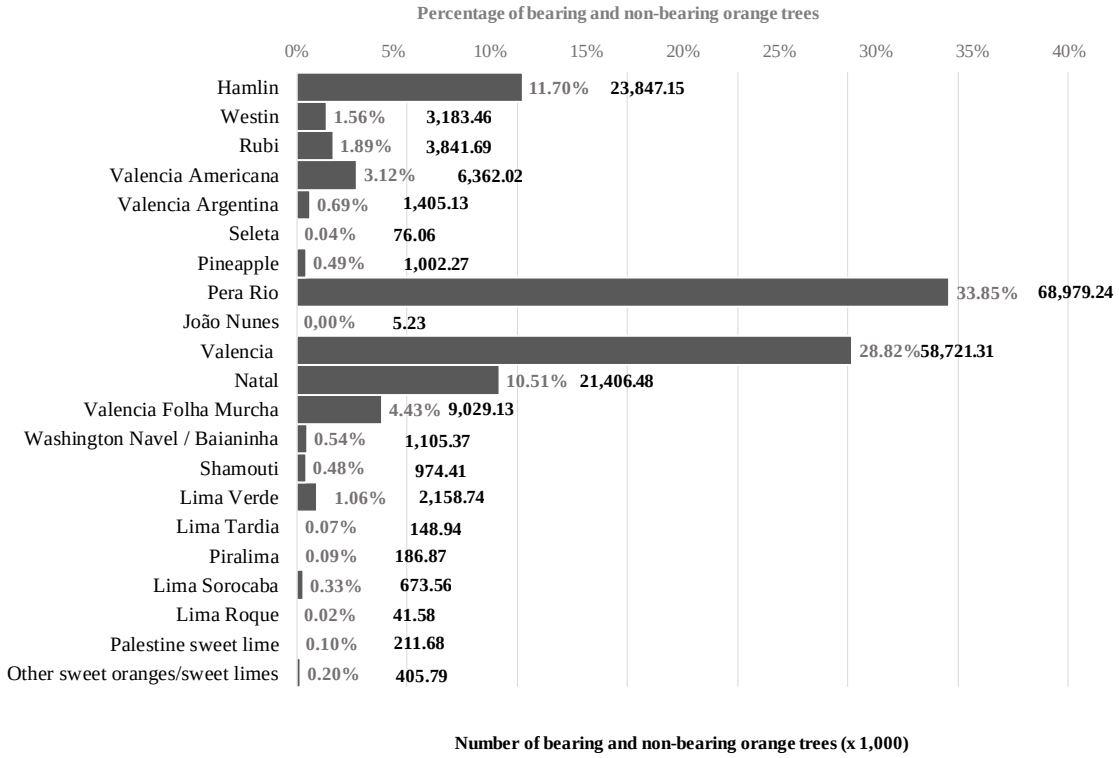
The most important sweet orange varieties in the citrus belt are: Hamlin, Westin, Rubi, Valencia Americana, Valencia Argentina, Seleta, Pineapple, Pera Rio, João Nunes, Valencia, Natal and Valencia Folha Murcha. These varieties account for 97% of the orange area and were compiled into a group called "oranges."

[2] Bastos-SP, Iacri-SP and Parapuã-SP.
[3] Iturama-MG.

In a lesser proportion, in the remaining 3% of the area, the varieties of Washington Navel, Baianinha, Shamouti, acidless sweet oranges and sweet limes are grown. Except for the planted area, all the other information on the orange groves in this publication refers to the most common varieties.

The orange trees of the most common varieties total 174.13 million bearing trees and 23.73 million non-bearing trees. Graph 1 presents the distribution of the orange trees by variety.

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



In relation to the sweet orange producing trees, 22% are between 3 and 5 years old, 45% are between 6 and 10 years old and 33% are more than 10 years old. The average age of the mature groves is 9.8 years. More than half of the bearing trees are located in only 4 regions: Avaré (AVA), Bebedouro (BEB), Duartina (DUA) and Limeira (LIM).

Analyzing the age of the plantings, we conclude that Matão (MAT) is the region that proportionately has the largest number of non-bearing trees. Another relevant aspect refers to the calculation of the number of trees that were planted before 2013 to replace trees originally planted; in other words, reset trees that have already reached their bearing phase, which total 2.776 million (1.6% of the total).

The average size of a citrus grove is approximately 42 hectares with blocks measuring 8.50 hectares on average. Groves with less than 100 thousand sweet orange trees account for 91% of the total number of citrus groves in the belt, and groves with up to 500 thousand trees account for 98%.

Important differences can be seen between the groves planted in recent years from older groves. Those more than 10 years old show density planting of 364 trees/hectare, while young groves; that is, those whose trees are not yet three years old, have 631 trees/hectare. The number of trees per hectare in the young groves is 37% higher than the weighted average, which is 459 trees/hectare. Another notable difference refers to the variety according to the planting year. While the Pera variety stands out in younger plantings, in older plantings, the most common variety is the Valencia.

The area of irrigated orange groves totals 105,788 hectares, which corresponds to 24.6% of the total orange area, with irrigation predominating in the Bebedouro (BEB) and the Triângulo Mineiro (TMG) regions and in groves less than 10 years old. The most commonly used irrigation method is the localized method, used in 88% of the irrigated area. More than half of the irrigated area is in groves covering more than 500 hectares.

3.2 – TABLES

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 citrus: Grove areas by sector

Sector	Oranges[1]	Washington Navel, Baianinha, Shamouti, acidless sweet oranges, sweet limes and others[2]	Acid limes and lemons[3]	Mandarins and hybrids[4]	Total	Percentage
	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)	(%)
North.....	92,651	884	12,408	1,592	107,535	22.28
Northwest.....	48,495	265	3,611	1,069	53,440	11.07
Central.....	126,849	3,519	8,372	2,498	141,238	29.27
South.....	88,941	5,535	2,870	3,371	100,717	20.87
Southwest.....	73,686	3,760	675	1,540	79,661	16.51
Total.....	**430,622**	**13,963**	**27,936**	**10,070**	**482,591**	**100.00**
Percentage.....	**89.23**	**2.89**	**5.79**	**2.09**	**100.00**	(X)

(X) Not applicable.

[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] Persian/Tahiti lime, Sicilian lemon, Mexican lime, Rangpur lime and other acid limes/lemons.

[4] Ponkan, Murcott tangor, Mexerica-do-Rio, Cravo, Clementina and other mandarins.

Table 2 – All citrus: Groves stratified by size of citrus area

Range of grove size (considering the total citrus area)	Citrus groves	Percentage
(hectares)	(number)	(%)
0.1 – 10.....	6,502	56.24
11 – 50.....	3,461	29.94
51 – 100.....	702	6.07
101 – 500.....	662	5.73
501 – 1,000.....	111	0.96
Above 1,000.....	123	1.06
Total.....	**11,561**	**100.00**
	(hectares)	
Average.....	**41.74**	

Table 3 – All citrus: Groves stratified by sector

Sector	Citrus groves	Percentage
	(number)	(%)
North.....	3,149	27.24
Northwest.....	2,756	23.84
Central.....	2,511	21.72
South.....	2,735	23.66
Southwest.....	410	3.54
Total.....	**11,561**	**100.00**

Table 4 – Oranges: Groves stratified by size of orange area

Ranges of grove size (considering the total orange area)	Citrus groves	Groves percentage	Total orange area	Irrigate orange area	Irrigate area percentage
(hectares)	(number)	(%)	(hectares)	(hectares)	(%)
0.1 – 10.....	3,651	48.12	18,007	1,629	9.05
11 – 50.....	2,631	34.67	62,654	7,232	11.54
51 – 100.....	605	7.97	42,524	6,659	15.66
101 – 500.....	558	7.35	117,871	24,478	20.77
501 – 1.000.....	79	1.04	55,400	12,243	22.10
Above 1.000.....	64	0.85	134,166	53,547	39.91
Total.....	**7,588**	**100.00**	**430,622**	**105,788**	**24.57**
	(hectares)				
Average.....	**56.5**				

Table 5 – Oranges: Groves stratified by number of orange trees

Range of the number of orange trees in the grove	Groves	Groves percentage	Non-bearing and bearing trees	Percentage of non-bearing and bearing trees
(number)	(number)	(%)	(1,000 trees)	(%)
Below 10 thousand.....	5,149	67.86	18,009.14	9.10
10 – 19 thousand.....	977	12.88	13,799.92	6.97
20 – 29 thousand.....	421	5.55	10,223.12	5.17
30 – 49 thousand.....	383	5.05	14,605.90	7.38
50 – 99 thousand.....	301	3.97	20,810.02	10.52
100 – 199 thousand.....	176	2.32	24,989.87	12.63
Above 200 thousand	181	2.37	95,421.23	48.23
Total.....	**7,588**	**100.00**	**197,859.18**	**100.00**
	(hectares)			
Average.....	**56.75**			

Table 6 – Oranges: Orange blocks stratified by area of block

Orange block area	Orange blocks	Percentage
(hectares)	(number)	(%)
Below 1.....	3,336	6.58
1.1 – 4.....	14,300	28.22
4.1 – 10.....	17,953	35.43
10.1 – 20.....	10,391	20.52
Above 20.....	4,688	9.25
Total.....	**50,668**	**100.00**
	(hectares)	
Average.....	**8.50**	

Table 7 – Oranges: Average age[1] of mature groves by sector and region

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

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

Table 8 – Oranges: Area of mature and young groves by sector and region

Sector and region	Area of young groves[1]	Area of mature groves[2]	Total
	(hectares)	(hectares)	(hectares)
NORTH			
Triângulo Mineiro……..	2,521	23,229	25,750
Bebedouro.....	4,327	51,668	55,995
Altinópolis.....	116	10,790	10,906
Subtotal	**6,964**	**85,687**	**92,651**
NORTHWEST			
Votuporanga.....	1,540	23,073	24,613
São José do Rio Preto.....	1,400	22,482	23,882
Subtotal.....	**2,940**	**45,555**	**48,495**
CENTRAL			
Matão.....	4,704	42,755	47,459
Duartina.....	4,429	52,379	56,808
Brotas.....	1,472	21,110	22,582
Subtotal.....	**10,605**	**116,244**	**126,849**
SOUTH			
Porto Ferreira.....	2,430	39,615	42,045
Limeira.....	1,771	45,125	46,896
Subtotal.....	**4,201**	**84,740**	**88,941**
SOUTHWEST			
Avaré.....	1,767	54,173	55,940
Itapetininga.....	653	17,093	17,746
Subtotal	**2,420**	**71,266**	**73,686**
TOTAL.....	**27,130**	**403,492**	**430,622**
PERCENTAGE.....	**6.30**	**93.70**	**100.00**

[1] Groves implemented in 2013 or 2014.
[2] Groves implemented in 2012 or in previous years.

Table 9 – Oranges: Non-bearing and bearing trees by sector and region

Sector and region	Non-bearing trees[1]			Bearing trees[4]	Total
	In young groves[2]	In mature groves[3] (resets)	Total		
	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)
NORTH					
Triângulo Mineiro……	1,502.44	183.66	1,686.10	10,565.79	12,251.89
Bebedouro.....	2,832.50	925.75	3,758.25	22,303.43	26,061.68
Altinópolis.....	62.44	257.92	320.36	5,094.15	5,414.51
Subtotal	**4,397.38**	**1,367.33**	**5,764.71**	**37,963.37**	**43,728.08**
NORTHWEST					
Votuporanga.....	765.06	162.67	927.73	9,317.17	10,244.90
São José do Rio Preto.....	823.24	211.38	1,034.62	9,736.91	10,771.53
Subtotal.....	**1,588.30**	**374.05**	**1,962.35**	**19,054.08**	**21,016.43**
CENTRAL					
Matão.....	3,047.78	796.83	3,844.61	16,903.03	20,747.64
Duartina.....	2.707.29	933.42	3,640.71	22,936.38	26,577.09
Brotas.....	941.06	403.81	1,344.87	7,614.27	8,959.14
Subtotal.....	**6,696.13**	**2,134.06**	**8,830.19**	**47,453.68**	**56,283.87**
SOUTH					
Porto Ferreira.....	1,609.96	818.27	2,428.23	16,418.85	18,847.08
Limeira.....	1,165.40	931.52	2,096.92	18,946.92	21,043.84
Subtotal.....	**2,775.36**	**1,749.79**	**4,525.15**	**35,365.77**	**39,890.92**
SOUTHWEST					
Avaré.....	1,262.84	905.82	2,168.66	25,755.22	27,923.88
Itapetininga.....	417.91	64.33	482.24	8,533.76	9,016.00
Subtotal	**1,680.75**	**970.15**	**2,650.90**	**34,288.98**	**36,939.88**
TOTAL.....	**17,137.92**	**6,595.38**	**23,733.30**	**174,125.88**	**197,859.18**
PERCENTAGE.....	**8.66**	**3.34**	**12.00**	**88.00**	**100.00**

[1] Trees planted in 2013 or 2014.
[2] Groves implemented in 2013 or 2014.
[3] Groves implemented in 2012 or in previous years.
[4] Trees planted in 2012 or in previous years.

Table 10 – Oranges: Area of groves by age, sector and region groups

Sector and region	Ages				
	1 – 2 years[1]	3 – 5 years	6 – 10 years	More than 10 years	Total
	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)
NORTH					
Triângulo Mineiro.....	2,521	6,933	11,214	5,082	25,750
Bebedouro.....	4,327	9,505	20,102	22,061	55,995
Altinópolis.....	116	601	5,950	4,239	10,906
Subtotal	**6,964**	**17,039**	**37,266**	**31,382**	**92,651**
NORTHWEST					
Votuporanga.....	1,540	6,248	12,259	4,566	24,613
São José do Rio Preto..	1,400	6,924	8,995	6,563	23,882
Subtotal.....	**2,940**	**13,172**	**21,254**	**11,129**	**48,495**
CENTRAL					
Matão.....	4,704	8,895	15,001	18,859	47,459
Duartina.....	4,429	7,143	26,252	18,984	56,808
Brotas.....	1,472	2,339	6,776	11,995	22,582
Subtotal.....	**10,605**	**18,377**	**48,029**	**49,838**	**126,849**
SOUTH					
Porto Ferreira.....	2,430	6,459	11,714	21,442	42,045
Limeira.....	1,771	6,640	15,455	23,030	46,896
Subtotal.....	**4,201**	**13,099**	**27,169**	**44,472**	**88,941**
SOUTHWEST					
Avaré.....	1,767	3,759	28,553	21,861	55,940
Itapetininga.....	653	3,198	6,207	7,688	17,746
Subtotal	**2,420**	**6,957**	**34,760**	**29,549**	**73,686**
TOTAL.....	**27,130**	**68,644**	**168,478**	**166.370**	**430,622**
PERCENTAGE.....	**6.31**	**15.94**	**39.12**	**38.63**	**100.00**

[1] Area of young orange groves.

Table 11 – Oranges: Trees by age, sector and region groups

Sector and Region	Ages							
	Non-bearing trees			Bearing trees				Total
	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	183.66	1,502.44	1,686.10	3,758.01	4,957.22	1,850.56	10,565.79	12,251.89
Bebedouro.....	925.75	2,832.50	3,758.25	5,210.15	9,245.84	7,847.44	22,303.43	26,061.68
Altinópolis.....	257.92	62.44	320.36	352.63	2,951.14	1,790.38	5,094.15	5,414.51
Subtotal.....	**1,367.33**	**4,397.38**	**5,764.71**	**9,320.79**	**17,154.20**	**11,488.38**	**37,963.37**	**43,728.08**
NORTHWEST								
Votuporanga....	162.67	765.06	927.73	2,961.98	4,921.65	1,433.55	9,317.18	10,244.91
S. J. Rio Preto...	211.38	823.24	1,034.62	3,574.51	4,039.47	2,122.92	9,736.90	10,771.52
Subtotal.....	**374.05**	**1,588.30**	**1,962.35**	**6,536.49**	**8,961.12**	**3,556.47**	**19,054.08**	**21,016.43**
CENTRAL								
Matão.....	796.83	3,047.78	3,844.61	5,104.86	6,482.33	5,315.84	16,903.03	20,747.64
Duartina.....	933.42	2,707.29	3,640.71	3,986.78	12,209.28	6,740.32	22,936.38	26,577.09
Brotas.....	403.81	941.06	1,344.87	1,145.05	2,804.47	3,664.75	7,614.27	8,959.14
Subtotal.....	**2,134.06**	**6,696.13**	**8,830.19**	**10,236.69**	**21,496.08**	**15,720.91**	**47,453.68**	**56,283.87**
SOUTH								
Porto Ferreira...	818.27	1,609.96	2,428.23	3,827.17	5,040.47	7,551.21	16,418.85	18,847.08
Limeira.....	931.52	1,165.40	2,096.92	3,550.64	6,922.44	8,473.84	18,946.92	21,043.84
Subtotal.....	**1,749.79**	**2,775.36**	**4,525.15**	**7,377.81**	**11,962.91**	**16,025.05**	**35,365.77**	**39,890.92**
SOUTHWEST								
Avaré.....	905.82	1.262.84	2,168.66	2,184.91	14,953.73	8,616.58	25,755.22	27,923,88
Itapetininga.....	64.33	417.91	482.24	2,044.28	3,592.33	2,897.15	8,533.76	9,016,00
Subtotal.....	**970.15**	**1.680.75**	**2,650.90**	**4,229.19**	**18,546.06**	**11,513.73**	**34,288.98**	**36,939.88**
TOTAL.....	**6,595.38**	**17,137.92**	**23,733.30**	**37,700.97**	**78,120.37**	**58,304.54**	**174,125.88**	**197,859.18**
PERCENTAGE.	**3.34**	**8.66**	**12.00**	**19.05**	**39.48**	**29.47**	**88.00**	**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

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	4,617	226	247	218	12	-	4	5,324
Bebedouro.....	9,631	1,434	1,097	3,262	526	1	301	16,252
Altinópolis.....	1,625	45	138	218	2	-	23	2,051
Subtotal	**15,873**	**1,705**	**1,482**	**3,698**	**540**	**1**	**328**	**23,627**
NORTHWEST								
Votuporanga.....	927	134	160	410	-	-	92	1,723
São J. Rio Preto...	4,165	470	923	2,092	480	-	180	8,310
Subtotal.....	**5,092**	**604**	**1,083**	**2,502**	**480**	**-**	**272**	**10,033**
CENTRAL								
Matão.....	7,242	344	791	2,489	2,550	-	513	13,929
Duartina.....	7,138	372	951	1,999	-	60	80	10,600
Brotas.....	2,945	242	69	377	52	-	166	3,851
Subtotal.....	**17,325**	**958**	**1,811**	**4,865**	**2,602**	**60**	**759**	**28,380**
SOUTH								
Porto Ferreira.....	3,620	1,238	652	705	210	12	9	6,446
Limeira.....	4,371	1,706	381	222	164	70	22	6,936
Subtotal.....	**7,991**	**2,944**	**1,033**	**927**	**374**	**82**	**31**	**13,382**
SOUTHWEST								
Avaré.....	7,007	941	1,664	827	677	26	112	11,254
Itapetininga.....	1,514	149	276	214	13	-	396	2,562
Subtotal	**8,521**	**1,090**	**1,940**	**1,041**	**690**	**26**	**508**	**13,816**
TOTAL.....	**54,802**	**7,301**	**7,349**	**13,033**	**4,686**	**169**	**1,899**	**89,239**
PERCENTAGE.....	**61.41**	**8.18**	**8.24**	**14.60**	**5.25**	**0.19**	**2.13**	**100.00**

- Represents zero.

