TREE INVENTORY AND ORANGE CROP FORECAST FOR SÃO PAULO AND WEST-SOUTHWEST MINAS GERAIS CITRUS BELT

2018-2019

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TREE INVENTORY AND 2018-2019 ORANGE CROP FORECAST FOR SÃO PAULO AND WEST-SOUTHWEST MINAS GERAIS CITRUS BELT

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

SNAPSHOT OF GROVES IN MARCH 2018

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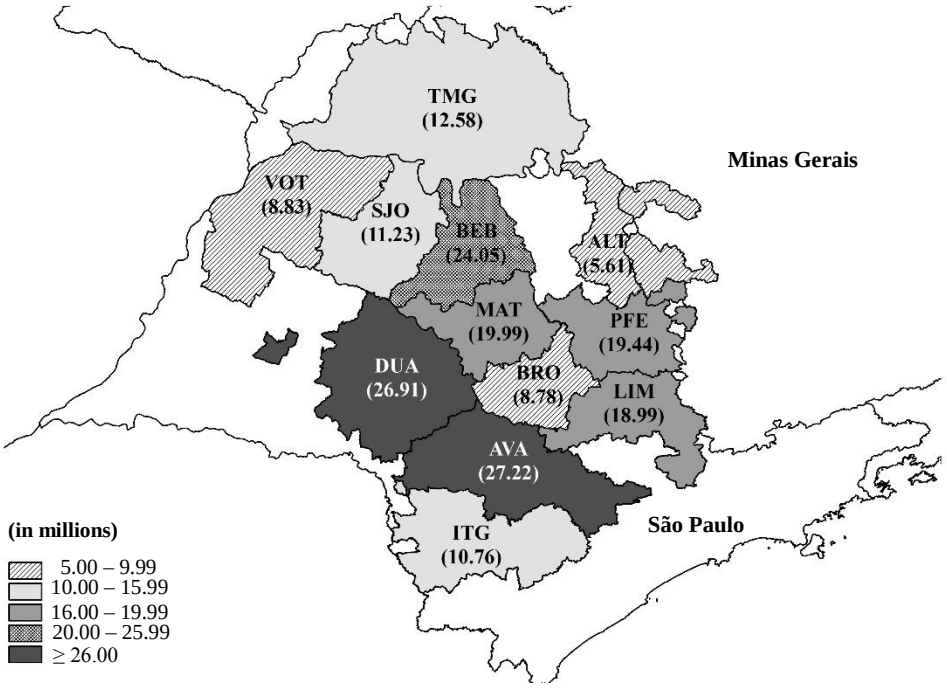
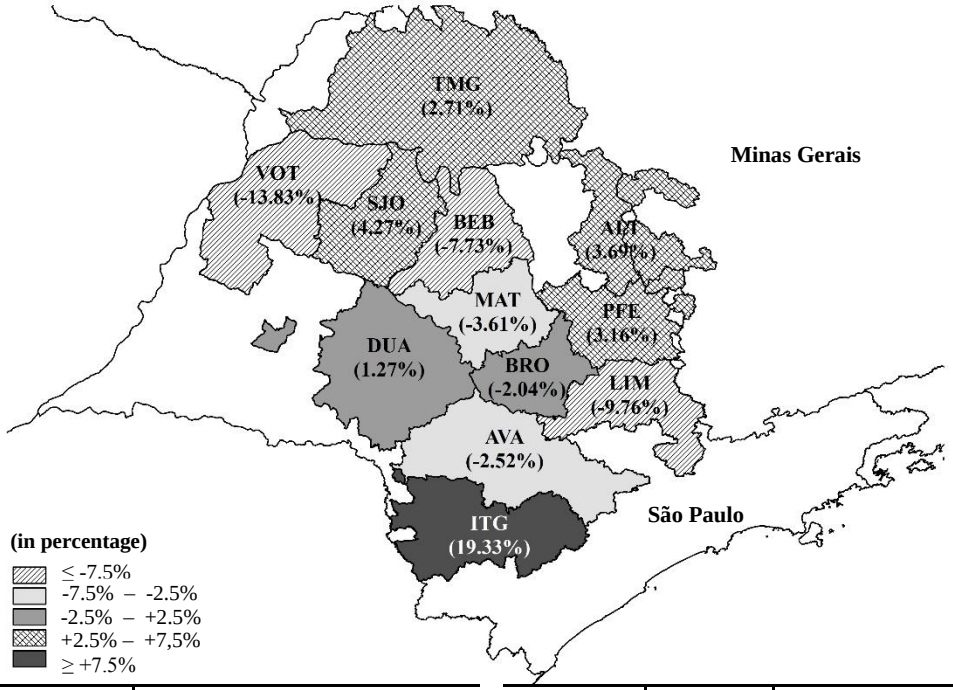
TOTAL ORANGE TREES[1] BY REGION
Total: 194.41 million trees



VARIATION IN TOTAL ORANGE TREES [1] BETWEEN THE 2015 AND 2018 INVENTORIES



Abbreviation	Region	Total orange trees[1]		
		2015 Inventory [2]	2018 Inventory[2]	Variation
		(millions)	(millions)	(%)
TMG	Triângulo Mineiro	12.25	12.58	+2.71%
VOT	Votuporanga	10.24	8.83	-13.83%
SJO	S. J. do Rio Preto	10.77	11.23	+4.27%
DUA	Duartina	26.58	26.91	+1.27%
AVA	Avaré	27.92	27.22	-2.52%
ITG	Itapetininga	9.02	10.76	+19.33%

Abbreviation	Region	Total orange trees[1]		
		2015 Inventory[2]	2018 Inventory[2]	Variation
		(millions)	(millions)	(%)
BEB	Bebedouro	26.06	24.05	-7.73%
ALT	Altinópolis	5.41	5.61	+3.69%
MAT	Matão	20.75	20.00	-3.61%
PFE	P.Ferreira	18.85	19.44	+3.16%
BRO	Brotas	8.96	8.78	-2.04%
LIM	Limeira	21.04	18.99	-9.76%

[1] Varieties: Hamlin, Westin, Rubi, Valencia Americana, Seleta, Pineapple, Pera Rio, João Nunes, Valencia, Valencia Folha Murcha and Natal.
Snapshot of groves in March.

TREE INVENTORY OF SÃO PAULO AND WEST-SOUTHWEST MINAS GERAIS CITRUS BELT– SNAPSHOT OF GROVES IN MARCH 2018

Published on May 21, 2018[1]

Publication Schedule

2018-2019 Crop Year
Executive summary of the 2018-2019 orange crop forecast: May 9, 2018
March 2018 tree inventory: May 21, 2018
Crop forecast: May 21, 2018
1st Crop forecast update: September 10, 2018
2nd Crop forecast update: December 10, 2018
3rd Crop forecast update: February 11, 2019
Final crop forecast: April 10, 2019

This is a live document in that it serves to know and explore the citrus belt in rich detail and provide support to agents in this sector. In that sense and with the aim of meeting the demands both from the citrus segment and the press, we reserve the right to enlarge, review and deepen the information already published. It is therefore recommended that the most recent publication available at www.fundecitrus.com.br be used.

[1] Year 4 – Nº 1 – May 21, 2018 (Portuguese version only)
Year 4 – Nº 2 – May 25, 2018 (Portuguese version only)
Year 4 – Nº 3 – May 29, 2018 (Portuguese and English versions)

Improvements resulting from text review and information included are presented in a consolidated form on the last page of this report.

**Performed by FUNDECITRUS in cooperation with MARKESTRAT,
FEA-RP/USP and the department of Math and Science of FCAV/Unesp**

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

SNAPSHOT OF GROVES IN MARCH 2018

Fundecitrus
Araraquara, São Paulo
2018

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FOREWORDS

Dr. Lourival Carmo Monaco

Fundecitrus President and citrus grower

We are at the important time of announcing production forecast results and other data for the 2018-2019 crop year. Trust placed on the methodology can be confirmed by final results for the 2017-2018 crop forecast performed and reviewed by the Crop Forecast Survey (PES), created by citrus growers and under our responsibility of carrying out the crop survey with the inclusion of details for the reality in each region, while keeping information confidential as well as respecting all links of the chain.

Special distinction should be given to the increasing collaboration of citrus growers, which evidences their trust on this project that improves with the years and is based on accumulated experience, having expanded to other citriculture segments with a view of portraying the status of such segments within climatic, social and economic diversity. This guidance is fundamental in face of its strategic vision towards globally analyzing the productive chain in order to prioritize links to be improved under close collaboration with the agents of this important agribusiness. Fundecitrus, through its technical team and collaborators, produces reliable information so that citrus growers can have the essential elements for an ever more competitive and growing citriculture. It is fundamental to highlight not only the quality data collection and analysis, but also the structure in place to maintain confidentiality and avoid lack of information with its resulting commercial impacts.

Results from three consecutive crop seasons (2015, 2016 and 2017) showed consistency with the regional reality and compatibility with processing and commercialization. Process reliability led Fundecitrus to make adjustments without losing focus on confidentiality and responsibility in data treatment. PES continued within its quality perspectives owing to the dedication of those responsible for data collection and processing, who kept to the concepts defined in the original plan that is regularly assessed by the Technical Committee, therefore preserving process reliability. The trust shown by PES, under distinct circumstances of production, market demand and inventory, the latter being also announced, strengthens the trend of expansion of the citrus agribusiness involving other segments of that chain, which will enable the setting of strategies to work with the demand and supply of a quality product that is accepted by all markets. The model adopted unquestionably opens windows of opportunity to citrus growers, regardless of their farm structure and size.

Antonio Juliano Ayres

Fundecitrus General Manager

The crop forecast and tree inventory for São Paulo and west-southwest Minas Gerais in 2018-2019 innovate even more by including not only orange varieties but also acidless sweet oranges, acid limes, lemons and tangerines. This updated and complete snapshot of trees in the citrus belt brings the new distribution of citrus per region, variety and age, allowing for citriculture scenarios and trends to be outlined. It also allows for a better control of diseases such as greening and citrus canker through merging inventory data with results from the disease survey carried out by Fundecitrus, which provides a better view of the behavior of such diseases and facilitates the establishment of action plans. The orange crop forecast is increasingly more assertive, due to both a larger number of trees drawn for follow-up on fruit drop along the crop season and the several additional studies carried out to increase the accuracy of causes of fruit drop and of final fruit size. PES, developed with the contribution of different institutions and professionals, guarantees transparency and assertiveness in the results announced by Fundecitrus and faithfully portraits citriculture.

Marcos Fava Neves
PES Political-Institutional and Methodological Coordinator, part-time Full Professor at FEA-RP/USP and other organizations

I am pleased to participate in the fourth announcement of the orange crop forecast for the citrus belt. Since previous events until this one, there has always been a high level of apprehension due to the responsibility of the work. We are increasingly more confident and enjoy fewer chances of error, with further learning each year. Once again it is fascinating to see the maturity the productive chain has attained in these four years upon reducing one of the main problems always raised by the sector, which is lack of information and transparency. Innovative efforts link Fundecitrus, which is the main organization in the citrus sector and that I believe should gain increasingly more amplitude, with Markestrat, FEA-RP/USP and Unesp. They all have the same purpose of contributing towards reliable results. The four years that went by have shown that the efforts of this great PES team were worthwhile and surprised even the most optimists. On our part, in addition to the political and institutional coordination, I would like to also highlight the efforts we made towards international visibility of PES, by showing serious citriculture and agribusiness in Brazil. There have already been more than eight publications in European and American periodicals and our efforts were recognized at worldwide agribusiness congresses held in Minneapolis (2015), Aarhus (Denmark, 2016) and Miami (EUA, 2017), as they will be in the next one to be held in Buenos Aires in July 2018. Other countries and productive chains are inspired by PES as a leader and a role model of citriculture from Brazil to the world. Congratulations to all and may we have a good and profitable crop, with safety, work and as I like to say, by "creating, capturing and sharing value", even more after two better years.

Vinícius Gustavo Trombin
Executive Coordinator of PES and partner at Markestrat

This PES edition is special. The reasons for that are many, but I highlight three of them here. First, this edition confirms the high standard of quality this survey has had. This statement is based on the fact that although data for all plots was again collected by survey agents who had no access to the information registered in the 2015 mapping, the comparison between the two surveys shows extreme equivalence, despite the fact they were carried out by different people within a three-year interval. The second reason that shows the special character of this fourth edition is the greater precision expected for fruit size in the crop. I say that based on the recent finding about the influence rainfall in May, June and July has on fruit size at harvest. Combined data for rainfall in that period and final fruit size in the last ten crop seasons has shown a surprisingly strong correlation. Oranges were heavier in crop seasons where rainfall was intense in those three months, whereas they had reduced growth in periods of lower rainfall. The regression model created with this and other variables reduced the subjectivity of the fruit size projection. Finally, as a third reason, I highlight the increasing confidence citrus growers have had in PES and the indispensable support from the Technical Committee. On behalf of the whole team directly involved in the survey I can guarantee the best efforts are employed to rise to the challenge, with serious and ethical work and respect for data confidentiality. At the same time, open communication is encouraged, with public access to compiled information and total transparency in activities and results.

José Carlos Barbosa
Methodological Analyst at PES and (Voluntary) Full Professor at FCAV/Unesp

We have started the second cycle of PES carried out by Fundecitrus. A new inventory was taken and new methodologies were incorporated aiming at the obtainment of increasingly reliable crop forecasts. The group in charge of the project is well-integrated and comprises citrus growers, industry representatives and technicians that work in the sector. Information produced in the three previous crop seasons shows the capacity Fundecitrus has to carry out the work required for the survey. Our participation in PES also represents the trust of the productive sector in the university as a generator of knowledge.

ACKNOWLEDGEMENTS

In this fourth publication we are pleased to present the updated citrus belt tree inventory that resulted from the hard work of scanning more than 151,000 km² through visits carried out farm by farm, large and small, to take the most complete inventory of citrus, one of the major item in Brazilian exports.

This would unquestionably not have been possible if each grower did not collaborate and trust our commitment with absolute confidentiality on their individual information. Today, we are the benchmark to other agricultural sectors in organizing and democratizing information to all links of this agribusiness.

Therefore, we thank all citrus growers and the orange juice companies Citrosuco, Cutrale and Louis Dreyfus for contributing to fund this survey and allowing data collection on their farms, therefore giving us the opportunity to develop an impartial and technical survey.

We also thank the department of agriculture and supply in the State of São Paulo for its close collaboration with the citrus sector and for information supplied on the number of nursery citrus plants marketed under the permit to transit plants in 2017.

We thank the Technical Committee for its permanent support, exchange of field experiences and encouragement to the pursuit of technical excellence at all times.

We thank those who collaborate to Fundecitrus and the outsourced personnel involved in this major challenge for their commitment, zeal and efforts so that goals were met within the deadlines set and with the quality demanded.

Lastly, we would like to express our appreciation to the Fundecitrus Management Board for its approval and trust, which were fundamental for us to be able to deliver the current portrait of our citriculture to all links of the productive chain at the same time, confirming our commitment to democratizing the information on this important sector.

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1 – INTRODUCTION

This publication presents the results of the fourth survey on the tree inventory of São Paulo and west-southwest Minas Gerais citrus belt carried out by Fundecitrus in cooperation with Markestrat, FEA-RP/USP and the department of Math and Science at FCAV/Unesp from September 2017 to May 2018. This fourth edition is similar to the first, produced for the 2015 inventory. Both were based on complete mappings of all citrus groves obtained right before each edition was published. Mappings included newly collected satellite images and covered the entire citrus region with visits to all citrus plots for *in loco* data collection.

Fundecitrus has carried out, starting from 2014 – year it took over the responsibility of performing a public and reliable forecast of the crop and the profile of groves – all activities involving field data collection, laboratory work and information processing. Since then, (Voluntary) Professor José Carlos Barbosa, from the department of Math and Science at FCAV/Unesp has been in charge of analyzing methodologies. Markestrat, represented by Vinícius Gustavo Trombin, is responsible for the survey governance, with professor Marcos Fava Neves of FEA-RP/USP and also linked to Markestrat serving as the institutional and methodological coordinator.

One of the governance measures adopted at the time of survey implementation that is still in force is the follow-up on activities being performed, which is done by a technical committee comprising citrus growers, representatives of orange juice companies, academics, as well as Fundecitrus researchers and supervisors. The committee's objective is to monitor the performance of field activities and propose solutions toward operational improvements.

Results from this study were obtained all along the survey, then compiled and restricted until the crop announcement date to the following professionals: Antonio Juliano Ayres (Fundecitrus general manager); Fernando Alvarinho Delgado, Renato Tadeu Rovarotto and Roseli Reina (PES supervisors); Vinícius Gustavo Trombin (executive coordinator linked to Markestrat); Marcos Fava Neves (institutional and methodological coordinator linked to FEA-RP/USP and Markestrat); and José Carlos Barbosa (methodology analyst, working as a volunteer linked to the department of Math and Science of FCAV/Unesp). All of them are subject to confidentiality obligations with regard to PES information before its announcement is made public, according to agreements signed between each of them and Fundecitrus.

As for antitrust practices, all of them are complied with through the adoption of measures necessary to prevent any communication or sharing of individual information with a competitive content among the orange juice companies that collaborate with Fundecitrus in this project or between these and citrus growers.

1.1 – BUDGET

On April 2017 the Fundecitrus Management Board formally approved this survey, with an allowed budget of R$ 8.912 million, of which 46% refer to expenses with the technical and administrative staff and labor-related charges; 30% to travel expenses, accommodations, meals and maintenance; and the remaining 24% to investments including satellite images, software licenses, IT equipment, supplies, indemnity for tree stripping and others. This budget provides financial support to activities performed before May 31, 2018. After that date the budget referring to the period from June 2018 to May 2019 will come into force.

1.2 – GENERAL FIGURES

- **More than 120 professionals directly involved in the survey;**

Field personnel: 41 agents and 58 assistants.
Laboratory personnel: 23 assistants.
Office personnel: 1 coordinator, 3 supervisors and 2 analysts.

- **More than 971,000 kilometers covered;**

Accumulated distance in travelling to map citrus groves: 497,443 km.
Accumulated distance in travelling to count 5% of orange plots: 176,149 km.
Accumulated distance in travelling to strip orange trees: 297,417 km.

- **422 cities visited;**
- **347 cities with mapped citrus farms** (bearing, young and abandoned groves)**;**
- **151,000 square kilometers in continuous and orthorectified satellite images;**

1.3 – DEFINITION OF TECHNICAL TERMS

Citrus belt: region in Brazil with the largest concentration of commercial orange producing farms, encompassing cities in the state of São Paulo as well as some located in the west-southwest state of Minas Gerais.

Farm: rural estate with continuous area of land (physical interruptions may be present such as roads and water streams) under the control of one owner, with more than 200 citrus trees, with the possibility of there being areas in the same estate that are allocated for different purposes such as growing other crops or raising livestock.

Plot: farm fraction or portion separated by lanes, roads, tracks or any other passageway that is usually wider than the spacing between planting rows.

Non-bearing tree: tree planted in 2016 or 2017 that has not yet entered into production.

Bearing tree: tree planted in 2015 or in previous years.

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

Vacancy: empty space on the ground within the planting row that should be occupied by a citrus tree, according to the tree spacing defined when the plot was planted.

Planting hole: central spot in the space occupied by each tree (plant-area) where the earth is dug out and a nursery plant is set; spot in the planting row where there is a potential tree.

Young grove: plot planted in 2016 or 2017. Plots planted in 2018 were not accounted for in this inventory since the field data survey included only the first quarter of said year.

Mature grove: plot planted in 2015 or in previous years.

Eradicated grove: area where citrus trees were removed, which can refer to the whole plot or to part of it.

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 miles.

2 – METHODOLOGICAL PROCEDURES

2.1 – OBJECTIVE METHOD FOR MAPPING CITRUS GROVES

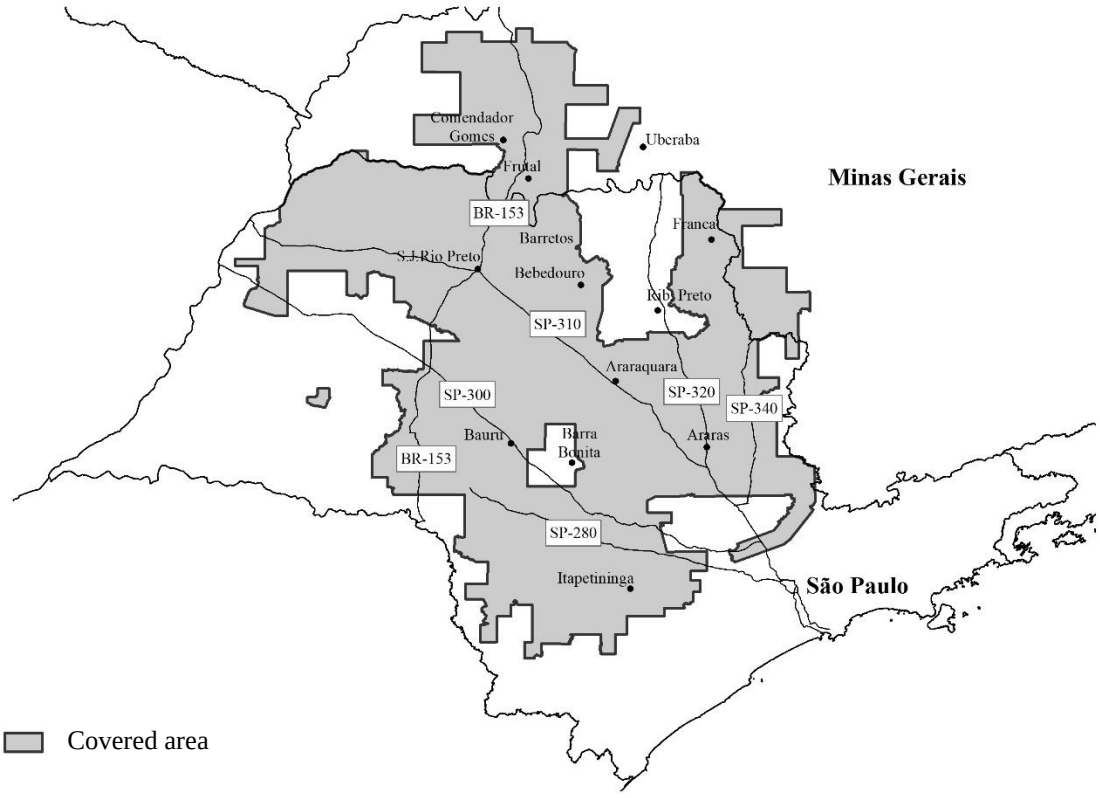
The georeferenced mapping performed for the first time when the 2015 inventory was taken has been completely updated in this 2018 inventory. In both of them, the method employed is objective and aims at producing and conveying quality technical information with scientific rigor and the least possibility of subjective interference.

The mapping method can be divided into four steps, as follows: (1) collection of satellite images, (2) data collection on farms, (3) checking data in the office and in the field, (4) organizing data.

COLLECTION OF SATELLITE IMAGES

New high-definition images were obtained by satellites SPOT 6&7 from the European operator Airbus Defence and Space between May 1 and August 7, 2017. Such months were chosen due to favorable meteorological conditions, with lower incidence of clouds and lower rainfall, especially in July 2017, which allowed for a better contrast between vegetated and bare soil areas such as roads and tracks. Scenes covered 151,000 km^2 in 422 cities in the state of São Paulo, and in west-southwest Minas Gerais. This coverage area is represented in Figure 1.

Figure 1 – Area covered by new satellite images including regions of São Paulo and Minas Gerais



Spatial resolution for scenes is 1.50 meters per pixel, which provides a fairly sharp view of plots. Canopy hues and diameter seen in the images made it possible to differentiate between mature groves from those still in early development and facilitated discerning citrus plantings from those of other fruit also significantly present in the citrus belt, such as mango, avocado and guava. Furthermore, images are orthorectified, which allowed precise measurements to be made, both linear ones in the case of spacing between rows or plants and those used in the calculation of the area of plots.

Images were georeferenced into geographic coordinates with Datum WGS 84, enabling their synchronicity to GPS for assisted navigation to farms and outlines of groves planted from September 2017 to March 2018 that had not been caught in images at the time they were taken. Mapping of totally or partially eradicated plots was also facilitated by this technology.

DATA COLLECTION ON FARMS

Satellite images were made available to survey agents in September 2017, and so were the outlines of plots identified in the previous mapping, which was overlaid on the images to ease visualization of spots to be visited for *in loco* data collection. No information relative to a plot other than its outline was supplied to survey agents, which required a new collection of all data: variety, planting year, spacing, visual aspect of plants and irrigation system, if any.

Before going to the field, survey agents visually inspected satellite images to identify younger groves planted from 2015 to 2017 that should be included in the visiting route and registered with the use of geoprocessing and data collection software. Data was entered on electronic forms that were specifically designed for that. With the use of GPS signaling the route on top of digital images of a region, survey agents travelled to cities to be scanned for location of groves.

The standard procedure to begin activities on any farm included disinfecting vehicles, personnel and equipment as well as obtaining a permit to enter and move through citrus plots before data could be collected in each of them – a total of 89% of the mapped area, including all oranges, had new data collected in this manner.

On farms corresponding to 6% of the mapped area, entry was not permitted but complete data on groves was supplied and inserted in the system to be used as such for calculations in the inventory.

Whenever the owner or person in charge was not available after several attempts or if the entry permit was not granted, the survey was carried out from a distance, provided that citrus plots identified on the corresponding image could be seen externally to the farm, which took place in 4% of the mapped area.

However, that was not possible for larger farms, in which case data was taken from the previous mapping or, if unavailable, plots were mapped based on the visual outlines of the new satellite images and data was estimated by statistical inference from average data for the region. That was the case for 1% of the mapped area.

Criteria for outlining new plantings were the same used in 2015, that is, areas relative to any farm structures within plots, such as farmhouses, dams or sheds for the distribution of agricultural inputs, were not accounted for, so the net areas for each plot were obtained, i.e., only areas occupied by plants, automatically calculated by the geoprocessing software[1]. In case plots underwent changes after the 2015 mapping, their outlines were redrawn to correspond to their current area.

Planting configuration data (spatial tree arrangement) was also collected again. Hence, spacing was measured between rows and between plants located in the center of plots. To determine the spacing between rows, the distance between three trees in parallel rows was measured, whereas to determine the spacing between plants, 11 consecutive planting holes in the same row were measured.

Information on the variety and planting year for each plot was requested from the grower or the person in charge of the farm. In many cases the identification was made in the field by the agent themselves, upon

[1] Procedures described as of this point apply only to orange. For other citrus including acid limes, lemons and tangerines, a simplified mapping methodology was used.

considering a series of factors such as characteristics of leaves, shape of the canopy, presence and shape of fruit, tree size, use of dwarfing rootstock or not, and trunk width, among others.

The field visit identified plots that were abandoned or eradicated after the 2015 inventory. Plots already identified as such in the mapping that year were revisited for data update.

Lastly, new features in the current mapping include the drawing of outlines of all citrus farms and the collection of registration information, which enabled the precise determination of a figure that was previously only an estimate and will now serve to improve the efficiency of field activities in future surveys.

Information storage and security

In order to preserve the confidentiality of individualized information, all data collected and entered by agents was encrypted and securely sent through a private network from the agents' work computers to the Fundecitrus server, on a daily base.

Information was transferred to the Fundecitrus Geographic Information System whose database is stored in a secure environment that undergoes continuous improvement to be kept stable along time. This system is accessed by survey agents and supervisors who are part of the survey team through workstations that are not connected to the internet and have blocked entry/exit data ports to render communication with peripheral devices impossible. Access to individualized information is also managed by a login system with permit levels and validated by username and password verification.

According to compliance rules, survey agents should deliver filled out form sheets and any printed information they receive from citrus growers to Fundecitrus. These documents are confidential and are stored in a secured place at Fundecitrus for a period of four years after which they are destroyed. Data collection took place from September 8, 2017 to January 29, 2018. Each survey agent mapped an average of 230 hectares per day.

CHECKING DATA AT THE OFFICE AND IN THE FIELD

After data for all plots in a certain city was collected by agents, it was serially checked to prevent errors that could influence results. Technicians responsible for data processing at the office scanned images again to adjust the drawings of plots and verify if the citrus areas identified as such were mapped in totality by survey agents. Divergences were informed to agents that in turn went back to the cities for checks in the field and registration of farms in case the collected information was confirmed. Newly collected data relative to variety and planting year that differed from the previous registration was audited for validation.

In total, approximately 1,800 orange plots had their data audited *in loco* during mapping. Quality of registration information for plots was also assessed during the plot counting step. Out of roughly 2,500 plots visited in this step, registration errors were found in only 0.55% of them in reference to variety, and in 0.24% in reference to planting year.

DATA ORGANIZATION

After the data collected was submitted to verification, it was grouped and organized in regions, variety group and age group, as presented in item 2.3.

Therefore, data for each plot or farm is not individually published so as to preserve the privacy of each citrus grower.

This volume of data, encrypted and saved in the Fundecitrus Geographic Information System forms the new primary base (2018) that replaces that of 2015 and will now be preserved for use in future updates until a new mapping is performed, which is planned to start in the second half of 2020 for taking the 2021 inventory.

2.2 – OBJECTIVE METHOD FOR TAKING THE ORANGE TREE INVENTORY

For the tree inventory, 5% of plots in the primary base (2018) are drawn to be visited and to have their planting holes classified and quantified. In the 2015 and 2016 inventories, the counting of planting holes was stratified into four categories: bearing, non-bearing, dead trees and vacancies. Starting from the 2017 inventory, the categorizing method has been refined. Each tree present in a plot was classified into up to four age categories: zero (up to two years old), one (from three to five years old), two (from six to ten years old) and three (over 10 years old). Dead trees and vacancies were also accounted for.

This reformulation provides a detailed overview of the number of trees within a same plot in each age category, since each tree is classified and counted at its own age and no longer considered as old as the original planted grove. For the categorized counting, survey agents are informed by the citrus grower whether a grove has been reset and when. Next, they visit the block and define the visual pattern of the tree for each age category present in the plot, by combining the information provided by the citrus grower with visual evidence such as trunk circumference, height and shape of canopy.

The visual pattern of age is specific to each plot since plant development varies according to management, variety, rootstock and scion genetics, irrigation and edaphoclimatic aspects, among other factors. Therefore, count results represent an approximate tree age and not effectively its chronological age, calculated from its exact planting year. Age base for the plot remains being the year it was planted.

If eradicated plots are found among the drawn plots, their areas are used to calculate the eradication rate of the sample. This eradication rate is applied to the primary base. The same calculation is done in case abandoned plots are found. After those two rates are applied to the primary base, the estimated area occupied by groves in the current crop is determined. This new area multiplied by the tree density of the primary base results in its updated number of planting holes. That number in turn is corrected by the index generated from the comparison between the number of planting holes found in the sample and its respective number in the primary base. Indexes resulting from counts are applied to that number of planting holes, i.e., percentages of trees in each age category, as well as percentages of dead trees and vacancies, aiming at the determination of the new tree inventory.

In years when farm mapping is not performed, as it was the case in inventories taken in 2016 and 2017, an estimate is made of plantings that occurred in the years following the most recent mapping.

Hence, all farms in the sample are checked for the presence of groves planted after the survey agent's visit at the time the previous mapping was performed to form the primary base. An index for new

plantings is generated from the rate between the additional area and the respective total area for a variety on the farm. Indexes per variety are extrapolated to the whole region to estimate plantings in the year.

Data used to estimate the number of trees planted is supplied by the animal and plant health protection agency for the state of São Paulo (CDA-SP), of the São Paulo state agriculture and supply department, on the number of citrus nursery plants marketed under the permit to transit plants in the state of São Paulo.

In strata where stratified plantings per region and variety in the field survey show a higher number of trees than that supplied by the CDA-SP, the field survey data prevails. This difference results from the production of nursery plants by growers in nurseries within their farms and allocated to their own use, without the need of a permit to transit plants. Therefore, the final number of nursery plants planted in a given year includes nursery plants produced with and without permits to transit plants.

The number of farm-produced nursery plants is determined by Fundecitrus from a survey with the main citrus growers who have nurseries on their farms. To estimate the area of newly planted groves, their stratified average density per variety and region is used. From the sum of the number of trees supplied by the CDA-SP and that found in the survey with growers, nursery plants used for resetting are subtracted so that the number of trees planted in groves is estimated for that year.

To calculate the number of nursery plants allocated for resetting, the number of existing non-bearing trees in mature groves (resets) is divided by two, based on the assumption that such resetting occurred at the same rate in the two previous years. The density found in sampling 5% of plots is used to calculate the area occupied by new groves.

In years when mapping is performed, information once estimated for these new plantings is updated to its actual figures, such as in this 2018 inventory.

Lastly, auditing is performed with a plot recount to assess the quality of the data collected.

Plots are randomly drawn for counting through the proportional stratified sampling technique. Stratification variables are: 12 regions, five orange variety groups and four age groups, totaling 240 strata. Counting of groves was concentrated between January 29 and March 7, 2018. Each survey agent counted an average of 14,800 planting holes per day.

2.3 – CITRUS BELT STRATIFICATION

Sectors and regions

The citrus belt is divided into five sectors that in turn are subdivided into 12 regions. Each of them comprises several cities and has been named after one of them for reference. The division considered the soil and climate characteristics and historical aspects related to citriculture development that, in general, resulted in a technological pattern for similar farms in the region. Figure 2 presents sectors and regions of the citrus belt and following that, Chart 1 details the cities and abbreviations used to designate regions.

Figure 2 – Division of the citrus belt into 5 sectors

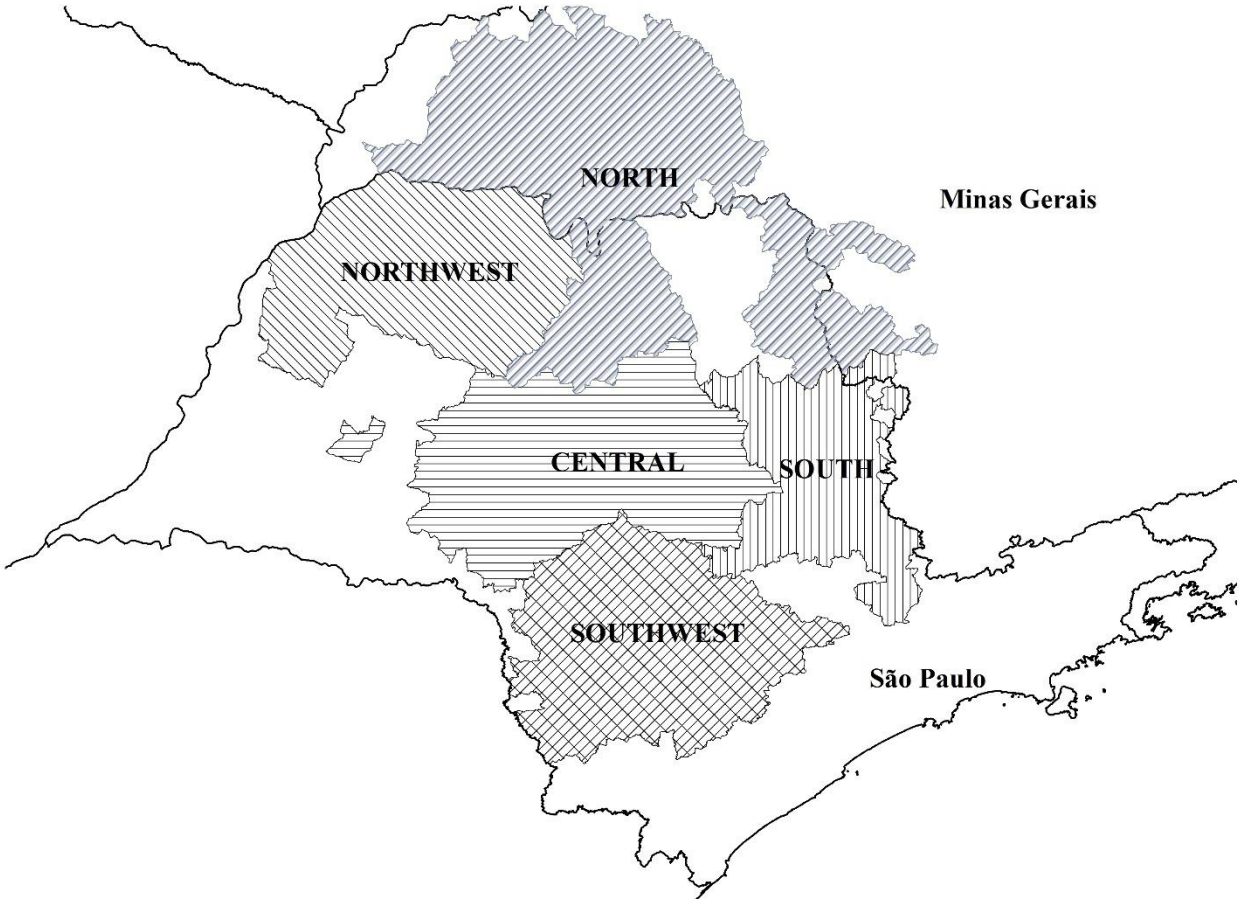
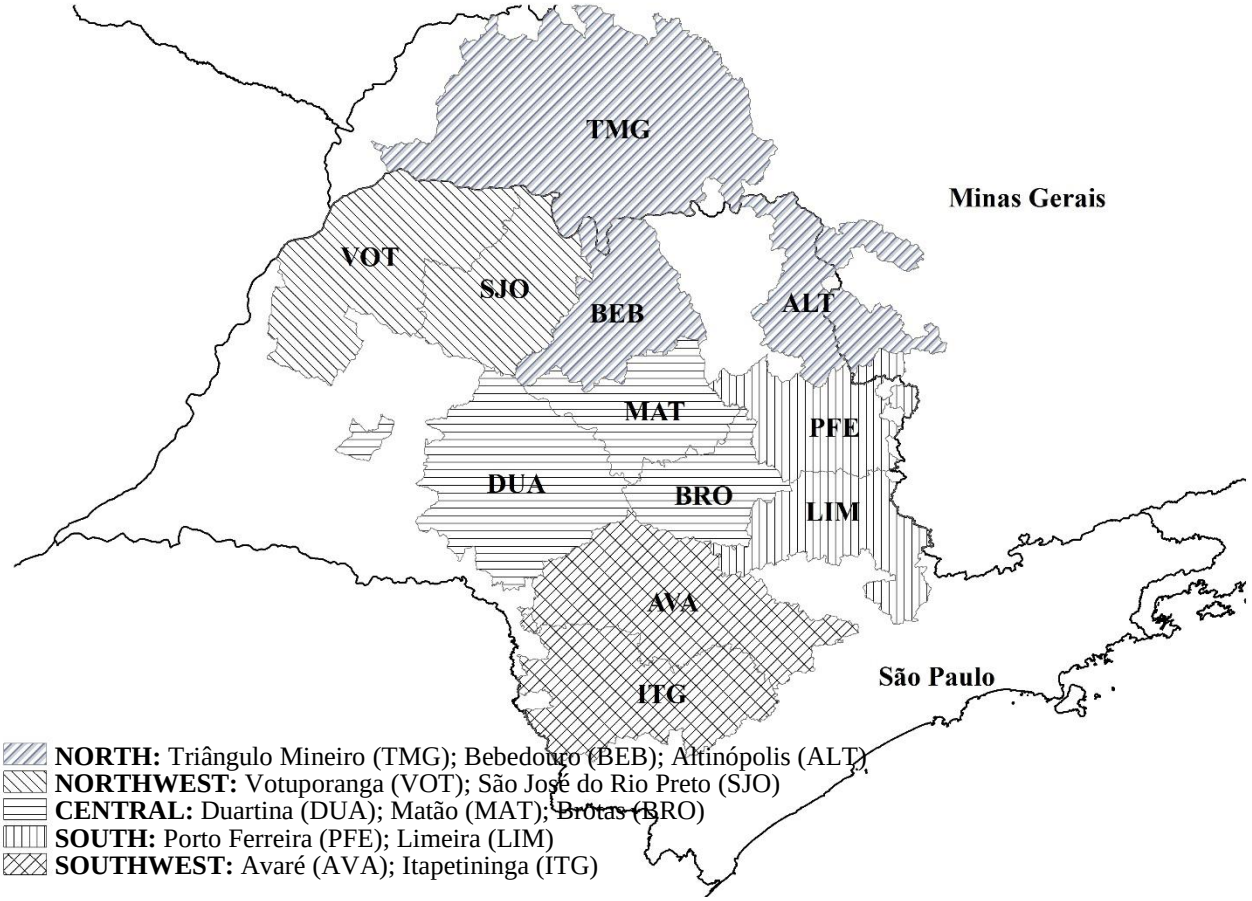


Figure 3 – Division of the citrus belt into 12 regions and respective sectors



NORTH: Triângulo Mineiro (TMG); Bebedouro (BEB); Altinópolis (ALT)
NORTHWEST: Votuporanga (VOT); São José do Rio Preto (SJO)
CENTRAL: Duartina (DUA); Matão (MAT); Brotas (BRO)
SOUTH: Porto Ferreira (PFE); Limeira (LIM)
SOUTHWEST: Avaré (AVA); Itapetininga (ITG)

Chart 1 – Division of cities with citrus farms in sectors and regions

Sector	Region	Cities
North 72 cities	Triângulo Mineiro (TMG) 16 cities	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 cities	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) 21 cities	Altinópolis, Batatais, Brodowski, Cajuru, Cássia dos Coqueiros, Cristais Paulista, Fortaleza de Minas, Franca, Ibiraci, Igarapava, Itamogi, Jacuí, Jeriquara, Monte Santo de Minas, Nova Resende, Patrocínio Paulista, Pedregulho, Santo Antônio da Alegria, São Pedro da União, São Sebastião do Paraíso, São Tomás de Aquino.
Northwest 91 cities	Votuporanga (VOT) 54 cities	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 South, Nova Canaã Paulista, Ouroeste, Palmeira d'Oeste, Paranapuã, Parisi, Pedranópolis, Pereira Barreto, Pontalinda, Pontes Gestal, Populina, Riolândia, Rubinéia, Santa Albertina, Santa Clara d'Oeste, Santa Fé do South, 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) 37 cities	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, Sebastianópolis do South, Tanabi, Ubarana, União Paulista, Zacarias.
Central 79 cities	Matão (MAT) 21 cities	Américo Brasiliense, Araraquara, Bariri, Boa Esperança do South, Borborema, Cândido Rodrigues, Fernando Prestes, Gavião Peixoto, Ibitinga, Itaju, Itápolis, Jaboticabal, Matão, Monte Alto, Motuca, Nova Europa, Novo Horizonte, Rincão, Santa Lúcia, Tabatinga, Taquaritinga.
	Duartina (DUA) 43 cities	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, 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 cities	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 54 cities	Porto Ferreira (PFE) 20 cities	Aguaí, Caconde, Casa Branca, Descalvado, Guaranésia, Guaxupé, Itobi, Luís Antônio, Mococa, Pirassununga, Porto Ferreira, Santa Cruz da Conceição, Santa Cruz das Palmeiras, Santa Rita do Passa Quatro, Santa Rosa de Viterbo, São João da Boa Vista, São José do Rio Pardo, São Simão, Tambaú, Vargem Grande do Sul.
	Limeira (LIM) 34 cities	Águas de Lindóia, Americana, Amparo, Araras, Artur Nogueira, Atibaia, Bragança Paulista, Charqueada, Conchal, Cordeirópolis, Cosmópolis, Engenheiro Coelho, Espírito Santo do Pinhal, Estiva Gerbi, Holambra, Ipeúna, Iracemápolis, Itapira, Itatiba, Jaguariúna, Jarinu, Leme, Limeira, Lindóia, Mogi Guaçu, Mogi Mirim, Monte Alegre do South, Paulínia, Pinhalzinho, Piracicaba, Rio Claro, Santo Antônio de Posse, Serra Negra, Socorro.
Southwest 51 cities	Avaré (AVA) 31 cities	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, Lençóis Paulista, Manduri, Óleo, Pardinho, Porangaba, Porto Feliz, Pratânia, Quadra, Salto de Pirapora, São Manuel, Sorocaba, Tatuí, Tietê.
	Itapetininga (ITG) 20 cities	Alambari, Buri, Campina do Monte Alegre, Capão Bonito, Coronel Macedo, Itaberá, Itaí, Itapetininga, Itapeva, Itaporanga, Itararé, Nova Campina, Paranapanema, Pilar do South, São Miguel Arcanjo, Sarapuí, Sarutaiá, Taquarituba, Taquarivaí, Tejupá.
5 sectors	12 regions	347 cities with citrus farms

Variety groups

Chart 2 – Division of citrus species per variety group

Group of citrus species	Varieties
Oranges.....	Early: Hamlin, Westin and Rubi Other early: Valencia Americana[1], Seleta and Pineapple Mid-season: Pera Rio Late: Valencia and Valencia Folha Murcha Late: Natal
Other oranges.....	Washington Navel and Baianinha Charmute de Brotas Acidless sweet oranges and sweet lime: Lima Verde, Lima Late, Piralima, Lima Sorocaba, Lima Roque, João Nunes and Palestine sweet lime Other varieties
Acid limes and lemons.....	Tahiti acid lime (Persian lime) and Galego acid lime (Mexican lime) Sicilian lemon Other varieties including non-identified ones
Tangerines.....	Ponkan Murcott Other tangerines

[1] Plots registered as Valencia Argentina in the 2015 mapping were updated to Valencia Americana.in this mapping

Age groups

Chart 3 – Classification by tree planting years and grove age groups

Age group	Planting years
1 to 2 years.....	2017, 2016
3 to 5 years.....	2015, 2014, 2013
6 to 10 years.....	2012, 2011, 2010, 2009, 2008
Over 10 years.....	2007 and previous years

3 – RESULTS

3.1 – MAIN CONCLUSIONS ON THE TREE INVENTORY

This publication presents the fourth tree inventory taken by Fundecitrus and portrays the estimated status of citrus groves updated in March 2018. This inventory, just like the 2015 inventory, was based on the mapping of all citrus groves finished right before its publication, which set them apart from the 2016 and 2017 inventories. In addition to providing new information on all groves mapped in the first inventory, the recent mapping finished in January 2018 also enabled the updating of the information on groves planted in 2015, 2016 and 2017 with their actual figures, whereas the 2015 and 2016 plantings in the previous inventories were estimated based on three sources of information: (1) São Paulo state agriculture and supply department, for number of orange nursery plants marketed under the permit to transit plants; (2) nurserymen, for number of nursery plants produced to be planted locally; (3) farms drawn for counting of 5% of plots in the citrus belt, where recent plantings were identified and the density was measured to infer that of new planted areas.

In this new snapshot of São Paulo and west-southwest Minas Gerais citrus belt, the citrus planted area showed a decrease of 16,956 hectares since 2015, moving from 482,591 hectares to 465,635 hectares in 2018, distributed in 9,845 farms. Areas of orange groves reduced their share in the citrus belt from 92% to 89%, whereas areas of acid limes and lemons gained importance, increasing from 6% to 8%, which was also the case for the area of tangerines that grew from 2% to 3%.

Acid limes and lemons groves occupy an area of 39,078 hectares, showing an increase of 11,142 hectares as compared to their area in the 2015 inventory. Their largest concentrations are in the regions of Bebedouro (39%), Matão (26%), Limeira (11%) and Votuporanga (10%). Distribution per variety shows that 90% of that area is planted with Tahiti acid lime, 9% with Sicilian lemon and 1% with other varieties, including those not identified by survey agents.

Tangerine groves total 12,204 hectares, with an increase of 2,134 hectares as compared to their area in the 2015 inventory. These groves are well-distributed in the whole belt although they are more present in the regions of Limeira (21%), Porto Ferreira (12%), Duartina (12%), Bebedouro (11%), Itapetininga (10%), Votuporanga (9%) and Avaré (9%). The Murcott and Ponkan varieties have a similar share, the former with 46% and the latter with 43%. The share of other varieties is 11%.

Orange groves including all varieties take up 414,353 hectares, with a decrease of 30,232 hectares as compared to their area in the 2015 inventory. Data for these groves was compiled into two groups.

The first group, called “oranges”, leads with 97% of the planted area (401,470 hectares) and comprises the Hamlin, Westin, Rubi, Valencia Americana, Seleta, Pineapple, Pera Rio, Valencia, Valencia Folha Murcha and Natal varieties. Plantings of this group are distributed throughout all regions. Regions with larger planted areas have a share in the citrus belt that varies from 10% to 14% and are as follows, in a decreasing order: Duartina, Avaré, Bebedouro, Matão, Limeira and Porto Ferreira. Regions with a smaller share varying between 3% and 7% are as follows, in a decreasing order: Triângulo Mineiro, São José do Rio Preto, Votuporanga, Itapetininga, Brotas and Altinópolis. The second group, named “other oranges”, occupies only 3% of the planted area (12,883 hectares) and comprises the Washington Navel, Baianinha, Charmute de Brotas, acidless sweet oranges, sweet lime and other varieties. Groves in this second group are more concentrated in the regions of Limeira (27%) and Porto Ferreira (20%), followed by Avaré (16%) and Brotas (11%). Sweet oranges include Lima Verde, Lima Sorocaba and Lima Tardia, among other varieties, and take up approximately half of the area.

Figures 4 to 7 show the location of plots within the São Paulo and west-southwest Minas Gerais citrus belt.