Table 13 – Oranges: Trees of early season varieties by sector and region

Sector and region	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	2,000.58	101.55	145.56	115.27	4.64	-	1.77	2,369.37
Bebedouro.....	4,132.63	574.48	586.53	1,594.61	207.54	0.68	122.74	7,219.21
Altinópolis.....	796.30	20.35	78.20	122.98	1.47	-	18.37	1,037.67
Subtotal	**6,929.51**	**696.38**	**810.29**	**1,832.86**	**213.65**	**0.68**	**142.88**	**10,626.25**
NORTHWEST								
Votuporanga.....	390.61	46.87	82.87	188.52	-	-	27.82	736.69
São J. Rio Preto...	1,869.46	171.39	469.47	1,038.14	120.42	-	88.59	3,757.47
Subtotal.....	**2,260.07**	**218.26**	**552.34**	**1,226.66**	**120.42**	**-**	**116.41**	**4,494.16**
CENTRAL								
Matão.....	2,885.70	121.01	403.25	1,117.47	662.89	-	289.21	5,479.53
Duartina.....	3,076.77	141.14	492.21	1,047.92	-	34.52	34.62	4,827.18
Brotas.....	1,219.96	101.07	26.40	173.10	25.42	-	98.42	1,644.37
Subtotal.....	**7,182.43**	**363.22**	**921.86**	**2,338.49**	**688.31**	**34.52**	**422.25**	**11,951.08**
SOUTH								
Porto Ferreira.....	1,601.33	610.96	369.66	339.49	66.42	6.18	5.38	2,999.42
Limeira.....	1,882.27	766.62	216.12	108.38	64.00	27.78	8.64	3,073.81
Subtotal.....	**3,483.60**	**1,377.58**	**585.78**	**447.87**	**130.42**	**33.96**	**14.02**	**6,073.23**
SOUTHWEST								
Avaré.....	3,277.84	445.39	808.10	399.39	244.52	6.89	49.28	5,231.41
Itapetininga.....	713.72	82.64	163.31	116.76	7.80	-	257.41	1,341.64
Subtotal	**3,991.56**	**528.03**	**971.41**	**516.15**	**252.32**	**6.89**	**306.69**	**6,573.05**
TOTAL.....	**23,847.17**	**3,183.47**	**3.841.68**	**6,362.03**	**1,405.12**	**76.05**	**1,002.25**	**39,717.77**
PERCENTAGE.....	**60.04**	**8.02**	**9.67**	**16.02**	**3.54**	**0.19**	**2.52**	**100.00**

- Represents zero.

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

Sector and region	Varieties				
	Pera Rio[1]	Valencia	Natal	Valencia Folha Murcha	Total
	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)
NORTH					
Triângulo Mineiro.....	7,563	8,947	3,567	348	20,425
Bebedouro.....	13,703	17,275	6,100	2,665	39,743
Altinópolis.....	3,695	4,236	560	365	8,856
Subtotal	**24,961**	**30,458**	**10,227**	**3,378**	**69,024**
NORTHWEST					
Votuporanga.....	19,270	1,778	1,239	605	22,892
São José do Rio Preto.....	5,646	5,296	3,377	1,251	15,570
Subtotal.....	**24,916**	**7,074**	**4,616**	**1,856**	**38,462**
CENTRAL					
Matão.....	13,151	13,951	4,556	1,875	33,533
Duartina.....	20,524	16,309	6,805	2,569	46,207
Brotas.....	6,118	9,560	2,149	902	18,729
Subtotal.....	**39.793**	**39,820**	**13,510**	**5,346**	**98,469**
SOUTH					
Porto Ferreira.....	13,522	15,301	4,721	2,055	35,599
Limeira.....	16,675	16,752	3,847	2,686	39.960
Subtotal.....	**30,197**	**32,053**	**8,568**	**4,741**	**75,559**
SOUTHWEST					
Avaré.....	15,783	18,444	8,894	1,568	44,689
Itapetininga.....	5,945	4,355	4,068	813	15,181
Subtotal.....	**21,728**	**22,799**	**12,962**	**2,381**	**59,870**
TOTAL.....	**141,595**	**132,204**	**49,882**	**17,702**	**341,383**
PERCENTAGE.....	**41.47**	**38.73**	**14.61**	**5.19**	**100.00**

[1] The orange groves area of João Nunes variety, which totals 10 hectares, was added to the area of the Pera Rio variety, because both areas present the same maturity period.

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

Sector and region	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.....	3,978.88	4,136.70	1,561.57	205.39	9,882.54
Bebedouro.....	7,412.29	7,597.39	2,494.62	1,338.16	18,842.46
Altinópolis.....	1,886.94	2,022.27	273.02	194.61	4,376.84
Subtotal	**13,278.11**	**13,756.36**	**4,329.21**	**1,738.16**	**33,101.84**
NORTHWEST					
Votuporanga.....	7,974.08	770.65	470.14	293.36	9,508.23
São José do Rio Preto.....	2,681.93	2,451.16	1,215.49	665.47	7,014.05
Subtotal.....	**10,656.01**	**3,221,81**	**1,685.63**	**958.83**	**16,522.28**
CENTRAL					
Matão.....	6,837.56	5,944.98	1,454.95	1,030.58	15,268.07
Duartina.....	10,187.83	7,196.05	3,025.68	1,340.32	21,749.88
Brotas.....	2,447.15	3,574.60	901.58	391.50	7,314.83
Subtotal.....	**19,472.54**	**16,715.63**	**5,382.21**	**2,762.40**	**44,332.78**
SOUTH					
Porto Ferreira.....	6,402.29	6,478.52	1,980.76	986.10	15,847.67
Limeira.....	8,009.82	7,055.19	1,659.36	1,245.64	17,970.01
Subtotal.....	**14,412.11**	**13,533.71**	**3,640.12**	**2,231.74**	**33,817.68**
SOUTHWEST					
Avaré.....	8,398.42	9,039.08	4,374.34	880.66	22,692.50
Itapetininga.....	2,767.28	2,454.71	1,994.98	457.36	7,674.33
Subtotal.....	**11,165.70**	**11,493.79**	**6,369.32**	**1,338.02**	**30,366.83**
TOTAL.....	**68,984.47**	**58,721.30**	**21,406.49**	**9,029.15**	**158,141.41**
PERCENTAGE.....	**43.62**	**37.13**	**13.54**	**5.71**	**100.00**

[1] The orange trees of the João Nunes variety, which totals approximately 5,000 plants, were added to the area of the Pera Rio variety, because both areas present the same maturity period.

Table 16 – Oranges: Grove area by age, region and variety – North Sector

Region and variety	Ages				
	1 – 2 years[1]	3 – 5 years	6 – 10 years	More than 10 years	Total
	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)
TMG[2]					
Hamlin.....	206	251	2,569	1,592	4,618
Westin.....	30	2	122	73	227
Rubi.....	6	226	15	-	247
V.Americana[3].....	-	48	167	1	216
V.Argentina[4].....	-	-	-	12	12
Seleta.....	-	-	-	-	-
Pineapple.....	4	-	-	-	4
Pera Rio	1,175	3,288	2,164	927	7,554
João Nunes.....	-	4	5	1	10
Valencia.....	934	2,558	3,578	1,877	8,947
Natal.....	149	452	2,397	569	3,567
V.Folha Murcha[5]	17	104	197	30	348
Subtotal.....	**2,521**	**6,933**	**11,214**	**5,082**	**25,750**
Percentage.....	**2.72**	**7.48**	**12.10**	**5.49**	**27.79**
BEB[6]					
Hamlin.....	145	820	4,461	4,206	9,632
Westin.....	9	67	474	884	1,434
Rubi.....	75	710	102	211	1,098
V.Americana[3].....	117	731	2,046	367	3,261
V.Argentina[4].....	-	-	-	526	526
Seleta.....	1	-	-	-	1
Pineapple.....	51	81	96	72	300
Pera Rio	2,240	3,576	4,851	3,036	13,703
João Nunes.....	-	-	-	-	-
Valencia.....	892	2,810	5,123	8,451	17,276
Natal.....	362	480	1,626	3,631	6,099
V.Folha Murcha[5]	435	230	1,323	677	2,665
Subtotal.....	**4,327**	**9,505**	**20,102**	**22,061**	**55,995**
Percentage.....	**4.67**	**10.26**	**21.70**	**23.81**	**60.44**
ALT[7]					
Hamlin.....	-	39	872	714	1,625
Westin.....	-	-	39	5	44
Rubi.....	1	55	63	19	138
V.Americana[3].....	14	43	145	16	218
V.Argentina[4].....	-	2	-	-	2
Seleta.....	-	-	-	-	-
Pineapple.....	-	-	23	-	23
Pera Rio	46	287	1,923	1,440	3,696
João Nunes.....	-	-	-	-	-
Valencia.....	-	116	2,238	1,881	4,235
Natal.....	36	30	363	131	560
V.Folha Murcha[5]	19	29	284	33	365
Subtotal.....	**116**	**601**	**5,950**	**4,239**	**10,906**
Percentage.....	**0.13**	**0.65**	**6.42**	**4.57**	**11.77**
TOTAL.....	**6,964**	**17,039**	**37,266**	**31,382**	**92,651**

- 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 Section

Region and variety	Ages							
	Non-bearing trees			Bearing trees				Total
	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.....	40.89	130.71	171.60	131.41	1,117.55	580.01	1,828.97	2,000.57
Westin.....	1.79	10.86	12.65	0.95	62.61	25.35	88.91	101.56
Rubi.....	4.05	3.92	7.97	128.24	9.34	-	137.58	145.55
V.Americana[4].....	1.01	-	1.01	29.89	84.00	0.37	114.26	115.27
V.Argentina[5].....	-	-	-	-	-	4,64	4,64	4,64
Seleta.....	-	-	-	-	-	-	-	-
Pineapple.....	-	1.76	1.76	-	-	-	-	1.76
Pera Rio	82.55	734.30	816.85	1,788.61	1,013.97	354.23	3,156.81	3,973.66
João Nunes.....	0.10	-	0.10	1.93	3.03	0.17	5.13	5.23
Valencia.....	39.96	530.69	570.65	1,379.11	1,517.35	669.59	3,566.05	4,136.70
Natal.....	10.56	79.82	90.38	233.35	1,030.88	206.95	1,471.18	1,561.56
V.Folha Murcha[6]	2.75	10.38	13.13	64.51	118.49	9.26	192.26	205.39
Subtotal.....	**183.66**	**1,502.44**	**1,686.10**	**3,758.00**	**4,957.22**	**1,850.57**	**10,565.79**	**12,251.89**
Percentage.....	**13.43**	**34.17**	**29.25**	**40.32**	**28.90**	**16.11**	**27.83**	**28.02**
BEB[7]								
Hamlin.....	104.10	96.67	200.77	406.47	2,067.25	1,458.15	3,931.87	4,132.64
Westin.....	13.41	6.03	19.44	36.21	214.13	304.69	555.03	574.47
Rubi.....	12.69	66.03	78.72	389.46	53.02	65.33	507.81	586.53
V.Americana[4].....	104.01	65.40	169.41	358.63	934.76	131.83	1,425.22	1,594.63
V.Argentina[5].....	13.76	-	13.76	-	-	193.78	193.78	207.54
Seleta.....	-	0.68	0.68	-	-	-	-	0.68
Pineapple.....	6.54	12.99	19.53	35.67	38.99	28.54	103.20	122.73
Pera Rio	280.14	1,523.92	1,804.06	2,136.02	2,362.64	1,109.57	5,608.23	7,412.29
João Nunes.....	-	-	-	-	-	-	-	-
Valencia.....	241.90	551.48	793.38	1,462.84	2,261.85	3,079.32	6,804.01	7,597.39
Natal.....	109.44	242.31	351.75	268.52	690.04	1,184.31	2,142.87	2,494.62
V.Folha Murcha[6]	39.76	266.99	306.75	116.33	623.17	291.91	1,031.41	1,338.16
Subtotal.....	**925.75**	**2,832.50**	**3,758.25**	**5,210.15**	**9,245.85**	**7,847.43**	**22,303.43**	**26,061.68**
Percentage.....	**67.70**	**64.41**	**65.19**	**55.90**	**53.90**	**68.31**	**58.75**	**59.60**
ALT[8]								
Hamlin.....	64.50	-	64.50	18.74	389.10	323.97	731.81	796.31
Westin.....	2.67	-	2.67	-	15.40	2.27	17.67	20.34
Rubi.....	13.24	0.83	14.07	27.67	27.45	9.03	64.15	78.22
V.Americana[4].....	7.39	10.12	17.51	26.32	72.18	6.97	105.47	122.98
V.Argentina[5].....	0.20	-	0.20	1.27	-	-	1.27	1.47
Seleta.....	-	-	-	-	-	-	-	-
Pineapple.....	0.90	-	0.90	-	17.45	-	17.45	18.35
Pera Rio	59.95	24.63	84.58	173.54	1,015.59	613.23	1,802.36	1,886.94
João Nunes.....	-	-	-	-	-	-	-	-
Valencia.....	81.50	-	81.50	68.97	1,098.96	772.84	1,940.77	2,022.27
Natal.....	21.18	17.29	38.47	16.76	167.96	49.82	234.54	273.01
V.Folha Murcha[6]	6.39	9.57	15.96	19.35	147.05	12.26	178.66	194.62
Subtotal.....	**257.92**	**62.44**	**320.36**	**352.62**	**2,951.14**	**1,790.39**	**5,094.15**	**5,414.51**
Percentage.....	**18.86**	**1.42**	**5.56**	**3.78**	**17.20**	**15.58**	**13.42**	**12.38**
TOTAL.....	**1,367.33**	**4,397.38**	**5,764.71**	**9,320.77**	**17,154.21**	**11,488.39**	**37,963.37**	**43,728.08**

- 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

Region and variety	Ages				
	1 – 2 years[1]	3 – 5 years	6 – 10 years	More than 10 years	Total
	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)
VOT[2]					
Hamlin.....	22	220	474	211	927
Westin.....	9	27	72	26	134
Rubi.....	-	65	95	-	160
V.Americana[3].....	8	127	260	15	410
V.Argentina[4].....	-	-	-	-	-
Seleta.....	-	-	-	-	-
Pineapple.....	-	11	82	-	93
Pera Rio	1,420	5,405	9,285	3,160	19,270
João Nunes.....	-	-	-	-	-
Valencia.....	41	230	1,056	451	1,778
Natal.....	34	133	469	600	1,236
V.Folha Murcha[5]	6	30	466	103	605
Subtotal.....	**1,540**	**6,248**	**12,259**	**4,566**	**24,613**
Percentage.....	**3.18**	**12.88**	**25.28**	**9.41**	**50.75**
SJO[6]					
Hamlin.....	6	1,427	2,050	682	4,165
Westin.....	-	14	159	297	470
Rubi.....	60	288	319	256	923
V.Americana[3].....	26	1,257	750	58	2,091
V.Argentina[4].....	-	-	-	480	480
Seleta.....	-	-	-	-	-
Pineapple.....	6	29	138	7	180
Pera Rio	392	1,324	2,235	1,695	5,646
João Nunes.....	-	-	-	-	-
Valencia.....	594	2,119	1,811	772	5,296
Natal.....	290	228	841	2,018	3,377
V.Folha Murcha[5]	26	238	692	298	1,254
Subtotal.....	**1,400**	**6,924**	**8,995**	**6,563**	**23,882**
Percentage.....	**2.89**	**14.28**	**18.55**	**13.53**	**49.25**
TOTAL.....	**2,940**	**13,172**	**21,254**	**11,129**	**48,495**