Figure 4 – Location of plots of the group of varieties called oranges

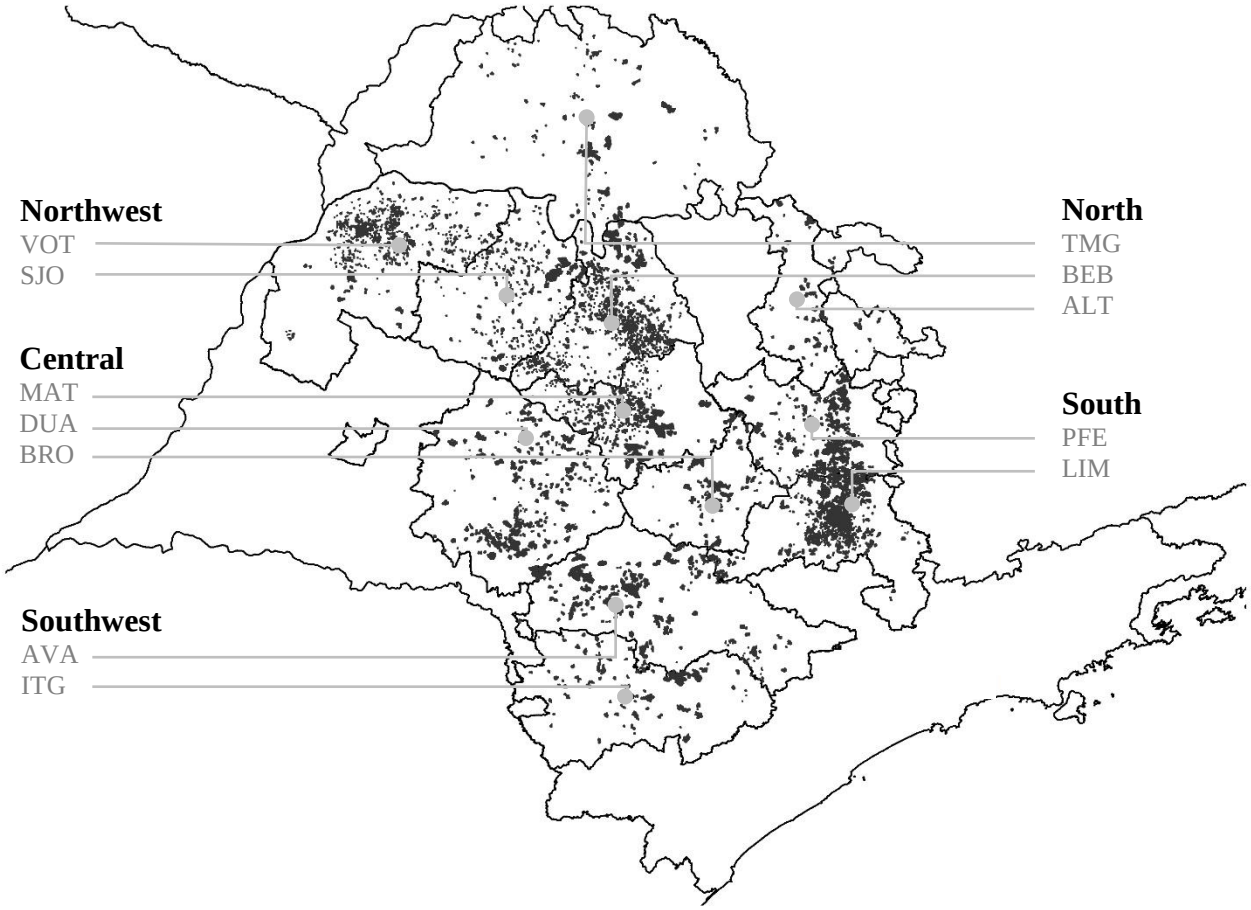


Figure 5 – Location of plots of the group of varieties called other oranges

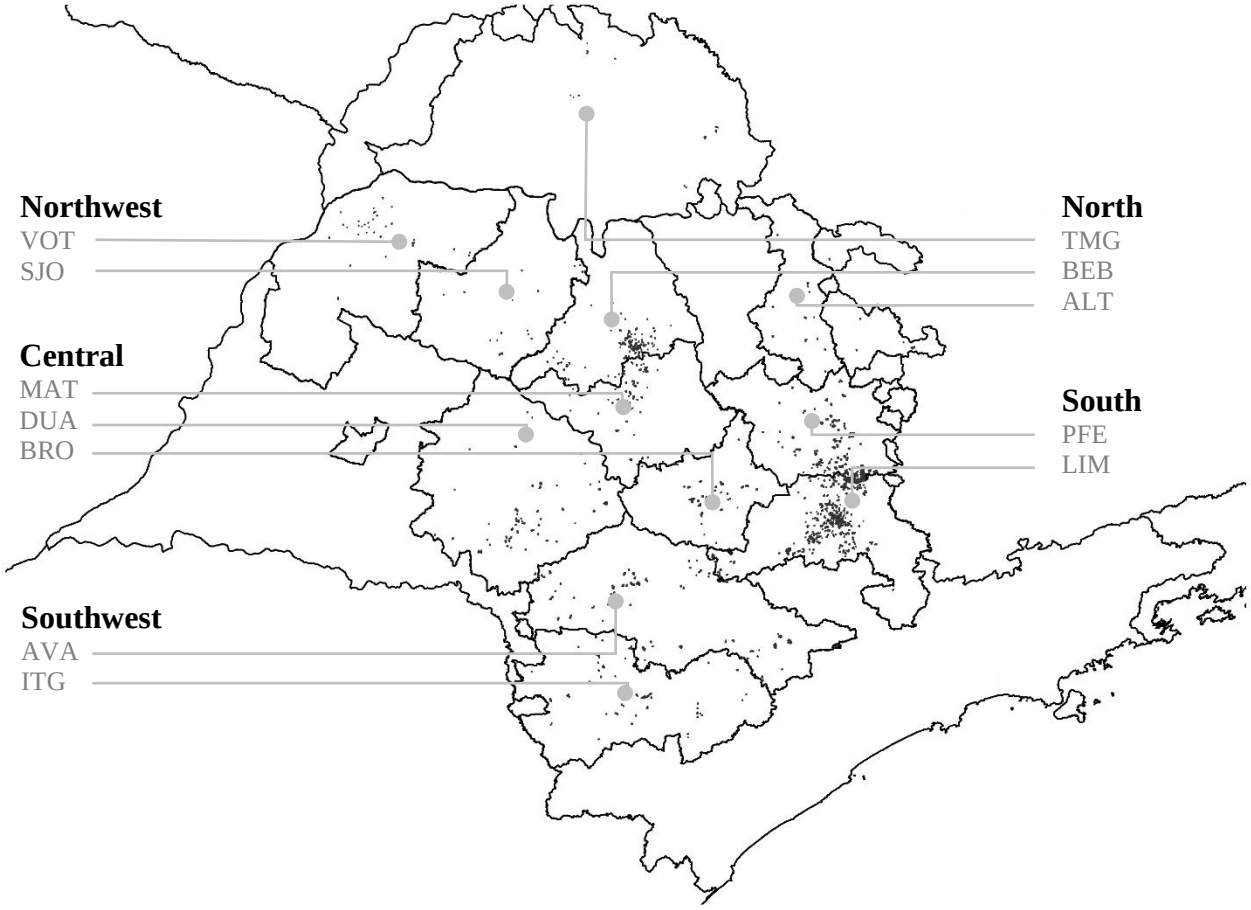


Figure 6 – Location of plots of acid lime and lemon varieties

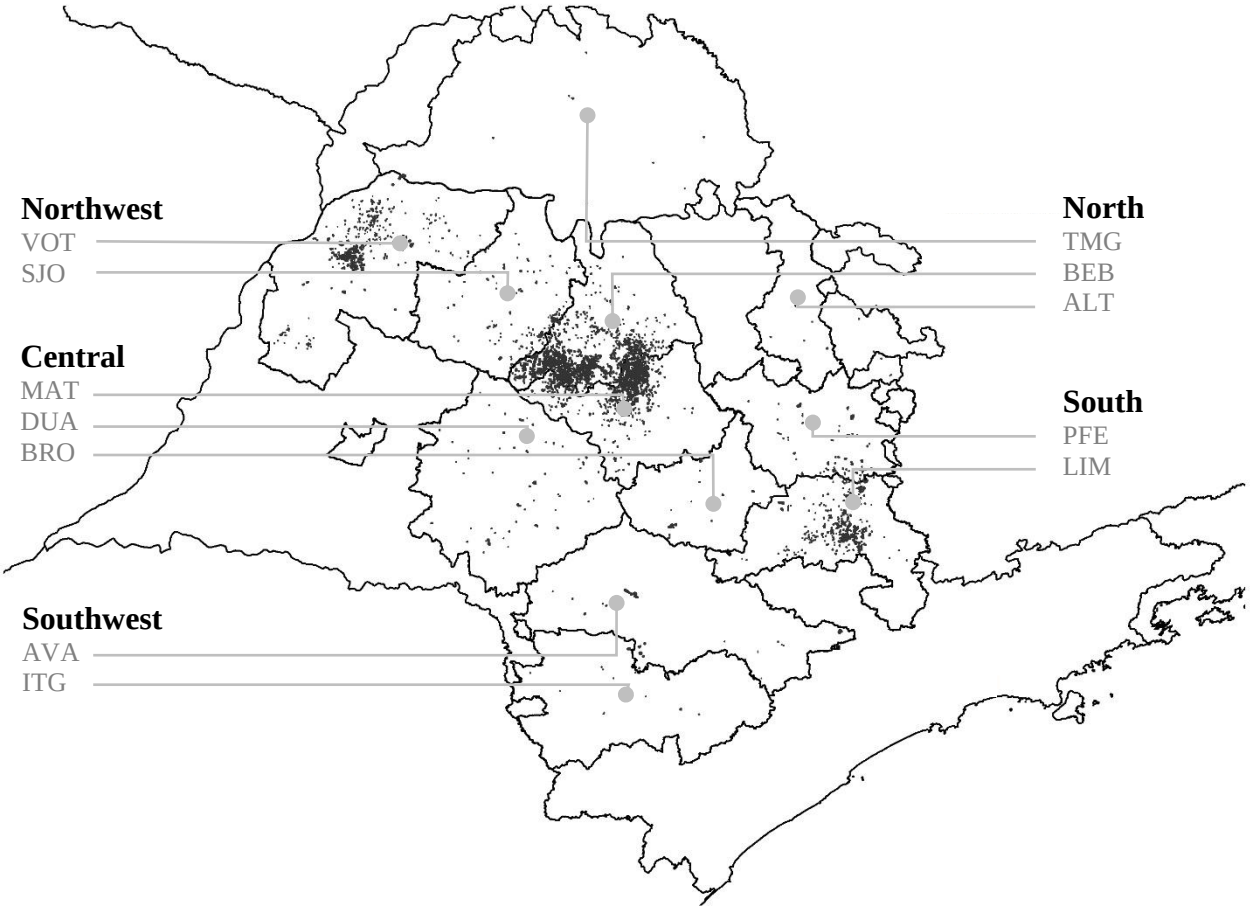
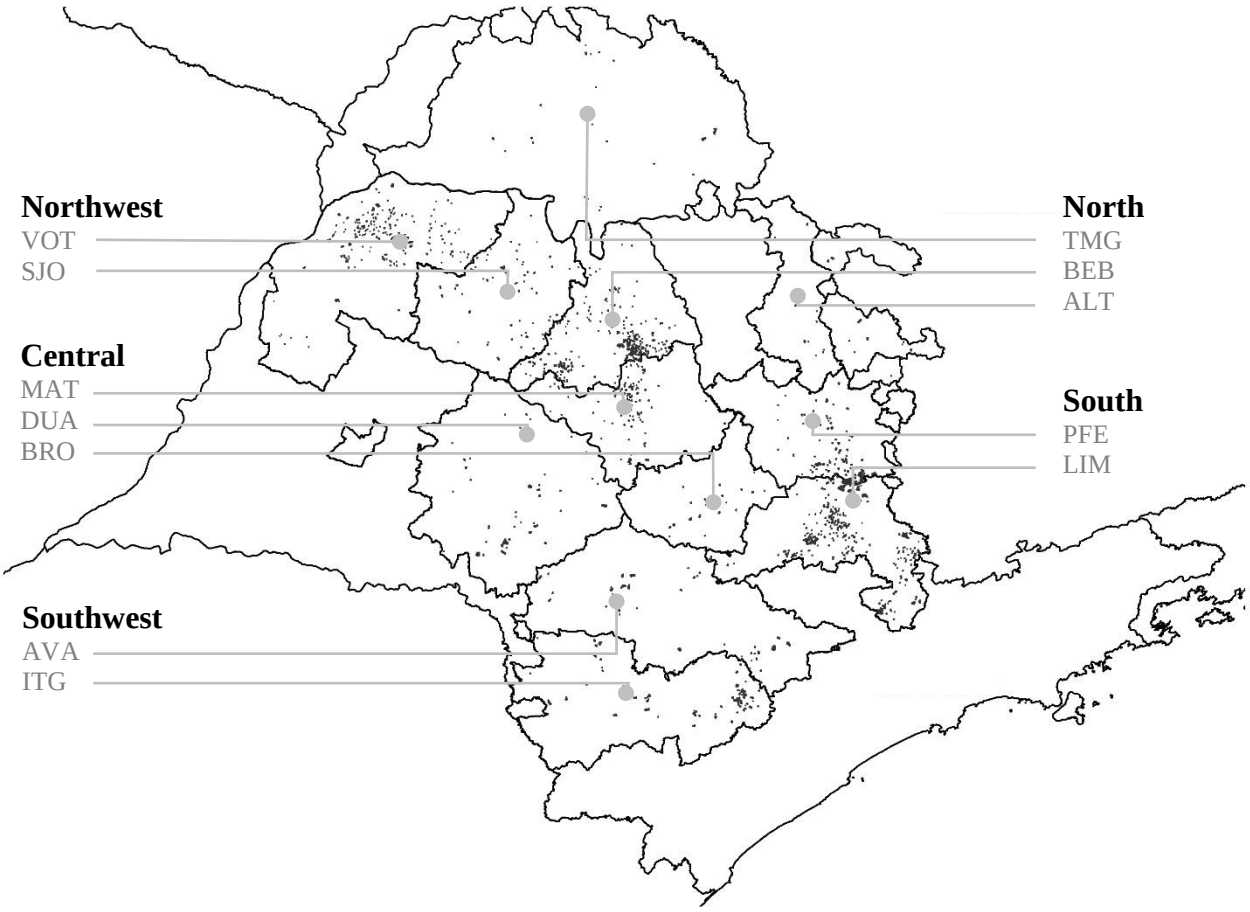
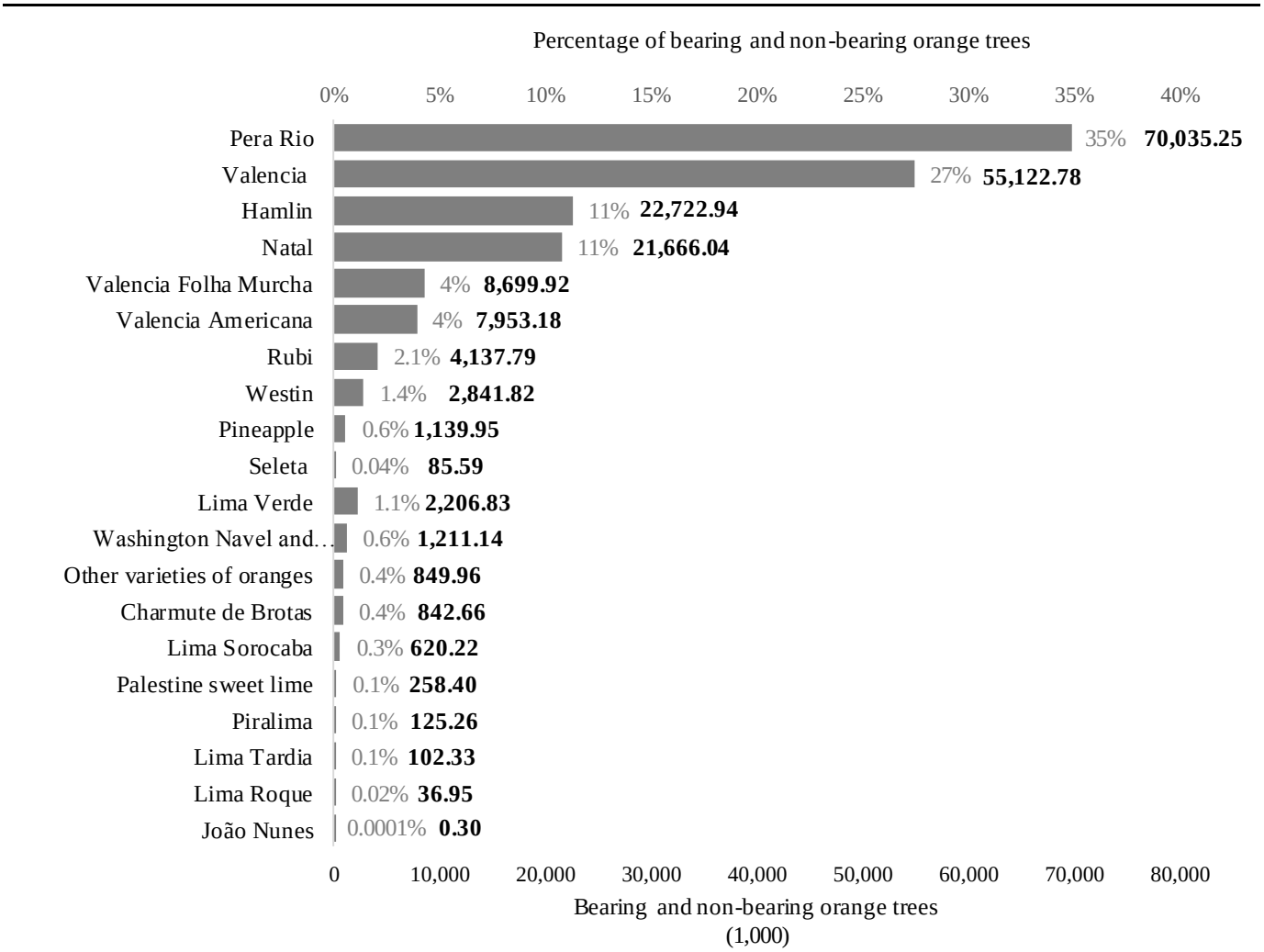


Figure 7 – Location of plots of tangerine varieties



Regarding oranges, almost 90% of the citrus belt is comprised of five varieties: Pera Rio (mid-season) with 35% of the total, Valencia (late) with 27%, Hamlin (early) with 11%, Natal (late) with 11% and Valencia Folha Murcha (late) with 4%. Graph 1 shows the complete distribution of the volume of trees per variety and their share in relation to the total of orange trees.



Graph 1 – Oranges and other oranges: Distribution of bearing and non-bearing orange trees per variety

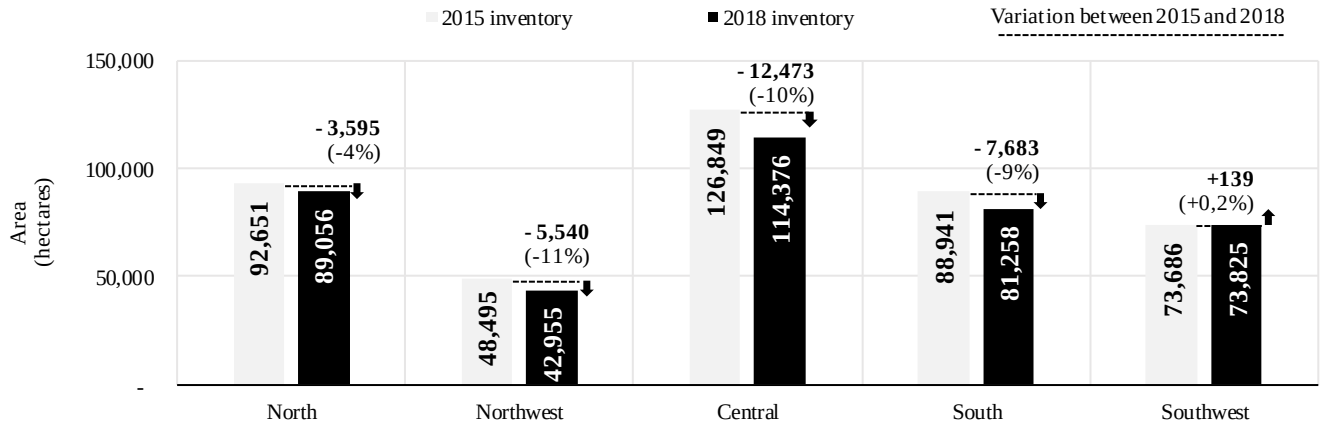
From this point on in the text, just like in previous inventories, statements are specific to the group called oranges, which is more representative of the citrus belt.

The area with groves of oranges (401,470 hectares) presented in this inventory is 29,152 hectares smaller than that in 2015. This decrease corresponds to a net variation of -7%. This figure is determined from the area of groves in the 2015 inventory (430,622 hectares) to which the expansion area (14,690 hectares) relative to new plantings from 2015 to 2017 was added, besides the area of currently recovered groves that was also added and was accounted for as abandoned in 2015 (91 hectares). From this total, the area resulting from the loss of groves (43,933 hectares), corresponding to the sum of areas that were eradicated (39,532 hectares) or abandoned (4,401 hectares) after the 2015 inventory, is deducted.

Groves planted in 2015, 2016 and 2017 total 34,797 hectares, with a planted area of approximately 11,500 hectares per year. Of this total, 58% are plantings that occurred in renovation areas and 42% in expansion areas. In the varietal distribution, the Pera Rio variety accounts for 50% of these plantings. The other half is distributed among the varieties: Valencia (17%); Natal (13%); Hamlin (7%); Valencia Folha

Murcha (5%); Valencia Americana (4%), Rubi (3%) and Westin, Pineapple and Seleta (totaling 1% altogether). Most of these groves are located in the three traditional sectors of the citrus belt in the following percentages: 33% in the central sector, 23% in the south sector and 18% in the north sector. Sectors northwest and southwest have the same share of 13% each.

Among the five sector of the citrus belt, southwest was the only one presenting a slight increase in the total area of orange groves (139 hectares), as presented in Graph 2.



Graph 2 – Oranges: Area of groves per sector (2015 and 2018 inventories)

The explanation for this positive variation in the southwest is not the new plantings because, as described before, there were not significant investments on new groves in this sector. The explanation is the low accumulated eradication rate and the smaller area of abandoned groves, which were able to maintain a positive balance. The other sectors presented a decrease in area since the 2015 inventory, with a marked negative variation in the northwest sector, which had -11% of its area reduced, followed by the central sector with -10%, the south sector with -9% and the north sector with -4%. Therefore, plantings were not enough in these sectors to offset the area resulting from the loss of groves by eradication or abandonment.

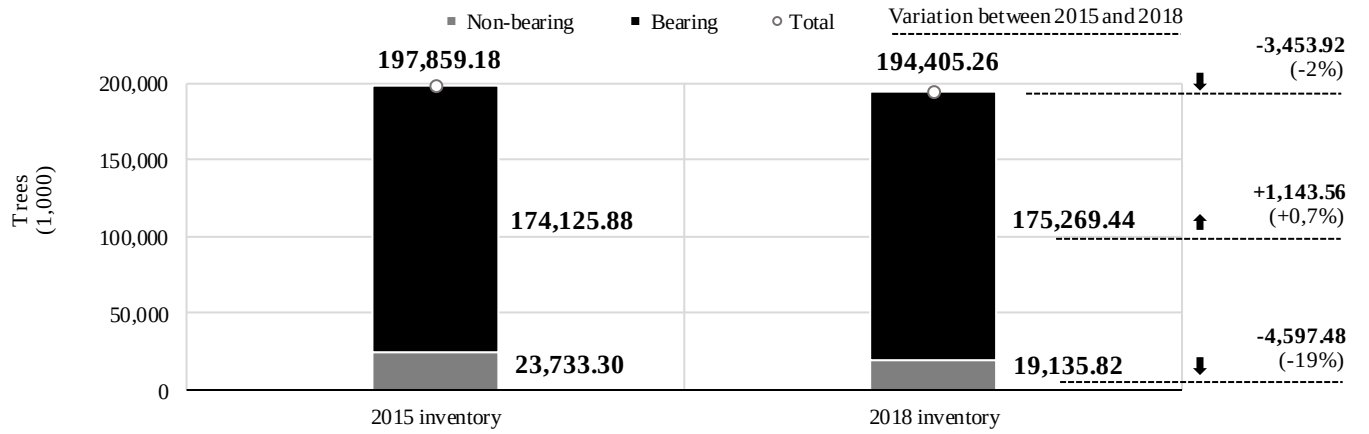
Contrarily to the southwest, which presents the lowest accumulated eradication rate of exactly 7.18% since the 2015 inventory, the other sectors have higher eradication rates. The northwest sector comes first with 18.11%. The second, third and fourth in line are respectively the central sector with 17.39%, the south sector with 15.59% and the north sector with 10.42%. These ranks are maintained in the same order when areas of abandoned groves in relation to total citrus areas are considered. In first place, with the highest abandonment rate, is the northwest sector with 2.79%, followed by the central sector with 1.94%, the south sector with 1.60%, the north sector with 0.37% and the southwest sector with 0.23%. Reasons for that can be many. However, it is possible to point to the results from the last survey of diseases carried out by Fundecitrus (2017) as an explanation. This survey shows that the highest incidences of orange trees with greening symptoms are located in the central sector, with 24.76% of trees affected by the disease, and in the south sector, with 32.26%. Citrus canker, in turn, is more present in the northwest with 30.29% of trees affected by the disease, followed by the central sector with 14.10% and by the north sector with 5.74%.

The average eradication rate in the citrus belt is 3.84%, as estimated for the period from April 2017 to March 2018, which almost equals the rate for the same period in the previous year (3.32%). The highest percentage of eradication was observed on farms with a number of plants lower than 50,000 trees, whose average size is up to 100 hectares.

Abandoned citrus groves totaled 9,952 hectares in the 2015 inventory, whereas in this one they total 6,050 hectares, of which 5,115 refer to all orange varieties. Out of the abandoned groves found in the 2015

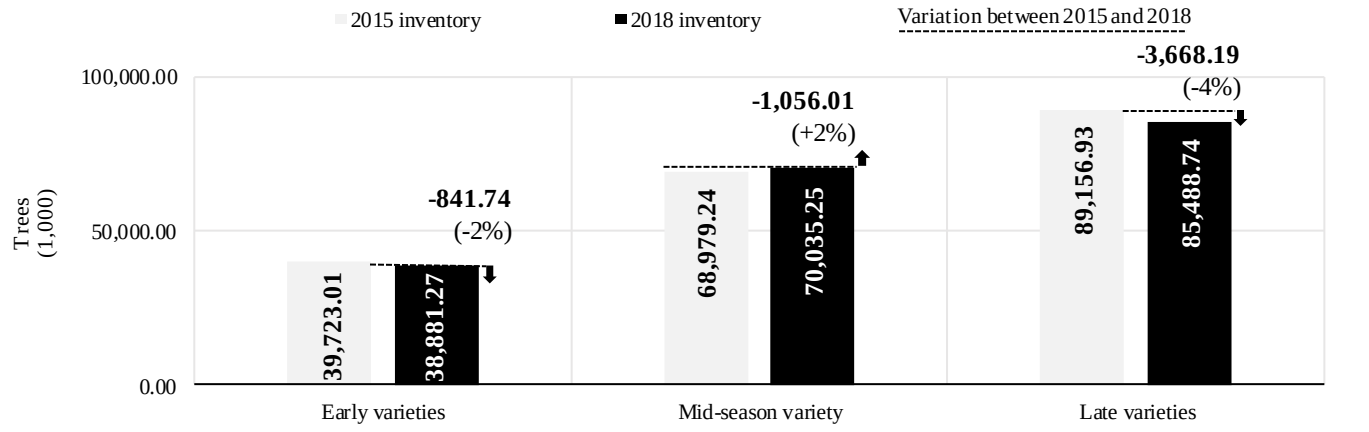
inventory, only 750 hectares remain abandoned, while 481 hectares were reset with citrus or recovered, and most of them, 8,721 hectares, are either planted with other crops or are bare soil.

Bearing orange trees add up to 175.27 million and non-bearing trees to 19.14 million, totaling 194.41 million trees. In comparison to the 2015 inventory, the total of trees decreased approximately 3.45 million, which is equivalent to -2% and results from the slowdown in new plantings observed in the last years, as presented in Graph 3. It is also seen that the variation in the number of trees (-2%) is lower than the variation observed for the area (-7%). That results from a change that has gradually occurred in the profile of groves, with the eradication of low density groves and planting of higher density ones. The appreciation of the land, the need to optimize resources and the citrus greening management were key to this change.



Graph 3 – Oranges: total trees, bearing and non-bearing trees (2015 and 2018 inventories)

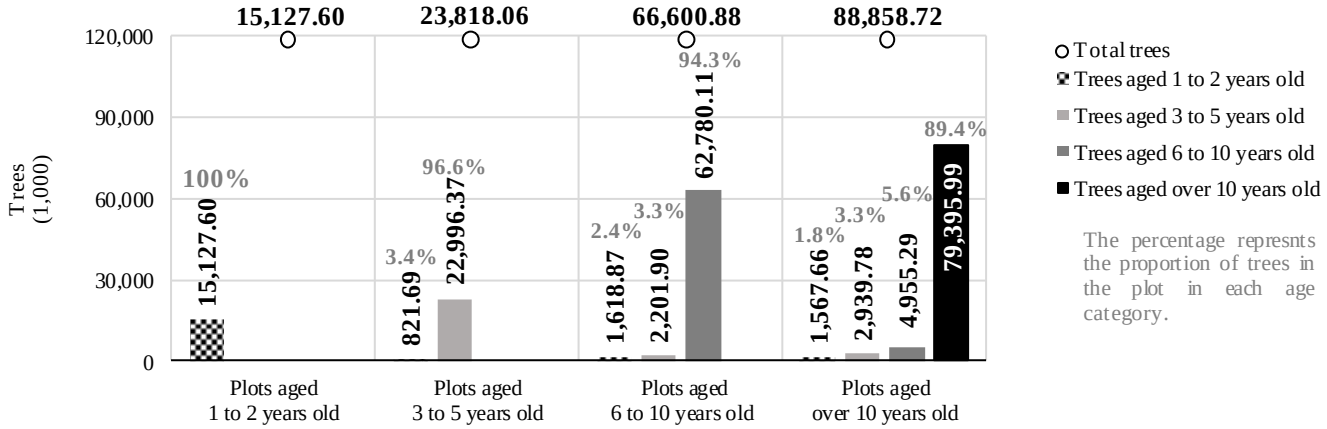
The distribution of citrus varieties by maturity time shows that in comparison to the 2015 inventory, the number of trees of early varieties, both bearing and non-bearing, decreased -2%,whereas the number of mid-season varieties increased +2% and the number of trees of late varieties decreased -4%. Currently, 38.88 million trees are of early varieties, usually harvested between May and August; 70.04 million are mid-season varieties, usually harvested between July and October, and 85.49 million are late varieties, usually harvested between October and January, as shown in Graph 4. Climatic variations and other factors such as crop size may advance or extend the harvesting time from one year to the next.



Graph 4 – Oranges: Trees grouped by maturity time of varieties (2015 and 2018 inventories)

The method to quantify trees per age category and age groups of plots implemented in 2017 provides indispensable information especially on groves in the age group of six to ten years old and on those over ten years old, since these groves have bearing trees of age lower than the age of the originally planted

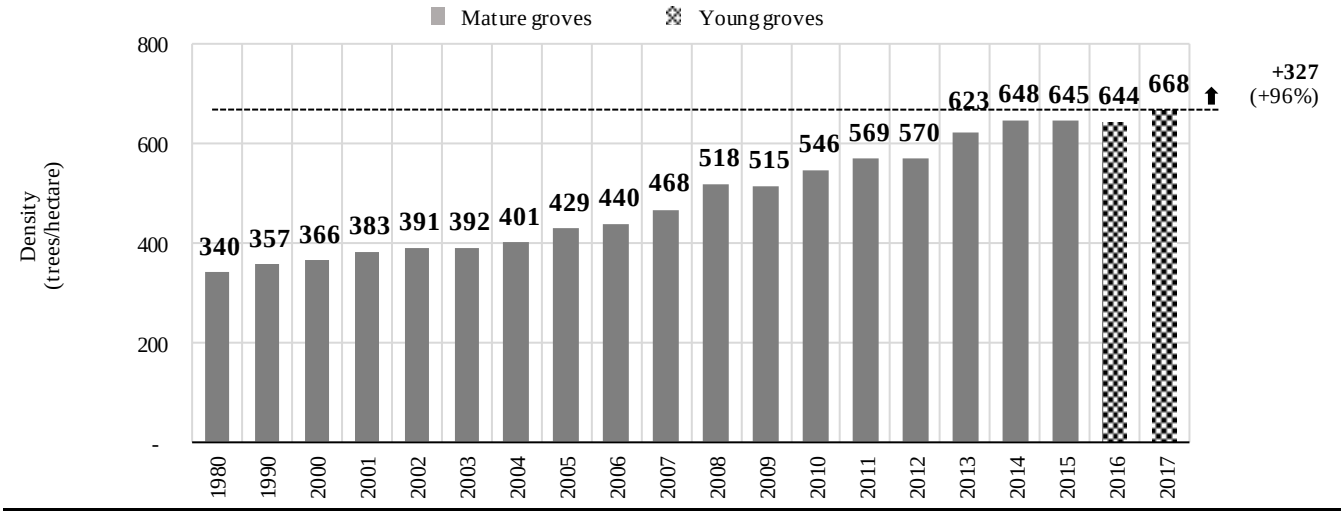
plot. Groves in the first group were planted from 2008 to 2012 and comprise 66.60 million trees. The new method enabled the complete segregation of trees per age and presented the following results: approximately 94% of trees remained in the category of six to ten years old (same age group of plots), 3% belong to the age group of three to five years old, and 2% to the age group of one to two years old. In the group of groves over ten years old, that is, planted up to 2007 and totaling 88.86 million trees, 89% of trees are over ten years old, 6% are between six to ten years old, 3% are between three and five years old, and 2% between one and two years old. Graph 5 shows the distribution of trees per age category in all age groups of groves.



Graph 5 – Oranges: Trees per age groups and age groups of plots

Non-bearing resets represent an average of 2% of the total trees in plots, although this index varies from 0.42% in the Triângulo Mineiro to 3.28% in Limeira, which are the regions that presented respectively the lower and the highest incidence of greening in the 2017 survey.

Average density of groves planted in 2017 is 668 trees per hectare, which is almost twice as many plants (+96%) as compared to plantings dated back three decades, as highlighted in Graph 6. Young groves with a higher average density of 803 trees per hectare are located in the region of Matão, followed by those in Itapetininga, with 802 trees per hectare; in Altinópolis, with 689 trees per hectare; and in Avaré, with 670 trees per hectare. On the opposite side are the groves in the region of Votuporanga, with 431 trees per hectare; Triângulo Mineiro, with 545 trees per hectare; and Bebedouro, with 573 trees per hectare. The average density of young groves in this inventory is 656 trees per hectare, which is higher than the density of 631 trees per hectare found in the 2015 inventory. Average density of mature groves increased to 474 trees per hectare, which is also higher than the 448 trees per hectare found in the 2015 inventory.



Graph 6 – Oranges: Average density of groves per planting year

The average age of mature groves went up to 10.5 years, which still indicates a relatively young citrus region. Out t of the 401,470 hectares, 46% are up to 10 years old; 34% are from 11 to 15 years old; 12% are from 16 to 20 years old; and 9% are over 20 years old. This last percentage of more mature groves comprises 34,217 hectares and has an average density of 355 trees per hectare, which considerably lags behind the current density (656 trees per hectare).

The percentage of dead trees in the citrus belt increased from 0.94% to 1.38%, although vacancies decreased from 5.46% to 4.49%. That serves as an alert concerning the health of groves, in view of this increased mortality rate.

The average orange farm size is 68 hectares, and the number of orange growing farms in 2018 is 5,882. Small growers are the majority: 4,683 farms have up to 50 hectares. However, approximately 171 farms, that is, 2.91% of the total farms, range between having 100,000 to 199,000 trees, whereas other 198 farms, that is 3.37%,of the total farms, have over 200,000 trees. That means the average size and large farms account for 66% of the trees in the citrus belt.

In the time between the 2015 and 2018 inventories, 1,713 farms stopped growing oranges, 66% of which are farms that previously had an area of groves of up to 10 hectares; other 27% of them had an area of groves from 10.1 to 50 hectares; and the remaining 7% of farms had an area of groves from 50.1 to 500 hectares. Many are the reasons for this sharp decrease in the number of farms, but the following two stand out.

The first refers to the fact that smaller farms have more area of exposure to contamination by greening in relation to the total farm area. It is the so-called border effect. To understand this effect it is necessary to take into account that small farms have fewer plots that, as a result, are located near their borders, facilitating disease-transmitting insects to fly in from outside these farms. Contrarily, on larger farms, border plots serve as protection to a higher number of internal plots.