- 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

Region and variety	Ages							
	Non-bearing trees			Bearing trees				Total
	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.....	15.68	10.65	26.33	116.55	188.77	58.96	364.28	390.61
Westin.....	1.60	3.39	4.99	10.11	25.29	6.47	41.87	46.86
Rubi.....	4.17	-	4.17	28.76	49.96	-	78.72	82.89
V.Americana[4].....	3.82	7.08	10.90	61.84	111.41	4.37	177.62	188.52
V.Argentina[5].....	-	-	-	-	-	-	-	-
Seleta.....	-	-	-	-	-	-	-	-
Pineapple.....	-	-	-	5.59	22.23	-	27.82	27.82
Pera Rio	115.25	704.60	819.85	2,550.66	3,586.88	1,016.69	7,154.23	7,974.08
João Nunes.....	-	-	-	-	-	-	-	-
Valencia.....	14.01	19.45	33.46	116.50	481.24	139.46	737.20	770.66
Natal.....	4.36	16.47	20.83	58.98	218.48	171.85	449.31	470.14
V.Folha Murcha[6]	3.78	3.42	7.20	12.99	237.39	35.74	286.12	293.32
Subtotal.....	**162.67**	**765.06**	**927.73**	**2,961.98**	**4,921.65**	**1,433.54**	**9,317.17**	**10,244.90**
Percentage.....	**3.64**	**0.78**	**4.42**	**14.10**	**23.42**	**6.83**	**44.35**	**48.77**
SJO[7]								
Hamlin.....	24.92	3.76	28.68	706.14	896.32	238.32	1,840.78	1,869.46
Westin.....	3.36	-	3.36	6.70	70.48	90.85	168.03	171.39
Rubi.....	8.00	43.86	51.86	189.39	138.42	89.79	417.60	469.46
V.Americana[4].....	39.06	16.95	56.01	640.05	325.10	16.98	982.13	1,038.14
V.Argentina[5].....	-	-	-	-	-	120.42	120.42	120.42
Seleta.....	-	-	-	-	-	-	-	-
Pineapple.....	4.76	4.02	8.78	13.95	63.71	2.16	79.82	88.60
Pera Rio	72.53	228.43	300.96	726.04	1.043.69	611.23	2,380.96	2,681.92
João Nunes.....	-	-	-	-	-	-	-	-
Valencia.....	31.45	346.45	377.90	1,030.30	785.09	257.87	2,073.26	2,451.16
Natal.....	14.63	166.88	181.51	122.88	362.03	549.07	1,033.98	1,215.49
V.Folha Murcha[6]	12.67	12.89	25.56	139.07	354.63	146.23	639.93	665.49
Subtotal.....	**211.38**	**823.24**	**1,034.62**	**3,574.52**	**4,039.47**	**2,122.92**	**9,736.91**	**10,771.53**
Percentage.....	**3.91**	**1.01**	**4.92**	**17.01**	**19.21**	**10.09**	**46.31**	**51.23**
TOTAL.....	**374.05**	**1,588.30**	**1,962.35**	**6,536.50**	**8,961.12**	**3,556.46**	**19,054.08**	**21,016.43**

- Represents zero.
1 Non-bearing trees in mature groves.
2 Non-bearing trees in young grovess.
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

Region and variety	Ages				
	1 – 2 years[1]	3 – 5 years	6 – 10 years	More than 10 years	Total
	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)
MAT[2]					
Hamlin.....	99	1,202	3,471	2,470	7,242
Westin.....	10	57	118	159	344
Rubi.....	-	353	415	22	790
V.Americana[3].....	8	524	1,418	539	2,489
V.Argentina[4].....	-	27	274	2,249	2,550
Seleta.....	-	-	-	-	-
Pineapple.....	210	303	-	-	513
Pera Rio	2,246	3,009	3,680	4,216	13,151
João Nunes.....	-	-	-	-	-
Valencia.....	1,175	2,972	3,927	5,878	13,952
Natal.....	282	305	1,074	2,893	4,554
V.Folha Murcha[5]	674	143	624	433	1,874
Subtotal.....	**4,704**	**8,895**	**15,001**	**18,859**	**47,459**
Percentage.....	**3.71**	**7.01**	**11.83**	**14.86**	**37.41**
DUA[6]					
Hamlin.....	214	565	4,088	2,272	7,139
Westin.....	6	13	189	163	371
Rubi.....	71	363	461	55	950
V.Americana[3].....	394	246	1,117	242	1,999
V.Argentina[4].....	-	-	-	-	-
Seleta.....	4	36	13	7	60
Pineapple.....	-	-	41	40	81
Pera Rio	1,727	3,228	9,515	6,055	20,525
João Nunes.....	-	-	-	-	-
Valencia.....	1,209	1,487	7,069	6,544	16,309
Natal.....	527	783	2,711	2,784	6,805
V.Folha Murcha[5]	277	422	1,048	822	2,569
Subtotal.....	**4,429**	**7,143**	**26,252**	**18,984**	**56,808**
Percentage.....	**3.49**	**5.63**	**20.70**	**14.97**	**44.79**
BRO[7]					
Hamlin.....	15	343	1,318	1,269	2,945
Westin.....	10	35	30	167	242
Rubi.....	-	4	20	45	69
V.Americana[3].....	-	52	208	117	377
V.Argentina[4].....	-	-	-	52	52
Seleta.....	-	-	-	-	-
Pineapple.....	166	-	-	-	166
Pera Rio	920	933	1,671	2,594	6,118
João Nunes.....	-	-	-	-	-
Valencia.....	201	706	2,483	6,171	9,561
Natal.....	136	77	772	1,164	2,149
V.Folha Murcha[5]	24	189	274	416	903
Subtotal.....	**1,472**	**2,339**	**6,776**	**11,995**	**22,582**
Percentage.....	**1.16**	**1.84**	**5.34**	**9.46**	**17.80**
TOTAL.....	**10,605**	**18,377**	**48,029**	**49,838**	**126,849**

- 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

Region and variety	Ages							
	Non-bearing trees			Bearing trees				Total
	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.....	85.37	44.44	129.81	670.95	1,390.32	694.62	2,755.89	2,885.70
Westin.....	4.10	4.32	8.42	27.37	41.96	43.28	112.61	121.03
Rubi.....	8.08	-	8.08	196.92	191.74	6.49	395.15	403.23
V.Americana[4].....	74.50	2.95	77.45	318.14	607.05	114.84	1,040.03	1,117.48
V.Argentina[5].....	2.51	-	2.51	15.89	135.68	508.81	660.38	662.89
Seleta.....	-	-	-	-	-	-	-	-
Pineapple.....	0.27	120.87	121.14	168.09	-	-	168.09	289.23
Pera Rio	359.06	1,493.16	1,852.22	1,795.21	1,780.82	1,409.31	4,985.34	6,837.56
João Nunes.....	-	-	-	-	-	-	-	-
Valencia.....	187.63	744.80	932.43	1,691.55	1,595.04	1,725.96	5,012.55	5,944.98
Natal.....	46.59	181.64	228.23	146.44	404.21	676.08	1,226.73	1,454.96
V.Folha Murcha[6]	28.72	455.60	484.32	74.31	335.50	136.45	546.26	1,030.58
Subtotal.....	**796.83**	**3,047.78**	**3,844.61**	**5,104.87**	**6,482.32**	**5,315.84**	**16,903.03**	**20,747.64**
Percentage.....	**37.34**	**45.52**	**43.54**	**49.87**	**30.16**	**33.81**	**35.62**	**36.86**
DUA[7]								
Hamlin.....	165.77	131.37	297.14	290.07	1,756.52	733.06	2,779.65	3,076.79
Westin.....	5.10	3.40	8.50	6.35	82.44	43.86	132.65	141.15
Rubi.....	12.35	41.54	53.89	198.37	225.10	14.85	438.32	492.21
V.Americana[4].....	32.80	262.15	294.95	141.33	541.37	70.27	752.97	1,047.92
V.Argentina[5].....	-	-	-	-	-	-	-	-
Seleta.....	1.14	2.90	4.04	21.24	7.02	2.22	30.48	34.52
Pineapple.....	1.97	-	1.97	-	20.50	12.15	32.65	34.62
Pera Rio	215.29	1,035.22	1,250.51	1,828.11	4,836.49	2,272.72	8,937.32	10,187.83
João Nunes.....	-	-	-	-	-	-	-	-
Valencia.....	358.14	735.86	1,094.00	807.28	3,065.18	2,229.62	6,102.08	7,196.08
Natal.....	76.77	324.42	401.19	457.08	1,174.51	992.91	2,624.50	3,025.69
V.Folha Murcha[6]	64.09	170.43	234.52	236.95	500.16	368.65	1,105.76	1,340.28
Subtotal.....	**933.42**	**2,707.29**	**3,640.71**	**3,986.78**	**12,209.29**	**6,740.31**	**22,936.38**	**26,577.09**
Percentage.....	**43.74**	**40.43**	**41.23**	**38.95**	**56.80**	**42.87**	**48.33**	**47.22**
BRO[8]								
Hamlin.....	83.51	9.85	93.36	173.22	552.60	400.69	1,126.51	1,219.87
Westin.....	2.40	6.49	8.89	26.27	10.02	55.88	92.17	101.06
Rubi.....	1.44	-	1.44	2.37	9.08	13.54	24.99	26.43
V.Americana[4].....	3.68	-	3.68	25.87	105.03	38.51	169.41	173.09
V.Argentina[5].....	2.00	-	2.00	-	-	23.41	23.41	25.41
Seleta.....	-	-	-	-	-	-	-	-
Pineapple.....	-	98.41	98.41	-	-	-	-	98.41
Pera Rio	88.98	595.53	684.51	339.08	629.66	793.91	1,762.65	2,447.16
João Nunes.....	-	-	-	-	-	-	-	-
Valencia.....	154.12	125.95	280.07	431.20	1,059.61	1,803.73	3,294.54	3,574.61
Natal.....	48.09	89.41	137.50	46.56	306.03	411.50	764.09	901.59
V.Folha Murcha[6]	19.59	15.42	35.01	100.49	132.44	123.57	356.50	391.51
Subtotal.....	**403.81**	**941.06**	**1,344.87**	**1,145.06**	**2,804.47**	**3,664.74**	**7,614.27**	**8,959.14**
Percentage.....	**18.92**	**14.05**	**15.23**	**11.19**	**13.05**	**23.31**	**16.05**	**15.92**
TOTAL.....	**2,134.06**	**6,696.13**	**8,830.19**	**10,236.71**	**21,496.08**	**15,720.89**	**47,453.68**	**56,283.87**

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

Region and variety	Ages				
	1 – 2 years[1]	3 – 5 years	6 – 10 years	More than 10 years	Total
	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)
PFE[2]					
Hamlin.....	52	502	1,433	1,633	3,620
Westin.....	53	236	612	336	1,237
Rubi.....	107	281	94	170	652
V.Americana[3].....	6	79	230	390	705
V.Argentina[4].....	-	19	-	191	210
Seleta.....	-	-	12	-	12
Pineapple.....	-	9	-	-	9
Pera Rio	966	2,845	3,582	6,129	13,522
João Nunes.....	-	-	-	-	-
Valencia.....	466	1,744	4,409	8,682	15,301
Natal.....	450	494	771	3,007	4,722
V.Folha Murcha[5]	330	250	571	904	2,055
Subtotal.....	**2,430**	**6,459**	**11,714**	**21,442**	**42,045**
Percentage.....	**2.73**	**7.26**	**13.17**	**24.11**	**47.27**
LIM[6]					
Hamlin.....	37	377	1,540	2,417	4,371
Westin.....	42	373	958	333	1,706
Rubi.....	46	176	91	67	380
V.Americana[3].....	1	42	126	53	222
V.Argentina[4].....	-	-	39	125	164
Seleta.....	-	4	17	49	70
Pineapple.....	-	-	12	10	22
Pera Rio	877	3,577	5,324	6,898	16,676
João Nunes.....	-	-	-	-	-
Valencia.....	311	1,278	5,505	9,658	16,752
Natal.....	279	389	981	2,199	3,848
V.Folha Murcha[5]	178	424	862	1,221	2,685
Subtotal.....	**1,771**	**6,640**	**15,455**	**23,030**	**46,896**
Percentage.....	**1.99**	**7.47**	**17.38**	**25.89**	**52.73**
TOTAL.....	**4,201**	**13,099**	**27,169**	**44,472**	**88,941**

- 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

Region and variety	Ages							
	Non-bearing trees			Bearing trees				Total
	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.....	100.65	42.57	143.22	293.51	571.16	593.46	1,458.13	1,601.35
Westin.....	23.14	49.23	72.37	160.70	246.38	131.50	538.58	610.95
Rubi.....	22.45	89.13	111.58	182.86	40.13	35.09	258.08	369.66
V.Americana[4].....	7.98	4.23	12.21	50.97	134.63	141.69	327.29	339.50
V.Argentina[5].....	1.79	-	1.79	14.00	-	50.62	64.62	66.41
Seleta.....	-	0.11	0.11	-	6.05	-	6.05	6.16
Pineapple.....	0.07	-	0.07	5.31	-	-	5.31	5.38
Pera Rio	272.54	617.04	889.58	1,650.42	1,558.28	2,304.00	5,512.70	6,402.28
João Nunes.....	-	-	-	-	-	-	-	-
Valencia.....	300.25	314.74	614.99	1,027.23	1,889.85	2,946.45	5,863.53	6,478.52
Natal.....	49.92	270.63	320.55	290.44	330.81	1,038.97	1,660.22	1,980.77
V.Folha Murcha[6]	39.48	222.28	261.76	151.74	263.17	309.43	724.34	986.10
Subtotal.....	**818.27**	**1,609.96**	**2,428.23**	**3,827.18**	**5,040.46**	**7,551.21**	**16,418.85**	**18,847.08**
Percentage.....	**46.76**	**58.01**	**53.66**	**51.87**	**42.13**	**47.12**	**46.43**	**47.25**
LIM[7]								
Hamlin.....	72.48	20.83	93.31	197.96	688.27	902.76	1,788.99	1,882.30
Westin.....	38.23	25.52	63.75	180.30	400.81	121.77	702.88	766.63
Rubi.....	9.45	28.70	38.15	110.34	41.55	26.07	177.96	216.11
V.Americana[4].....	2.17	0.53	2.70	28.81	57.34	19.53	105.68	108.38
V.Argentina[5].....	0.52	-	0.52	-	16.90	46.57	63.47	63.99
Seleta.....	1.69	-	1.69	2.37	7.90	15.82	26.09	27.78
Pineapple.....	0.18	-	0.18	-	5.05	3.41	8.46	8.64
Pera Rio	345.15	572.87	918.02	1,934.80	2,502.67	2,654.32	7,091.79	8,009.81
João Nunes.....	-	-	-	-	-	-	-	-
Valencia.....	325.78	211.68	537.46	659.11	2,394.46	3,464.16	6,517.73	7,055.19
Natal.....	77.78	173.32	251.10	226.59	436.73	744.94	1,408.26	1,659.36
V.Folha Murcha[6]	58.09	131.95	190.04	210.36	370.76	474.49	1,055.61	1,245.65
Subtotal.....	**931.52**	**1,165.40**	**2,096.92**	**3,550.64**	**6,922.44**	**8,473.84**	**18,946.92**	**21,043.84**
Percentage.....	**53.24**	**41.99**	**46.34**	**48.13**	**57.87**	**52.88**	**53.57**	**52.75**
TOTAL.....	**1,749.79**	**2,775.36**	**4,525.15**	**7,377.82**	**11,962.90**	**16,025.05**	**35,365.77**	**39,890.92**

- 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

Region and variety	Ages				
	1 – 2 years[1]	3 – 5 years	6 – 10 years	More than 10 years	Total
	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)
AVA[2]					
Hamlin.....	62	224	4,201	2,519	7,006
Westin.....	-	114	427	399	940
Rubi.....	8	196	1,152	308	1,664
V.Americana[3].....	41	176	422	190	829
V.Argentina[4].....	-	-	-	676	676
Seleta.....	-	-	-	23	23
Pineapple.....	-	-	51	61	112
Pera Rio	654	1,401	8,074	5,652	15,781
João Nunes.....	-	-	-	-	-
Valencia.....	449	864	9,079	8,052	18,444
Natal.....	431	401	4,678	3,384	8,894
V.Folha Murcha[5]	122	383	469	597	1,571
Subtotal.....	**1,767**	**3,759**	**28,553**	**21,861**	**55,940**
Percentage.....	**2.40**	**5.10**	**38.75**	**29.67**	**75.92**
ITG[6]					
Hamlin.....	-	199	540	774	1.513
Westin.....	-	23	88	38	149
Rubi.....	1	116	115	43	275
V.Americana[3].....	12	82	94	26	214
V.Argentina[4].....	-	-	13	-	13
Seleta.....	-	-	-	-	-
Pineapple.....	7	372	-	17	396
Pera Rio	360	1,104	1,458	3,024	5,946
João Nunes.....	-	-	-	-	-
Valencia.....	43	808	2,040	1,460	4,351
Natal.....	75	360	1,485	2,155	4,075
V.Folha Murcha[5]	155	134	374	151	814
Subtotal.....	**653**	**3,198**	**6,207**	**7,688**	**17,746**
Percentage.....	**0.89**	**4.34**	**8.42**	**10.43**	**24.08**
TOTAL.....	**2,420**	**6,957**	**34,760**	**29,549**	**73,686**

- 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

Region and variety	Ages							
	Non-bearing trees			Bearing trees				Total
	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.....	147.69	43.80	191.49	77.22	2,086.94	922.20	3,086.36	3,277.85
Westin.....	14.33	-	14.33	54.63	221.13	155.31	431.07	445.40
Rubi.....	22.85	12.67	35.52	79.88	586.83	105.86	772.57	808.09
V.Americana[4].....	12.98	31.52	44.50	90.16	194.72	69.98	354.86	399.36
V.Argentina[5].....	2.76	-	2.76	-	-	241.76	241.76	244.52
Seleta.....	0.52	-	0.52	-	-	6.37	6.37	6.89
Pineapple.....	0.46	-	0.46	-	26.08	22.73	48.81	49.27
Pera Rio	278.91	504.21	783.12	912.20	4,297.22	2,405.88	7,615.30	8,398.42
João Nunes.....	-	-	-	-	-	-	-	-
Valencia.....	282.51	319.43	601.94	513.38	4,782.73	3,141.03	8,437.14	9,039.08
Natal.....	108.34	265.17	373.51	214.56	2,485.44	1,300.83	4,000.83	4,374.34
V.Folha Murcha[6]	34.47	86.04	120.51	242.88	272.65	244.62	760.15	880.66
Subtotal.....	**905.82**	**1,262.84**	**2,168.66**	**2,184.91**	**14,953.74**	**8,616.57**	**25,755.22**	**27,923.88**
Percentage.....	**93.37**	**75.14**	**81.81**	**51.66**	**80.63**	**74.84**	**75.11**	**75.59**
ITG[7]								
Hamlin.....	13.69	-	13.69	115.00	306.40	278.65	700.05	713.74
Westin.....	2.36	-	2.36	13.01	48.25	19.02	80.28	82.64
Rubi.....	4.95	0.76	5.71	72.87	63.77	20.96	157.60	163.31
V.Americana[4].....	1.24	7.92	9.16	47.61	52.61	7.38	107.60	116.76
V.Argentina[5].....	0.03	-	0.03	-	7.78	-	7.78	7.81
Seleta.....	-	-	-	-	-	-	-	-
Pineapple.....	2.99	4.64	7.63	245.56	-	4.22	249.78	257.41
Pera Rio	16.59	263.44	280.03	717.59	816.30	953.37	2,487.26	2,767.29
João Nunes.....	-	-	-	-	-	-	-	-
Valencia.....	13.95	24.99	38.94	539.40	1,174.02	702.33	2,415.75	2,454.69
Natal.....	6.33	25.72	32.05	195.83	910.82	856.27	1,962.92	1,994.97
V.Folha Murcha[6]	2.20	90.44	92.64	97.40	212.38	54.96	364.74	457.38
Subtotal.....	**64.33**	**417.91**	**482.24**	**2,044.27**	**3,592.33**	**2,897.16**	**8,533.76**	**9,016.00**
Percentage.....	**6.63**	**24.86**	**18.19**	**48.34**	**19.37**	**25.16**	**24.89**	**24.41**
TOTAL.....	**970.15**	**1,680.75**	**2,650.90**	**4,229.18**	**18,546.07**	**11,513.73**	**34,288.98**	**36,939.88**

- Represents zero.
1 Non-bearing trees in mature groves.
2 Non-bearing trees in young grovess.
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

Variety	North	Northwest	Central	South	Southwest	Total	Group percentage	Total percentage
	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)	(%)	(%)
EARLY SEASON								
Hamlin.....	15,873	5,092	17,326	7,991	8,521	54,803	61.41	12.73
Westin.....	1,705	604	958	2,944	1,090	7,301	8.18	1.70
Rubi.....	1,483	1,083	1,810	1,033	1,941	7,350	8.24	1.71
Valencia Americana.	3,697	2,502	4,865	926	1,042	13,032	14.60	3.03
Valencia Argentina...	539	480	2.602	374	689	4.684	5.25	1.09
Seleta.....	4	-	60	82	23	169	0.19	0.04
Pineapple.....	328	272	760	33	508	1.901	2.15	0.44
Subtotal.....	**23,629**	**10,033**	**28,381**	**13,383**	**13,814**	**89,240**	**100.00**	**20.72**
MID-SEASON								
Pera Rio	24,953	24,916	39,794	30,197	21,726	141,586	99.99	32.88
João Nunes.....	10	-	-	-	-	10	0.01	0.00
Subtotal.....	**24,963**	**24,916**	**39,794**	**30,197**	**21,726**	**141,596**	**100.00**	**32.88**
LATE SEASON								
Valencia.....	30,456	7,074	39,821	32,053	22,796	132,201	66.17	30.70
Natal.....	10,227	4,616	13,507	8,567	12,968	49,884	24.97	11.58
V.Folha Murcha[1].....	3,376	1,856	5,346	4,741	2,382	17,701	8.86	4.11
Subtotal.....	**44,059**	**13,546**	**58,674**	**45,361**	**38,146**	**199,786**	**100.00**	**46.40**
TOTAL.....	**92,651**	**48,495**	**126,849**	**88,941**	**73,686**	**430,622**	**(X)**	**100.00**
PERCENTAGE.....	**21.52**	**11.24**	**29.46**	**20.65**	**17.13**	**100.00**	**(X)**	**(X)**

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

Table 27 – Oranges: Trees by sector and variety

Variety	North	Northwest	Central	South	Southwest	Total	Group percentage	Total percentage
	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(%)	(%)
EARLY SEASON								
Hamlin.....	6,929.51	2,260.08	7,182.34	3,483.63	3,991.59	23,847.15	60.04	12.05
Westin.....	696.38	218.26	363.22	1,377.58	528.03	3,183.47	8.02	1.61
Rubi.....	810.29	552.34	921.89	585.78	971.40	3,841.70	9.67	1.94
Valencia Americana.	1,832.86	1,226.67	2,338.50	447.87	516.13	6,362.03	16.02	3.22
Valencia Argentina...	213.66	120.42	688.31	130.42	252.32	1,405.13	3.54	0.71
Seleta.....	0.68	-	34.53	33.96	6.89	76.06	0.19	0.04
Pineapple.....	142.87	116.41	422.28	14.02	306.69	1,002.27	2.52	0.51
Subtotal.....	**10,626.25**	**4,494.18**	**11,951.07**	**6,073.26**	**6,573.05**	**39,717.81**	**100.00**	**20.07**
MID-SEASON								
Pera Rio	13,272.88	10,656.02	19,472.55	14,412.10	11,165.70	68,979.25	99.99	34.86
João Nunes.....	5.23	-	-	-	-	5.23	0.01	0.01
Subtotal.....	**13,278.11**	**10,656.02**	**19,472.55**	**14,412.10**	**11,165.70**	**68,984.48**	**100.00**	**34.87**
LATE SEASON								
Valencia.....	13,756.36	3,221.81	16,715.65	13,533.72	11,493.77	58,721.30	65.86	29.68
Natal.....	4,329.20	1,685.62	5,382.21	3,640.12	6,369.30	21,406.48	24.01	10.82
V.Folha Murcha[1].....	1,738.16	958.80	2,762.38	2,231.72	1,338.05	9,029.11	10.13	4.56
Subtotal.....	**19,823.72**	**5,866.23**	**24,860.24**	**19,405.56**	**19,201.13**	**89,156.89**	**100.00**	**45.06**
TOTAL.....	**43,728.08**	**21,016.43**	**56,283.86**	**39,890.92**	**36,939.88**	**197,858.18**	**(X)**	**100.00**
PERCENTAGE.....	**22.10**	**10.62**	**28.45**	**20.16**	**18.67**	**100.00**	**(X)**	**(X)**

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

Table 28 – Oranges: Grove areas by sector and planting year

Planting year[1]	North	Northwest	Central	South	Southwest	Total
	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)
1979 or previous years.....	254	91	231	981	34	1,591
1980.....	34	9	-	134	-	177
1981.....	19	12	-	31	69	131
1982.....	29	10	7	129	16	191
1983.....	313	7	13	214	-	547
1984.....	117	10	14	86	37	264
1985.....	491	323	976	566	39	2,395
1986.....	310	474	425	1,073	43	2,325
1987.....	216	42	171	731	382	1,542
1988.....	175	280	649	332	122	1,558
1989.....	139	514	621	1,038	781	3,093
1990.....	565	335	1,493	1,827	1,117	5,337
1991.....	110	226	699	1,432	2,118	4,585
1992.....	460	64	327	1,229	1,670	3,750
1993.....	322	140	1,589	977	1,860	4,888
1994.....	301	408	901	1,618	1,208	4,436
1995.....	459	312	908	2,261	712	4,652
1996.....	477	103	1,487	1,390	612	4,069
1997.....	721	24	2,215	1,472	1,334	5,766
1998.....	1,351	278	3,426	2,832	836	8,723
1999.....	2,859	126	3,291	2,625	800	9,701
2000.....	3,913	891	4,601	4,566	1,489	15,460
2001.....	2,993	1,416	3,156	3,186	1,093	11,844
2002.....	2,767	904	8,037	4,085	2,793	18,586
2003.....	5,300	1,634	7,368	4,114	4,277	22,693
2004.....	6,686	2,496	7,231	5,543	6,108	28,064
2005.....	6,516	1,552	9,498	5,246	7,079	29,891
2006.....	7,853	3,470	8,841	5,758	7,075	32,997
2007.....	8,038	4,094	10,627	6,650	7,641	37,050
2008.....	7,549	7,467	11,632	5,217	8,468	40,333
2009.....	7,311	4,672	7,432	4,299	4,496	28,210
2010.....	5,614	4,892	5,302	4,731	2,301	22,840
2011.....	5,073	4,685	6,329	4,104	2,307	22,498
2012.....	6,352	3,594	6,747	4,263	2,349	23,305
Mature groves.....	**85,687**	**45,555**	**116,244**	**84,740**	**71,266**	**403,492**
2013.....	5,359	1,786	7,059	2,165	1,405	17,774
2014.....	1,605	1,154	3,546	2,036	1,015	9,356
Young groves…….....	**6,964**	**2,940**	**10,605**	**4,201**	**2,420**	**27,130**
Total.....	**92,651**	**48,495**	**126,849**	**88,941**	**73,786**	**430,622**
Percentage.....	**21.52**	**11.24**	**29.46**	**20.65**	**17.13**	**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 29 – Oranges: Trees by sector and planting year

Planting year[1]	North	Northwest	Central	South	Southwest	Total
	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)
1979 or previous years.....	85.23	22.48	68.71	263.72	10.58	450.71
1980.....	13.11	4.23	-	41.81	-	59.16
1981.....	6.20	3.42	-	5.11	27.49	42.21
1982.....	9.94	3.73	1.35	45.47	6.66	67.16
1983.....	82.16	1.89	4.18	74.27	-	162.49
1984.....	26.00	5.02	4.39	27.21	15.61	78.24
1985.....	125.13	91.89	194.79	146.59	15.47	573.87
1986.....	86.75	144.39	83.50	333.78	14.85	663.27
1987.....	52.05	14.58	47.49	204.77	167.82	486.71
1988.....	51.05	71.27	195.76	111.64	44.99	474.71
1989.....	41.95	139.01	193.27	354.43	232.19	960.86
1990.....	192.83	96.63	437.11	597.9	358.41	1,682.88
1991.....	36.69	59.63	212.94	482.26	634.18	1,425.69
1992.....	155.82	17.22	98.01	424.03	540.15	1,235.23
1993.....	100.56	44.31	391.10	343.06	688.62	1,567.64
1994.....	101.63	126.30	253.07	570.17	434.23	1,485.40
1995.....	179.82	105.05	314.78	807.98	313.51	1,721.15
1996.....	166.16	29.21	484.88	496.16	241.03	1,417.44
1997.....	282.79	7.78	707.66	543.74	536.88	2,078.84
1998.....	504.05	100.46	1,192.77	1,050.45	322.17	3,169.90
1999.....	1,017.92	43.95	1,076.66	913.56	315.21	3,367.30
2000.....	1,366.49	280.15	1,354.94	1,681.68	589.76	5,273.02
2001.....	1,120.47	413.66	1,053.64	1,214.94	508.73	4,311.43
2002.....	976.52	292.91	2,415.96	1,546.08	1,180.11	6,411.57
2003.....	2,124.25	563.94	2,378.88	1,582.11	1,742.25	8,391.43
2004.....	2,582.84	873.37	2,555.09	2,162.15	2,572.84	10,746.29
2005.....	2,566.14	608.10	3,959.44	2,196.49	3,595.01	12,925.17
2006.....	3,394.61	1,378.16	3,711.13	2,517.39	3,574.22	14,575.50
2007.....	3,870.84	1,597.60	4,843.30	2,895.04	4,185.25	17,392.03
2008.....	3,657.31	3,334.97	5,468.78	2,327.53	4,704.72	19,493.31
2009.....	3,665.31	2,042.31	3,513.43	2,026.47	2,486.86	13,734.37
2010.....	2,933.98	2,381.56	2,883.33	2,599.57	1,396.87	12,195.31
2011.....	2,836.44	2,358.52	3,626.82	2,262.68	1,373.83	12,458.29
2012.....	3,550.35	1,796.41	3,726.55	2,515.56	1,458.49	13,047.36
Bearing trees.....	**37,963.37**	**19,054.08**	**47,453.68**	**35,365.77**	**34,288.98**	**174,125.88**
Resets[2].....	1,367.32	374.05	2,134.06	1,749.80	970.15	6,595.38
2013.....	3,354.22	952.59	4,457.31	1,442.60	947.75	11,154.47
2014.....	1,043.17	635.71	2,238.82	1,332.75	733.00	5,983.45
Non-bearing trees.....	**5,764.71**	**1,962.35**	**8,830.19**	**4,525.15**	**2,650.90**	**23,733.30**
Total.....	**43,728.08**	**21,016.43**	**56,283.87**	**39,890.92**	**36,939.88**	**197,859.18**
Percentage.....	**22.10**	**10.62**	**28.45**	**20.16**	**18.67**	**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 30 – Oranges: Grove area of early season varieties by planting year

Planting year[1]	Varieties							Total
	Hamlin	Westin	Rubi	Valencia Americana	Valencia Argentina	Seleta	Pineapple	
	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)
1979 or previous years...	328	-	-	-	-	26	-	354
1980.....	-	-	-	-	-	-	-	-
1981.....	19	-	-	-	-	-	-	19
1982.....	4	-	-	-	-	-	-	4
1983.....	29	-	-	-	-	-	-	29
1984.....	10	-	-	-	-	-	-	10
1985.....	267	11	95	-	-	-	-	373
1986.....	126	19	67	75	90	-	-	377
1987.....	146	-	-	-	27	-	-	173
1988.....	236	-	-	-	-	-	-	236
1989.....	169	50	-	-	-	-	-	219
1990.....	296	88	-	77	-	2	-	463
1991.....	279	59	-	52	-	-	-	390
1992.....	730	-	-	17	-	-	11	758
1993.....	865	-	-	67	1,069	-	62	2,063
1994.....	963	89	26	2	312	-	-	1,392
1995.....	372	79	-	25	-	4	-	480
1996.....	436	22	6	167	-	-	2	633
1997.....	367	183	8	10	465	-	33	1,066
1998.....	1,079	282	44	79	63	-	24	1,571
1999.....	2,024	328	51	24	257	-	-	2,684
2000.....	1,510	160	20	165	158	3	-	2,016
2001.....	732	45	53	36	473	7	24	1,370
2002.....	2,365	392	187	271	655	6	12	3,888
2003.....	3,480	342	248	321	523	23	13	4,950
2004.....	3,926	733	391	625	220	9	25	5,929
2005.....	4,688	294	194	788	159	13	53	6,189
2006.....	5,919	643	779	1,048	-	1	88	8,478
2007.....	6,487	770	349	1,726	145	4	35	9,516
2008.....	6,851	839	757	1,979	22	-	132	10,580
2009.....	3,073	743	864	1,443	-	25	135	6,283
2010.....	1,845	346	799	1,012	21	37	102	4,162
2011.....	1,994	310	1,046	1,513	23	-	248	5,132
2012.....	2,331	306	989	885	4	4	454	4,973
Mature groves.....	**53,946**	**7,133**	**6,973**	**12,407**	**4,686**	**164**	**1,453**	**86,762**
2013.....	733	122	262	576	-	-	369	2,062
2014.....	123	46	114	50	-	5	77	415
Young groves…….	**856**	**168**	**376**	**626**	**-**	**5**	**446**	**2,477**
Total.....	**54,802**	**7,301**	**7,349**	**13,033**	**4,686**	**169**	**1,899**	**89,239**
Percentage.....	**61.41**	**8.20**	**8.24**	**14.60**	**5.25**	**0.20**	**2.10**	**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 of early season varieties by planting year

Planting year[1]	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....	98.79	-	-	-	-	6.63	-	105.42
1980.....	-	-	-	-	-	-	-	-
1981.....	6.19	-	-	-	-	-	-	6.19
1982.....	1.69	-	-	-	-	-	-	1.69
1983.....	9.89	-	-	-	-	-	-	9.89
1984.....	4.59	-	-	-	-	-	-	4.59
1985.....	71.40	2.99	14.39	-	-	-	-	88.78
1986.....	35.12	3.87	17.58	24.19	15.08	-	-	95.84
1987.....	38.96	-	-	-	6.85	-	-	45.81
1988.....	68.50	-	-	-	-	-	-	68.50
1989.....	47.56	15.84	-	-	-	-	-	63.40
1990.....	89.21	29.54	-	15.45	-	1.13	-	135.33
1991.....	72.54	18.82	-	21.75	-	-	-	113.11
1992.....	249.10	-	-	3.18	-	-	4.68	256.96
1993.....	298.32	-	-	21.67	216.77	-	22.89	559.65
1994.....	318.37	28.34	7.37	0.62	79.32	-	-	434.02
1995.....	130.72	28.56	-	8.15	-	1.18	-	168.61
1996.....	138.19	7.37	1.69	46.84	-	-	0.60	194.69
1997.....	128.44	62.39	2.26	3.62	100.17	-	10.14	307.02
1998.....	362.15	93.82	14.99	28.57	22.36	-	6.58	528.47
1999.....	680.82	114.65	16.23	7.41	98.82	-	-	917.93
2000.....	512.94	58.52	9.40	44.37	34.25	1.01	-	660.49
2001.....	252.29	17.66	25.03	14.10	109.98	2.22	9.41	430.69
2002.....	789.72	154.68	71.25	76.37	234.26	2.36	4.16	1,332.80
2003.....	1,319.82	119.16	78.46	93.49	189.16	6.37	4.89	1,811.35
2004.....	1,459.52	244.04	128.36	212.94	83.02	3.51	9.85	2,141.24
2005.....	1,933.75	120.96	85.63	304.07	69.43	5.80	25.66	2,545.30
2006.....	2,499.82	265.42	377.89	479.64	-	0.33	40.41	3,663.51
2007.....	2,979.78	330.75	159.95	775.47	80.27	1.78	14.42	4,342.42
2008.....	3,176.57	372.43	382.51	947.43	10.66	-	49.20	4,938.80
2009.....	1,421.31	349.33	430.40	713.58	-	13.07	64.31	2,992.00
2010.....	924.84	192.33	443.87	568.78	15.27	21.48	57.66	2,224.23
2011.....	1,042.08	161.77	570.64	785.88	14.25	-	163.35	2,737.97
2012.....	1,230.31	168.49	592.62	464.97	1.63	2.12	253.16	2,713.30
Bearing trees.....	**22,393.30**	**2,961.73**	**3,430.52**	**5,662.54**	**1,381.55**	**68.99**	**741.37**	**36,640.00**
Resets[2].....	919.24	112.50	123.73	290.62	23.57	3.35	18.17	1,491.18
2013.....	458.86	74.19	182.55	374.84	-	0.12	192.91	1,283.47
2014.....	75.77	35.05	104.88	34.03	-	3.59	49.80	303.12
Non-bearing trees.....	**1,453.87**	**221.74**	**411.16**	**699.49**	**23.57**	**7.06**	**260.88**	**3,077.77**
Total.....	**23,847.17**	**3,183.47**	**3,841.68**	**6,362.03**	**1,405.12**	**76.05**	**1,002.25**	**39,717.77**
Percentage.....	**60.04**	**8.02**	**9.67**	**16.02**	**3.54**	**0.19**	**2.52**	**100.00**

[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 mid-season and late season varieties by planting year

Planting year[1]	Varieties				Total
	Pera Rio[2]	Valencia	Natal	Valencia Folha Murcha	
	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)
1979 or previous years....	266	739	236	-	1,241
1980.....	48	57	62	10	177
1981.....	15	31	67	-	113
1982.....	87	52	46	-	185
1983.....	183	89	246	-	518
1984.....	65	93	95	-	253
1985.....	511	522	989	-	2,022
1986.....	646	479	790	35	1,950
1987.....	381	309	636	43	1,369
1988.....	483	289	521	29	1,322
1989.....	1,141	1,062	584	86	2,873
1990.....	1,476	2,034	1,084	278	4,872
1991.....	1,644	1,207	1,289	56	4,196
1992.....	1,452	903	559	78	2,992
1993.....	1,062	981	626	155	2,824
1994.....	1,294	1,028	555	169	3,046
1995.....	1,626	1,817	511	219	4,173
1996.....	1,218	1,324	579	314	3,435
1997.....	1,414	2,520	653	113	4,700
1998.....	2,378	3,649	552	574	7,153
1999.....	2,374	3,774	482	386	7,016
2000.....	4,171	6,413	1,886	975	13,445
2001.....	2,849	4,682	2,283	661	10,475
2002.....	3,759	7,794	2,682	464	14,699
2003.....	6,671	8,302	2,495	274	17,742
2004.....	7,612	9,729	4,026	768	22,135
2005.....	8,355	9,797	4,598	952	23,702
2006.....	8,734	10,474	4,014	1,297	24,519
2007.....	11,156	11,261	3,704	1,413	27,534
2008.....	13,429	10,080	4,122	2,123	29,754
2009.....	12,093	6,707	1,727	1,399	21,926
2010.....	11,178	5,499	1,088	911	18,676
2011.....	9,248	5,877	1,355	884	17,364
2012.....	9,553	6,316	1,688	772	18,329
Mature groves.....	**128,572**	**125,890**	**46,830**	**15,438**	**316,730**
2013.....	8,356	4,288	1,917	1,152	15,713
2014.....	4,667	2,026	1,135	1,112	8,940
Young groves……..	**13,023**	**6,314**	**3,052**	**2,264**	**24,653**
Total.....	**141,595**	**132,204**	**49,882**	**17,702**	**341,383**
Percentage.....	**41.48**	**38.73**	**14.60**	**5.19**	**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, which totals some 10 hectares, was added to the area of the Pera Rio variety, since they both have the same maturity period.