The second reason refers to the lower technological level usually observed on smaller farms, resulting in low yields. Evidence of small farms being less technified is the lower frequency of irrigation systems in place. Although there was an increase in the irrigated area from 24.57% to 30.17% between the 2015 and 2018 inventories, the smaller the farm the less significant that increase was. While irrigation is present on 46% of farms larger than 1,000 hectares and on 34% of farms of 500.1 to 1,000 hectares, it is present on less than 11% of farms of up to 10 hectares. This is a reflection of the difficulty in making irrigation systems viable for small scale production. The difficulty is not limited to this technological resource, but also applies to modern machines and implements, that are often incompatible both cost and sizewise with smaller areas. As a consequence, a trend of groves being concentrated on mid- and large-size farms has been observed since the 2015 inventory. One cause of this is the capacity of such farms to invest in new technologies including genetics, increased planting density and management, which results in higher yields and consequently in spread out production costs.

3.2 – TABLES OF DATA

Calculations used whole numbers and all decimal points, the same way they are stored in the data bank. Occasional divergences between figures on tables result from rounding numbers. The word "oranges" in the title of tables indicates that their figures comprise the Hamlin, Westin, Rubi, Valencia Americana, Seleta, Pineapple, Pera Rio, Valencia, Natal and Valencia Folha Murcha varieties.

Table 1 – All citrus: Area of groves by sector [2015 and 2018 inventories and accumulated variation]

Inventory, sector and variation	Oranges[1]	Other oranges[2]	Acid limes and lemons[3]	Tangerines[4]	Total[5]	Percentage of sectors
	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)	(%)
2015 inventory						
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**
Citrus percentage	**89.23**	**2.89**	**5.79**	**2.09**	**100.00**	**(X)**
2018 inventory						
North	89,056	842	15,469	1,788	107,155	23.01
Northwest	42,955	300	4,768	1,534	49,557	10.64
Central	114,376	2,448	11,855	2,579	131,258	28.19
South	81,258	6,059	5,462	3,954	96,733	20.77
Southwest	73,825	3,234	1,524	2,349	80,932	17.38
Total	**401,470**	**12,883**	**39,078**	**12,204**	**465,635**	**100.00**
Citrus percentage	**86.22**	**2.77**	**8.39**	**2.62**	**100.00**	**(X)**
Accumulated variation						
Hectares	**-29,152**	**-1,080**	**11,142**	**2,134**	**-16,956**	**(X)**
Percentage	**-6.77**	**-7.73**	**39.88**	**21.19**	**-3.51**	**(X)**

(X) Not applicable.
[1] Oranges: Hamlin, Westin, Rubi, Valencia Americana, Seleta, Pineapple, Pera Rio, Valencia, Valencia Folha Murcha e Natal.
[2] Other oranges: Washington Navel, Baianinha, Charmute de Brotas, Lima Verde, Lima Tardia, Piralima, Lima Sorocaba, Lima Roque, João Nunes, Palestine sweet lime and other varieties.
[3] Acid limes and lemons: Tahiti acid lime (Persian lime), Galego acid lime (Mexican lime), Sicilian lemon and other varieties including non-identified ones.
[4] Tangerines: Ponkan, Murcott and other varieties.
[5] Abandoned groves in the 2015 inventory and then found recovered in this new mapping had their data included in the 2018 inventory according to their respective planting years.

Table 2 – All citrus: Farms with citrus groves, stratified by sector [2015 and 2018 inventories]

Sector	2015 inventory		2018 inventory	
	(number)	(%)	(number)	(%)
North	3,149	27.24	2,526	25.66
Northwest	2,756	23.84	2,128	21.62
Central	2,511	21.72	1,873	19.02
South	2,735	23.66	2,919	29.65
Southwest	410	3.54	399	4.05
Total	**11,561**	**100.00**	**9,845**	**100.00**

Table 3 – Oranges: Farms with orange groves, stratified by size of area with oranges [2015 and 2018 inventories]

Range of the farm size considering the total orange area	2015 inventory				2018 inventory			
	Farms with orange groves		Orange area		Farms with orange groves		Orange area	
			Total	Irrigate area			Total	Irrigate area
(hectares)	(number)	(%)	(hectares)	(%)	(number)	(%)	(hectares)	(%)
0.1 – 10	3,651	48.12	18,007	9.05	2,514	42.74	12,003	10.95
10.1 – 50	2,631	34.67	62,654	11.54	2,169	36.88	48,914	13.60
50.1 – 100	605	7.97	42,524	15.66	521	8.86	36,628	16.82
100.1 – 500	558	7.35	117,871	20.77	528	8.98	110,664	22.21
500.1 – 1,000	79	1.04	55,400	22.10	84	1.43	59,287	34.64
Above 1,000	64	0.85	134,166	39.91	66	1.12	133,974	46.09
Total	**7,588**	**100.00**	**430,622**	**24.57**	**5,882**	**100.00**	**401,470**	**30.14**
Average per farm			**56.75**				**68.25**	

Table 4 – Oranges: Farms with orange groves, stratified by number of orange trees [2015 and 2018 inventories]

Range of the number of orange trees in the farm	2015 inventory				2018 inventory			
	Farms with orange groves		Non-bearing and bearing trees		Farms with orange groves		Non-bearing and bearing trees	
(trees)	(number)	(%)	(1,000 trees)	(%)	(number)	(%)	(1,000 trees)	(%)
Below 10 thousand	5,149	67.86	18,009.14	9.10	3,780	64.26	13,830.44	7.11
10.1 – 19 thousand	977	12.88	13,799.92	6.97	720	12.24	9,847.82	5.07
20 – 29 thousand	421	5.55	10,223.12	5.17	360	6.12	8,395.74	4.32
30 – 49 thousand	383	5.05	14,605.90	7.38	339	5.76	12,710.74	6.54
50 – 99 thousand	301	3.97	20,810.02	10.52	314	5.34	21,233.87	10.92
100 – 199 thousand	176	2.32	24,989.87	12.63	171	2.91	22,645.08	11.65
Above 200 thousand	181	2.37	95,421.23	48.23	198	3.37	105,741.56	54.39
Total	**7,588**	**100.00**	**197,859.18**	**100.00**	**5,882**	**100.00**	**194,405.26**	**100.00**
Average per farm			**26,075**				**33,051**	

Table 5 – Oranges: Orange plots stratified by plot area size [2015 and 2018 inventories]

Plot area	2015 inventory		2018 inventory	
(hectares)	(number)	(%)	(number)	(%)
Below 1	3,336	6.58	3,398	6.74
1.1 – 4	14,300	28.22	14,368	28.49
4.1 – 10	17,953	35.43	18,335	36.36
10.1 – 20	10,391	20.52	10,042	19.91
Above 20	4,688	9.25	4,283	8.49
Total	**50,668**	**100.00**	**50,426**	**100.00**
	(hectares)		(hectares)	
Average per plot	**8.50**		**7.96**	

Table 6 – Oranges and others[1]: Area of groves by sector [2015 and 2018 inventories and accumulated variation]

Inventory and sector	Total[2]	Changes					Accumulated variation
		Groves per planting year after the 2015 inventory				Accumulated loss of groves due to eradication and abandonment	
		2015	2016	2017	Total		
	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)	(%)
2015 inventory							
North	93,535	-	-	-	-	-	-
Northwest	48,760	-	-	-	-	-	-
Central	130,368	-	-	-	-	-	-
South	94,476	-	-	-	-	-	-
Southwest	77,446	-	-	-	-	-	-
Total	**444,585**	-	-	-	-	-	-
2018 inventory							
North	89,898	2,466	2,261	1,596	6,323	-6,441	-3.89
Northwest	43,255	1,848	1,839	1,000	4,687	-7,375	-11.29
Central	116,824	3,284	3,007	5,398	11,689	-18,314	-10.39
South	87,317	3,598	2,998	2,336	8,932	-11,562	-7.58
Southwest	77,059	1,426	1,560	2,361	5,347	-2,326	-0.50
Total	**414,353**	**12,622**	**11,665**	**12,691**	**36,978**	**-46,018**	**-6.80**

- Not available.

[1] Oranges: Hamlin, Westin, Rubi, Valencia Americana, Seleta, Pineapple, Pera Rio, Valencia, Valencia Folha Murcha e Natal.
Other oranges: Washington Navel, Baianinha, Charmute de Brotas, Lima Verde, Lima Tardia, Piralima, Lima Sorocaba, Lima Roque, João Nunes, Palestine sweet lime and other varieties.

[2] Abandoned groves in the 2015 inventory and then found recovered in this new mapping had their data included in the 2018 inventory according to their respective planting years.

Table 7 – Other oranges: Area of groves by variety [2018 inventory]

Variety	Area	Percentage
	(hectares)	(%)
Washington Navel and Baianinha	2,623	20.36
Charmute de Brotas	1,982	15.38
Acidless sweet oranges and sweet lime	6,906	53.61
Other varieties	1,372	10.65
Total	**12,883**	**100.00**

Table 8 – Acid limes and lemons: Area of groves by variety [2018 inventory]

Variety	Area	Percentage
	(hectares)	(%)
Tahiti acid lime (Persian lime)	35,076	89.76
Sicilian lemon	3,577	9.15
Other varieties including non-identified ones	425	1.09
Total	**39,078**	**100.00**

Table 9 – Tangerines: Area of groves by variety [2018 inventory]

Variety	Area	Percentage
	(hectares)	(%)
Ponkan	5,286	43.31
Murcott	5,607	45.94
Other varieties	1,311	10.74
Total	**12,204**	**100.00**

Table 10 – Oranges: Area of groves by sector [2015 and 2018 inventories and accumulated variation]

Inventory and sector	Total[1]	Changes					Accumulated variation
		Groves per planting year after the 2015 inventory				Accumulated loss of groves due to eradication and abandonment	
		2015	2016	2017	Total		
	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)	(%)
2015 inventory							
North	92,651	-	-	-	-	-	-
Northwest	48,495	-	-	-	-	-	-
Central	126,849	-	-	-	-	-	-
South	88,941	-	-	-	-	-	-
Southwest	73,686	-	-	-	-	-	-
Total	**430,622**	-	-	-	-	-	-
2018 inventory							
North	89,056	2,383	2,219	1,562	6,164	-6,303	-3.88
Northwest	42,955	1,794	1,823	993	4,610	-7,204	-11.42
Central	114,376	3,185	2,940	5,296	11,421	-16,769	-9.83
South	81,258	3,147	2,693	2,107	7,947	-11,262	-8.64
Southwest	73,825	1,241	1,271	2,143	4,655	-2,395	0.19
Total	**401,470**	**11,750**	**10,946**	**12,101**	**34,797**	**-43,933**	**-6.77**

- Not available.
[1] Abandoned groves in the 2015 inventory and then found recovered in this new mapping had their data included in the 2018 inventory according to their respective planting years.

Table 11 – Oranges: Groves planted from 2015 to 2017 in expansion and renovation areas [2018 inventory]

Sector	Groves planted in 2015, 2016 and 2017 (after the 2015 inventory)				
	Total	In expansion areas		In renovation areas	
	(hectares)	(hectares)	(%)	(hectares)	(%)
North	6,164	2,682	43.51	3,483	56.51
Northwest	4,610	1,656	35.92	2,954	64.08
Central	11,421	4,279	37.47	7,142	62.53
South	7,947	3,558	44.77	4,389	55.23
Southwest	4,655	2,515	54.03	2,140	45.97
Total	**34,797**	**14,690**	**42.22**	**20,107**	**57.78**

Table 12 – Oranges: Trees by sector [2015 and 2018 inventories and accumulated variation]

Inventory and sector	Total[1]	Accumulated variation		Non-bearing trees			Bearing trees		
				Total	Accumulated variation		Total	Accumulated variation	
	(1,000 trees)	(1,000 trees)	(%)	(1,000 trees)	(1,000 trees)	(%)	(1,000 trees)	(1,000 trees)	(%)
2015 inventory									
North	43,728.08	-	-	5,764.71	-	-	37,963.37	-	-
Northwest	21,016.43	-	-	1,962.35	-	-	19,054.08	-	-
Central	56,283.87	-	-	8,830.19	-	-	47,453.68	-	-
South	39,890.92	-	-	4,525.15	-	-	35,365.77	-	-
Southwest	36,939.88	-	-	2,650.90	-	-	34,288.98	-	-
Total	**197,859.18**	-	-	**23,733.30**	-	-	**174,125.88**	-	-
2018 inventory									
North	42,246.10	-1,481.98	-3.39	2,922.44	-2,842.27	-49.30	39,323.66	1,360.29	3.58
Northwest	20,059.25	-957.18	-4.55	1,709.58	-252.77	-12.88	18,349.67	-704.41	-3.70
Central	55,687.95	-595.92	-1.06	7,095.08	-1,735.11	-19.65	48,592.87	1,139.19	2.40
South	38,432.10	-1,458.82	-3.66	4,096.92	-428.23	-9.46	34,335.18	-1,030.59	-2.91
Southwest	37,979.86	1,039.98	2.82	3,311.80	660.90	24.93	34,668.06	379.08	1.11
Total	**194,405.26**	**-3,453.92**	**-1.75**	**19,135.82**	**-4,597.48**	**-19.37**	**175,269.44**	**1,143.56**	**0.66**

- Not available.
[1] Abandoned groves in the 2015 inventory and then found recovered in this new mapping had their data included in the 2018 inventory according to their respective planting years.

Table 13 – Oranges: Area of groves by variety group [2015 and 2018 inventories and accumulated variation]

Inventory and variety group	Total[1]	Changes					Accumulated variation
		Groves per planting year after the 2015 inventory				Accumulated loss of groves due to eradication and abandonment	
		2015	2016	2017	Total		
	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)	(%)
2015 inventory							
Hamlin, Westin and Rubi.....	69,454	-	-	-	-	-	-
Other early[2].....	19,786	-	-	-	-	-	-
Pera Rio.....	141,596	-	-	-	-	-	-
Valencia and V.Folha Murcha[3]	149,902	-	-	-	-	-	-
Natal.....	49,884	-	-	-	-	-	-
Total.....	**430,622**	-	-	-	-	-	-
2018 inventory							
Hamlin, Westin and Rubi…….	64,172	651	915	2,387	3,953	-6,643	-7.61
Other early[2].....	19,406	210	292	1,011	1,513	-960	-1.92
Pera Rio.....	136,195	6,043	5,868	5,407	17,318	-14,160	-3.81
Valencia and V.Folha Murcha[3]	135,214	2,887	2,672	1,905	7,464	-17,262	-9.80
Natal.....	46,483	1,959	1,199	1,391	4,549	-4,908	-6.82
Total.....	**401,470**	**11,750**	**10,946**	**12,101**	**34,797**	**-43,933**	**-6.77**

- Not available.
1 Abandoned groves in the 2015 inventory and then found recovered in this new mapping had their data included in the 2018 inventory according to their respective planting years.
2 Valencia Americana, Seleta and Pineapple.
3 Valencia Folha Murcha.

Table 14 – Oranges: Trees by variety group [2015 and 2018 inventories and accumulated variation]

Inventory and sector	Total[1]	Accumulated variation		Non-bearing trees			Bearing trees		
				Total	Accumulated variation		Total	Accumulated variation	
	(1,000 trees)	(1,000 trees)	(%)	(1,000 trees)	(1,000 trees)	(%)	(1,000 trees)	(1,000 trees)	(%)
2015 inventory									
Hamlin, Westin and Rubi.....	30,872.30	-	-	2,086.76	-	-	28,785.54	-	-
Other early[2].....	8,850.71	-	-	991.11	-	-	7,859.60	-	-
Pera Rio.....	68,979.24	-	-	10,484.28	-	-	58,494.96	-	-
Valencia and V.Folha Murcha[3]	67,750.44	-	-	7,744.09	-	-	60,006.35	-	-
Natal.....	21,406.49	-	-	2,427.06	-	-	18,979.43	-	-
Total.....	**197,859.18**	-	-	**23,733.30**	-	-	**174,125.88**	-	-
2018 inventory									
Hamlin, Westin and Rubi.....	29,702.55	-1,170	-3.79	3,054.56	968	46.38	26,647.99	-2,138	-7.43
Other early[2].....	9,178.72	328	3.71	1,219.42	228	23.04	7,959.30	100	1.27
Pera Rio.....	70,035.25	1,056	1.53	8,459.13	-2,025	-19.32	61,576.12	3,081	5.27
Valencia and V.Folha Murcha[3]	63,822.70	-3,928	-5.80	4,239.05	-3,505	-45.26	59,583.65	-423	-0.70
Natal.....	21,666.04	260	1.21	2,163.66	-263	-10.85	19,502.38	523	2.76
Total.....	**194,405.26**	**-3,454**	**-1.75**	**19,135.82**	**-4,597**	**-19.37**	**175,269.44**	**1,144**	**0.66**

- Not available.
1 Abandoned groves in the 2015 inventory and then found recovered in this new mapping had their data included in the 2018 inventory according to their respective planting years.
2 Valencia Americana, Seleta and Pineapple.
3 Valencia Folha Murcha.

Table 15 – Oranges: Stratification of total planting holes of groves [2018 inventory and accumulated variation] (continues next page)

Region and variety group	Non-bearing trees	Bearing trees	Dead trees	Vacancies	Total
	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 holes)	(1,000 trees and holes)
Triângulo Mineiro					
Hamlin, Westin and Rubi.....	23.96	2,189.85	15.67	24.64	2,254.12
Other early[1].....	7.78	139.04	1.29	2.69	150.80
Pera Rio.....	497.81	3,820.26	32.88	84.40	4,435.35
Valencia and V.Folha Murcha[2].....	46.24	4,246.30	9.71	21.46	4,323.71
Natal.....	55.82	1,557.16	7.43	32.23	1,652.64
**Subtotal.....	**631.61**	**11,952.61**	**66.98**	**165.42**	**12,816.62**
Bebedouro					
Hamlin, Westin and Rubi.....	330.90	4,281.95	83.81	229.25	4,925.91
Other early[1].....	113.59	1,744.43	24.49	114.41	1,996.92
Pera Rio.....	793.56	6,524.44	59.61	139.32	7,516.93
Valencia and V.Folha Murcha[2].....	421.19	7,683.91	51.88	223.70	8,380.68
Natal.....	146.90	2,006.62	29.21	76.34	2,259.07
**Subtotal.....	**1,806.14**	**22,241.35**	**249.00**	**783.02**	**25,079.51**
Altinópolis					
Hamlin, Westin and Rubi.....	99.40	830.17	9.28	33.13	971.98
Other early[1].....	8.86	130.46	0.26	6.31	145.89
Pera Rio.....	200.79	1,775.14	41.26	93.24	2,110.43
Valencia and V.Folha Murcha[2].....	81.74	2,125.29	27.05	84.14	2,318.22
Natal.....	93.90	268.64	1.75	13.47	377.76
**Subtotal.....	**484.69**	**5,129.70**	**79.60**	**230.29**	**5,924.28**
Votuporanga					
Hamlin, Westin and Rubi.....	2.92	437.79	3.76	5.63	450.10
Other early[1].....	8.03	162.82	3.18	1.79	175.82
Pera Rio.....	499.25	6,302.74	99.05	265.11	7,166.15
Valencia and V.Folha Murcha[2].....	1.71	974.27	28.20	37.67	1,041.85
Natal.....	25.43	413.17	15.84	4.79	459.23
**Subtotal.....	**537.34**	**8,290.79**	**150.03**	**314.99**	**9,293.15**
São José do Rio Preto					
Hamlin, Westin and Rubi.....	67.53	2,220.02	46.96	126.85	2,461.36
Other early[1].....	76.28	1,140.32	17.04	77.47	1,311.11
Pera Rio.....	376.11	2,511.50	39.31	108.95	3,035.87
Valencia and V.Folha Murcha[2].....	390.95	2,889.93	33.84	93.97	3,408.69
Natal.....	261.37	1,297.11	18.02	30.07	1,606.57
**Subtotal.....	**1,172.24**	**10,058.88**	**155.17**	**437.31**	**11,823.60**
Matão					
Hamlin, Westin and Rubi.....	631.54	2,550.07	33.54	146.37	3,361.52
Other early[1].....	361.07	1,615.26	15.45	138.53	2,130.31
Pera Rio.....	959.94	6,214.66	71.28	366.72	7,612.60
Valencia and V.Folha Murcha[2].....	412.59	5,699.41	39.65	345.31	6,496.96
Natal.....	353.56	1,199.73	7.07	124.45	1,684.81
**Subtotal.....	**2,718.70**	**17,279.13**	**166.99**	**1,121.38**	**21,286.20**
Duartina					
Hamlin, Westin and Rubi.....	639.43	3,073.42	44.58	220.43	3,977.86
Other early[1].....	304.93	1,059.65	5.53	98.77	1,468.88
Pera Rio.....	1,407.17	9,174.84	152.34	511.20	11,245.55
Valencia and V.Folha Murcha[2].....	1,034.93	7,160.40	87.54	356.22	8,639.09
Natal.....	366.17	2,692.85	34.50	225.96	3,319.48
**Subtotal.....	**3,752.63**	**23,161.16**	**324.49**	**1,412.58**	**28,650.86**
Brotas					
Hamlin, Westin and Rubi.....	37.35	1,158.13	40.54	77.53	1,313.55
Other early[1].....	24.39	263.50	2.44	11.97	302.30
Pera Rio.....	306.28	2,387.95	47.39	163.51	2,905.13
Valencia and V.Folha Murcha[2].....	190.06	3,650.71	96.75	271.51	4,209.03
Natal.....	65.67	692.29	17.06	20.77	795.79
**Subtotal.....	**623.75**	**8,152.58**	**204.18**	**545.29**	**9,525.80**

Table 15 – Oranges: Stratification of total planting holes of groves [2018 inventory and accumulated variation] (continued)

Region and variety group	Non-bearing trees	Bearing trees	Dead trees	Vacancies	Total
	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 holes)	(1,000 trees and holes)
Porto Ferreira					
Hamlin, Westin and Rubi.....	258.45	2,342.12	22.08	131.06	2,753.71
Other early[1].....	3.57	348.71	8.19	31.18	391.65
Pera Rio.....	1,226.07	6,122.53	148.69	501.15	7,998.44
Valencia and V.Folha Murcha[2].....	429.10	6,486.35	106.31	444.65	7,466.41
Natal.....	262.12	1,963.09	27.07	77.69	2,329.97
Subtotal.....	**2,179.31**	**17,262.80**	**312.34**	**1,185.73**	**20,940.18**
Limeira					
Hamlin, Westin and Rubi.....	257.42	2,580.81	54.21	180.91	3,073.35
Other early[1].....	15.91	201.06	1.14	13.53	231.64
Pera Rio.....	1,076.73	6,505.70	222.87	392.66	8,197.96
Valencia and V.Folha Murcha[2].....	430.29	6,424.71	171.58	416.27	7,442.85
Natal.....	137.26	1,360.10	24.52	41.96	1,563.84
Subtotal.....	**1,917.61**	**17,072.38**	**474.32**	**1,045.33**	**20,509.64**
Avaré					
Hamlin, Westin and Rubi.....	278.68	4,185.79	74.25	293.73	4,832.45
Other early[1].....	104.98	704.40	2.01	60.11	871.50
Pera Rio.....	305.28	7,503.69	220.96	411.60	8,441.53
Valencia and V.Folha Murcha[2].....	419.36	9,374.57	166.42	594.72	10,555.07
Natal.....	167.58	4,176.62	110.44	349.33	4,803.97
Subtotal.....	**1,275.88**	**25,945.07**	**574.08**	**1,709.49**	**29,504.52**
Itapetininga					
Hamlin, Westin and Rubi.....	426.98	797.87	21.36	83.37	1,329.58
Other early[1].....	190.03	449.65	0.87	24.21	664.76
Pera Rio.....	810.14	2,732.67	22.64	84.42	3,649.87
Valencia and V.Folha Murcha[2].....	380.89	2,867.80	10.15	70.42	3,329.26
Natal.....	227.88	1,875.00	34.28	68.98	2,206.14
Subtotal.....	**2,035.92**	**8,722.99**	**89.30**	**331.40**	**11,179.61**
Total.....	**19,135.82**	**175,269.44**	**2,846.48**	**9,282.23**	**206,533.97**
Percentage.....	**9.27**	**84.86**	**1.38**	**4.49**	**100.00**
Accumulated variation					
Trees/holes…..	**-4,597.48**	**1,143.56**	**852.85**	**-2,261.74**	**-4,862.81**
Percentage.....	**94.54**	**-23.52**	**-17.54**	**46.51**	**100.00**

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

Table 16 – Oranges: Trees by age group and age group of plot – Citrus belt [2018 inventory]

Plot age[1]	Tree age[2]				Total	Percentage
	1 – 2 years	3 – 5 years	6 – 10 years	Over 10 years		
	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(%)
1 – 2 years ……..	15,127.60	-	-	-	15,127.60	7.78
3 – 5 years ……..	821.69	22,996.37	-	-	23,818.06	12.25
6 – 10 years ……..	1,618.87	2,201.90	62,780.11	-	66,600.88	34.26
Over 10 years ….....	1,567.66	2,939.78	4,955.29	79,395.99	88,858.72	45.71
Total.....	**19,135.82**	**28,138.05**	**67,735.40**	**79,395.99**	**194,405.26**	**100.00**
Percentage.....	**9.84**	**14.47**	**34.84**	**40.84**	**100.00**	

Ages and planting years: 1 – 2 years (2016 and 2017), 3 – 5 years (2013 and 2015), 6 – 10 years (2008 to 2012) and over 10 years (2007 and earlier).
- Represents zero.
[1] Calculation based on the year the original plot was planted.
[2] Estimated both from information supplied by growers on years resettings occurred in the plot and from visual aspects of the plant, such as trunk circumference, height and shape of canopy, among other factors.

Table 17 – Oranges: Trees by age group, age group of plot and sector [2018 inventory]

Plot age and sector	Tree age				Total	Percentage
	1 – 2 years	3 – 5 years	6 – 10 years	Over 10 years		
	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(%)
North						
1 – 2 years ……	2,187.89	-	-	-	2,187.89	5.18
3 – 5 years ……	93.18	5,508.44	-	-	5,601.62	13.26
6 – 10 years ……..	304.95	614.05	14,663.05	-	15,582.05	36.88
Over 10 years….....	336.42	721.66	1,078.97	16,737.49	18,874.54	44.68
Subtotal……	**2,922.44**	**6,844.15**	**15,742.02**	**16,737.49**	**42,246.10**	**21.73**
Northwest						
1 – 2 years ……	1,535.07	-	-	-	1,535.07	7.65
3 – 5 years ……	40.55	2,540.50	-	-	2,581.05	12.87
6 – 10 years ……..	98.77	143.69	10,220.20	-	10,462.66	52.16
Over 10 years….....	35.19	62.39	63.85	5,319.04	5,480.47	27.32
Subtotal……	**1,709.58**	**2,746.58**	**10,284.05**	**5,319.04**	**20,059.25**	**10.32**
Central						
1 – 2 years ……	5,808.12	-	-	-	5,808.12	10.43
3 – 5 years ……	248.78	8,350.86	-	-	8,599.64	15.44
6 – 10 years ……..	565.41	749.99	15,929.19	-	17,244.59	30.97
Over 10 years…….	472.77	761.46	1,819.00	20,982.37	24,035.60	43.16
Subtotal……	**7,095.08**	**9,862.31**	**17,748.19**	**20,982.37**	**55,687.95**	**28.65**
South						
1 – 2 years ……	2,988.29	-	-	-	2,988.29	7.78
3 – 5 years ……	317.83	4,073.33	-	-	4,391.16	11.43
6 – 10 years ……..	372.39	420.60	10,954.17	-	11,747.16	30.57
Over 10 years….....	418.41	713.68	1,388.43	16,784.97	19,305.49	50.23
Subtotal……	**4,096.92**	**5,207.61**	**12,342.60**	**16,784.97**	**38,432.10**	**19.77**
Southwest						
1 – 2 years ……	2,608.23	-	-	-	2,608.23	6.87
3 – 5 years ……	121.35	2,523.24	-	-	2,644.59	6.96
6 – 10 years ……..	277.35	273.57	11,013.50	-	11,564.42	30.45
Over 10 years….....	304.87	680.59	605.04	19,572.12	21,162.62	55.72
Subtotal……	**3,311.80**	**3,477.40**	**11,618.54**	**19,572.12**	**37,979.86**	**19.54**
Total……..	**19,135.82**	**28,138.05**	**67,735.40**	**79,395.99**	**194,405.26**	**100.00**

Table 18 – Oranges: Trees by age group, age group of plot and variety [2018 inventory]

Plot age and variety	Tree age				Total	Percentage
	1 – 2 years	3 – 5 years	6 – 10 years	Over 10 years		
	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(%)
Hamlin, Westin, Rubi						
1 – 2 years ……	2,213,59	-	-	-	2,213,59	7,45
3 – 5 years ……	58,44	1,358,02	-	-	1,416,46	4,77
6 – 10 years ……..	385,19	451,99	9,834,77	-	10,671,95	35,93
Over 10 years….....	397,34	671,31	961,11	13,370,79	15,400,55	51,85
Subtotal……	**3,054,56**	**2,481,32**	**10,795,88**	**13,370,79**	**29,702,55**	**15,28**
Other early						
1 – 2 years ……	988,87	-	-	-	988,87	10,77
3 – 5 years ……	26,50	777,37	-	-	803,87	8,76
6 – 10 years ……..	74,44	104,62	3,768,45	-	3,947,51	43,01
Over 10 years….....	129,61	97,32	154,90	3,056,64	3,438,47	37,46
Subtotal……	**1,219,42**	**979,31**	**3,923,35**	**3,056,64**	**9,178,72**	**4,72**
Pera Rio						
1 – 2 years ……	7,144,66	-	-	-	7,144,66	10,20
3 – 5 years ……	348,29	11,611,43	-	-	11,959,72	17,08
6 – 10 years ……..	619,31	963,93	25,272,10	-	26,855,34	38,35
Over 10 years….....	346,87	665,15	1,270,12	21,793,39	24,075,53	34,38
Subtotal……	**8,459,13**	**13,240,51**	**26,542,22**	**21,793,39**	**70,035,25**	**36,03**
Valencia, V.F. Murcha						
1 – 2 years ……	3,079,12	-	-	-	3,079,12	4,82
3 – 5 years ……	215,30	6,243,53	-	-	6,458,83	10,12
6 – 10 years ……..	408,51	602,18	19,002,97	-	20,013,66	31,36
Over 10 years….....	536,12	1,142,35	1,941,37	30,651,25	34,271,09	53,70
Subtotal……	**4,239,05**	**7,988,06**	**20,944,34**	**30,651,25**	**63,822,70**	**32,83**
Natal						
1 – 2 years ……	1,701,36	-	-	-	1,701,36	7,85
3 – 5 years ……	173,16	3,006,02	-	-	3,179,18	14,67
6 – 10 years ……..	131,42	79,18	4,901,82	-	5,112,42	23,60
Over 10 years….....	157,72	363,65	627,79	10,523,92	11,673,08	53,88
Subtotal……	**2,163,66**	**3,448,85**	**5,529,61**	**10,523,92**	**21,666,04**	**11,14**
Total……..	**19,135,82**	**28,138,05**	**67,735,40**	**79,395,99**	**194,405,26**	**100,00**

Table 19 – Hamlin, Westin and Rubi: Trees by age group and age group of plot – North Sector [2018 inventory]

Plot age[1] and regions of North Sector	Age trees[2]				Total
	1 – 2 years	3 – 5 years	6 – 10 years	Over 10 years	
	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)
Triângulo Mineiro					
1 – 2 years.....	10.12	-	-	-	10.12
3 – 5 years.....	0.85	154.95	-	-	155.80
6 – 10 years.....	1.17	7.86	596.13	-	605.16
Over 10 years.....	11.82	38.19	16.73	1,375.99	1,442.73
Subtotal.....	**23.96**	**201.00**	**612.86**	**1,375.99**	**2,213.81**
Bebedouro					
1 – 2 years.....	197.94	-	-	-	197.94
3 – 5 years.....	10.41	172.11	-	-	182.52
6 – 10 years.....	82.96	62.35	1,534.65	-	1,679.96
Over 10 years.....	39.59	139.57	173.44	2,199.83	2,552.43
Subtotal.....	**330.90**	**374.03**	**1,708.09**	**2,199.83**	**4,612.85**
Altinópolis					
1 – 2 years.....	16.18	-	-	-	16.18
3 – 5 years.....	1.21	38.23	-	-	39.44
6 – 10 years.....	9.96	33.66	157.43	-	201.05
Over 10 years.....	72.05	43.33	58.22	499.30	672.90
Subtotal.....	**99.40**	**115.22**	**215.65**	**499.30**	**929.57**
North					
1 – 2 years.....	224.24	-	-	-	224.24
3 – 5 years.....	12.47	365.29	-	-	377.76
6 – 10 years.....	94.09	103.87	2,288.21	-	2,486.17
Over 10 years.....	123.46	221.09	248.39	4,075.12	4,668.06
Total.....	**454.26**	**690.25**	**2,536.60**	**4,075.12**	**7,756.23**

Ages and planting years: 1 – 2 years (2016 and 2017), 3 – 5 years (2013 and 2015), 6 – 10 years (2008 to 2012) and over 10 years (2007 and earlier).

- Represents zero.

[1] Calculation based on the year the original plot was planted.

[2] Estimated both from information supplied by growers on years resettings occurred in the plot and from visual aspects of the plant, such as trunk circumference, height and shape of canopy, among other factors.

Table 20 – Hamlin, Westin and Rubi: Trees by age group and age group of plot – Northwest Sector [2018 inventory]

Plot age[1] and regions of Northwest Sector	Age trees[2]				Total
	1 – 2 years	3 – 5 years	6 – 10 years	Over 10 years	
	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)
Votuporanga					
1 – 2 years	1.04	-	-	-	1.04
3 – 5 years	0.02	7.60	-	-	7.62
6 – 10 years	1.68	3.81	268.62	-	274.11
Over 10 years	0.18	2.59	0.54	154.63	157.94
Subtotal	**2.92**	**14.00**	**269.16**	**154.63**	**440.71**
São José do Rio Preto					
1 – 2 years	28.39	-	-	-	28.39
3 – 5 years	7.66	188.20	-	-	195.86
6 – 10 years	26.89	17.96	1,350.88	-	1,395.73
Over 10 years	4.59	11.87	3.10	648.01	667.57
Subtotal	**67.53**	**218.03**	**1,353.98**	**648.01**	**2,287.55**
Northwest					
1 – 2 years	29.43	-	-	-	29.43
3 – 5 years	7.68	195.80	-	-	203.48
6 – 10 years	28.57	21.77	1,619.50	-	1,669.84
Over 10 years	4.77	14.46	3.64	802.64	825.51
Total	**70.45**	**232.03**	**1,623.14**	**802.64**	**2,728.26**

Ages and planting years: 1 – 2 years (2016 and 2017), 3 – 5 years (2013 and 2015), 6 – 10 years (2008 to 2012) and over 10 years (2007 and earlier).
- Represents zero.
[1] Calculation based on the year the original plot was planted.
[2] Estimated both from information supplied by growers on years resettings occurred in the plot and from visual aspects of the plant, such as trunk circumference, height and shape of canopy, among other factors.

Table 21 – Hamlin, Westin and Rubi: Trees by age group and age group of plot – Central Sector [2018 inventory]

Plot age[1] and regions of Central Sector	Age trees[2]				Total
	1 – 2 years	3 – 5 years	6 – 10 years	Over 10 years	
	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)
Matão					
1 – 2 years	553.07	-	-	-	553.07
3 – 5 years	5.84	66.58	-	-	72.42
6 – 10 years	16.90	35.62	1,357.63	-	1,410.15
Over 10 years	55.73	58.23	61.47	970.54	1,145.97
Subtotal	**631.54**	**160.43**	**1,419.10**	**970.54**	**3,181.61**
Duartina					
1 – 2 years	536.15	-	-	-	536.15
3 – 5 years	5.47	232.41	-	-	237.88
6 – 10 years	62.99	133.37	1,198.39	-	1,394.75
Over 10 years	34.82	56.64	79.19	1,373.42	1,544.07
Subtotal	**639.43**	**422.42**	**1,277.58**	**1,373.42**	**3,712.85**
Brotas					
1 – 2 years	14.08	-	-	-	14.08
3 – 5 years	0.34	12.46	-	-	12.80
6 – 10 years	17.29	26.19	404.13	-	447.61
Over 10 years	5.64	22.86	94.43	598.06	720.99
Subtotal	**37.35**	**61.51**	**498.56**	**598.06**	**1,195.48**
Central					
1 – 2 years	1,103.30	-	-	-	1,103.30
3 – 5 years	11.65	311.45	-	-	323.10
6 – 10 years	97.18	195.18	2,960.15	-	3,252.51
Over 10 years	96.19	137.73	235.09	2,942.02	3,411.03
Total	**1,308.32**	**644.36**	**3,195.24**	**2,942.02**	**8,089.94**

Ages and planting years: 1 – 2 years (2016 and 2017), 3 – 5 years (2013 and 2015), 6 – 10 years (2008 to 2012) and over 10 years (2007 and earlier).
- Represents zero.
[1] Calculation based on the year the original plot was planted.
[2] Estimated both from information supplied by growers on years resettings occurred in the plot and from visual aspects of the plant, such as trunk circumference, height and shape of canopy, among other factors.

Table 22 – Hamlin, Westin and Rubi: Trees by age group and age group of plot – South Sector [2018 inventory]

Plot age[1] and regions of South Sector	Age trees[2]				Total
	1 – 2 years	3 – 5 years	6 – 10 years	Over 10 years	
	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)
Porto Ferreira					
1 – 2 years	226.32	-	-	-	226.32
3 – 5 years	14.22	162.87	-	-	177.09
6 – 10 years	2.75	51.67	943.53	-	997.95
Over 10 years	15.16	102.42	155.06	926.57	1,199.21
Subtotal	**258.45**	**316.96**	**1,098.59**	**926.57**	**2,600.57**
Limeira					
1 – 2 years	159.51	-	-	-	159.51
3 – 5 years	10.09	145.42	-	-	155.51
6 – 10 years	18.19	20.58	752.42	-	791.19
Over 10 years	69.63	61.16	164.51	1,436.72	1,732.02
Subtotal	**257.42**	**227.16**	**916.93**	**1,436.72**	**2,838.23**
South					
1 – 2 years	385.83	-	-	-	385.83
3 – 5 years	24.31	308.29	-	-	332.60
6 – 10 years	20.94	72.25	1,695.95	-	1,789.14
Over 10 years	84.79	163.58	319.57	2,363.29	2,931.23
Total	**515.87**	**544.12**	**2,015.52**	**2,363.29**	**5,438.80**

Ages and planting years: 1 – 2 years (2016 and 2017), 3 – 5 years (2013 and 2015), 6 – 10 years (2008 to 2012) and over 10 years (2007 and earlier).
- Represents zero.
1 Calculation based on the year the original plot was planted.
2 Estimated both from information supplied by growers on years resettings occurred in the plot and from visual aspects of the plant, such as trunk circumference, height and shape of canopy, among other factors.

Table 23 – Hamlin, Westin and Rubi: Trees by age group and age group of plot – Southwest Sector [2018 inventory]

Plot age[1] and regions of Southwest Sector	Age trees[2]				Total
	1 – 2 years	3 – 5 years	6 – 10 years	Over 10 years	
	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)
Avaré					
1 – 2 years	85.33	-	-	-	85.33
3 – 5 years	2.18	128.89	-	-	131.07
6 – 10 years	103.04	58.26	984.65	-	1,145.95
Over 10 years	88.13	133.24	128.96	2,751.79	3,102.12
Subtotal	**278.68**	**320.39**	**1,113.61**	**2,751.79**	**4,464.47**
Itapetininga					
1 – 2 years	385.46	-	-	-	385.46
3 – 5 years	0.15	48.30	-	-	48.45
6 – 10 years	41.37	0.66	286.31	-	328.34
Over 10 years	-	1.21	25.46	435.93	462.60
Subtotal	**426.98**	**50.17**	**311.77**	**435.93**	**1,224.85**
Southwest					
1 – 2 years	470.79	-	-	-	470.79
3 – 5 years	2.33	177.19	-	-	179.52
6 – 10 years	144.41	58.92	1,270.96	-	1,474.29
Over 10 years	88.13	134.45	154.42	3,187.72	3,564.72
Total	**705.66**	**370.56**	**1,425.38**	**3,187.72**	**5,689.32**

Ages and planting years: 1 – 2 years (2016 and 2017), 3 – 5 years (2013 and 2015), 6 – 10 years (2008 to 2012) and over 10 years (2007 and earlier).
- Represents zero.
1 Calculation based on the year the original plot was planted.
2 Estimated both from information supplied by growers on years resettings occurred in the plot and from visual aspects of the plant, such as trunk circumference, height and shape of canopy, among other factors.

Table 24 – Other early[1]: Trees by age group and age group of plot – North Sector [2018 inventory]

Plot age[2] and regions of North Sector	Age trees[3]				Total
	1 – 2 years	3 – 5 years	6 – 10 years	Over 10 years	
	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)
Triângulo Mineiro					
1 – 2 years	7.71	-	-	-	7.71
3 – 5 years	0.03	1.73	-	-	1.76
6 – 10 years	0.04	0.69	89.26	-	89.99
Over 10 years	-	0.06	0.23	47.07	47.36
Subtotal	**7.78**	**2.48**	**89.49**	**47.07**	**146.82**
Bebedouro					
1 – 2 years	54.94	-	-	-	54.94
3 – 5 years	1.51	93.55	-	-	95.06
6 – 10 years	26.67	33.39	928.29	-	988.35
Over 10 years	30.47	19.60	56.10	613.50	719.67
Subtotal	**113.59**	**146.54**	**984.39**	**613.50**	**1,858.02**
Altinópolis					
1 – 2 years	-	-	-	-	-
3 – 5 years	-	-	-	-	-
6 – 10 years	2.84	4.53	66.51	-	73.88
Over 10 years	6.02	6.22	7.70	45.50	65.44
Subtotal	**8.86**	**10.75**	**74.21**	**45.50**	**139.32**
North					
1 – 2 years	62.65	-	-	-	62.65
3 – 5 years	1.54	95.28	-	-	96.82
6 – 10 years	29.55	38.61	1,084.06	-	1,152.22
Over 10 years	36.49	25.88	64.03	706.07	832.47
Total	**130.23**	**159.77**	**1,148.09**	**706.07**	**2,144.16**

Ages and planting years: 1 – 2 years (2016 and 2017), 3 – 5 years (2013 and 2015), 6 – 10 years (2008 to 2012) and over 10 years (2007 and earlier).

- Represents zero.

[1] Valencia Americana, Seleta and Pineapple.

[2] Calculation based on the year the original plot was planted.

[3] Estimated both from information supplied by growers on years resettings occurred in the plot and from visual aspects of the plant, such as trunk circumference, height and shape of canopy, among other factors.

Table 25 – Other early[1]: Trees by age group and age group of plot – Northwest Sector [2018 inventory]

Plot age[2] and regions of Northwest Sector	Age trees[3]				Total
	1 – 2 years	3 – 5 years	6 – 10 years	Over 10 years	
	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)
Votuporanga					
1 – 2 years.....	-	-	-	-	-
3 – 5 years.....	-	9.92	-	-	9.92
6 – 10 years.....	8.03	3.92	110.69	-	122.64
Over 10 years.....	-	-	0.19	38.10	38.29
Subtotal.....	**8.03**	**13.84**	**110.88**	**38.10**	**170.85**
São José do Rio Preto					
1 – 2 years.....	50.17	-	-	-	50.17
3 – 5 years.....	1.58	35.21	-	-	36.79
6 – 10 years.....	5.11	16.76	782.41	-	804.28
Over 10 years.....	19.42	3.19	2.01	300.74	325.36
Subtotal.....	**76.28**	**55.16**	**784.42**	**300.74**	**1,216.60**
Northwest					
1 – 2 years.....	50.17	-	-	-	50.17
3 – 5 years.....	1.58	45.13	-	-	46.71
6 – 10 years.....	13.14	20.68	893.10	-	926.92
Over 10 years.....	19.42	3.19	2.20	338.84	363.65
Total.....	**84.31**	**69.00**	**895.30**	**338.84**	**1,387.45**

Idades e plantios: 1 – 2 years (2015 e 2016), 3 – 5 years (2012 a 2014), 6 – 10 years (2007 a 2011) e Over 10 years (2006 e anteriores).

- Represents zero.

[1] Valencia Americana, Seleta and Pineapple.

[2] Calculation based on the year the original plot was planted.

[3] Estimated both from information supplied by growers on years resettings occurred in the plot and from visual aspects of the plant, such as trunk circumference, height and shape of canopy, among other factors.

Table 26 – Other early[1]: Trees by age group and age group of plot – Central Sector [2018 inventory]

Plot age[2] and regions of Central Sector	Age trees[3]				Total
	1 – 2 years	3 – 5 years	6 – 10 years	Over 10 years	
	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)
Matão					
1 – 2 years.....	322.46	-	-	-	322.46
3 – 5 years.....	0.85	127.71	-	-	128.56
6 – 10 years.....	9.04	15.28	646.10	-	670.42
Over 10 years.....	28.72	36.65	11.26	778.26	854.89
Subtotal.....	**361.07**	**179.64**	**657.36**	**778.26**	**1,976.33**
Duartina					
1 – 2 years.....	263.20	-	-	-	263.20
3 – 5 years.....	17.92	276.07	-	-	293.99
6 – 10 years.....	16.23	6.58	377.18	-	399.99
Over 10 years.....	7.58	8.14	19.24	372.44	407.40
Subtotal.....	**304.93**	**290.79**	**396.42**	**372.44**	**1,364.58**
Brotas					
1 – 2 years.....	17.57	-	-	-	17.57
3 – 5 years.....	2.10	98.44	-	-	100.54
6 – 10 years.....	4.32	2.30	69.10	-	75.72
Over 10 years.....	0.40	3.51	18.03	72.12	94.06
Subtotal.....	**24.39**	**104.25**	**87.13**	**72.12**	**287.89**
Central					
1 – 2 years.....	603.23	-	-	-	603.23
3 – 5 years.....	20.87	502.22	-	-	523.09
6 – 10 years.....	29.59	24.16	1,092.38	-	1,146.13
Over 10 years.....	36.70	48.30	48.53	1,222.82	1,356.35
Total.....	**690.39**	**574.68**	**1,140.91**	**1,222.82**	**3,628.80**

Idades e plantios: 1 – 2 years (2015 e 2016), 3 – 5 years (2012 a 2014), 6 – 10 years (2007 a 2011) e Over 10 years (2006 e anteriores).

- Represents zero.

[1] Valencia Americana, Seleta and Pineapple.

[2] Calculation based on the year the original plot was planted.

[3] Estimated both from information supplied by growers on years resettings occurred in the plot and from visual aspects of the plant, such as trunk circumference, height and shape of canopy, among other factors.

Table 27 – Other early[1]: Trees by age group and age group of plot – South Sector [2018 inventory]

Plot age[2] and regions of South Sector	Age trees[3]				Total
	1 – 2 years	3 – 5 years	6 – 10 years	Over 10 years	
	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)
Porto Ferreira					
1 – 2 years.....	1.16	-	-	-	1.16
3 – 5 years.....	0.26	8.04	-	-	8.30
6 – 10 years.....	0.18	9.93	111.29	-	121.40
Over 10 years.....	1.97	8.48	21.66	189.31	221.42
Subtotal.....	**3.57**	**26.45**	**132.95**	**189.31**	**352.28**
Limeira					
1 – 2 years.....	3.61	-	-	-	3.61
3 – 5 years.....	0.07	2.03	-	-	2.10
6 – 10 years.....	0.69	3.96	65.32	-	69.97
Over 10 years.....	11.54	7.45	2.54	119.76	141.29
Subtotal.....	**15.91**	**13.44**	**67.86**	**119.76**	**216.97**
South					
1 – 2 years.....	4.77	-	-	-	4.77
3 – 5 years.....	0.33	10.07	-	-	10.40
6 – 10 years.....	0.87	13.89	176.61	-	191.37
Over 10 years.....	13.51	15.93	24.20	309.07	362.71
Total.....	**19.48**	**39.89**	**200.81**	**309.07**	**569.25**

Ages and planting years: 1 – 2 years (2016 and 2017), 3 – 5 years (2013 and 2015), 6 – 10 years (2008 to 2012) and over 10 years (2007 and earlier).
- Represents zero.
[1] Valencia Americana, Seleta and Pineapple.
[2] Calculation based on the year the original plot was planted.
[3] Estimated both from information supplied by growers on years resettings occurred in the plot and from visual aspects of the plant, such as trunk circumference, height and shape of canopy, among other factors.

Table 28 – Other early[1]: Trees by age group and age group of plot – Southwest Sector [2018 inventory]

Plot age[2] and regions of Southwest Sector	Age trees[3]				Total
	1 – 2 years	3 – 5 years	6 – 10 years	Over 10 years	
	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)
Avaré					
1 – 2 years.....	80.19	-	-	-	80.19
3 – 5 years.....	0.01	32.56	-	-	32.57
6 – 10 years.....	1.29	2.98	183.63	-	187.90
Over 10 years.....	23.49	4.02	15.94	465.27	508.72
Subtotal.....	**104.98**	**39.56**	**199.57**	**465.27**	**809.38**
Itapetininga					
1 – 2 years.....	187.86	-	-	-	187.86
3 – 5 years.....	2.17	92.11	-	-	94.28
6 – 10 years.....	-	4.30	338.67	-	342.97
Over 10 years.....	-	-	-	14.57	14.57
Subtotal.....	**190.03**	**96.41**	**338.67**	**14.57**	**639.68**
Southwest					
1 – 2 years.....	268.05	-	-	-	268.05
3 – 5 years.....	2.18	124.67	-	-	126.85
6 – 10 years.....	1.29	7.28	522.30	-	530.87
Over 10 years.....	23.49	4.02	15.94	479.84	523.29
Total.....	**295.01**	**135.97**	**538.24**	**479.84**	**1,449.06**

Ages and planting years: 1 – 2 years (2016 and 2017), 3 – 5 years (2013 and 2015), 6 – 10 years (2008 to 2012) and over 10 years (2007 and earlier).
- Represents zero.
[1] Valencia Americana, Seleta and Pineapple.
[2] Calculation based on the year the original plot was planted.
[3] Estimated both from information supplied by growers on years resettings occurred in the plot and from visual aspects of the plant, such as trunk circumference, height and shape of canopy, among other factors.

Table 29 – Pera Rio: Trees by age group and age group of plot – North Sector [2018 inventory]

Plot age[1] and regions of North Sector	Age trees[2]				Total
	1 – 2 years	3 – 5 years	6 – 10 years	Over 10 years	
	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)
Triângulo Mineiro					
1 – 2 years.....	487.74	-	-	-	487.74
3 – 5 years.....	3.84	896.74	-	-	900.58
6 – 10 years.....	5.47	45.24	2,352.08	-	2,402.79
Over 10 years….....	0.76	2.96	9.59	513.65	526.96
Subtotal.....	**497.81**	**944.94**	**2,361.67**	**513.65**	**4,318.07**
Bebedouro					
1 – 2 years.....	637.98	-	-	-	637.98
3 – 5 years.....	36.17	1,860.71	-	-	1,896.88
6 – 10 years.....	102.33	244.40	3,144.64	-	3,491.37
Over 10 years.....	17.08	52.34	88.31	1,134.04	1,291.77
Subtotal.....	**793.56**	**2,157.45**	**3,232.95**	**1,134.04**	**7,318.00**
Altinópolis					
1 – 2 years.....	172.53	-	-	-	172.53
3 – 5 years.....	3.35	77.46	-	-	80.81
6 – 10 years.....	4.38	10.61	434.60	-	449.59
Over 10 years.....	20.53	37.96	129.01	1,085.50	1,273.00
Subtotal.....	**200.79**	**126.03**	**563.61**	**1,085.50**	**1,975.93**
North					
1 – 2 years.....	1,298.25	-	-	-	1,298.25
3 – 5 years.....	43.36	2,834.91	-	-	2,878.27
6 – 10 years.....	112.18	300.25	5,931.32	-	6,343.75
Over 10 years.....	38.37	93.26	226.91	2,733.19	3,091.73
Total.....	**1,492.16**	**3,228.42**	**6,158.23**	**2,733.19**	**13,612.00**

Ages and planting years: 1 – 2 years (2016 and 2017), 3 – 5 years (2013 and 2015), 6 – 10 years (2008 to 2012) and over 10 years (2007 and earlier).

- Represents zero.

1 Calculation based on the year the original plot was planted.

2 Estimated both from information supplied by growers on years resettings occurred in the plot and from visual aspects of the plant, such as trunk circumference, height and shape of canopy, among other factors.

Table 30 – Pera Rio: Trees by age group and age group of plot – Northwest Sector [2018 inventory]

Plot age[1] and regions of Northwest Sector	Age trees[2]				Total
	1 – 2 years	3 – 5 years	6 – 10 years	Over 10 years	
	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)
Votuporanga					
1 – 2 years.....	455.89	-	-	-	455.89
3 – 5 years.....	12.28	790.49	-	-	802.77
6 – 10 years.....	23.21	33.68	3,811.95	-	3,868.84
Over 10 years.....	7.87	9.48	25.31	1,631.83	1,674.49
Subtotal.....	**499.25**	**833.65**	**3,837.26**	**1,631.83**	**6,801.99**
São José do Rio Preto					
1 – 2 years.....	351.97	-	-	-	351.97
3 – 5 years.....	9.39	421.18	-	-	430.57
6 – 10 years.....	13.56	34.69	1,127.69	-	1,175.94
Over 10 years.....	1.19	26.87	16.45	884.62	929.13
Subtotal.....	**376.11**	**482.74**	**1,144.14**	**884.62**	**2,887.61**
Northwest					
1 – 2 years.....	807.86	-	-	-	807.86
3 – 5 years.....	21.67	1,211.67	-	-	1,233.34
6 – 10 years.....	36.77	68.37	4,939.64	-	5,044.78
Over 10 years.....	9.06	36.35	41.76	2,516.45	2,603.62
Total.....	**875.36**	**1,316.39**	**4,981.40**	**2,516.45**	**9,689.60**

Ages and planting years: 1 – 2 years (2016 and 2017), 3 – 5 years (2013 and 2015), 6 – 10 years (2008 to 2012) and over 10 years (2007 and earlier).
- Represents zero.
[1] Calculation based on the year the original plot was planted.
[2] Estimated both from information supplied by growers on years resettings occurred in the plot and from visual aspects of the plant, such as trunk circumference, height and shape of canopy, among other factors.

Table 31 – Pera Rio: Trees by age group and age group of plot – Central Sector [2018 inventory]

Plot age[1] and regions of Central Sector	Age trees[2]				Total
	1 – 2 years	3 – 5 years	6 – 10 years	Over 10 years	
	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)
Matão					
1 – 2 years.....	861.04	-	-	-	861.04
3 – 5 years.....	41.78	2,311.11	-	-	2,352.89
6 – 10 years.....	54.04	90.05	2,197.12	-	2,341.21
Over 10 years.....	3.08	20.80	89.53	1,506.05	1,619.46
Subtotal.....	**959.94**	**2,421.96**	**2,286.65**	**1,506.05**	**7,174.60**
Duartina					
1 – 2 years.....	1,228.71	-	-	-	1,228.71
3 – 5 years.....	35.10	1,559.02	-	-	1,594.12
6 – 10 years.....	90.91	167.36	3,240.49	-	3,498.76
Over 10 years.....	52.45	101.75	135.13	3,971.09	4,260.42
Subtotal.....	**1,407.17**	**1,828.13**	**3,375.62**	**3,971.09**	**10,582.01**
Brotas					
1 – 2 years.....	267.83	-	-	-	267.83
3 – 5 years.....	8.26	626.65	-	-	634.91
6 – 10 years.....	23.85	54.22	484.58	-	562.65
Over 10 years.....	6.34	19.72	195.30	1,007.48	1,228.84
Subtotal.....	**306.28**	**700.59**	**679.88**	**1,007.48**	**2,694.23**
Central					
1 – 2 years.....	2,357.58	-	-	-	2,357.58
3 – 5 years.....	85.14	4,496.78	-	-	4,581.92
6 – 10 years.....	168.80	311.63	5,922.19	-	6,402.62
Over 10 years.....	61.87	142.27	419.96	6,484.62	7,108.72
Total.....	**2,673.39**	**4,950.68**	**6,342.15**	**6,484.62**	**20,450.84**

Ages and planting years: 1 – 2 years (2016 and 2017), 3 – 5 years (2013 and 2015), 6 – 10 years (2008 to 2012) and over 10 years (2007 and earlier).
- Represents zero.
[1] Calculation based on the year the original plot was planted.
[2] Estimated both from information supplied by growers on years resettings occurred in the plot and from visual aspects of the plant, such as trunk circumference, height and shape of canopy, among other factors.

Table 32 – Pera Rio: Trees by age group and age group of plot – South Sector [2018 inventory]

Plot age[1] and regions of South Sector	Age trees[2]				Total
	1 – 2 years	3 – 5 years	6 – 10 years	Over 10 years	
	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)
Porto Ferreira					
1 – 2 years	968.82	-	-	-	968.82
3 – 5 years	60.76	1,034.98	-	-	1,095.74
6 – 10 years	112.16	80.74	2,159.02	-	2,351.92
Over 10 years	84.33	180.21	271.85	2,395.73	2,932.12
Subtotal	**1,226.07**	**1,295.93**	**2,430.87**	**2,395.73**	**7,348.60**
Limeira					
1 – 2 years	719.90	-	-	-	719.90
3 – 5 years	115.69	897.94	-	-	1,013.63
6 – 10 years	137.06	113.98	2,709.68	-	2,960.72
Over 10 years	104.08	51.01	133.25	2,599.84	2,888.18
Subtotal	**1,076.73**	**1,062.93**	**2,842.93**	**2,599.84**	**7,582.43**
South					
1 – 2 years	1,688.72	-	-	-	1,688.72
3 – 5 years	176.45	1,932.92	-	-	2,109.37
6 – 10 years	249.22	194.72	4,868.70	-	5,312.64
Over 10 years	188.41	231.22	405.10	4,995.57	5,820.30
Total	**2,302.80**	**2,358.86**	**5,273.80**	**4,995.57**	**14,931.03**

Ages and planting years: 1 – 2 years (2016 and 2017), 3 – 5 years (2013 and 2015), 6 – 10 years (2008 to 2012) and over 10 years (2007 and earlier).
- Represents zero.
1 Calculation based on the year the original plot was planted.
2 Estimated both from information supplied by growers on years resettings occurred in the plot and from visual aspects of the plant, such as trunk circumference, height and shape of canopy, among other factors.