Table 33 – Oranges: Trees of mid-season and late season varieties by planting year

Planting year[1]	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....	74.82	203.21	67.26	-	345.29
1980.....	18.90	15.93	22.04	2.29	59.16
1981.....	4.13	5.11	26.78	-	36.02
1982.....	32.27	16.70	16.51	-	65.48
1983.....	64.52	28.88	59.20	-	152.60
1984.....	19.52	21.28	32.85	-	73.65
1985.....	137.32	139.08	208.69	-	485.09
1986.....	205.72	141.35	207.55	12.81	567.43
1987.....	161.07	94.18	176.66	8.97	440.88
1988.....	154.33	87.31	155.96	8.60	406.20
1989.....	378.59	335.36	159.01	24.51	897.47
1990.....	500.60	626.17	328.00	92.80	1,547.57
1991.....	516.50	375.09	400.61	20.39	1,312.59
1992.....	456.77	306.16	191.21	24.12	978.26
1993.....	377.39	342.39	233.12	55.09	1,007.99
1994.....	484.76	334.30	166.97	65.34	1,051.37
1995.....	663.96	622.49	178.71	87.38	1,552.54
1996.....	446.35	443.15	189.13	144.11	1,222.74
1997.....	574.86	940.97	206.81	49.17	1,771.81
1998.....	878.55	1,329.40	183.95	249.54	2,641.44
1999.....	861.80	1,284.36	163.67	139.52	2,449.35
2000.....	1,498.58	2,126.98	604.37	382.60	4,612.53
2001.....	1,090.66	1,790.65	737.96	261.48	3,880.75
2002.....	1,266.56	2,667.88	974.39	169.94	5,078.77
2003.....	2,537.96	3,022.84	916.91	102.36	6,580.07
2004.....	3,092.16	3,631.14	1,575.18	306.56	8,605.04
2005.....	3,822.19	4,135.42	2,009.04	413.22	10,379.87
2006.....	3,993.76	4,586.28	1,734.27	597.69	10,912.00
2007.....	5,313.74	5,230.38	1,798.86	706.63	13,049.61
2008.....	6,468.57	4,872.50	2,105.74	1,107.70	14,554.51
2009.....	5,848.97	3,280.81	870.03	742.55	10,742.36
2010.....	5,975.03	2,906.44	590.87	498.74	9,971.08
2011.....	5,104.37	3,341.47	775.72	498.74	9,720.30
2012.....	5,474.81	3,478.94	911.40	468.91	10,334.06
Bearing trees.....	**58,500.09**	**52,764.60**	**18,979.43**	**7,241.76**	**137,485.88**
Resets[3].....	2,187.03	2,031.20	573.98	311.98	5,104.19
2013.....	5,306.21	2,669.54	1,138.12	757.16	9,871.03
2014.....	2,991.14	1,255.96	714.96	718.25	5,680.31
Non-bearing trees.....	**10,484.38**	**5,956.70**	**2,427.06**	**1,787.39**	**20,655.53**
Total.....	**68,984.47**	**58,721.30**	**21,406.49**	**9,029.15**	**158,141.41**
Percentage.....	**43.62**	**37.13**	**13.54**	**5.71**	**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, which totals some 10 hectares, was added to the area of the Pera Rio variety, since they both have the same maturity period.

[3] Non-bearing trees in mature groves.

Table 34 – Oranges: Density[1] planting of mature and young groves by sector and region

Sector and region	Young groves[2]	Mature groves[3]
	(trees/hectare)	(trees/hectare)
NORTH		
Triângulo Mineiro	596	463
Bebedouro	655	450
Altinópolis	540	496
Average	**631**	**459**
NORTHWEST		
Votuporanga	497	411
São José do Rio Preto	588	443
Average	**540**	**426**
CENTRAL		
Matão	648	414
Duartina	611	456
Brotas	639	380
Average	**631**	**427**
SOUTH		
Porto Ferreira	662	435
Limeira	658	441
Average	**661**	**438**
SOUTHWEST		
Avaré	711	492
Itapetininga	640	503
Average	**692**	**495**
AVERAGE GENERAL	**631**	**448**

[1] Average density planting weighted per stratum area.
[2] Groves implemented in 2013 or 2014.
[3] Groves implemented in 2012 or in previous years. The calculation considers the total number of trees of the block, that is, bearing and non-bearing trees (2013 or 2014 resets).

Table 35 – Oranges: Density[1] planting of mature and young groves by variety and maturity

Variety	Young groves[2]	Mature groves[3]
	(trees/hectare)	(trees/hectare)
EARLY SEASON		
Hamlin	624	432
Westin	649	431
Rubi	746	510
Valencia Americana	653	480
Valencia Argentina	(NA)	300
Seleta	725	447
Pineapple	545	523
Average	**637**	**440**
MID-SEASON		
Pera Rio	637	472
João Nunes	(NA)	544
Average	**637**	**472**
LATE SEASON		
Valencia	622	435
Natal	607	418
Valencia Folha Murcha	652	489
Average	**624**	**435**
GENERAL AVERAGE	**631**	**448**

NA, Not Available.
[1] Average density planting weighted per stratum area.
[2] Groves implemented in 2013 or 2014.
[3] Groves implemented in 2012 or in previous years. The calculation considers the total number of trees of the block, that is, bearing and non-bearing trees (2013 or 2014 resets).

Table 36 – Oranges: Density[1] planting of young groves by variety and region

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.....	634	668	(NA)	480	671	450	615	666	814	559	709	(NA)	624
Westin.....	363	680	(NA)	395	(NA)	440	550	655	922	611	(NA)	(NA)	649
Rubi.....	639	883	858	(NA)	729	(NA)	586	(NA)	833	618	709	628	746
Valencia Americana…..	(NA)	559	741	922	644	377	665	(NA)	713	720	775	644	653
Valencia Argentina.....	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
Seleta.....	(NA)	554	(NA)	(NA)	(NA)	(NA)	794	(NA)	522	(NA)	(NA)	(NA)	725
Pineapple.....	442	249	(NA)	(NA)	670	576	(NA)	591	(NA)	(NA)	(NA)	652	545
Average……..	**598**	**622**	**749**	**550**	**699**	**529**	**641**	**600**	**847**	**599**	**733**	**646**	**637**
MID-SEASON													
Pera Rio.....	625	680	532	496	583	665	600	647	639	654	771	733	637
João Nunes.....	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
Average……	**625**	**680**	**532**	**496**	**583**	**665**	**600**	**647**	**639**	**654**	**771**	**733**	**637**
LATE SEASON													
Valencia.....	568	618	(NA)	475	583	634	608	628	676	680	711	585	622
Natal.....	537	669	477	478	575	644	616	656	601	621	615	342	607
V.Folha Murcha[14].....	613	614	517	569	498	674	614	662	675	743	709	585	652
Average……..	**565**	**628**	**491**	**483**	**578**	**648**	**611**	**641**	**649**	**673**	**669**	**518**	**624**
GENERAL AVERAGE	**596**	**655**	**540**	**497**	**588**	**648**	**611**	**639**	**662**	**658**	**711**	**640**	**631**

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 37 – Oranges: Density[1] planting of mature groves by variety and region

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.....	424	425	490	420	449	398	425	413	437	430	466	472	432
Westin.....	462	399	456	348	364	349	377	407	474	445	474	553	431
Rubi.....	587	509	564	518	493	510	512	384	515	560	480	592	510
Valencia Americana…	530	486	554	451	494	449	490	459	480	488	467	541	480
Valencia Argentina.....	396	395	745	(NA)	251	260	(NA)	485	317	389	362	602	300
Seleta.....	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	562	(NA)	508	396	294	(NA)	447
Pineapple.....	(NA)	441	787	302	487	556	431	(NA)	624	389	441	649	523
Average……..	**438**	**440**	**504**	**425**	**449**	**390**	**442**	**418**	**452**	**440**	**462**	**523**	**440**
MID-SEASON													
Pera Rio.....	508	514	510	407	467	490	487	356	461	471	522	448	472
João Nunes.....	544	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	544
Average……	**508**	**514**	**510**	**407**	**467**	**490**	**487**	**356**	**461**	**471**	**522**	**448**	**472**
LATE SEASON													
Valencia.....	450	430	478	432	448	407	428	368	415	416	485	564	435
Natal.....	433	393	488	378	340	298	430	404	400	417	486	492	418
V.Folha Murcha[14].....	590	480	534	484	533	479	511	428	443	444	549	557	489
Average……..	**449**	**426**	**483**	**422**	**422**	**386**	**436**	**378**	**415**	**419**	**488**	**532**	**435**
GENERAL AVERAGE	**463**	**450**	**496**	**411**	**443**	**414**	**456**	**380**	**435**	**441**	**492**	**503**	**448**

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 (2013 or 2014 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 38 – Oranges: Density[1] planting of groves younger than 11 years by variety and region

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.....	452	479	512	462	468	453	472	478	470	490	513	586	478
Westin.....	516	472	458	374	459	407	452	576	500	464	525	567	481
Rubi.....	587	560	580	518	553	516	528	525	607	600	508	612	544
Valencia Americana.....	531	501	558	457	500	513	520	514	608	523	491	578	510
Valencia Argentina.....	(NA)	(NA)	745	(NA)	(NA)	506	(NA)	(NA)	758	441	(NA)	602	517
Seleta.....	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	592	(NA)	508	487	(NA)	(NA)	552
Pineapple.....	(NA)	446	787	302	494	556	519	(NA)	624	416	518	668	547
Average…….	**469**	**491**	**528**	**451**	**486**	**478**	**488**	**487**	**506**	**489**	**511**	**606**	**493**
MID-SEASON													
Pera Rio.....	529	563	555	425	506	550	537	400	520	527	573	602	519
João Nunes.....	569	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	569
Average……	**529**	**563**	**555**	**425**	**506**	**550**	**537**	**400**	**520**	**527**	**573**	**602**	**519**
LATE SEASON													
Valencia.....	476	486	515	476	469	493	483	507	502	479	549	606	502
Natal.....	447	478	523	462	464	404	486	456	512	514	542	603	499
V.Folha Murcha[14]……..	616	494	545	512	544	564	527	541	537	486	634	616	539
Average……..	**472**	**486**	**519**	**480**	**480**	**486**	**489**	**501**	**507**	**485**	**551**	**606**	**505**
GENERAL AVERAGE	**489**	**509**	**533**	**434**	**488**	**501**	**507**	**469**	**511**	**503**	**549**	**605**	**507**

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 (2013 or 2014 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 39 – Oranges: Density[1] planting of groves older than 10 years by variety and region

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.....	374	358	463	280	350	293	330	328	398	381	382	362	358
Westin.....	371	354	444	248	309	286	283	341	409	370	404	513	358
Rubi.....	(NA)	313	465	(NA)	351	306	282	308	313	402	358	486	345
Valencia Americana..	282	377	501	289	292	218	321	336	378	378	391	290	324
Valencia Argentina....	396	395	(NA)	(NA)	251	227	(NA)	485	273	373	362	(NA)	281
Seleta.....	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	352	(NA)	(NA)	356	294	(NA)	337
Pineapple.....	(NA)	428	(NA)	(NA)	319	(NA)	340	(NA)	(NA)	355	378	245	374
Average……	**374**	**361**	**464**	**277**	**315**	**258**	**326**	**334**	**383**	**380**	**379**	**370**	**345**
MID-SEASON													
Pera Rio.....	383	377	441	327	385	395	382	312	398	399	437	318	384
João Nunes.....	236	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	236
Average……	**383**	**377**	**441**	**327**	**385**	**395**	**382**	**312**	**398**	**399**	**437**	**318**	**384**
LATE SEASON													
Valencia.....	364	377	431	309	337	306	356	297	354	372	406	481	362
Natal.....	364	343	382	293	274	248	360	365	353	356	401	398	344
V.Folha Murcha[14]……	330	449	430	347	496	329	481	302	357	400	428	363	404
Average……...	**364**	**371**	**428**	**304**	**311**	**288**	**367**	**307**	**354**	**372**	**405**	**429**	**360**
GENERAL AVERAGE	**371**	**369**	**439**	**318**	**331**	**303**	**366**	**312**	**370**	**381**	**408**	**378**	**364**

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 (2013 or 2014 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 by year of planting

Planting year[2]	Orange groves
	(trees/hectare)
1979 or previous years.....	311
1980.....	343
1981.....	348
1982.....	373
1983.....	313
1984.....	313
1985.....	257
1986.....	296
1987.....	331
1988.....	320
1989.....	326
1990.....	330
1991.....	318
1992.....	340
1993.....	330
1994.....	347
1995.....	383
1996.....	360
1997.....	372
1998.....	378
1999.....	363
2000.....	354
2001.....	374
2002.....	357
2003.....	382
2004.....	397
2005.....	451
2006.....	460
2007.....	490
2008.....	502
2009.....	507
2010.....	552
2011.....	571
2012.....	577
Mature groves.....	**448**
2013.....	628
2014.....	638
Young groves.....	**631**
Average.....	**459**

[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 (2013 or 2014 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 41 – Oranges: Area of groves irrigated, non-irrigated or without irrigation information by sector and region

Sector and region	Irrigated groves	Non-irrigated groves or without irrigation information
	(hectares)	(hectares)
NORTH		
Triângulo Mineiro	16,703	9,045
Bebedouro	31,036	24,958
Altinópolis	185	10,720
Subtotal	**47,924**	**44,723**
NORTHWEST		
Votuporanga	6,220	18,393
São José do Rio Preto	9,176	14,705
Subtotal	**15,396**	**33,098**
CENTRAL		
Matão	15,496	31,963
Duartina	8,720	48,088
Brotas	719	21,863
Subtotal	**24,935**	**101,914**
SOUTH		
Porto Ferreira	7,989	34,057
Limeira	4,552	42,345
Subtotal	**12,541**	**76,402**
SOUTHWEST		
Avaré	4,853	51,090
Itapetininga	139	17.607
Subtotal	**4,992**	**68,697**
TOTAL	**105,788**	**324,834**
PERCENTAGE	**24.57**	**75.43**

Table 42 – Oranges: Area of groves irrigated, non-irrigated or without irrigation information by variety

Variety	Irrigated groves	Non-irrigated groves or without information
	(hectares)	(hectares)
EARLY SEASON		
Hamlin	13,289	41,514
Westin	1,897	5,403
Rubi	1,792	5,558
Valencia Americana	2,854	10,178
Valencia Argentina	2,865	1,821
Seleta	32	135
Pineapple	235	1,667
Subtotal	**22,964**	**66,276**
MID-SEASON		
Pera Rio	32,087	109,498
João Nunes	-	10
Subtotal	**32,087**	**109,508**
LATE SEASON		
Valencia	31,752	100,449
Valencia Folha Murcha	3,023	14,678
Natal	15,962	33,923
Subtotal	**50,737**	**149,050**
TOTAL	**105,788**	**324,834**

- Represents zero.

Table 43 – Oranges: Area of groves irrigated, non-irrigated or without irrigation information by age groups

Ages	Irrigated groves	Non-irrigated groves or without irrigation information
	(hectares)	(hectares)
1 – 2 years.....	5,876	21,255
3 – 5 years.....	15,676	52,539
6 – 10 years.....	32,161	135,733
More than 10 years.....	52,075	115,307
Total.....	**105,788**	**324,834**

Table 44 – Oranges: Area of irrigated groves by irrigation method

Irrigation method	Irrigated groves	Percentage
	(hectares)	(%)
Sprinkling.....	12,353	11.68
Localized.....	93,435	88.32
Total.....	**105,788**	**100.00**

Table 45 – Oranges: Municipalities with groves by sector and region

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

Table 46 – Acid limes and lemons: Municipalities with groves by sector and region

Sector and number of municipalities	Region and number of municipalities	Municipalities
North 45 municipalities	Triângulo Mineiro (TMG) 9 municipalities	Campina Verde, Campo Florido, Comendador Gomes, Conceição das Alagoas, Frutal, Iturama, Monte Alegre de Minas, Prata, Uberaba.
	Bebedouro (BEB) 33 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, Uchoa, Urupês, Vista Alegre do Alto.
	Altinópolis (ALT) 3 municipalities	Brodowski, Santo Antônio da Alegria, São Sebastião do Paraíso.
Northwest 63 municipalities	Votuporanga (VOT) 37 municipalities	Álvares Florence, Américo de Campos, Aparecida d'Oeste, Aspásia, Dirce Reis, Dolcinópolis, Estrela d'Oeste, Fernandópolis, Guzolândia, Jales, Macedônia, Marinópolis, Mesópolis, Nova Canaã Paulista, Ouroeste, Palmeira d'Oeste, Paranapuã, Parisi, Pedranópolis, Pontalinda, Pontes Gestal, Populina, Rubinéia, Santa Albertina, Santa Fé do Sul, Santa Salete, Santana da Ponte Pensa, São Francisco, São João das Duas Pontes, Sud Mennucci, Suzanápolis, Três Fronteiras, Turmalina, Urânia, Valentim Gentil, Vitória Brasil, Votuporanga.
	São José do Rio Preto (SJO) 26 municipalities	Adolfo, Altair, Bady Bassitt, Bálsamo, Cedral, Cosmorama, Guapiaçu, Ipiguá, Jaci, José Bonifácio, Macaubal, Mendonça, Mirassolândia, Monte Aprazível, Neves Paulista, Nhandeara, Nova Aliança, Nova Granada, Onda Verde, Palestina, Planalto, Poloni, Potirendaba, São José do Rio Preto, Tanabi, Zacarias.
Central 59 municipalities	Matão (MAT) 17 municipalities	Araraquara, Bariri, Boa Esperança do Sul, Borborema, Cândido Rodrigues, Fernando Prestes, Ibitinga, Itajú, Itápolis, Matão, Monte Alto, Motuca, Nova Europa, Novo Horizonte, Santa Ernestina, Tabatinga, Taquaritinga.
	Duartina (DUA) 32 municipalities	Álvaro de Carvalho, Arealva, Avaí, Bauru, Boracéia, Cabrália Paulista, Cafelândia, Campos Novos Paulista, Duartina, Echaporã, Fernão, Gália, Garça, Guaiçara, Guaimbê, Guarantã, Iacanga, Lins, Lucianópolis, Lupércio, Marília, Pederneiras, Pirajuí, Piratininga, Pongaí, Presidente Alves, Promissão, Reginópolis, Sabino, São Pedro do Turvo, Ubirajara, Uru.
	Brotas (BRO) 10 municipalities	Bocaina, Brotas, Corumbataí, Dois Córregos, Ibaté, Itirapina, Mineiros do Tietê, Ribeirão Bonito, São Carlos, Torrinha.
South 33 municipalities	Porto Ferreira (PFE) 11 municipalities	Aguaí, Casa Branca, Guaxupé, Luiz Antônio, Pirassununga, Porto Ferreira, Santa Cruz da Conceição, Santa Rita do Passa Quatro, São Simão, Tambaú, Vargem Grande do Sul.
	Limeira (LIM) 22 municipalities	Araras, Artur Nogueira, Charqueada, Conchal, Cordeirópolis, Cosmópolis, Engenheiro Coelho, Espírito Santo do Pinhal, Estiva Gerbi, Holambra, Ipeúna, Iracemápolis, Itapira, Jaguariúna, Jarinu, Leme, Limeira, Mogi Guaçu, Mogi Mirim, Piracicaba, Rio Claro, Santo Antônio de Posse.
Southwest 14 municipalities	Avaré (AVA) 9 municipalities	Águas de Santa Bárbara, Angatuba, Arandu, Botucatu, Cabreúva, Capela do Alto, Cerqueira César, Quadra, Sorocaba.
	Itapetininga (ITG) 5 municipalities	Capão Bonito, Itaí, Itapeva, Paranapanema, Taquarivaí.
Total 5 sectors	Total 12 regions	Total 214 municipalities

Table 47 – Mandarins and hybrids: Municipalities with groves by sector and region

Sector and number of municipalities	Region and number of municipalities	Municipalities
North 47 municipalities	Triângulo Mineiro (TMG) 8 municipalities	Campina Verde, Campo Florido, Comendador Gomes, Conceição das Alagoas, Frutal, Itapagipe, Monte Alegre de Minas, Uberaba.
	Bebedouro (BEB) 29 municipalities	Ariranha, Barretos, Bebedouro, Cajobi, Colina, Colômbia, Elisiário, Embaúba, Guaraci, Ibirá, Irapuã, Itajobi, Marapoama, Monte Azul Paulista, Olímpia, Paraíso, Pindorama, Pirangi, Pitangueiras, Sales, Santa Adélia, Severínia, Tabapuã, Taiaçu, Taiúva, Taquaral, Uchoa, Urupês, Vista Alegre do Alto.
	Altinópolis (ALT) 10 municipalities	Altinópolis, Ibiraci, Jacuí, Monte Santo de Minas, Nova Resende, Patrocínio Paulista, Pedregulho, Santo Antônio da Alegria, São Pedro da União, São Sebastião do Paraíso.
Northwest 63 municipalities	Votuporanga (VOT) 38 municipalities	Álvares Florence, Américo de Campos, Aparecida d'Oeste, Aspásia, Cardoso, Estrela d'Oeste, Fernandópolis, Guaraçaí, Jales, Macedônia, Marinópolis, Meridiano, Mesópolis, Mira Estrela, Mirandópolis, Murutinga do Sul, Nova Castilho, Palmeira d'Oeste, Paranapuã, Parisi, Pedranópolis, Pontalinda, Populina, Rubinéia, Santa Clara d'Oeste, Santa Fé do Sul, Santa Salete, Santana da Ponte Pensa, Santo Antônio do Aracanguá, São Francisco, São João das Duas Pontes, São João de Iracema, Suzanápolis, Três Fronteiras, Turmalina, Urânia, Vitória Brasil, Votuporanga.
	São José do Rio Preto (SJO) 25 municipalities	Adolfo, Altair, Bady Bassitt, Bálsamo, Cedral, Cosmorama, Guapiaçu, Ipiguá, Jaci, José Bonifácio, Mendonça, Mirassol, Mirassolândia, Monte Aprazível, Neves Paulista, Nhandeara, Nova Aliança, Nova Granada, Palestina, Planalto, Poloni, Potirendaba, São José do Rio Preto, Tanabi, União Paulista.
Central 47 municipalities	Matão (MAT) 13 municipalities	Bariri, Boa Esperança do Sul, Borborema, Cândido Rodrigues, Fernando Prestes, Ibitinga, Itajú, Itápolis, Monte Alto, Nova Europa, Novo Horizonte, Tabatinga, Taquaritinga.
	Duartina (DUA) 22 municipalities	Alvinlândia, Arealva, Avaí, Bastos, Bauru, Cabrália Paulista, Cafelândia, Duartina, Fernão, Getulina, Guaimbê, Guarantã, Iacanga, Lins, Lucianópolis, Marília, Parapuã, Paulistânia, Pederneiras, Piratininga, São Pedro do Turvo, Ubirajara.
	Brotas (BRO) 12 municipalities	Analândia, Bocaina, Brotas, Corumbataí, Dois Córregos, Dourado, Ibaté, Itirapina, Mineiros do Tietê, Santa Maria da Serra, São Carlos, Torrinha.
South 39 municipalities	Porto Ferreira (PFE) 11 municipalities	Aguaí, Casa Branca, Descalvado, Guaxupé, Mococa, Pirassununga, Porto Ferreira, Santa Cruz das Palmeiras, Santa Rita do Passa Quatro, São Simão, Tambaú.
	Limeira (LIM) 28 municipalities	Águas de Lindóia, Amparo, Araras, Artur Nogueira, Bragança Paulista, Conchal, Cordeirópolis, Cosmópolis, Engenheiro Coelho, Espírito Santo do Pinhal, Estiva Gerbi, Holambra, Ipeúna, Iracemápolis, itatiba, Jaguariúna, Jarinu, Leme, Limeira, Lindóia, Mogi Guaçu, Mogi Mirim, Paulínia, Piracicaba, Rio Claro, Santo Antônio de Posse, Serra Negra, Socorro.
Southwest 22 municipalities	Avaré (AVA) 15 municipalities	Águas de Santa Bárbara, Angatuba, Anhembi, Araçoiaba da Serra, Botucatu, Capela do Alto, Guareí, Iperó, Manduri, Porto Feliz, Pratânia, Salto de Pirapora, Sorocaba, Tatuí, Tietê.
	Itapetininga (ITG) 7 municipalities	Alambari, Buri, Itaí, Itapeva, Paranapanema, Sarapuí, Tejupá.
Total 5 sectors	Total 12 regions	Total 218 municipalities

3.3 – ABANDONED CITRUS GROVES

Abandoned groves are blocks of citrus 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. In many cases, the degradation of groves is so intense that it becomes impossible to go in and gather data such as spacing, year of planting and variety. Due to this restriction, it is not possible to differentiate these areas by type of citrus (orange, lemon or tangerine), or by variety or year of planting. Thus, the areas of these groves are accounted for separately and are not part of the bearing and non-bearing citrus tree inventory.

Table 48 – All citrus: Area of abandoned groves by sector and region

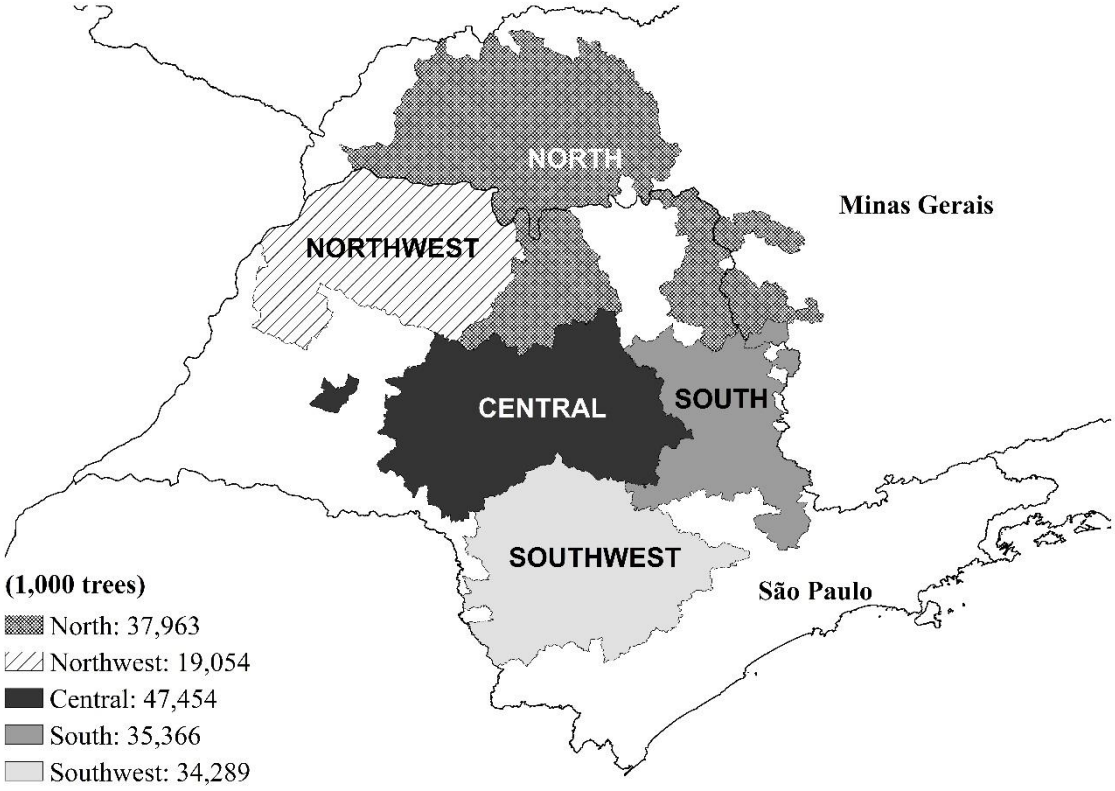
Sector and region	Abandoned groves	Percentage in relation to the total area of the region
	(hectares)	(%)
NORTH		
Triângulo Mineiro (TMG).....	218	0.82
Bebedouro (BEB).....	1,091	1.54
Altinópolis (ALT).....	144	1.26
Subtotal	**1,453**	**1.33**
NORTHWEST		
Votuporanga (VOT).....	1,051	3.58
São José do Rio Preto (SJO).....	818	3.16
Subtotal.....	**1,869**	**3.38**
CENTRAL		
Matão (MAT).....	1,353	2.37
Duartina (DUA).....	1,889	3.05
Brotas (BRO).....	1,399	5.22
Subtotal.....	**4,641**	**3.18**
SOUTH		
Porto Ferreira (PFE).....	427	0.92
Limeira (LIM).....	830	1.49
Subtotal.....	**1,257**	**1.23**
SOUTHWEST		
Avaré (AVA).....	677	1.11
Itapetininga (ITG).....	55	0.29
Subtotal	**732**	**0.91**
TOTAL.....	**9,953**	**2.02**

Figure 5 – Location of abandoned groves

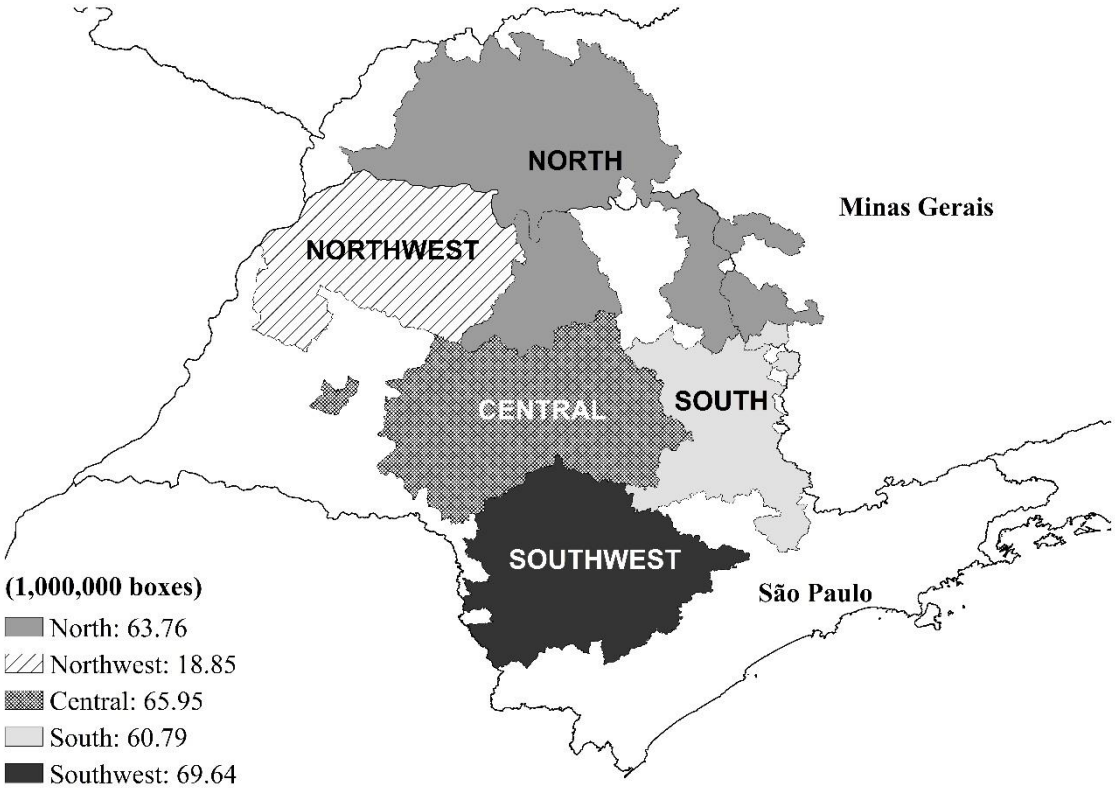
ORANGE PRODUCTION FORECAST FOR THE 2015-2016 SEASON OF THE SÃO PAULO AND WEST-SOUTHWEST OF MINAS GERAIS CITRUS BELT

MAY FORECAST

ORANGE BEARING TREES[1] BY SECTOR
Total: 174.126 million trees



2015-2016 ORANGE PRODUCTION FORECAST[1] BY SECTOR[2]
Total: 278.99 million 40.8 kg box



[1] Snapshot of March/2015. Sweet orange varieties: Hamlin, Westin, Rubi, Valencia Americana, Valencia Argentina, Seleta, Pineapple, Pera Rio, João Nunes, Valencia, Natal and Valencia Folha Murcha.

2 May forecast.

ORANGE PRODUCTION FORECAST FOR THE 2015-2016 SEASON OF THE SÃO PAULO AND WEST-SOUTHWEST OF MINAS GERAIS CITRUS BELT – MAY/2015 FORECAST

Published on May 19, 2015[1]

Forecast Dates

2015-2016 Season
September forecast (1st orange crop forecast update): September 10, 2015
December forecast (2nd orange crop forecast update): December 10, 2015
February forecast (3rd orange crop forecast update): February 11, 2016
April forecast (final orange crop estimate): April 11, 2016

During the course of the season, the crop will again be forecasted 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 1 – No. 1 – May 19, 2015 (Portuguese version only)

Revised versions:
Year 1 – No. 2 – May 28, 2015 (Portuguese version only)
Year 1 – No. 3 – July 1, 2015 (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 2015-2016 SEASON OF THE SÃO PAULO AND WEST-SOUTHWEST OF MINAS GERAIS CITRUS BELT

MAY FORECAST

Fundecitrus
Araraquara, São Paulo
2015

Av. Adhemar Pereira de Barros, 201 | Vila Melhado | CEP: 14807-040 | Araraquara | São Paulo | Brazil
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338.1 Orange production forecast for the 2015-2016
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Lourival Carmo Monaco
President of Fundecitrus

Antonio Juliano Ayres
General manager of Fundecitrus

Marcos Fava Neves
PES methodological coordinator, full professor at FEA-RP/USP and member of Markestrat Administrative Board

Vinícius Gustavo Trombin
PES executive coordinator and member of Markestrat

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

Fernando Alvarinho Delgado
PES/Fundecitrus technical supervisor

Renato Tadeu Rovarotto
PES/Fundecitrus supervisor

Roseli Reina
PES/Fundecitrus supervisor

SUMMARY

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1 – INTRODUCTION

This publication presents the results of the first crop forecast, based on the Citrus Tree Inventory of the São Paulo and West-Southwest Minas Gerais Citrus Belt, both conducted by Fundecitrus with the cooperation of Markestrat, FEA-RP/USP and the Exact Sciences Department of FCAV/Unesp, during the period from October/2014 to May/2015.