Table 33 – Pera Rio: Trees by age group and age group of plot – Southwest Sector [2018 inventory]

Plot age[1] and regions of Southwest Sector	Age trees[2]				Total
	1 – 2 years	3 – 5 years	6 – 10 years	Over 10 years	
	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)
Avaré					
1 – 2 years	200.00	-	-	-	200.00
3 – 5 years	10.56	651.30	-	-	661.86
6 – 10 years	45.80	77.63	2,451.72	-	2,575.15
Over 10 years	48.92	156.14	165.85	4,001.05	4,371.96
Subtotal	**305.28**	**885.07**	**2,617.57**	**4,001.05**	**7,808.97**
Itapetininga					
1 – 2 years	792.25	-	-	-	792.25
3 – 5 years	11.11	483.85	-	-	494.96
6 – 10 years	6.54	11.33	1,158.53	-	1,176.40
Over 10 years	0.24	5.91	10.54	1,062.51	1,079.20
Subtotal	**810.14**	**501.09**	**1,169.07**	**1,062.51**	**3,542.81**
Southwest					
1 – 2 years	992.25	-	-	-	992.25
3 – 5 years	21.67	1,135.15	-	-	1,156.82
6 – 10 years	52.34	88.96	3,610.25	-	3,751.55
Over 10 years	49.16	162.05	176.39	5,063.56	5,451.16
Total	**1,115.42**	**1,386.16**	**3,786.64**	**5,063.56**	**11,351.78**

Ages and planting years: 1 – 2 years (2016 and 2017), 3 – 5 years (2013 and 2015), 6 – 10 years (2008 to 2012) and over 10 years (2007 and earlier).
- Represents zero.
1 Calculation based on the year the original plot was planted.
2 Estimated both from information supplied by growers on years resettings occurred in the plot and from visual aspects of the plant, such as trunk circumference, height and shape of canopy, among other factors.

Table 34 – Valencia and Valencia Folha Murcha: Trees by age group and age group of plot – North Sector [2018 inventory]

Plot age[1] and regions of Norte Sector	Age trees[2]				Total
	1 – 2 years	3 – 5 years	6 – 10 years	Over 10 years	
	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)
Triângulo Mineiro					
1 – 2 years.....	31.25	-	-	-	31.25
3 – 5 years.....	2.44	627.40	-	-	629.84
6 – 10 years.....	3.50	18.27	1,762.84	-	1,784.61
Over 10 years.....	9.05	19.87	17.75	1,800.17	1,846.84
Subtotal.....	**46.24**	**665.54**	**1,780.59**	**1,800.17**	**4,292.54**
Bebedouro					
1 – 2 years.....	292.37	-	-	-	292.37
3 – 5 years.....	29.12	1,037.60	-	-	1,066.72
6 – 10 years.....	39.56	102.27	2,386.62	-	2,528.45
Over 10 years.....	60.14	182.65	290.97	3,683.80	4,217.56
Subtotal.....	**421.19**	**1,322.52**	**2,677.59**	**3,683.80**	**8,105.10**
Altinópolis					
1 – 2 years.....	42.52	-	-	-	42.52
3 – 5 years.....	-	16.62	-	-	16.62
6 – 10 years.....	12.79	35.67	353.17	-	401.63
Over 10 years.....	26.43	88.30	107.96	1,523.57	1,746.26
Subtotal.....	**81.74**	**140.59**	**461.13**	**1,523.57**	**2,207.03**
North					
1 – 2 years.....	366.14	-	-	-	366.14
3 – 5 years.....	31.56	1,681.62	-	-	1,713.18
6 – 10 years.....	55.85	156.21	4,502.63	-	4,714.69
Over 10 years.....	95.62	290.82	416.68	7,007.54	7,810.66
Total.....	**549.17**	**2,128.65**	**4,919.31**	**7,007.54**	**14,604.67**

Ages and planting years: 1 – 2 years (2016 and 2017), 3 – 5 years (2013 and 2015), 6 – 10 years (2008 to 2012) and over 10 years (2007 and earlier).

- Represents zero.

[1] Calculation based on the year the original plot was planted.

[2] Estimated both from information supplied by growers on years resettings occurred in the plot and from visual aspects of the plant, such as trunk circumference, height and shape of canopy, among other factors.

Table 35 – Valencia and Valencia Folha Murcha: Trees by age group and age group of plot – Northwest Sector [2018 inventory]

Plot age[1] and regions of Northwest Sector	Age trees[2]				Total
	1 – 2 years	3 – 5 years	6 – 10 years	Over 10 years	
	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)
Votuporanga					
1 – 2 years.....	-	-		-	-
3 – 5 years.....	-	21.68	-	-	21.68
6 – 10 years.....	1.71	8.74	652.53	-	662.98
Over 10 years.....	-	0.17	-	291.15	291.32
Subtotal.....	**1.71**	**30.59**	**652.53**	**291.15**	**975.98**
São José do Rio Preto					
1 – 2 years.....	368.93	-	-	-	368.93
3 – 5 years.....	5.08	509.35	-	-	514.43
6 – 10 years.....	16.78	17.11	1,682.47	-	1,716.36
Over 10 years.....	0.16	1.82	4.94	674.24	681.16
Subtotal.....	**390.95**	**528.28**	**1,687.41**	**674.24**	**3,280.88**
Northwest					
1 – 2 years.....	368.93	-	-	-	368.93
3 – 5 years.....	5.08	531.03	-	-	536.11
6 – 10 years.....	18.49	25.85	2,335.00	-	2,379.34
Over 10 years.....	0.16	1.99	4.94	965.39	972.48
Total.....	**392.66**	**558.87**	**2,339.94**	**965.39**	**4,256.86**

Ages and planting years: 1 – 2 years (2016 and 2017), 3 – 5 years (2013 and 2015), 6 – 10 years (2008 to 2012) and over 10 years (2007 and earlier).
- Represents zero.
1 Calculation based on the year the original plot was planted.
2 Estimated both from information supplied by growers on years resettings occurred in the plot and from visual aspects of the plant, such as trunk circumference, height and shape of canopy, among other factors.

Table 36 – Valencia and Valencia Folha Murcha: Trees by age group and age group of plot – Central Sector [2018 inventory]

Plot age[1] and regions of Central Sector	Age trees[2]				Total
	1 – 2 years	3 – 5 years	6 – 10 years	Over 10 years	
	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)
Matão					
1 – 2 years.....	301.69	-	-	-	301.69
3 – 5 years.....	11.13	1,131.10	-	-	1,142.23
6 – 10 years.....	68.26	43.76	2,391.36	-	2,503.38
Over 10 years.....	31.51	106.64	217.86	1,808.69	2,164.70
Subtotal.....	**412.59**	**1,281.50**	**2,609.22**	**1,808.69**	**6,112.00**
Duartina					
1 – 2 years.....	696.12	-	-	-	696.12
3 – 5 years.....	109.48	1,032.95	-	-	1,142.43
6 – 10 years.....	94.50	101.48	1,877.22	-	2,073.20
Over 10 years.....	134.83	170.20	160.72	3,817.83	4,283.58
Subtotal.....	**1,034.93**	**1,304.63**	**2,037.94**	**3,817.83**	**8,195.33**
Brotas					
1 – 2 years.....	104.21	-	-	-	104.21
3 – 5 years.....	2.49	125.43	-	-	127.92
6 – 10 years.....	22.88	42.13	711.27	-	776.28
Over 10 years.....	60.48	70.57	461.59	2,239.72	2,832.36
Subtotal.....	**190.06**	**238.13**	**1,172.86**	**2,239.72**	**3,840.77**
Central					
1 – 2 years.....	1,102.02	-	-	-	1,102.02
3 – 5 years.....	123.10	2,289.48	-	-	2,412.58
6 – 10 years.....	185.64	187.37	4,979.85	-	5,352.86
Over 10 years.....	226.82	347.41	840.17	7,866.24	9,280.64
Total.....	**1,637.58**	**2,824.26**	**5,820.02**	**7,866.24**	**18,148.10**

Ages and planting years: 1 – 2 years (2016 and 2017), 3 – 5 years (2013 and 2015), 6 – 10 years (2008 to 2012) and over 10 years (2007 and earlier).
- Represents zero.
1 Calculation based on the year the original plot was planted.
2 Estimated both from information supplied by growers on years resettings occurred in the plot and from visual aspects of the plant, such as trunk circumference, height and shape of canopy, among other factors.

Table 37 – Valencia and Valencia Folha Murcha: Trees by age group and age group of plot – South Sector [2018 inventory]

Plot age[1] and regions of South Sector	Age trees[2]				Total
	1 – 2 years	3 – 5 years	6 – 10 years	Over 10 years	
	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)
Porto Ferreira					
1 – 2 years.....	310.75	-	-	-	310.75
3 – 5 years.....	25.00	707.12	-	-	732.12
6 – 10 years.....	45.15	76.94	1,642.83	-	1,764.92
Over 10 years.....	48.20	125.86	262.38	3,671.22	4,107.66
Subtotal.....	**429.10**	**909.92**	**1,905.21**	**3,671.22**	**6,915.45**
Limeira					
1 – 2 years.....	312.94	-	-	-	312.94
3 – 5 years.....	15.03	398.95	-	-	413.98
6 – 10 years.....	42.50	54.12	1,752.03	-	1,848.65
Over 10 years.....	59.82	116.41	250.01	3,853.19	4,279.43
Subtotal.....	**430.29**	**569.48**	**2,002.04**	**3,853.19**	**6,855.00**
South					
1 – 2 years.....	623.69	-	-	-	623.69
3 – 5 years.....	40.03	1,106.07	-	-	1,146.10
6 – 10 years.....	87.65	131.06	3,394.86	-	3,613.57
Over 10 years.....	108.02	242.27	512.39	7,524.41	8,387.09
Total.....	**859.39**	**1,479.40**	**3,907.25**	**7,524.41**	**13,770.45**

Ages and planting years: 1 – 2 years (2016 and 2017), 3 – 5 years (2013 and 2015), 6 – 10 years (2008 to 2012) and over 10 years (2007 and earlier).
- Represents zero.
[1] Calculation based on the year the original plot was planted.
[2] Estimated both from information supplied by growers on years resettings occurred in the plot and from visual aspects of the plant, such as trunk circumference, height and shape of canopy, among other factors.

Table 38 – Valencia and Valencia Folha Murcha: Trees by age group and age group of plot – Southwest Sector [2018 inventory]

Plot age[1] and regions of Southwest Sector	Age trees[2]				Total
	1 – 2 years	3 – 5 years	6 – 10 years	Over 10 years	
	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)
Avaré					
1 – 2 years.....	252.59	-	-	-	252.59
3 – 5 years.....	12.76	506.02	-	-	518.78
6 – 10 years.....	51.78	88.93	2,249.81	-	2,390.52
Over 10 years.....	102.23	258.51	161.93	6,109.37	6,632.04
Subtotal.....	**419.36**	**853.46**	**2,411.74**	**6,109.37**	**9,793.93**
Itapetininga					
1 – 2 years.....	365.75	-	-	-	365.75
3 – 5 years.....	2.77	129.31	-	-	132.08
6 – 10 years.....	9.10	12.76	1,540.82	-	1,562.68
Over 10 years.....	3.27	1.35	5.26	1,178.30	1,188.18
Subtotal.....	**380.89**	**143.42**	**1,546.08**	**1,178.30**	**3,248.69**
Southwest					
1 – 2 years.....	618.34	-	-	-	618.34
3 – 5 years.....	15.53	635.33	-	-	650.86
6 – 10 years.....	60.88	101.69	3,790.63	-	3,953.20
Over 10 years.....	105.50	259.86	167.19	7,287.67	7,820.22
Total.....	**800.25**	**996.88**	**3,957.82**	**7,287.67**	**13,042.62**

Ages and planting years: 1 – 2 years (2016 and 2017), 3 – 5 years (2013 and 2015), 6 – 10 years (2008 to 2012) and over 10 years (2007 and earlier).
- Represents zero.
[1] Calculation based on the year the original plot was planted.
[2] Estimated both from information supplied by growers on years resettings occurred in the plot and from visual aspects of the plant, such as trunk circumference, height and shape of canopy, among other factors.

Table 39 – Natal: Trees by age group and age group of plot – North Sector [2018 inventory]

Plot age[1] and regions of Norte Sector	Age trees[2]				Total
	1 – 2 years	3 – 5 years	6 – 10 years	Over 10 years	
	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)
Triângulo Mineiro					
1 – 2 years.....	42.16	-	-	-	42.16
3 – 5 years.....	0.12	98.68	-	-	98.80
6 – 10 years.....	0.71	1.04	424.57	-	426.32
Over 10 years.....	12.83	32.77	52.30	947.80	1,045.70
Subtotal.....	**55.82**	**132.49**	**476.87**	**947.80**	**1,612.98**
Bebedouro					
1 – 2 years.....	119.51	-	-	-	119.51
3 – 5 years.....	3.66	415.67	-	-	419.33
6 – 10 years.....	10.54	11.66	356.40	-	378.60
Over 10 years.....	13.19	55.96	67.63	1,099.30	1,236.08
Subtotal.....	**146.90**	**483.29**	**424.03**	**1,099.30**	**2,153.52**
Altinópolis					
1 – 2 years.....	74.94	-	-	-	74.94
3 – 5 years.....	0.47	16.99	-	-	17.46
6 – 10 years.....	2.03	2.41	75.86	-	80.30
Over 10 years.....	16.46	1.88	3.03	168.47	189.84
Subtotal.....	**93.90**	**21.28**	**78.89**	**168.47**	**362.54**
North					
1 – 2 years.....	236.61	-	-	-	236.61
3 – 5 years.....	4.25	531.34	-	-	535.59
6 – 10 years.....	13.28	15.11	856.83	-	885.22
Over 10 years.....	42.48	90.61	122.96	2,215.57	2,471.62
Total.....	**296.62**	**637.06**	**979.79**	**2,215.57**	**4,129.04**

Ages and planting years: 1 – 2 years (2016 and 2017), 3 – 5 years (2013 and 2015), 6 – 10 years (2008 to 2012) and over 10 years (2007 and earlier).

- Represents zero.

1 Calculation based on the year the original plot was planted.

2 Estimated both from information supplied by growers on years resettings occurred in the plot and from visual aspects of the plant, such as trunk circumference, height and shape of canopy, among other factors.

Table 40 – Natal: Trees by age group and age group of plot – Northwest Sector [2018 inventory]

Plot age[1] and regions of Northwest Sector	Age trees[2]				Total
	1 – 2 years	3 – 5 years	6 – 10 years	Over 10 years	
	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)
Votuporanga					
1 – 2 years.....	21.90	-	-	-	21.90
3 – 5 years.....	3.44	23.16	-	-	26.60
6 – 10 years.....	0.06	0.40	232.23	-	232.69
Over 10 years.....	0.03	1.34	0.97	155.07	157.41
Subtotal.....	**25.43**	**24.90**	**233.20**	**155.07**	**438.60**
São José do Rio Preto					
1 – 2 years.....	256.78	-	-	-	256.78
3 – 5 years.....	1.10	533.71	-	-	534.81
6 – 10 years.....	1.74	6.62	200.73	-	209.09
Over 10 years.....	1.75	5.06	10.34	540.65	557.80
Subtotal.....	**261.37**	**545.39**	**211.07**	**540.65**	**1,558.48**
Northwest					
1 – 2 years.....	278.68	-	-	-	278.68
3 – 5 years.....	4.54	556.87	-	-	561.41
6 – 10 years.....	1.80	7.02	432.96	-	441.78
Over 10 years.....	1.78	6.40	11.31	695.72	715.21
Total.....	**286.80**	**570.29**	**444.27**	**695.72**	**1,997.08**

Ages and planting years: 1 – 2 years (2016 and 2017), 3 – 5 years (2013 and 2015), 6 – 10 years (2008 to 2012) and over 10 years (2007 and earlier).
- Represents zero.
[1] Calculation based on the year the original plot was planted.
[2] Estimated both from information supplied by growers on years resettings occurred in the plot and from visual aspects of the plant, such as trunk circumference, height and shape of canopy, among other factors.

Table 41 – Natal: Trees by age group and age group of plot – Central Sector [2018 inventory]

Plot age[1] and regions of Central Sector	Age trees[2]				Total
	1 – 2 years	3 – 5 years	6 – 10 years	Over 10 years	
	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)
Matão					
1 – 2 years.....	334.88	-	-	-	334.88
3 – 5 years.....	6.00	274.55	-	-	280.55
6 – 10 years.....	-	1.96	245.41	-	247.37
Over 10 years.....	12.68	13.47	71.33	593.01	690.49
Subtotal.....	**353.56**	**289.98**	**316.74**	**593.01**	**1,553.29**
Duartina					
1 – 2 years.....	258.71	-	-	-	258.71
3 – 5 years.....	1.13	392.77	-	-	393.90
6 – 10 years.....	68.04	28.37	593.87	-	690.28
Over 10 years.....	38.29	68.71	82.43	1,526.70	1,716.13
Subtotal.....	**366.17**	**489.85**	**676.30**	**1,526.70**	**3,059.02**
Brotas					
1 – 2 years.....	48.40	-	-	-	48.40
3 – 5 years.....	0.89	83.61	-	-	84.50
6 – 10 years.....	16.16	1.32	135.34	-	152.82
Over 10 years.....	0.22	3.57	121.49	346.96	472.24
Subtotal.....	**65.67**	**88.50**	**256.83**	**346.96**	**757.96**
Central					
1 – 2 years.....	641.99	-	-	-	641.99
3 – 5 years.....	8.02	750.93	-	-	758.95
6 – 10 years.....	84.20	31.65	974.62	-	1,090.47
Over 10 years.....	51.19	85.75	275.25	2,466.67	2,878.86
Total.....	**785.40**	**868.33**	**1,249.87**	**2,466.67**	**5,370.27**

Ages and planting years: 1 – 2 years (2016 and 2017), 3 – 5 years (2013 and 2015), 6 – 10 years (2008 to 2012) and over 10 years (2007 and earlier).
- Represents zero.
[1] Calculation based on the year the original plot was planted.
[2] Estimated both from information supplied by growers on years resettings occurred in the plot and from visual aspects of the plant, such as trunk circumference, height and shape of canopy, among other factors.

Table 42 – Natal: Trees by age group and age group of plot – South Sector [2018 inventory]

Plot age[1] and regions of South	Age trees[2]				Total
	1 – 2 years	3 – 5 years	6 – 10 years	Over 10 years	
	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)
Porto Ferreira					
1 – 2 years.....	187.05	-	-	-	187.05
3 – 5 years.....	50.64	478.94	-	-	529.58
6 – 10 years.....	5.34	3.90	442.06	-	451.30
Over 10 years.....	19.09	52.23	106.83	879.13	1,057.28
Subtotal.....	**262.12**	**535.07**	**548.89**	**879.13**	**2,225.21**
Limeira					
1 – 2 years.....	98.23	-	-	-	98.23
3 – 5 years.....	26.07	237.04	-	-	263.11
6 – 10 years.....	8.37	4.78	375.99	-	389.14
Over 10 years.....	4.59	8.45	20.34	713.50	746.88
Subtotal.....	**137.26**	**250.27**	**396.33**	**713.50**	**1,497.36**
South					
1 – 2 years.....	285.28	-	-	-	285.28
3 – 5 years.....	76.71	715.98	-	-	792.69
6 – 10 years.....	13.71	8.68	818.05	-	840.44
Over 10 years.....	23.68	60.68	127.17	1,592.63	1,804.16
Total.....	**399.38**	**785.34**	**945.22**	**1,592.63**	**3,722.57**

Ages and planting years: 1 – 2 years (2016 and 2017), 3 – 5 years (2013 and 2015), 6 – 10 years (2008 to 2012) and over 10 years (2007 and earlier).
- Represents zero.
1 Calculation based on the year the original plot was planted.
2 Estimated both from information supplied by growers on years resettings occurred in the plot and from visual aspects of the plant, such as trunk circumference, height and shape of canopy, among other factors.

Table 43 – Natal: Trees by age group and age group of plot – Southwest Sector [2018 inventory]

Plot age[1] and regions of Southwest Sector	Age trees[2]				Total
	1 – 2 years	3 – 5 years	6 – 10 years	Over 10 years	
	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)
Avaré					
1 – 2 years.....	45.95	-	-	-	45.95
3 – 5 years.....	69.02	292.62	-	-	361.64
6 – 10 years.....	14.02	12.16	1,245.91	-	1,272.09
Over 10 years.....	38.59	119.75	88.67	2,417.51	2,664.52
Subtotal.....	**167.58**	**424.53**	**1,334.58**	**2,417.51**	**4,344.20**
Itapetininga					
1 – 2 years.....	212.85	-	-	-	212.85
3 – 5 years.....	10.62	158.28	-	-	168.90
6 – 10 years.....	4.41	4.56	573.45	-	582.42
Over 10 years.....	-	0.46	2.43	1,135.82	1,138.71
Subtotal.....	**227.88**	**163.30**	**575.88**	**1,135.82**	**2,102.88**
Southwest					
1 – 2 years.....	258.80	-	-	-	258.80
3 – 5 years.....	79.64	450.90	-	-	530.54
6 – 10 years.....	18.43	16.72	1,819.36	-	1,854.51
Over 10 years.....	38.59	120.21	91.10	3,553.33	3,803.23
Total.....	**395.46**	**587.83**	**1,910.46**	**3,553.33**	**6,447.08**

Ages and planting years: 1 – 2 years (2016 and 2017), 3 – 5 years (2013 and 2015), 6 – 10 years (2008 to 2012) and over 10 years (2007 and earlier).
- Represents zero.
1 Calculation based on the year the original plot was planted.
2 Estimated both from information supplied by growers on years resettings occurred in the plot and from visual aspects of the plant, such as trunk circumference, height and shape of canopy, among other factors.

Table 44 – Oranges: Area of young and mature groves by sector and region [2018 inventory and accumulated variation]

Sector and region	2018 inventory			Accumulated variation (△) since 2015 inventory		
	Area of young groves[1]	Area of mature groves[2]	Total			
	(A)	(B)	(C)	(△ A)	(△ B)	(△ C)
	(hectares)	(hectares)	(hectares)	(%)	(%)	(%)
North						
Triângulo Mineiro.....	1,063	25,418	26,481	-57.83	9.42	2.84
Bebedouro.....	2,273	49,008	51,281	-47.47	-5.15	-8.42
Altinópolis.....	445	10,849	11,294	283.62	0.55	3.56
Subtotal	**3,781**	**85,275**	**89,056**	**-45.71**	**-0.48**	**-3.88**
Northwest						
Votuporanga.....	1,112	18,703	19,815	-27.79	-18.94	-19.49
São José do Rio Preto.....	1,704	21,436	23,140	21.71	-4.65	-3.11
Subtotal.....	**2,816**	**40,139**	**42,955**	**-4.22**	**-11.89**	**-11.42**
Central						
Matão.....	2,956	38,000	40,956	-37.16	-11.12	-13.70
Duartina.....	4,573	49,994	54,567	3.25	-4.55	-3.94
Brotas.....	707	18,146	18,853	-51.97	-14.04	-16.51
Subtotal.....	**8,236**	**106,140**	**114,376**	**-22.34**	**-8.69**	**-9.83**
South						
Porto Ferreira.....	2,589	37,951	40,540	6.54	-4.20	-3.58
Limeira.....	2,211	38,507	40,718	24.84	-14.67	-13.17
Subtotal.....	**4,800**	**76,458**	**81,258**	**14.26**	**-9.77**	**-8.64**
Southwest						
Avaré.....	992	53,395	54,387	-43.86	-1.44	-2.78
Itapetininga.....	2,422	17,016	19,438	270.90	-0.45	9.53
Subtotal	**3,414**	**70,411**	**73,825**	**41.07**	**-1.20**	**0.19**
Total.....	**23,047**	**378,423**	**401,470**	**-15.05**	**-6.21**	**-6.77**
Percentage.....	**5.74**	**94.26**	**100**	**(X)**	**(X)**	**(X)**

(X) Not applicable.
- Represents zero.
[1] Groves planted in 2016 or 2017.
[2] Groves planted in 2015 or in previous years.

Table 45 – Oranges: Non-bearing and bearing trees by sector and region [2018 inventory and accumulated variation]

Sector and region	2018 inventory					Accumulated variation (△) since 2015 inventory				
	Non-bearing trees[1]			Bearing trees[4]	Total					
	In young groves[2]	In mature groves[3] (resets)	Total							
	(A)	(B)	(C)	(D)	(E)	(△A)	(△B)	(△C)	(△D)	(△E)
	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(%)	(%)	(%)	(%)	(%)
North										
Triângulo Mineiro.....	578.98	52.63	631.61	11,952.61	12,584.22	-61.46	-71.34	-62.54	13.13	2.71
Bebedouro.....	1,302.74	503.40	1,806.14	22,241.35	24,047.49	-54.01	-45.62	-51.94	-0.28	-7.73
Altinópolis.....	306.17	178.52	484.69	5,129.70	5,614.39	390.34	-30.78	51.30	0.70	3.69
Subtotal	**2,187.89**	**734.55**	**2,922.44**	**39,323.66**	**42,246.10**	**-50.25**	**-46.28**	**-49.30**	**3.58**	**-3.39**
Northwest										
Votuporanga.....	478.83	58.51	537.34	8,290.79	8,828.13	-37.41	-64.03	-42.08	-11.02	-13.83
S. J. do Rio Preto.....	1,056.24	116.00	1,172.24	10,058.88	11,231.12	28.30	-45.12	13.30	3.31	4.27
Subtotal.....	**1,535.07**	**174.51**	**1,709.58**	**18,349.67**	**20,059.25**	**-3.35**	**-53.35**	**-12.88**	**-3.70**	**-4.55**
Central										
Matão.....	2,373.14	345.56	2,718.70	17,279.13	19,997.83	-22.14	-56.63	-29.29	2.23	-3.61
Duartina.....	2,982.89	769.74	3,752.63	23,161.16	26,913.79	10.18	-17.54	3.07	0.98	1.27
Brotas.....	452.09	171.66	623.75	8,152.58	8,776.33	-51.96	-57.49	-53.62	7.07	-2.04
Subtotal.....	**5,808.12**	**1,286.96**	**7,095.08**	**48,592.87**	**55,687.95**	**-13.26**	**-39.69**	**-19.65**	**2.40**	**-1.06**
South										
Porto Ferreira.....	1,694.10	485.21	2,179.31	17,262.80	19,442.11	5.23	-40.70	-10.25	5.14	3.16
Limeira.....	1,294.19	623.42	1,917.61	17,072.38	18,989.99	11.05	-33.07	-8.55	-9.89	-9.76
Subtotal.....	**2,988.29**	**1,108.63**	**4,096.92**	**34,335.18**	**38,432.10**	**7.67**	**-36.64**	**-9.46**	**-2.91**	**-3.66**
Southwest										
Avaré.....	664.06	611.82	1,275.88	25,945.07	27,220.95	-47.42	-32.46	-41.17	0.74	-2.52
Itapetininga.....	1,944.17	91.75	2,035.92	8,722.99	10,758.91	365.21	42.62	322.18	2.22	19.33
Subtotal.....	**2,608.23**	**703.57**	**3,311.80**	**34,668.06**	**37,979.86**	**55.18**	**-27.48**	**24.93**	**1.11**	**2.82**
Total.....	**15,127.60**	**4,008.22**	**19,135.82**	**175,269.44**	**194,405.26**	**-11.73**	**-39.23**	**-19.37**	**0.66**	**-1.75**
Percentage.....	**79.05**	**20.95**	**9.84**	**90.16**	**100.00**	**(X)**	**(X)**	**(X)**	**(X)**	**(X)**

(X) Not applicable.
- Represents zero.
[1] Trees planted in 2016 or 2017.
[2] Groves planted in 2016 or 2017.
[3] Groves planted in 2015 or in previous years.
[4] Trees planted in 2015 or in previous years.