Several meetings were held in the project structuring phase to discuss methodologies and to share knowledge with representatives from the government (IEA/SAA-SP and USDA) and from the orange juice companies (Citrosuco, Cutrale and Louis Dreyfus) that made it possible to establish a transparent, impartial and reliable methodology for the project. In the execution phase, committees were organized composed of citrus growers, representatives of the orange juice companies, attorneys and scholars, who discussed the actions, goals and indicators in order to propose technical improvements for conducting activities. Throughout the execution phase, the most modern tools and methodologies were used, such as high resolution satellite images, and the direct involvement of 151 professionals in the study. More than a million kilometers covered were travelled to visit and collect data at all the citrus groves.

The data collected about tree productivity in the samples and the results compiled in the trees inventory were kept restricted until the date of this publication to the Production Forecast Research (PES – *Pesquisa de Estimativa de Safra)* office supervisors, project coordinators, methodological analyst and general manager of Fundecitrus, all under a formal confidentiality agreement and subject to legal penalties for failure to preserve the confidentiality of the information. These professionals were identified by name at the start of this document.

Antitrust practices were complied with throughout all the work phases, through the adoption of the measures necessary to prevent any sharing of sensitive information with a competitive content, among the orange juice companies members of Fundecitrus, and between these and the citrus growers.

The results of the trees inventory and the 2015-2016 orange production forecast were finalized exclusively by the professionals indicated herein. The crop forecast was finalized on May 19, 2015 around 9:10 a.m. at a strictly confidential meeting. At that time, the final information was personally delivered to the President of Fundecitrus, Lourival Carmo Monaco. All those present at the meeting were denied access to any means of communication at the start of the meeting until 10:40 a.m., when President Monaco began 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 the Fundecitrus website.

2 – OBJECTIVE SURVEY METHOD FOR ORANGE PRODUCTION FORECAST

This study was conducted using the objective method; that is, based on field measurements, counting and weighing of fruits per bloom. The direct expansion method, which uses four components, was chosen:

(1) Bearing trees;
(2) Fruit per tree;
(3) Fruit size (pieces of fruit projected to make a standard 40.8 kg box at harvest);
(4) Fruit loss from droppage (the fraction of fruit counted at survey time but lost from droppage before harvest).

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

Bearing trees

The number of bearing trees by region, variety and age was obtained from the "Citrus Tree Inventory of the São Paulo and West-Southwest Minas Gerais Citrus Belt – Snapshot of Groves in March/2015." The varieties covered in the forecast represent 97% of the total sweet orange growing area, and are the following: Hamlin, Westin, Rubi, Valencia Americana, Valencia Argentina, Seleta, Pineapple, Pera Rio, Valencia, Valencia Folha Murcha and Natal.

All orange trees of these varieties, planted in 2012 or in previous years, composed the population from which the samples were drawn. The tree on the block drawn was located at the 20th hole of the 10th row. If this procedure fell on a vacancy, dead tree or tree of a different age than the one drawn, researchers moved forward to the third tree. If the situation was the same, they moved to the next third tree until the researchers found a tree of the age drawn. If the block did not have 10 or more planting lines, the count would be re-started on the existing rows until number 10 was reached.

Fruit per tree

In order to forecast the productivity of the orange trees, 2,500 trees were drawn by the stratified sampling technique, proportional to the number of trees of each stratum. To determine the sample size, researchers used the variance of the historical number of fruits per tree, considering an expected error of 2% to 3% of the average.

The factors used for stratification of the citrus belt were: region, variety and age. The factor "region" is composed of 12 groups covering the 328 municipalities with rural properties containing mature orange groves. Each of the regions was indicated by one of its municipalities and the detailing of municipalities that make them up is in the publication by the Citrus Tree Inventory of the Citrus Belt. In addition to the subdivision of the 12 regions, the following charts present the five subdivisions of the factor "variety" and the three subdivisions of the factor "age." The combinations of these factors led 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 maturity age of the groups of varieties covered in the drawing

Maturity age	Group of varieties
Early season	Hamlin Westin Rubi
Other early season	Valencia Americana Valencia Argentina Seleta Pineapple
Mid-season	Pera Rio[1]
Late season	Valencia Natal
	Valencia Folha Murcha

[1] The orange trees of João Nunes variety, which totals 5,233 trees, were added to the Pera Rio variety trees, because both areas present the same maturity period.

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

Age group	Planting years
3 to 5 years.....	2012, 2011, 2010
6 to 10 years.....	2009, 2008, 2007, 2006, 2005
Above 10 years.....	Before 2005

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

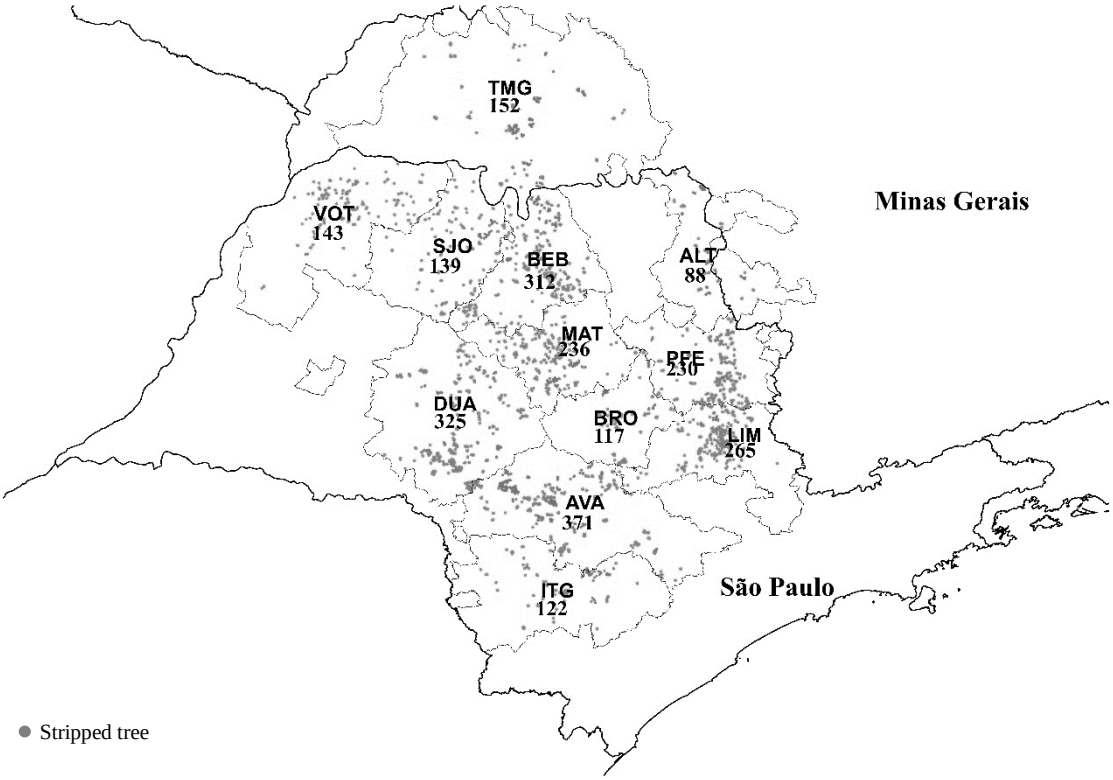

Figure 1 – Location and total number of stripped trees per region

In order to obtain the number of fruits per tree, a stripping procedure was done on each of the 2,500 trees drawn. This operation consisted of harvesting all fruits from the tree in advance, independent of the bloom. Fruits were placed in sacks and properly identified with a card containing the sample number, variety, planting year and region of origin, as well as the name of the study agent in charge and a model with the location of the block within the grove. The samples were taken to a laboratory in Araraquara, where fruits were separated, counted and weighed, according to the bloom. The information on quantity and weight was recorded on the cards corresponding to the samples and typed into the Fundecitrus system, where the consistency analyses of this data was done.

Five blooms were identified in the samples, and for the purpose of forecasting, fruits from the 1st, 2nd, and 3rd blooms were fully used. A fruit setting rate of 40% was used for the 4th bloom. Fruits from the 5th bloom were not considered in the forecast.

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

Not all the fruit produced at an orange tree reaches harvest, due to natural droppage, pests and diseases, hydric stress, excess rains, hail, very high or very low temperatures, and other factors. For this reason, Fundecitrus will conduct monthly observation in a subsample of 900 blocks drawn from the 2,500 used in the stripping, to monitor fruit fall in trees neighboring the stripped trees, during the period from June 2015 until the final harvest of these blocks. This fruit loss from droppage, measured in the season itself, will be used to correct the forecasted rate, and consequently, the forecasted productivity.

However, in order to prepare this first forecast, the rate of fruit loss from droppage and number of fruit sizes was forecasted based on the historical data from the 2004-2005 to 2014-2015 seasons, provided by the orange juice companies that are members of Fundecitrus, and who have been conducting individually and by themselves this accompaniment in the citrus belt since 1988, crossing these data with the fruit that enters their factories for processing.

The average weighted fruit loss from droppage of the trees used in this first forecast was 17%, from which 11% were related to the early varieties, 17% to the Pera Rio variety and 20% to the late varieties.

It should be emphasized that climate plays an important role in the growth of the fruit and the droppage rate. It can either contribute to a good setting and growth, or be responsible for premature droppage of the fruit and a reduction in its growth. Thus, to define these components, the five similar seasons were identified in terms of the following parameters: number of fruits, size at sampling time and profile of blooms.

Based on the average deviations from orange production forecasts of citrus belt over the past 10 years, the correction factor was forecasted 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[1]

The development and growth of the fruits from the start of the season – when they are stripped for the purposes of estimating the crop – until they reach the ideal maturity stage to be harvested for industrial purposes or for consumption *in natura*, vary greatly from one season to another, especially in years of bad weather, due to hydric and/or thermal stress or to excessive precipitation, to which each of the producing regions may be subject.

The groves in the São Paulo and West-Southwest of Minas Gerais citrus belt feel the effects of drought more strongly than those in Florida, since only a fourth of them are irrigated, compared to almost all the citrus groves in the American citrus belt. This means that the size of the fruit produced in the São Paulo and West-Southwest of Minas Gerais citrus belt shows greater variability between seasons, leading to unpredictability within the same season; for this reason historical analysis of this rate, and its constant monitoring during the course of the season is essential to conduct the periodic forecasts of the production.

Another fact that directly impacts fruit size is the number of settings of the blooms, which varies from season to season. Past records show that the larger the number of bloom settings; that is, the increase in productivity of fruit per tree, the smaller the fruit will be, because they are inversely proportionate factors.

As a result of the need to understand the variability of this factor in different seasons, the professionals chosen for this forecast analyzed the data of a historical series of 17 years, provided by agents in the production chain, which are presented in Table 1.

[1] The larger the size of the fruit, the lower the number of pieces of fruit needed to reach 40.8 kg and vice-versa.

Table 1 – Fruit size (average size) by variety from 1998-1999 to 2014-2015

Season	Valencia Argentina, Westin, Rubi	Other early season varieties	Hamlin	Pera Rio	Valencia	Natal	Acidless sweet oranges	Mandarins and hybrids	Average size[1]
	(fruits/ box)	(fruits/ box)	(fruits/ box)	(fruits/ box)	(fruits/ box)	(fruits/ box)	(fruits/ box)	(fruits/ box)	(fruits/ box)
1998-1999	243	228	244	249	229	236	257	296	240
1999-2000	298	285	329	309	268	283	326	348	292
2000-2001	311	308	342	290	251	269	334	310	278
2001-2002	270	267	295	272	248	270	267	273	268
2002-2003	288	280	343	299	254	278	280	308	286
2003-2004	264	261	291	278	253	276	269	287	271
2004-2005	257	259	324	287	255	279	292	309	278
2005-2006	258	255	304	304	254	289	290	294	283
2006-2007	274	270	340	311	254	269	329	332	287
2007-2008	265	265	320	298	252	278	302	318	281
2008-2009	247	234	281	264	231	251	274	291	250
2009-2010	257	240	295	257	218	232	284	290	243
2010-2011	262	253	297	284	244	262	296	287	268
2011-2012	284	249	313	286	232	238	293	339	262
2012-2013	260	214	293	283	217	228	238	316	242
2013-2014	236	200	246	231	198	208	230	259	217
2014-2015	278	230	306	278	225	228	315	309	256

[1] Weighted average by total of boxes processed for each variety.

The weighted average size of the fruit used in this first forecast was 245 fruit size of 40.8 kg box, where: 270 for Hamlin, Westin and Rubi; 245 for Valencia Americana, Valencia Argentina, Seleta and Pineapple; 254 for Pera Rio; 229 for Valencia and Valencia Folha Murcha and 230 for Natal.

3 – ORANGE PRODUCTION FORECAST 2015-2016

The 2015-2016 orange production forecast published on May 19, 2015 by Fundecitrus with the cooperation of Markestrat, FEA-RP/USP and FCAV/Unesp[1] is 278.99 million boxes (40.8 kg). This total includes:

- 60.43 million boxes of the Hamlin, Westin and Rubi varieties;
- 14.18 million of the Valencia Americana, Valencia Argentina, Seleta and Pineapple varieties;
- 72.35 million of the Pera Rio variety;
- 96.25 million of the Valencia and Valencia Folha Murcha varieties;
- 35.78 million of the Natal variety.

The forecasted number of bearing trees is 174.13 million. Trees planted in 2012 and in previous years are considered to be bearing in this season.

Out of the total production forecast for the citrus belt, some 16.37 million boxes should be produced in the West of Minas Gerais. This region contains 10.57 million bearing trees on 23,229 hectares, density planting of 463 trees/hectare and forecasted productivity of 1.55 boxes per tree. In addition to this region of Minas Gerais, orange production was also forecasted for nine municipalities in the Southwest Minas area.

The climatic conditions have so far been favorable for the first bloom in September and October 2014. However, insufficient precipitation in the period from November 2014 to January 2015, together with the high temperatures hindered the setting of the first bloom. Precipitation only returned to historical summer levels at the end of January. This irregular precipitation caused multiple blooms, an atypical phenomenon for citrus growing in the citrus belt, which led to irregular distribution of the crop.

The 2015-2016 orange production forecast is based on the number of fruits per tree obtained in the stripping, which was done in the period from April 14 to May 11, 2015. Variations that may occur in fruit size and

[1] Exact Sciences Department.

droppage rates could alter the forecast, and these will be calculated throughout the season by monitoring in the field. The following tables present the forecast for 2015-2016 by variety, sector, age and bloom. The margin of error in the production forecast by sector and variety is higher than that of the production forecast for the citrus belt as a whole, due to the smaller number of subdivided samples in these strata.

The production forecast is presented at several stratification levels in the following tables. 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 2 – Orange production forecast for the 2015-2016 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 2015-2016		
					By tree	By area	Total
	(hectares)	(trees/ hectare)	(1,000 trees)	(number)	(boxes/ tree)	(boxes/ hectare)	(1,000,000 boxes)
North.....	85,685	459	37,963	523	1.68	744	63.76
Northwest.....	45,554	426	19,054	310	0.99	414	18.85
Central.....	116,249	427	47,454	431	1.39	567	65.95
South.....	84,740	438	35,366	534	1.72	717	60.79
Southwest.....	71,264	495	34,289	630	2.03	977	69.64
Total.....	**403,492**	**448**	**174,126**	**498**	**1.60**	**691**	**278.99**

[1] The calculation considers the total number of trees of the block, that is, bearing and non-bearing trees (2013 or 2014 resets).
[2] Weighted average per stratum area.

Table 3 – Oranges: Orange production forecast for the 2015-2016 season by tree age group

Age group	Mature groves area	Average density planting[1] of mature groves	Bearing trees	Fruits per tree at stripping[2]	Orange production forecast 2015-2016		
					By tree	By area	Total
	(hectares)	(trees/ hectare)	(1.000 trees)	(number)	(boxes/ tree)	(boxes/ hectare)	(1.000.000 boxes)
3 to 5 years.....	68,644	567	37,701	205	0.66	360	24.74
6 to 10 years.....	168,478	483	78,120	480	1.54	715	120.44
Above 10 years.	166,370	364	58,305	711	2.30	804	133.81
Total.....	**403,492**	**448**	**174,126**	**498**	**1.60**	**691**	**278.99**

[1] The calculation considers the total number of trees of the block, that is, bearing and nonbearing trees (2013 or 2014 resets).
[2] Weighted average per stratum area.

Table 4 – Oranges: Orange production forecast for the 2015-2016 season by bloom

Bloom	Orange production forecast 2015-2016	Percentage of orange production forecast by bloom
	(1,000,000 boxes)	(percentage)
1st	83.65	30.0
2nd	166.56	59.7
3rd	19.96	7.1
4th	8.82	3.2
Total.....	**278.99**	**100.0**

Table 5 – Oranges: Orange production forecast for 2015-2016 season as bloom percentage by region

Bloom	North[1]				Northwest[2]			Central[3]				South[4]			Southwest[5]			**MED**[6]
	TMG	BEB	ALT	**MED**[6]	VOT	SJO	**MED**[6]	MAT	DUA	BRO	**MED**[6]	PFE	LIM	**MED**[6]	AVA	ITG	**MED**[6]	
	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
1st	31.0	37.4	7.7	**28.7**	53.4	38.7	**45.4**	25.6	27.1	23.4	**25.9**	21.9	20.6	**21.3**	34.8	50.4	**38.4**	**30.0**
2nd	60.3	48.0	86.7	**60.4**	32.9	50.5	**42.5**	49.8	61.7	65.0	**58.6**	71.8	66.8	**69.4**	59.9	44.4	**56.3**	**59.7**
3rd	6.2	7.2	5.1	**6.4**	11.6	8.4	**9.9**	16.9	8.5	7.5	**11.0**	4.9	8.9	**6.9**	3.7	3.8	**3.7**	**7.1**
4th	2.5	7.4	0.5	**4.5**	2.1	2.4	**2.2**	7.7	2.7	4.1	**4.5**	1.4	3.7	**2.4**	1.6	1.4	**1.6**	**3.2**

[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] MED – Weighted average by total fruit of the sector.