Table 46 – Oranges: Area of groves by age group of plots, sector and region [2018 inventory]

Sector and region	Plot age				Total
	1 – 2 years[1]	3 – 5 years	6 – 10 years	Over 10 years	
	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)
North					
Triâng.Mineiro....	1,063	2,948	9,899	12,571	26,481
Bebedouro.....	2,273	6,038	17,218	25,752	51,281
Altinópolis.....	445	233	2,178	8,438	11,294
Subtotal.....	**3,781**	**9,219**	**29,295**	**46,761**	**89,056**
Northwest					
Votuporanga.....	1,112	1,718	10,857	6,128	19,815
S. J. Rio Preto.....	1,704	2,719	10,499	8,218	23,140
Subtotal.....	**2,816**	**4,437**	**21,356**	**14,346**	**42,955**
Central					
Matão.....	2,956	6,068	13,061	18,871	40,956
Duartina.....	4,573	5,758	14,415	29,821	54,567
Brotas.....	707	1,468	3,621	13,057	18,853
Subtotal.....	**8,236**	**13,294**	**31,097**	**61,749**	**114,376**
South					
Porto Ferreira....	2,589	3,708	9,835	24,408	40,540
Limeira.....	2,211	2,977	11,563	23,967	40,718
Subtotal.....	**4,800**	**6,685**	**21,398**	**48,375**	**81,258**
Southwest					
Avaré.....	992	2,484	13,442	37,469	54,387
Itapetininga.....	2,422	1,353	6,650	9,013	19,438
Subtotal.....	**3,414**	**3,837**	**20,092**	**46,482**	**73,825**
Total.....	**23,047**	**37,472**	**123,238**	**217,713**	**401,470**
Percentage.....	**5.74**	**9.33**	**30.70**	**54.23**	**100.00**

- Represents zero.
[1] Area of young orange groves.

Table 47 – Oranges: Trees by age group, age group of plot, sector and region [2018 inventory]

Sector and region	Plot and tree ages										Total
	Plots 1 – 2 years	Plots 3 – 5 years		Plots 6 – 10 years			Plots Over 10 years				
	Trees 1 – 2 years	Trees 1 – 2 years	Trees 3 – 5 years	Trees 1 – 2 years	Trees 3 – 5 years	Trees 6 – 10 years	Trees 1 – 2 years	Trees 3 – 5 years	Trees 6 – 10 years	Trees over 10 years	
	(1,000 trees)	(1,000 trees)	(1,000 trees)	(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	578.98	7.28	1,779.50	10.89	73.10	5,224.88	34.46	93.85	96.60	4,684.68	12,584.22
Bebedouro.....	1,302.74	80.87	3,579.64	262.06	454.07	8,350.60	160.47	450.12	676.45	8,730.47	24,047.49
Altinópolis.....	306.17	5.03	149.30	32.00	86.88	1,087.57	141.49	177.69	305.92	3,322.34	5,614.39
Subtotal.....	**2,187.89**	**93.18**	**5,508.44**	**304.95**	**614.05**	**14,663.05**	**336.42**	**721.66**	**1,078.97**	**16,737.49**	**42,246.10**
Northwest											
Votuporanga...	478.83	15.74	852.85	34.69	50.55	5,076.02	8.08	13.58	27.01	2,270.78	8,828.13
S J Rio Preto...	1,056.24	24.81	1,687.65	64.08	93.14	5,144.18	27.11	48.81	36.84	3,048.26	11,231.12
Subtotal.....	**1,535.07**	**40.55**	**2,540.50**	**98.77**	**143.69**	**10,220.20**	**35.19**	**62.39**	**63.85**	**5,319.04**	**20,059.25**
Central											
Matão.....	2,373.14	65.60	3,911.05	148.24	186.67	6,837.62	131.72	235.79	451.45	5,656.55	19,997.83
Duartina.....	2,982.89	169.10	3,493.22	332.67	437.16	7,287.15	267.97	405.44	476.71	11,061.48	26,913.79
Brotas.....	452.09	14.08	946.59	84.50	126.16	1,804.42	73.08	120.23	890.84	4,264.34	8,776.33
Subtotal.....	**5,808.12**	**248.78**	**8,350.86**	**565.41**	**749.99**	**15,929.19**	**472.77**	**761.46**	**1,819.00**	**20,982.37**	**55,687.95**
South											
Porto Ferreira..	1,694.10	150.88	2,391.95	165.58	223.18	5,298.73	168.75	469.20	817.78	8,061.96	19,442.11
Limeira.....	1,294.19	166.95	1,681.38	206.81	197.42	5,655.44	249.66	244.48	570.65	8,723.01	18,989.99
Subtotal.....	**2,988.29**	**317.83**	**4,073.33**	**372.39**	**420.60**	**10,954.17**	**418.41**	**713.68**	**1,388.43**	**16,784.97**	**38,432.10**
Southwest											
Avaré.....	664.06	94.53	1,611.39	215.93	239.96	7,115.72	301.36	671.66	561.35	15,744.99	27,220.95
Itapetininga.....	1,944.17	26.82	911.85	61.42	33.61	3,897.78	3.51	8.93	43.69	3,827.13	10,758.91
Subtotal.....	**2,608.23**	**121.35**	**2,523.24**	**277.35**	**273.57**	**11,013.50**	**304.87**	**680.59**	**605.04**	**19,572.12**	**37,979.86**
Total.....	**15,127.60**	**821.69**	**22,996.37**	**1,618.87**	**2,201.90**	**62,780.11**	**1,567.66**	**2,939.78**	**4,955.29**	**79,395.99**	**194,405.26**
Percentage.....	**7.78**	**0.42**	**11.83**	**0.83**	**1.13**	**32.29**	**0.81**	**1.51**	**2.55**	**40.84**	**100.00**

Table 48 – Oranges: Area of groves of early varieties by sector and region [2018 inventory]

Sector and region	Early varieties						
	Hamlin	Westin	Rubi	Valencia Americana	Seleta	Pineapple	Total
	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)
North							
Triâng.Mineiro.....	4,631	198	242	287	-	4	5,362
Bebedouro.....	8,578	1,343	925	3,730	2	217	14,795
Altinópolis.....	1,591	42	184	206	-	23	2,046
Subtotal.....	**14,800**	**1,583**	**1,351**	**4,223**	**2**	**244**	**22,203**
Northwest							
Votuporanga.....	777	58	131	333	-	74	1,373
S. J. Rio Preto.....	3,831	342	857	2,575	-	145	7,750
Subtotal.....	**4,608**	**400**	**988**	**2,908**	**-**	**219**	**9,123**
Central							
Matão.....	5,891	125	612	4,221	-	544	11,393
Duartina.....	6,440	234	1,190	2,410	69	95	10,438
Brotas.....	2,476	233	61	395	-	159	3,324
Subtotal.....	**14,807**	**592**	**1,863**	**7,026**	**69**	**798**	**25,155**
South							
Porto Ferreira.....	3,238	1,113	904	834	23	8	6,120
Limeira.....	4,281	1,685	389	382	52	3	6,792
Subtotal.....	**7,519**	**2,798**	**1,293**	**1,216**	**75**	**11**	**12,912**
Southwest							
Avaré.....	6,844	867	1,642	1,613	23	112	11,101
Itapetininga.....	1,490	199	528	321	2	544	3,084
Subtotal.....	**8,334**	**1,066**	**2,170**	**1,934**	**25**	**656**	**14,185**
Total.....	**50,068**	**6,439**	**7,665**	**17,307**	**171**	**1,928**	**83,578**
Percentage.....	**59.91**	**7.70**	**9.17**	**20.71**	**0.20**	**2.31**	**20.82**

- Represents zero.

Table 49 – Oranges: Trees of early varieties by sector and region [2018 inventory]

Sector and region	Early varieties						
	Hamlin	Westin	Rubi	Valencia Americana	Seleta	Pineapple	Total
	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)
North							
Triâng.Mineiro.....	1,975.67	93.12	145.02	145.06	-	1.76	2,360.63
Bebedouro.....	3,570.16	549.54	493.15	1,750.88	0.93	106.21	6,470.87
Altinópolis.....	792.18	19.41	117.98	120.33	-	18.99	1,068.89
Subtotal.....	**6,338.01**	**662.07**	**756.15**	**2,016.27**	**0.93**	**126.96**	**9,900.39**
Northwest							
Votuporanga.....	348.94	25.71	66.06	151.84	-	19.01	611.56
S. J. Rio Preto.....	1,773.05	103.00	411.50	1,148.54	-	68.06	3,504.15
Subtotal.....	**2,121.99**	**128.71**	**477.56**	**1,300.38**	**-**	**87.07**	**4,115.71**
Central							
Matão.....	2,817.34	46.26	318.01	1,659.84	-	316.49	5,157.94
Duartina.....	2,907.44	88.12	717.29	1,280.78	39.78	44.02	5,077.43
Brotas.....	1,077.65	93.99	23.84	183.84	-	104.05	1,483.37
Subtotal.....	**6,802.43**	**228.37**	**1,059.14**	**3,124.46**	**39.78**	**464.56**	**11,718.74**
South							
Porto Ferreira.....	1,515.56	578.21	506.80	336.29	11.76	4.23	2,952.85
Limeira.....	1,903.58	735.57	199.08	193.12	21.99	1.86	3,055.20
Subtotal.....	**3,419.14**	**1,313.78**	**705.88**	**529.41**	**33.75**	**6.09**	**6,008.05**
Southwest							
Avaré.....	3,257.11	405.78	801.58	748.11	10.21	51.06	5,273.85
Itapetininga.....	784.26	103.11	337.48	234.55	0.92	404.21	1,864.53
Subtotal.....	**4,041.37**	**508.89**	**1,139.06**	**982.66**	**11.13**	**455.27**	**7,138.38**
Total.....	**22,722.94**	**2,841.82**	**4,137.79**	**7,953.18**	**85.59**	**1,139.95**	**38,881.27**
Percentage.....	**58.44**	**7.31**	**10.64**	**20.46**	**0.22**	**2.93**	**20.00**

- Represents zero.

Table 50 – Oranges: Area of groves of mid-season and late varieties by sector and region [2018 inventory]

Sector and region	Mid-season and late varieties				
	Pera Rio	Valencia	Valencia Folha Murcha	Natal	Total
	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)
North					
Triâng.Mineiro.....	8,189	8,928	330	3,672	21,119
Bebedouro.....	13,216	16,013	2,282	4,975	36,486
Altinópolis.....	3,854	4,311	388	695	9,248
Subtotal.....	**25,259**	**29,252**	**3,000**	**9,342**	**66,853**
Northwest					
Votuporanga.....	15,426	1,522	527	967	18,442
S. J. Rio Preto.....	5,564	5,063	1,439	3,324	15,390
Subtotal.....	**20,990**	**6,585**	**1,966**	**4,291**	**33,832**
Central					
Matão.....	13,242	11,257	1,498	3,566	29,563
Duartina.....	20,356	14,573	2,487	6,713	44,129
Brotas.....	5,368	7,940	581	1,640	15,529
Subtotal.....	**38,966**	**33,770**	**4,566**	**11,919**	**89,221**
South					
Porto Ferreira.....	14,377	13,169	2,178	4,696	34,420
Limeira.....	15,243	12,729	2,643	3,311	33,926
Subtotal.....	**29,620**	**25,898**	**4,821**	**8,007**	**68,346**
Southwest					
Avaré.....	14,772	18,281	1,402	8,831	43,286
Itapetininga.....	6,588	4,831	842	4,093	16,354
Subtotal.....	**21,360**	**23,112**	**2,244**	**12,924**	**59,640**
Total.....	**136,195**	**118,617**	**16,597**	**46,483**	**317,892**
Percentage.....	**42.84**	**37.31**	**5.22**	**14.62**	**79.18**

Table 51 – Oranges: Trees of mid-season and late varieties by sector and region [2018 inventory]

Sector and region	Mid-season and late varieties				
	Pera Rio	Valencia	Valencia Folha Murcha	Natal	Total
	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)
North					
Triâng.Mineiro.....	4,318.07	4,105.09	187.45	1,612.98	10,223.59
Bebedouro.....	7,318.00	6,993.01	1,112.09	2,153.52	17,576.62
Altinópolis.....	1,975.93	2,004.79	202.24	362.54	4,545.50
Subtotal.....	**13,612.00**	**13,102.89**	**1,501.78**	**4,129.04**	**32,345.71**
Northwest					
Votuporanga.....	6,801.99	707.82	268.16	438.60	8,216.57
S. J. Rio Preto.....	2,887.61	2,526.19	754.69	1,558.48	7,726.97
Subtotal.....	**9,689.60**	**3,234.01**	**1,022.85**	**1,997.08**	**15,943.54**
Central					
Matão.....	7,174.60	5,254.04	857.96	1,553.29	14,839.89
Duartina.....	10,582.01	6,808.64	1,386.69	3,059.02	21,836.36
Brotas.....	2,694.23	3,541.28	299.49	757.96	7,292.96
Subtotal.....	**20,450.84**	**15,603.96**	**2,544.14**	**5,370.27**	**43,969.21**
South					
Porto Ferreira.....	7,348.60	5,790.95	1,124.50	2,225.21	16,489.26
Limeira.....	7,582.43	5,593.87	1,261.13	1,497.36	15,934.79
Subtotal.....	**14,931.03**	**11,384.82**	**2,385.63**	**3,722.57**	**32,424.05**
Southwest					
Avaré.....	7,808.97	9,010.72	783.21	4,344.20	21,947.10
Itapetininga.....	3,542.81	2,786.38	462.31	2,102.88	8,894.38
Subtotal.....	**11,351.78**	**11,797.10**	**1,245.52**	**6,447.08**	**30,841.48**
Total.....	**70,035.25**	**55,122.78**	**8,699.92**	**21,666.04**	**155,523.99**
Percentage.....	**45.03**	**35.44**	**5.59**	**13.93**	**80.00**

Table 52 – Oranges: Area of groves by age group of plots, region and variety – North Sector [2018 inventory]

Sector and variety	Plot age				Total
	1 – 2 years[1]	3 – 5 years	6 – 10 years	Over 10 years	
	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)
TMG[2]					
Hamlin.....	14	224	786	3,607	4,631
Westin.....	-	16	93	89	198
Rubi.....	-	27	215	-	242
V.Americana[3].....	9	-	182	96	287
Seleta.....	-	-	-	-	-
Pineapple.....	-	4	-	-	4
Pera Rio	908	1,400	4,452	1,429	8,189
Valencia.....	34	1,043	3,205	4,646	8,928
V.Folha Murcha[4]	8	58	174	90	330
Natal.....	90	176	792	2,614	3,672
Subtotal.....	**1,063**	**2,948**	**9,899**	**12,571**	**26,481**
Percentage.....	**4.01**	**11.13**	**37.38**	**47.47**	**29.74**
BEB[5]					
Hamlin.....	153	200	2,397	5,828	8,578
Westin.....	254	3	310	776	1,343
Rubi.....	-	104	688	133	925
V.Americana[3].....	86	141	1,814	1,689	3,730
Seleta.....	-	2	-	-	2
Pineapple.....	10	24	74	109	217
Pera Rio	1,013	3,000	5,999	3,204	13,216
Valencia.....	465	1,382	4,549	9,617	16,013
V.Folha Murcha[4]	67	469	603	1,143	2,282
Natal.....	225	713	784	3,253	4,975
Subtotal.....	**2,273**	**6,038**	**17,218**	**25,752**	**51,281**
Percentage.....	**4.43**	**11.77**	**33.58**	**50.22**	**57.58**
ALT[7]					
Hamlin.....	6	6	266	1,313	1,591
Westin.....	-	-	22	20	42
Rubi.....	14	48	49	73	184
V.Americana[3].....	-	-	83	123	206
Seleta.....	-	-	-	-	-
Pineapple.....	-	-	23	-	23
Pera Rio	260	115	815	2,664	3,854
Valencia.....	48	5	649	3,609	4,311
V.Folha Murcha[4]	12	23	111	242	388
Natal.....	105	36	160	394	695
Subtotal.....	**445**	**233**	**2,178**	**8,438**	**11,294**
Percentage.....	**3.94**	**2.06**	**19.28**	**74.71**	**12.68**
Total.....	**3,781**	**9,219**	**29,295**	**46,761**	**89,056**

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

Table 53 – Oranges: Trees by age group, age group of plot, region and variety – North Sector [2018 inventory]

Sector and region	Plot and tree ages										Total
	Plots 1 – 2 years	Plots 3 – 5 years		Plots 6 – 10 years			Plots over 10 years				
	Trees 1 – 2 years	Trees 1 – 2 years	Trees 3 – 5 years	Trees 1 – 2 years	Trees 3 – 5 years	Trees 6 – 10 years	Trees 1 – 2 years	Trees 3 – 5 years	Trees 6 – 10 years	Trees over 10 years	
	(1,000 trees)	(1,000 trees)	(1,000 trees)	(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[1]											
Hamlin.....	10.12	0.78	131.25	0.68	7.24	419.56	10.46	35.10	16.33	1,344.15	1,975.67
Westin.....	-	0.01	7.16	0.01	0.03	49.22	1.36	3.09	0.40	31.84	93.12
Rubi.....	-	0.06	16.54	0.48	0.59	127.35	-	-	-	-	145.02
V.Americana[2].....	7.71	-	-	0.04	0.69	89.26	-	0.06	0.23	47.07	145.06
Seleta.....	-	-	-	-	-	-	-	-	-	-	-
Pineapple.....	-	0.03	1.73	-	-	-	-	-	-	-	1.76
Pera Rio	487.74	3.84	896.74	5.47	45.24	2,352.08	0.76	2.96	9.59	513.65	4,318.07
Valencia.....	25.72	2.34	589.20	3.37	17.99	1,665.61	8.75	19.85	17.51	1,754.75	4,105.09
V.Folha Murcha[3]	5.53	0.10	38.20	0.13	0.28	97.23	0.30	0.02	0.24	45.42	187.45
Natal.....	42.16	0.12	98.68	0.71	1.04	424.57	12.83	32.77	52.30	947.80	1,612.98
Subtotal.....	**578.98**	**7.28**	**1,779.50**	**10.89**	**73.10**	**5,224.88**	**34.46**	**93.85**	**96.60**	**4,684.68**	**12,584.22**
Percentage.....	**4.60**	**0.06**	**14.14**	**0.09**	**0.58**	**41.52**	**0.27**	**0.75**	**0.77**	**37.23**	**29.79**
BEB[4]											
Hamlin.....	74.82	5.98	105.74	55.79	41.60	1,062.58	32.59	122.23	154.73	1,914.10	3,570.16
Westin.....	122.93	0.11	1.60	5.27	4.07	139.45	6.50	14.52	16.14	238.95	549.54
Rubi.....	0.19	4.32	64.77	21.90	16.68	332.62	0.50	2.82	2.57	46.78	493.15
V.Americana[3].....	49.44	1.30	76.99	25.63	32.09	892.25	28.55	17.45	52.82	574.36	1,750.88
Seleta.....	-	0.02	0.91	-	-	-	-	-	-	-	0.93
Pineapple.....	5.50	0.19	15.65	1.04	1.30	36.04	1.92	2.15	3.28	39.14	106.21
Pera Rio	637.98	36.17	1,860.71	102.33	244.40	3,144.64	17.08	52.34	88.31	1,134.04	7,318.00
Valencia.....	256.64	25.17	762.67	33.65	88.31	2,103.89	52.01	168.01	262.00	3,240.66	6,993.01
V.Folha Murcha[4]	35.73	3.95	274.93	5.91	13.96	282.73	8.13	14.64	28.97	443.14	1,112.09
Natal.....	119.51	3.66	415.67	10.54	11.66	356.40	13.19	55.96	67.63	1,099.30	2,153.52
Subtotal.....	**1,302.74**	**80.87**	**3,579.64**	**262.06**	**454.07**	**8,350.60**	**160.47**	**450.12**	**676.45**	**8,730.47**	**24,047.49**
Percentage.....	**5.42**	**0.34**	**14.89**	**1.09**	**1.89**	**34.73**	**0.67**	**1.87**	**2.81**	**36.31**	**56.92**
ALT[5]											
Hamlin.....	5.46	0.69	3.22	9.92	25.59	123.52	61.17	41.44	56.33	464.84	792.18
Westin.....	-	-	-	0.01	2.11	8.88	1.96	0.36	0.29	5.80	19.41
Rubi.....	10.72	0.52	35.01	0.03	5.96	25.03	8.92	1.53	1.60	28.66	117.98
V.Americana[3].....	-	-	-	2.71	3.39	48.79	6.02	6.22	7.70	45.50	120.33
Seleta.....	-	-	-	-	-	-	-	-	-	-	-
Pineapple.....	-	-	-	0.13	1.14	17.72	-	-	-	-	18.99
Pera Rio	172.53	3.35	77.46	4.38	10.61	434.60	20.53	37.96	129.01	1,085.50	1,975.93
Valencia.....	34.01	-	3.49	10.28	29.46	302.55	26.12	84.27	101.34	1,413.27	2,004.79
V.Folha Murcha[4]	8.51	-	13.13	2.51	6.21	50.62	0.31	4.03	6.62	110.30	202.24
Natal.....	74.94	0.47	16.99	2.03	2.41	75.86	16.46	1.88	3.03	168.47	362.54
Subtotal.....	**306.17**	**5.03**	**149.30**	**32.00**	**86.88**	**1,087.57**	**141.49**	**177.69**	**305.92**	**3,322.34**	**5,614.39**
Percentage.....	**5.45**	**0.09**	**2.66**	**0.57**	**1.55**	**19.37**	**2.52**	**3.16**	**5.45**	**59.18**	**13.29**
Total.....	**2,187.89**	**93.18**	**5,508.44**	**304.95**	**614.05**	**14,663.05**	**336.42**	**721.66**	**1,078.97**	**16,737.49**	**42,246.10**

- Represents zero.
1 TMG – Triângulo Mineiro.
2 Valencia Americana.
3 Valencia Folha Murcha.
4 BEB – Bebedouro.
5 ALT – Altinópolis.

Table 54 – Oranges: Area of groves by age group of plots, region and variety –Northwest Sector [2018 inventory]

Sector and variety	Plot age				Total
	1 – 2 years[1]	3 – 5 years	6 – 10 years	Over 10 years	
	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)
VOT[2]					
Hamlin.....	-	4	392	381	777
Westin.....	-	3	13	42	58
Rubi.....	2	6	123	-	131
V.Americana[3].....	-	26	207	100	333
Seleta.....	-	-	-	-	-
Pineapple.....	-	-	74	-	74
Pera Rio	1,063	1,574	8,309	4,480	15,426
Valencia.....	-	35	938	549	1,522
V.Folha Murcha[4]	-	14	338	175	527
Natal.....	47	56	463	401	967
Subtotal.....	**1,112**	**1,718**	**10,857**	**6,128**	**19,815**
Percentage.....	**5.61**	**8.67**	**54.79**	**30.93**	**46.13**
SJO[5]					
Hamlin.....	36	179	2,462	1,154	3,831
Westin.....	3	1	22	316	342
Rubi.....	8	82	375	392	857
V.Americana[3].....	80	63	1,501	931	2,575
Seleta.....	-	-	-	-	-
Pineapple.....	-	2	72	71	145
Pera Rio	622	716	2,141	2,085	5,564
Valencia.....	468	577	2,972	1,046	5,063
V.Folha Murcha[5]	13	311	552	563	1,439
Natal.....	474	788	402	1,660	3,324
Subtotal.....	**1,704**	**2,719**	**10,499**	**8,218**	**23,140**
Percentage.....	**7.36**	**11.75**	**45.37**	**35.51**	**53.87**
Total.....	**2,816**	**4,437**	**21,356**	**14,346**	**42,955**

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

Table 55 – Oranges: Trees by age group, region and variety – Northwest Sector [2018 inventory]

Sector and variety	Plot and tree ages										Total
	Plots 1 – 2 years	Plots 3 – 5 years		Plots 6 – 10 years			Plots over 10 years				
	Trees 1 – 2 years	Trees 1 – 2 years	Trees 3 – 5 years	Trees 1 – 2 years	Trees 3 – 5 years	Trees 6 – 10 years	Trees 1 – 2 years	Trees 3 – 5 years	Trees 6 – 10 years	Trees over 10 years	
	(1,000 trees)	(1,000 trees)	(1,000 trees)	(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[1]											
Hamlin.....	-	0.01	2.35	1.68	3.71	200.16	0.16	2.31	0.48	138.08	348.94
Westin.....	-	-	1.42	-	0.02	7.36	0.02	0.28	0.06	16.55	25.71
Rubi.....	1.04	0.01	3.83	-	0.08	61.10	-	-	-	-	66.06
V.Americana[2].....	-	-	9.92	8.00	3.91	91.72	-	-	0.19	38.10	151.84
Seleta.....	-	-	-	-	-	-	-	-	-	-	-
Pineapple.....	-	-	-	0.03	0.01	18.97	-	-	-	-	19.01
Pera Rio	455.89	12.28	790.49	23.21	33.68	3,811.95	7.87	9.48	25.31	1,631.83	6,801.99
Valencia.....	-	-	14.79	1.69	8.37	477.35	-	0.13	-	205.49	707.82
V.Folha Murcha[3]	-	-	6.89	0.02	0.37	175.18	-	0.04	-	85.66	268.16
Natal.....	21.90	3.44	23.16	0.06	0.40	232.23	0.03	1.34	0.97	155.07	438.60
Subtotal.....	**478.83**	**15.74**	**852.85**	**34.69**	**50.55**	**5,076.02**	**8.08**	**13.58**	**27.01**	**2,270.78**	**8,828.13**
Percentage.....	**5.42**	**0.18**	**9.66**	**0.39**	**0.57**	**57.50**	**0.09**	**0.15**	**0.31**	**25.72**	**44.01**
SJO[4]											
Hamlin.....	22.33	2.62	135.37	20.67	13.59	1,139.31	4.01	6.52	2.30	426.33	1,773.05
Westin.....	1.78	0.03	0.29	0.32	0.22	10.96	0.30	1.83	0.60	86.67	103.00
Rubi.....	4.28	5.01	52.54	5.90	4.15	200.61	0.28	3.52	0.20	135.01	411.50
V.Americana[2].....	50.17	1.53	34.00	4.76	15.91	746.56	16.80	2.76	1.75	274.30	1,148.54
Seleta.....	-	-	-	-	-	-	-	-	-	-	-
Pineapple.....	-	0.05	1.21	0.35	0.85	35.85	2.62	0.43	0.26	26.44	68.06
Pera Rio	351.97	9.39	421.18	13.56	34.69	1,127.69	1.19	26.87	16.45	884.62	2,887.61
Valencia.....	361.91	3.33	334.20	13.29	13.12	1,393.00	0.09	1.05	2.93	403.27	2,526.19
V.Folha Murcha[3]	7.02	1.75	175.15	3.49	3.99	289.47	0.07	0.77	2.01	270.97	754.69
Natal.....	256.78	1.10	533.71	1.74	6.62	200.73	1.75	5.06	10.34	540.65	1,558.48
Subtotal.....	**1,056.24**	**24.81**	**1,687.65**	**64.08**	**93.14**	**5,144.18**	**27.11**	**48.81**	**36.84**	**3,048.26**	**11,231.12**
Percentage.....	**9.40**	**0.22**	**15.03**	**0.57**	**0.83**	**45.80**	**0.24**	**0.43**	**0.33**	**27.14**	**55.99**
Total.....	**1,535.07**	**40.55**	**2,540.50**	**98.77**	**143.69**	**10,220.20**	**35.19**	**62.39**	**63.85**	**5,319.04**	**20,059.25**

- Represents zero.
1 VOT – Votuporanga.
2 V.Americana – Valencia Americana.
3 V.Folha Murcha – Valencia Folha Murcha.
4 SJO – São José do Rio Preto.