Table 6 – Oranges: Orange production forecast and its components by variety group

Variety group	Mature groves area	Average density planting[1]	Components of May/2015 forecast				Orange production forecast 2015-2016		
			Bearing trees	Fruits per tree at stripping	Fruits forecasted by box[2]	Fruit loss from droppage forecast	By tree	By area	Total
	(hectares)	(trees/ hectare)	(1.000 trees)	(number)	(number)	(number)	(boxes/ tree)	(boxes/ hectare)	(1.000.000 boxes)
Early season:									
Hamlin, Westin e Rubi.....	68,052	440	28,786	672	270	11	2.10	888	60.43
Other early season:									
Valencia Americana, Valencia Argentina, Seleta, Pineapple.....	18,710	438	7,860	524	245	11	1.81	758	14.18
Mid-season:									
Pera Rio.....	128,572	472	58,495	398	254	17	1.24	563	72.35
Late season:									
Valencia e V.Folha Murcha[3]	141,326	441	60,006	485	229	20	1.60	681	96.25
Natal.....	46,832	418	18,979	572	230	20	1.89	764	35.78
Average.....	(X)	**448**	(X)	**498**	**245**	**17**	**1.60**	**691**	(X)
Total.....	**403,492**	(X)	**174,126**	(X)	(X)	(X)	(X)	(X)	**278.99**

(X) Not applicable
[1] The calculation considers the total number of trees of the block, that is, bearing and nonbearing trees (2013 or 2014 resets).
[2] Weighted average per stratum area.
[3] V.Folha Murcha – Valencia Folha Murcha.

Table 7 – Oranges: Orange production forecast 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 2015-2016		
					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.....	18,589	437	7,864	816	2.55	1.078	20.03
Other early season:							
Valencia Americana, Valencia Argentina, Seleta, Pineapple....	4,377	479	1,970	459	1.58	713	3.12
Mid-season:							
Pera Rio.....	21,501	511	10,567	408	1.27	623	13.40
Late season:							
Valencia e V.Folha Murcha[3]...	31,538	448	13,713	481	1.59	692	21.83
Natal.....	9,680	412	3,849	424	1.40	556	5.38
Average.....	(X)	**459**	(X)	**523**	**1.68**	**744**	(X)
Total.....	**85,685**	(X)	**37,963**	(X)	(X)	(X)	**63.76**

(X) Not applicable.
[1] The calculation considers the total number of trees of the block, that is, bearing and non-bearing trees (2013 or 2014 resets).
[2] Weighted average per stratum area.
[3] V.Folha Murcha – Valencia Folha Murcha.

Table 8 – Oranges: Orange production forecast 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 2015-2016		
					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.....	6,683	444	2,911	344	1.08	468	3.13
Other early season:							
Valencia Americana, Valencia Argentina, Seleta, Pineapple....	3,214	447	1,388	377	1.30	560	1.80
Mid-season:							
Pera Rio.....	23,104	421	9,535	286	0.89	367	8.47
Late season:							
Valencia e V.Folha Murcha[3]...	8,264	460	3,737	209	0.69	312	2.58
Natal.....	4,289	350	1,483	587	1.93	669	2.87
Average.....	(X)	**426**	(X)	**310**	**0.99**	**414**	(X)
Total.....	**45,554**	(X)	**19,054**	(X)	(X)	(X)	**18.85**

(X) Not applicable.
[1] The calculation considers the total number of trees of the block, that is, bearing and non-bearing trees (2013 or 2014 resets).
[2] Weighted average per stratum area.
[3] V.Folha Murcha – Valencia Folha Murcha.

Table 9 – Oranges: Orange production forecast 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 2015-2016		
					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.....	19,671	418	7,858	469	1.46	585	11.51
Other early season:							
Valencia Americana, Valencia Argentina, Seleta, Pineapple....	7,511	399	2,877	597	2.06	788	5.92
Mid-season:							
Pera Rio.....	34,900	468	15,685	376	1.17	525	18.33
Late season:							
Valencia e V.Folha Murcha[3]...	41,605	414	16,419	409	1.35	534	22.21
Natal.....	12,562	381	4,615	525	1.73	635	7.98
Average.....	(X)	**427**	(X)	**431**	**1.39**	**567**	(X)
Total.....	**116,249**	(X)	**47,454**	(X)	(X)	(X)	**65.95**

(X) Not applicable.
[1] The calculation considers the total number of trees of the block, that is, bearing and non-bearing trees (2013 or 2014 resets).
[2] Weighted average per stratum area.
[3] V.Folha Murcha – Valencia Folha Murcha.

Table 10 – Oranges: Orange production forecast 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 2015-2016		
					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.....	11,629	446	4,925	675	2.11	892	10.37
Other early season:							
Valencia Americana, Valencia Argentina, Seleta, Pineapple....	1,407	442	607	525	1.81	782	1.10
Mid-season:							
Pera Rio.....	28,354	466	12,605	420	1.30	579	16.43
Late season:							
Valencia e V.Folha Murcha[3]...	35,510	419	14,161	566	1.87	747	26.53
Natal.....	7,840	408	3,068	629	2.07	811	6.36
Average.....	(X)	**438**	(X)	**534**	**1.72**	**717**	(X)
Total.....	**84,740**	(X)	**35,366**	(X)	(X)	(X)	**60.79**

(X) Not applicable.
[1] The calculation considers the total number of trees of the block, that is, bearing and nonbearing trees (2013 or 2014 resets).
[2] Weighted average per stratum area.
[3] V.Folha Murcha – Valencia Folha Murcha.

Table 11 – Oranges: Orange production forecast 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 2015-2016		
					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.....	11,480	473	5,228	942	2.94	1.341	15.39
Other early season:							
Valencia Americana, Valencia Argentina, Seleta, Pineapple....	2,201	471	1,017	644	2.21	1.022	2.25
Mid-season:							
Pera Rio.....	20,713	502	10,103	501	1.56	759	15.72
Late season:							
Valencia e V.Folha Murcha[3]....	24,409	504	11,978	583	1.93	946	23.09
Natal.....	12,461	488	5,964	671	2.21	1.059	13.19
Average.....	(X)	**495**	(X)	**630**	**2.03**	**977**	(X)
Total.....	**71,264**	(X)	**34,290**	(X)	(X)	(X)	**69.64**

(X) Not applicable.
[1] The calculation considers the total number of trees of the block, that is, bearing and non-bearing trees (2013 or 2014 resets).
[2] Weighted average per stratum area.
[3] V.Folha Murcha – Valencia Folha Murcha.

ATTACHMENTS

In order to make it easier to understand how the citrus tree inventory and crop forecast were prepared, the following images are presented to illustrate important stages of this process.

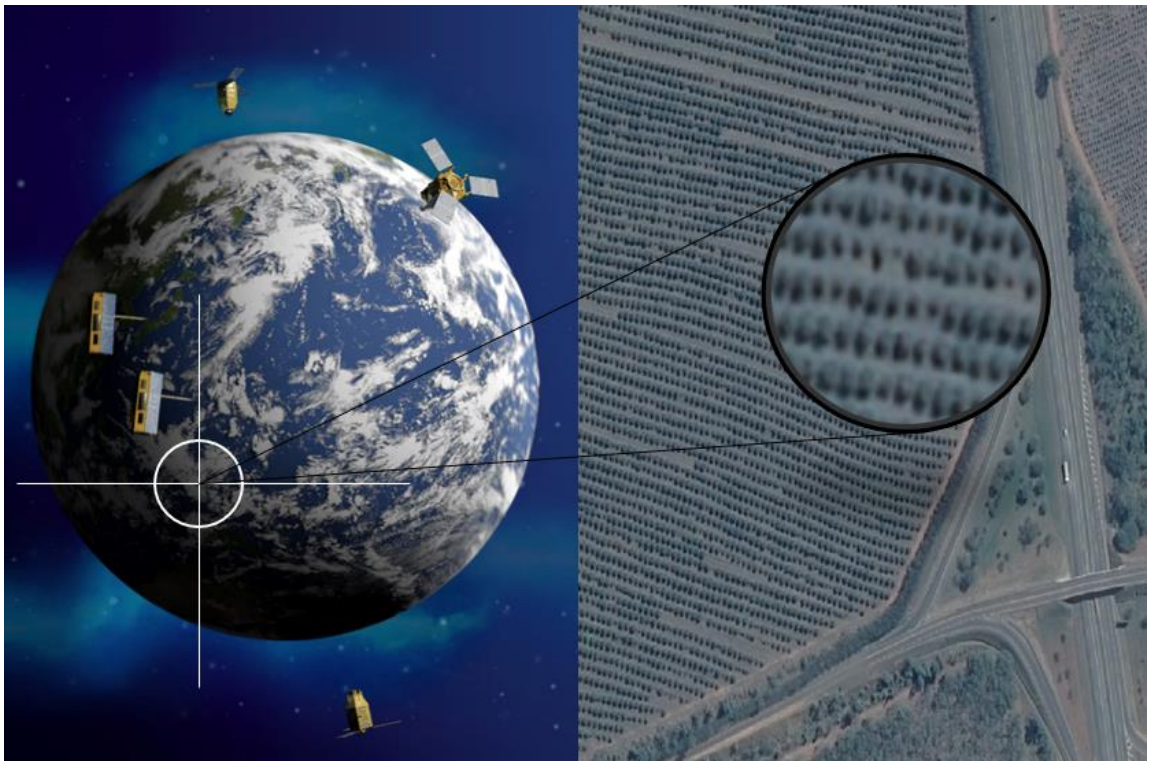

Image 1 – Illustrative representation of image collection by the French satellites *Pléiades 1A* and *1B* of *Airbus Defense and Space* and example of how it is possible to examine the image close up to see the trees.

Image 2 – Training of study agents in a grove to ensure uniformity of definitions.

Image 3 – Visual inspection of the images to anticipate the location of possible citrus plantings and to plan the daily route for the groves to be visited to collect data onsite.

Image 4 – Permission to visit the citrus blocks of the grove for mapping and data collection.

Image 5 – Vehicle disinfection procedures before arrival at a new citrus grove or starting study activities at another citrus grove.

Image 6 – Design of the citrus blocks on the high definition satellite images, at the grove site, using geo-processing software.

Image 7 – Measurement of spacing between trees in a long sequence of plants to better define the spacing resulting from increased density planting caused by the presence of two (or more saplings) in each hole, which had previously been a vacancy. Procedure is performed in the middle of the block.

Image 8 – Measurement of spacing between lines and at the same measurement location between trees.

Image 9 – Full count of three planting lines – one at the beginning, one between the middle and the limit and the other in the middle of the block – classifying the holes as: bearing, non-bearing, vacancies and dead trees.

Image 10 – Recognition of variety and planting year of the blocks.

Image 11 – Entry of the data collected into a program especially customized for the PES/Fundecitrus Citrus Tree Inventory at the block site.

Image 12 – To refine the data, a random drawing of 5% of all the blocks mapped was done. These blocks underwent full counting and all their holes were classified into bearing trees, non-bearing tree, vacancies and dead trees. This activity was carried out by the cross-audit system, composed of a group of one study agent and two field assistants.

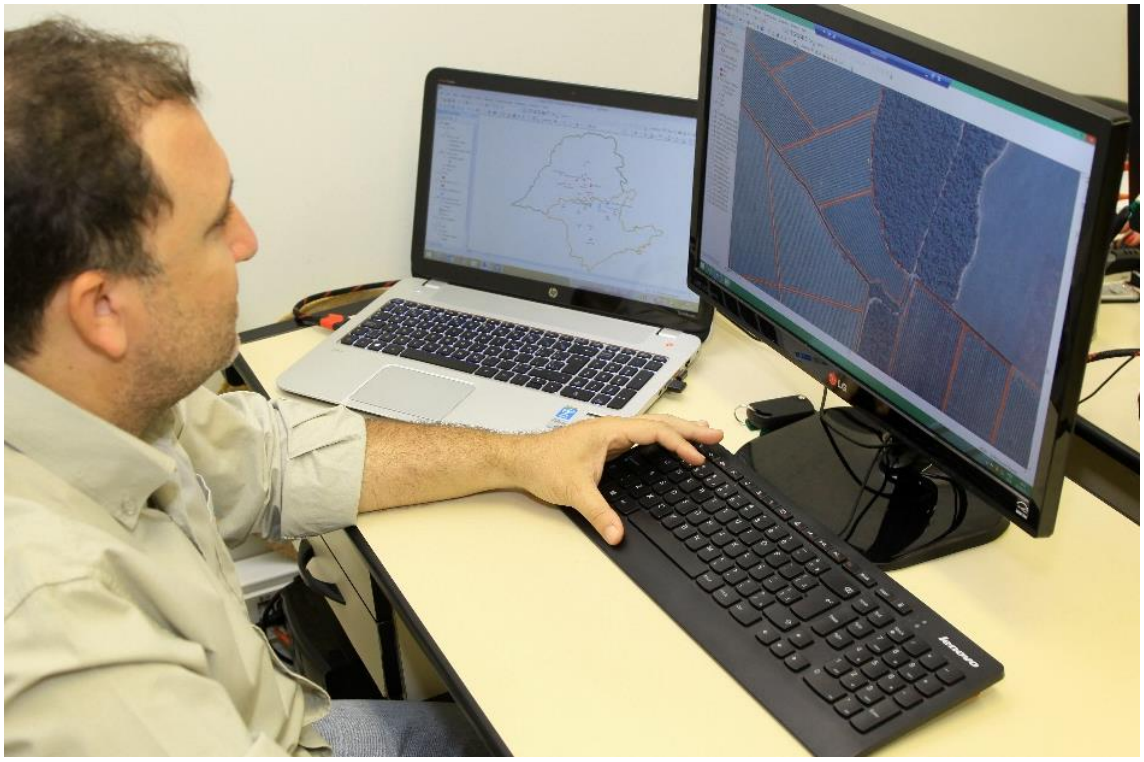

Image 13 – Each day, the data collected in the field were transferred to the office using VPN (Virtual Private Network) technology with the information encrypted in total security. At the PES/Fundecitrus computers in Araraquara-SP, the data were audited, refined and stored on just one server with access controlled by the Terminal Server with the use of a personal password.

Image 14 – Example of citrus blocks mapped on the satellite image in the municipalities of Conchal and Mogi Mirim.

Image 15 – To forecast the crop, 2,500 trees were drawn, stratified by region, variety and age. All fruits from each one of these trees were harvested early, and after being stripped, were placed into sacks and identified. In addition, on 900 of these samples, the following three trees after the stripped tree were crowned and the ground was cleaned to follow the fruit droppage during the next months. The eight trees selected for accompanying the fruit size were also marked with a tag customized by Fundecitrus.

Image 16 – Fruits from a single tree, sacked and properly identified with registration and volume cards, representing one of the 2,500 samples drawn for stripping.

Image 17 – The samples were taken to a warehouse at Industrial Sector I at Araraquara-SP that was temporarily leased. After unloading, samples were organized by volume and placed into plastic boxes, and were then sent to the classification stage.

Image 18 – During the classification stage, all sample fruits were separated according to their respective bloom. This procedure requires a degree of technical knowledge that justified the permanent presence of someone with experience in this area to provide support and settle any doubts that arise during this process. Next, sample fruits already separated in boxes and according to bloom were counted. In this stage, great care must be taken with the numbers; for this reason fruits were counted, recounted, and underwent random audits.

Image 19 – Fruit size is an important criterion, but it is not, and cannot be, the only one to be observed. The criteria used to identify the blooms are: variety, age, region of origin, fruit size, peel texture and stage of maturity. All these criteria combined make it possible to classify the fruits by bloom. This photo shows the classification standard of the five blooms found in the 2015-2016 season.

Image 20 – Weighing fruits according to the bloom is another sensitive stage and required precision electronic scales. Fruits from the 1st, 2nd and sometimes the 3rd bloom, which are larger, are weighed within the boxes, discounting the tare weight. Fruits from the 4th and 5th blooms are weighed using high precision scales, because they are very small and light. The numbers are recorded on the sample registration card to which the weight annotation information by bloom is stapled.

Image 21 – After weighing is concluded, the samples are released for disposal and taken by truck to a landfill.

Image 22 – The cards on which the stripping data is recorded are taken to the PES/Fundecitrus office, where they are typed into the server and the data is audited, consolidated and protected.

Image 23 – To adjust the crop forecast, the fruit weight must be monitored every month. Therefore, 900 blocks were randomly drawn from the 2,500 stripping blocks, and eight trees were drawn from them and received identification for monthly accompaniment of the fruit weight changes, according to their respective blooms.

Image 24 – Fruit droppage over the months also interferes in production forecast, so monthly fruit droppage must be monitored. This is done by cleaning and crowing the ground around three neighboring and consecutive trees to the stripped tree. Fallen fruits are collected, counted and noted on the monthly visit card. Respective data is then typed into the PES/Fundecitrus system and begins to be part of the adjustment numbers for the current season.

Image 25 – Climate plays a determining role in seasonal variation. Temperature and rainfall may contribute to a large crop or lead to a large drop in production. For this reason, on May 12, 2015, PES/Fundecitrus gathered a Technical Committee and specialists in the area of climate and meteorology to discuss climate expectations and probabilities for the 2015-2016 season.

Image 26 – On May 19, 2015, at 9 a.m., the final meeting for the 2015-2016 season forecast was held at Fundecitrus headquarters behind closed doors, with the presence of only the seven technicians responsible for preparation of this information, under a strict confidentiality agreement in regard to the information. Next, the results were presented to Dr. Lourival Carmo Monaco, President of Fundecitrus.

Image 27 – To prevent any interruption or communication with the external environment, all the curtains in the room remained closed. The telephone at the location was removed. Personal or business cell phones of all participants were turned off and removed from the room in a box.

Image 28 – At 10:40 a.m. on May 19, 2015, at the Fundecitrus auditorium, the disclosure ceremony began for the 2015-2016 Season, with the words of Fundecitrus President, Dr. Lourival Carmo Monaco, before citrus sector representatives, researchers and the press. At the end of the presentations by the board, and after the session was closed, the reports "Citrus Tree Inventory of the São Paulo and West-Southwest of Minas Gerais Citrus Belt" and "Orange production forecast for the 2015-2016 season of the São Paulo and West-Southwest of Minas Gerais Citrus Belt" were made available at the Fundecitrus site (www.fundecitrus.com.br) for consultation and copying.