Table 56 – Oranges: Area of groves by age group of plots, region and variety – Central Sector [2018 inventory]

Sector and variety	Plot age				Total
	1 – 2 years[1]	3 – 5 years	6 – 10 years	Over 10 years	
	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)
MAT[2]					
Hamlin.....	677	117	1,997	3,100	5,891
Westin.....	-	9	32	84	125
Rubi.....	3	11	584	14	612
V.Americana[3].....	313	13	931	2,964	4,221
Seleta.....	-	-	-	-	-
Pineapple.....	31	210	303	-	544
Pera Rio	1,124	3,404	4,287	4,427	13,242
Valencia.....	409	1,193	4,059	5,596	11,257
V.Folha Murcha[4]	5	680	406	407	1,498
Natal.....	394	431	462	2,279	3,566
Subtotal.....	**2,956**	**6,068**	**13,061**	**18,871**	**40,956**
Percentage.....	**7.22**	**14.82**	**31.89**	**46.08**	**35.81**
DUA[5]					
Hamlin.....	474	325	1,796	3,845	6,440
Westin.....	24	6	35	169	234
Rubi.....	259	68	729	134	1,190
V.Americana[3].....	390	445	649	926	2,410
Seleta.....	-	2	67	-	69
Pineapple.....	-	-	38	57	95
Pera Rio	1,915	2,565	6,159	9,717	20,356
Valencia.....	917	1,332	3,066	9,258	14,573
V.Folha Murcha[4]	158	363	653	1,313	2,487
Natal.....	436	652	1,223	4,402	6,713
Subtotal.....	**4,573**	**5,758**	**14,415**	**29,821**	**54,567**
Percentage.....	**8.38**	**10.55**	**26.42**	**54.65**	**47.71**
BRO[6]					
Hamlin.....	12	12	812	1,640	2,476
Westin.....	10	8	31	184	233
Rubi.....	-	1	4	56	61
V.Americana[3].....	29	-	140	226	395
Seleta.....	-	-	-	-	-
Pineapple.....	-	152	7	-	159
Pera Rio	427	976	1,030	2,935	5,368
Valencia.....	128	141	1,119	6,552	7,940
V.Folha Murcha[4]	29	45	182	325	581
Natal.....	72	133	296	1,139	1,640
Subtotal.....	**707**	**1,468**	**3,621**	**13,057**	**18,853**
Percentage.....	**3.75**	**7.79**	**19.21**	**69.26**	**16.48**
Total.....	**8,236**	**13,294**	**31,097**	**61,749**	**114,376**

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

Table 57 – Oranges: Trees by age group, age group of plot, region and variety – Central Sector [2018 inventory]

Sector and variety	Plot and tree ages										Total
	Plots 1 – 2 years	Plots 3 – 5 years		Plots 6 – 10 years			Plots Over 10 years				
	Trees 1 – 2 years	Trees 1 – 2 years	Trees 3 – 5 years	Trees 1 – 2 years	Trees 3 – 5 years	Trees 6 – 10 years	Trees 1 – 2 years	Trees 3 – 5 years	Trees 6 – 10 years	Trees over 10 years	
	(1,000 trees)	(1,000 trees)	(1,000 trees)	(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[1]											
Hamlin.....	551.84	4.97	56.61	12.22	29.86	1,048.02	53.63	56.90	59.85	943.44	2,817.34
Westin.....	-	0.38	4.38	0.14	0.40	13.55	1.79	1.14	1.38	23.10	46.26
Rubi.....	1.23	0.49	5.59	4.54	5.36	296.06	0.31	0.19	0.24	4.00	318.01
V.Americana[2].....	291.33	0.02	8.56	6.88	14.60	483.56	28.72	36.65	11.26	778.26	1,659.84
Seleta.....	-	-	-	-	-	-	-	-	-	-	-
Pineapple.....	31.13	0.83	119.15	2.16	0.68	162.54	-	-	-	-	316.49
Pera Rio	861.04	41.78		54.04	90.05	2,197.12	3.08	20.80	89.53	1,506.05	7,174.60
Valencia.....	298.36	8.96	697.99	58.84	38.82	2,138.29	29.40	99.67	204.91	1,678.80	5,254.04
V.Folha Murcha[3]	3.33	2.17	433.11	9.42	4.94	253.07	2.11	6.97	12.95	129.89	857.96
Natal.....	334.88	6.00	274.55	-	1.96	245.41	12.68	13.47	71.33	593.01	1,553.29
Subtotal.....	**2,373.14**	**65.60**	**3,911.05**	**148.24**	**186.67**	**6,837.62**	**131.72**	**235.79**	**451.45**	**5,656.55**	**19,997.83**
Percentage.....	**11.87**	**0.33**	**19.56**	**0.74**	**0.93**	**34.19**	**0.66**	**1.18**	**2.26**	**28.29**	**35.91**
DUA[4]											
Hamlin.....	319.54	5.24	189.29	41.48	114.09	807.08	33.33	56.24	75.85	1,265.30	2,907.44
Westin.....	11.45	0.02	3.26	0.75	0.67	13.56	0.77	0.21	1.72	55.71	88.12
Rubi.....	205.16	0.21	39.86	20.76	18.61	377.75	0.72	0.19	1.62	52.41	717.29
V.Americana[2].....	263.20	17.85	274.86	13.95	5.65	318.51	7.26	7.89	18.46	353.15	1,280.78
Seleta.....	-	0.07	1.21	1.42	0.58	36.50	-	-	-	-	39.78
Pineapple.....	-	-	-	0.86	0.35	22.17	0.32	0.25	0.78	19.29	44.02
Pera Rio	1,228.71	35.10	1,559.02	90.91	167.36	3,240.49	52.45	101.75	135.13	3,971.09	10,582.01
Valencia.....	600.85	83.94	811.68	73.41	88.81	1,504.33	114.89	157.78	142.61	3,230.34	6,808.64
V.Folha Murcha[4]	95.27	25.54	221.27	21.09	12.67	372.89	19.94	12.42	18.11	587.49	1,386.69
Natal.....	258.71	1.13	392.77	68.04	28.37	593.87	38.29	68.71	82.43	1,526.70	3,059.02
Subtotal.....	**2,982.89**	**169.10**	**3,493.22**	**332.67**	**437.16**	**7,287.15**	**267.97**	**405.44**	**476.71**	**11,061.48**	**26,913.79**
Percentage.....	**11.08**	**0.63**	**12.98**	**1.24**	**1.62**	**27.08**	**1.00**	**1.51**	**1.77**	**41.10**	**48.33**
BRO[5]											
Hamlin.....	7.97	0.21	7.66	17.29	25.73	386.77	5.56	22.43	83.96	520.07	1,077.65
Westin.....	6.11	0.11	4.17	-	0.42	15.81	0.07	0.33	7.88	59.09	93.99
Rubi.....	-	0.02	0.63	-	0.04	1.55	0.01	0.10	2.59	18.90	23.84
V.Americana[2].....	17.57	-	-	4.32	2.22	65.67	0.40	3.51	18.03	72.12	183.84
Seleta.....	-	-	-	-	-	-	-	-	-	-	-
Pineapple.....	-	2.10	98.44	-	0.08	3.43	-	-	-	-	104.05
Pera Rio	267.83	8.26	626.65	23.85	54.22	484.58	6.34	19.72	195.30	1,007.48	2,694.23
Valencia.....	85.42	2.14	91.09	20.61	37.87	608.56	57.54	67.84	439.51	2,130.70	3,541.28
V.Folha Murcha[4]	18.79	0.35	34.34	2.27	4.26	102.71	2.94	2.73	22.08	109.02	299.49
Natal.....	48.40	0.89	83.61	16.16	1.32	135.34	0.22	3.57	121.49	346.96	757.96
Subtotal.....	**452.09**	**14.08**	**946.59**	**84.50**	**126.16**	**1,804.42**	**73.08**	**120.23**	**890.84**	**4,264.34**	**8,776.33**
Percentage.....	**5.15**	**0.16**	**10.79**	**0.96**	**1.44**	**20.56**	**0.83**	**1.37**	**10.15**	**48.59**	**15.76**
Total.....	**5,808.12**	**248.78**	**8,350.86**	**565.41**	**749.99**	**15,929.19**	**472.77**	**761.46**	**1,819.00**	**20,982.37**	**55,687.95**

- Represents zero.
1 MAT – Matão.
2 Valencia Americana.
3 Valencia Folha Murcha.
4 DUA – Duartina.
5 BRO – Brotas.

Table 58 – Oranges: Area of groves by age group, region and variety – South Sector [2018 inventory]

Sector and variety	Plot age				Total
	1 – 2 years[1]	3 – 5 years	6 – 10 years	Over 10 years	
	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)
PFE[2]					
Hamlin.....	91	58	880	2,209	3,238
Westin.....	36	90	438	549	1,113
Rubi.....	268	101	340	195	904
V.Americana[3].....	1	11	180	642	834
Seleta.....	-	-	23	-	23
Pineapple.....	-	-	8	-	8
Pera Rio	1,437	1,575	4,144	7,221	14,377
Valencia.....	389	586	2,662	9,532	13,169
V.Folha Murcha[4]	108	459	426	1,185	2,178
Natal.....	259	828	734	2,875	4,696
Subtotal.....	**2,589**	**3,708**	**9,835**	**24,408**	**40,540**
Percentage.....	**6.39**	**9.15**	**24.26**	**60.21**	**49.89**
LIM[5]					
Hamlin.....	147	89	851	3,194	4,281
Westin.....	100	73	649	863	1,685
Rubi.....	131	47	131	80	389
V.Americana[3].....	6	3	146	227	382
Seleta.....	-	-	4	48	52
Pineapple.....	-	-	-	3	3
Pera Rio	1,122	1,559	5,429	7,133	15,243
Valencia.....	368	491	2,639	9,231	12,729
V.Folha Murcha[4]	198	255	959	1,231	2,643
Natal.....	139	460	755	1,957	3,311
Subtotal.....	**2,211**	**2,977**	**11,563**	**23,967**	**40,718**
Percentage.....	**5.43**	**7.31**	**28.40**	**58.86**	**50.11**
Total.....	**4,800**	**6,685**	**21,398**	**48,375**	**81,258**

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

Table 59 – Oranges: Trees of groves by age group of plots, region and variety – South Sector [2018 inventory]

Sector and variety	Plot and tree ages										Total
	Plots 1 – 2 years	Plots 3 – 5 years		Plots 6 – 10 years			Plots over 10 years				
	Trees 1 – 2 years	Trees 1 – 2 years	Trees 3 – 5 years	Trees 1 – 2 years	Trees 3 – 5 years	Trees 6 – 10 years	Trees 1 – 2 years	Trees 3 – 5 years	Trees 6 – 10 years	Trees over 10 years	
	(1,000 trees)	(1,000 trees)	(1,000 trees)	(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[1]											
Hamlin.....	53.40	3.50	40.07	1.46	27.73	485.17	11.25	72.50	110.22	710.26	1,515.56
Westin.....	21.93	5.18	59.31	0.75	14.42	252.25	1.03	7.65	28.03	187.66	578.21
Rubi.....	150.99	5.54	63.49	0.54	9.52	206.11	2.88	22.27	16.81	28.65	506.80
V.Americana[2].....	1.16	0.26	8.04	0.04	8.85	96.52	1.97	8.48	21.66	189.31	336.29
Seleta.....	-	-	-	-	0.72	11.04	-	-	-	-	11.76
Pineapple.....	-	-	-	0.14	0.36	3.73	-	-	-	-	4.23
Pera Rio	968.82	60.76	1,034.98	112.16	80.74	2,159.02	84.33	180.21	271.85	2,395.73	7,348.60
Valencia.....	245.31	13.94	393.42	39.15	64.18	1,403.74	42.01	113.19	231.68	3,244.33	5,790.95
V.Folha Murcha[3]	65.44	11.06	313.70	6.00	12.76	239.09	6.19	12.67	30.70	426.89	1,124.50
Natal.....	187.05	50.64	478.94	5.34	3.90	442.06	19.09	52.23	106.83	879.13	2,225.21
Subtotal.....	**1,694.10**	**150.88**	**2,391.95**	**165.58**	**223.18**	**5,298.73**	**168.75**	**469.20**	**817.78**	**8,061.96**	**19,442.11**
Percentage.....	**8.71**	**0.78**	**12.30**	**0.85**	**1.15**	**27.25**	**0.87**	**2.41**	**4.21**	**41.47**	**50.59**
LIM[4]											
Hamlin.....	62.83	3.69	58.61	9.59	10.85	401.98	56.71	51.54	129.75	1,118.03	1,903.58
Westin.....	40.20	3.71	50.24	6.96	7.86	282.91	11.85	8.32	31.87	291.65	735.57
Rubi.....	56.48	2.69	36.57	1.64	1.87	67.53	1.07	1.30	2.89	27.04	199.08
V.Americana[2].....	3.61	0.07	2.03	0.67	3.83	63.19	9.94	5.44	2.08	102.26	193.12
Seleta.....	-	-	-	0.02	0.13	2.13	1.38	1.91	0.41	16.01	21.99
Pineapple.....	-	-	-	-	-	-	0.22	0.10	0.05	1.49	1.86
Pera Rio	719.90	115.69	897.94	137.06	113.98	2,709.68	104.08	51.01	133.25	2,599.84	7,582.43
Valencia.....	192.85	8.75	257.22	32.26	39.40	1,299.83	53.66	107.86	224.06	3,377.98	5,593.87
V.Folha Murcha[3]	120.09	6.28	141.73	10.24	14.72	452.20	6.16	8.55	25.95	475.21	1,261.13
Natal.....	98.23	26.07	237.04	8.37	4.78	375.99	4.59	8.45	20.34	713.50	1,497.36
Subtotal.....	**1,294.19**	**166.95**	**1,681.38**	**206.81**	**197.42**	**5,655.44**	**249.66**	**244.48**	**570.65**	**8,723.01**	**18,989.99**
Percentage.....	**6.82**	**0.88**	**8.85**	**1.09**	**1.04**	**29.78**	**1.31**	**1.29**	**3.01**	**45.93**	**49.41**
Total.....	**2,988.29**	**317.83**	**4,073.33**	**372.39**	**420.60**	**10,954.17**	**418.41**	**713.68**	**1,388.43**	**16,784.97**	**38,432.10**

- Represents zero.
1 PFE – Porto Ferreira.
2 V.Americana – Valencia Americana.
3 V.Folha Murcha – Valencia Folha Murcha.
4 LIM – Limeira.

Table 60 – Oranges: Area of groves by age group of plots, region and variety – Southwest Sector [2018 inventory]

Sector and variety	Plot age				Total
	1 – 2 years[1]	3 – 5 years	6 – 10 years	Over 10 years	
	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)
AVA[2]					
Hamlin.....	104	156	1,113	5,471	6,844
Westin.....	5	2	401	459	867
Rubi.....	39	34	507	1,062	1,642
V.Americana[3].....	139	49	318	1,107	1,613
Seleta.....	-	-	-	23	23
Pineapple.....	-	-	-	112	112
Pera Rio	327	933	4,611	8,901	14,772
Valencia.....	242	620	3,388	14,031	18,281
V.Folha Murcha[4]	74	153	731	444	1,402
Natal.....	62	537	2,373	5,859	8,831
Subtotal.....	**992**	**2,484**	**13,442**	**37,469**	**54,387**
Percentage.....	**1.82**	**4.57**	**24.72**	**68.89**	**73.67**
ITG[5]					
Hamlin.....	219	1	300	970	1,490
Westin.....	27	-	96	76	199
Rubi.....	186	65	187	90	528
V.Americana[3].....	78	112	113	18	321
Seleta.....	-	-	-	2	2
Pineapple.....	131	7	389	17	544
Pera Rio	1,057	704	1,959	2,868	6,588
Valencia.....	379	216	2,109	2,127	4,831
V.Folha Murcha[4]	58	4	511	269	842
Natal.....	287	244	986	2,576	4,093
Subtotal.....	**2,422**	**1,353**	**6,650**	**9,013**	**19,438**
Percentage.....	**12.46**	**6.96**	**34.21**	**46.37**	**26.33**
Total.....	**3,414**	**3,837**	**20,092**	**46,482**	**73,825**

- Represents zero.
1 Area of young orange groves.
2 AVA – Avaré.
3 V.Americana – Valencia Americana.
4 V.Folha Murcha – Valencia Folha Murcha.
5 ITG – Itapetininga.

Table 61 – Oranges: Trees by age group, age group of plot, region and variety – Southwest Sector [2018 inventory]

Sector and variety	Plot and tree ages										Total
	Plots 1 – 2 years	Plots 3 – 5 years		Plots 6 – 10 years			Plots over 10 years				
	Trees 1 – 2 years	Trees 1 – 2 years	Trees 3 – 5 years	Trees 1 – 2 years	Trees 3 – 5 years	Trees 6 – 10 years	Trees 1 – 2 years	Trees 3 – 5 years	Trees 6 – 10 years	Trees Over 10 years	
	(1,000 trees)	(1,000 trees)	(1,000 trees)	(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[1]											
Hamlin.....	58.63	1.45	103.90	61.39	35.32	549.34	75.46	121.44	122.47	2,127.71	3,257.11
Westin.....	3.30	0.01	1.18	16.61	7.34	193.52	4.67	3.20	3.52	172.43	405.78
Rubi.....	23.40	0.72	23.81	25.04	15.60	241.79	8.00	8.60	2.97	451.65	801.58
V.Americana[2].....	80.19	0.01	32.56	1.29	2.98	183.63	20.82	3.84	11.25	411.54	748.11
Seleta.....	-	-	-	-	-	-	1.00	0.05	0.30	8.86	10.21
Pineapple.....	-	-	-	-	-	-	1.67	0.13	4.39	44.87	51.06
Pera Rio	200.00	10.56	651.30	45.80	77.63	2,451.72	48.92	156.14	165.85	4,001.05	7,808.97
Valencia.....	201.22	10.18	405.94	39.96	70.34	1,834.60	99.35	251.91	156.81	5,940.41	9,010.72
V.Folha Murcha[3]	51.37	2.58	100.08	11.82	18.59	415.21	2.88	6.60	5.12	168.96	783.21
Natal.....	45.95	69.02	292.62	14.02	12.16	1,245.91	38.59	119.75	88.67	2,417.51	4,344.20
Subtotal.....	**664.06**	**94.53**	**1,611.39**	**215.93**	**239.96**	**7,115.72**	**301.36**	**671.66**	**561.35**	**15,744.99**	**27,220.95**
Percentage.....	**2.44**	**0.35**	**5.92**	**0.79**	**0.88**	**26.14**	**1.11**	**2.47**	**2.06**	**57.84**	**71.67**
ITG[4]											
Hamlin.....	217.42	0.01	0.47	22.14	-	149.73	-	0.90	19.05	374.54	784.26
Westin.....	22.69	0.01	0.38	8.05	-	41.43	-	0.18	3.56	26.81	103.11
Rubi.....	145.35	0.13	47.45	11.18	0.66	95.15	-	0.13	2.85	34.58	337.48
V.Americana[2].....	68.27	2.17	86.88	-	-	68.11	-	-	-	9.12	234.55
Seleta.....	-	-	-	-	-	-	-	-	-	0.92	0.92
Pineapple.....	119.59	-	5.23	-	4.30	270.56	-	-	-	4.53	404.21
Pera Rio	792.25	11.11	483.85	6.54	11.33	1,158.53	0.24	5.91	10.54	1,062.51	3,542.81
Valencia.....	322.93	2.68	126.83	6.28	11.01	1,254.50	2.77	1.16	4.48	1,053.74	2,786.38
V.Folha Murcha[3]	42.82	0.09	2.48	2.82	1.75	286.32	0.50	0.19	0.78	124.56	462.31
Natal.....	212.85	10.62	158.28	4.41	4.56	573.45	-	0.46	2.43	1,135.82	2,102.88
Subtotal.....	**1,944.17**	**26.82**	**911.85**	**61.42**	**33.61**	**3,897.78**	**3.51**	**8.93**	**43.69**	**3,827.13**	**10,758.91**
Percentage.....	**18.07**	**0.25**	**8.48**	**0.57**	**0.31**	**36.23**	**0.03**	**0.08**	**0.41**	**35.57**	**28.33**
Total.....	**2,608.23**	**121.35**	**2,523.24**	**277.35**	**273.57**	**11,013.50**	**304.87**	**680.59**	**605.04**	**19,572.12**	**37,979.86**

- Represents zero.
1 AVA – Avaré.
2 V.Americana – Valencia Americana.
3 V.Folha Murcha – Valencia Folha Murcha.
4 ITG – Itapetininga.

Table 62 – Oranges: Area of groves by sector and variety [2018 inventory]

Variety	Sector					Total	Percentage of the variety group	Percentage of total
	North	Northwest	Central	South	Southwest			
	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)	(%)	(%)
Early								
Hamlin.....	14,800	4,608	14,807	7,519	8,334	50,068	59.91	12.47
Westin.....	1,583	400	592	2,798	1,066	6,439	7.70	1.60
Rubi.....	1,351	988	1,863	1,293	2,170	7,665	9.17	1.91
Valencia Americana.....	4,223	2,908	7,026	1,216	1,934	17,307	20.71	4.31
Seleta.....	2	-	69	75	25	171	0.20	0.04
Pineapple.....	244	219	798	11	656	1,928	2.31	0.48
Subtotal.....	**22,203**	**9,123**	**25,155**	**12,912**	**14,185**	**83,578**	**100.00**	**20.82**
Mid-season								
Pera Rio	25,259	20,990	38,966	29,620	21,360	136,195	100.00	33.92
Subtotal.....	**25,259**	**20,990**	**38,966**	**29,620**	**21,360**	**136,195**	**100.00**	**33.92**
Late								
Valencia.....	29,252	6,585	33,770	25,898	23,112	118,617	65.28	29.55
V.Folha Murcha[1].....	3,000	1,966	4,566	4,821	2,244	16,597	9.13	4.13
Natal.....	9,342	4,291	11,919	8,007	12,924	46,483	25.58	11.58
Subtotal.....	**41,594**	**12,842**	**50,255**	**38,726**	**38,280**	**181,697**	**100.00**	**45.26**
Total.....	**89,056**	**42,955**	**114,376**	**81,258**	**73,825**	**401,470**	**(X)**	**100.00**
Percentage.....	**22.18**	**10.70**	**28.49**	**20.24**	**18.39**	**100.00**	**(X)**	**(X)**

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

Table 63 – Oranges: Trees by sector and variety [2018 inventory]

Variety	Sector					Total	Percentage of the variety group	Percentage of total
	North	Northwest	Central	South	Southwest			
	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(%)	(%)
Early								
Hamlin.....	6,338.01	2,121.99	6,802.43	3,419.14	4,041.37	22,722.94	58.44	11.69
Westin.....	662.07	128.71	228.37	1,313.78	508.89	2,841.82	7.31	1.46
Rubi.....	756.15	477.56	1,059.14	705.88	1,139.06	4,137.79	10.64	2.13
Valencia Americana.....	2,016.27	1,300.38	3,124.46	529.41	982.66	7,953.18	20.46	4.09
Seleta.....	0.93	-	39.78	33.75	11.13	85.59	0.22	0.04
Pineapple.....	126.96	87.07	464.56	6.09	455.27	1,139.95	2.93	0.59
Subtotal.....	**9,900.39**	**4,115.71**	**11,718.74**	**6,008.05**	**7,138.38**	**38,881.27**	**100.00**	**20.00**
Mid-season								
Pera Rio	13,612.00	9,689.60	20,450.84	14,931.03	11,351.78	70,035.25	100.00	36.03
Subtotal.....	**13,612.00**	**9,689.60**	**20,450.84**	**14,931.03**	**11,351.78**	**70,035.25**	**100.00**	**36.03**
Late								
Valencia.....	13,102.89	3,234.01	15,603.96	11,384.82	11,797.10	55,122.78	64.48	28.35
V.Folha Murcha[1].....	1,501.78	1,022.85	2,544.14	2,385.63	1,245.52	8,699.92	10.18	4.48
Natal.....	4,129.04	1,997.08	5,370.27	3,722.57	6,447.08	21,666.04	25.34	11.14
Subtotal.....	**18,733.71**	**6,253.94**	**23,518.37**	**17,493.02**	**19,489.70**	**85,488.74**	**100.00**	**43.97**
Total.....	**42,246.10**	**20,059.25**	**55,687.95**	**38,432.10**	**37,979.86**	**194,405.26**	**(X)**	**100.00**
Percentage.....	**21.73**	**10.32**	**28.65**	**19.77**	**19.54**	**100.00**	**(X)**	**(X)**

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

Table 64 – Oranges: Area of groves by planting year [2015 and 2018 inventories and accumulated variation]

Planting year[1]	2015 inventory[2]	2018 inventory[2]	Accumulated variation[3]	
	(hectares)	(hectares)	(hectares)	(percentage)
1979 and previous years	1,591	1,656	65	4.09
1980	177	130	-47	-26.55
1981	131	152	21	16.03
1982	191	162	-29	-15.18
1983	547	676	129	23.58
1984	264	237	-27	-10.23
1985	2,395	1,017	-1,378	-57.54
1986	2,325	1,485	-840	-36.13
1987	1,542	1,094	-448	-29.05
1988	1,558	922	-636	-40.82
1989	3,093	1,815	-1,278	-41.32
1990	5,337	2,891	-2,446	-45.83
1991	4,585	2,645	-1,940	-42.31
1992	3,750	2,562	-1,188	-31.68
1993	4,888	3,355	-1,533	-31.36
1994	4,436	2,292	-2,144	-48.33
1995	4,652	2,998	-1,654	-35.55
1996	4,069	3,093	-976	-23.99
1997	5,766	5,035	-731	-12.68
1998	8,723	5,616	-3,107	-35.62
1999	9,701	6,598	-3,103	-31.99
2000	15,460	10,208	-5,252	-33.97
2001	11,844	10,497	-1,347	-11.37
2002	18,586	15,331	-3,255	-17.51
2003	22,693	20,569	-2,124	-9.36
2004	28,064	22,598	-5,466	-19.48
2005	29,891	29,503	-388	-1.30
2006	32,997	26,748	-6,249	-18.94
2007	37,050	35,828	-1,222	-3.30
2008	40,333	35,004	-5,329	-13.21
2009	28,210	24,379	-3,831	-13.58
2010	22,840	20,562	-2,278	-9.97
2011	22,498	19,252	-3,246	-14.43
2012	23,305	24,041	736	3.16
2013[4]	(X)	17,019	-755	-4.25
2014[4]	(X)	8,703	-653	-6.98
2015	NA	11,750	(X)	(X)
Mature groves	**403,492**	**378,423**	**-25,069**	**-6.21**
2013[4]	17,774	(X)	-755	-4.25
2014[4]	9,356	(X)	-653	-6.98
2016	NA	10,946	(X)	(X)
2017	NA	12,101	(X)	(X)
Young groves	**27,130**	**23,047**	**-4,083**	**-15.05**
Total	**430,622**	**401,470**	**-29,152**	**-6.77**

(X) Not applicable.

NA Not available, considering the 2015, 2016 and 2017 plantings occurred after the mapping for the 2015 inventory.

[1] Information per planting year considers the year the original plot was planted and refers to remaining groves at the time data were collected to take inventory. Therefore, information does not depict the totality of groves established in such years, since eradication and renovation occurred along time.

[2] Snapshot of groves in March of the year the inventory is published.

[3] Estimate of eradicated and abandoned groves from October 2014 to March 2018.

[4] Groves planted in 2013 and 2014 belonged to the group of young groves in the 2015 inventory and moved to the group of mature groves in this 2018 inventory.

Table 65 – Oranges: Trees by planting year [2015 and 2018 inventories and accumulated variation]

Planting year[1]	2015 inventory[2]	2018 inventory[2]	Accumulated variation[3]	
	(1,000 trees)	(1,000 trees)	(1,000 trees)	(percentage)
1979 and previous years.....	450.71	350.96	-99.75	-22.13
1980.....	59.16	36.71	-22.45	-37.95
1981.....	42.21	42.98	0.77	1.82
1982.....	67.16	57.12	-10.04	-14.95
1983.....	162.49	184.85	22.36	13.76
1984.....	78.24	59.21	-19.03	-24.32
1985.....	573.87	247.55	-326.32	-56.86
1986.....	663.27	411.97	-251.30	-37.89
1987.....	486.71	316.38	-170.33	-35.00
1988.....	474.71	268.93	-205.78	-43.35
1989.....	960.86	549.49	-411.37	-42.81
1990.....	1,682.88	910.80	-772.08	-45.88
1991.....	1,425.69	774.32	-651.37	-45.69
1992.....	1,235.23	779.40	-455.83	-36.90
1993.....	1,567.64	960.97	-606.67	-38.70
1994.....	1,485.40	706.80	-778.60	-52.42
1995.....	1,721.15	1,109.56	-611.59	-35.53
1996.....	1,417.44	1,060.47	-356.97	-25.18
1997.....	2,078.84	1,682.06	-396.78	-19.09
1998.....	3,169.90	1,924.41	-1,245.49	-39.29
1999.....	3,367.30	2,132.14	-1,235.16	-36.68
2000.....	5,273.02	3,298.30	-1,974.72	-37.45
2001.....	4,311.43	3,660.14	-651.29	-15.11
2002.....	6,411.57	5,363.03	-1,048.54	-16.35
2003.....	8,391.43	7,300.13	-1,091.30	-13.00
2004.....	10,746.29	8,179.32	-2,566.97	-23.89
2005.....	12,925.17	11,369.03	-1,556.14	-12.04
2006.....	14,575.50	10,631.59	-3,943.91	-27.06
2007.....	17,392.03	15,027.37	-2,364.66	-13.60
2008.....	19,493.31	17,075.24	-2,418.07	-12.40
2009.....	13,734.37	11,810.95	-1,923.42	-14.00
2010.....	12,195.31	10,600.37	-1,594.94	-13.08
2011.....	12,458.29	10,332.29	-2,126.00	-17.06
2012.....	13,047.36	12,961.26	-86.10	-0.66
2013[3].....	11,154.47	10,255.73	-898.74	-8.06
2014[3].....	5,983.45	5,448.35	-535.10	-8.94
2015.....	(X)	7,292.29	(X)	(X)
6 to 10 years old resets[4].....	(X)	4,955.29	(X)	(X)
3 to 5 years old resets[4].....	(X)	5,141.68	(X)	(X)
Bearing trees.....	**191,263.80**	**175,269.44**	**-15,994.36**	**-8.36**
0 a 2 years old resets[4].....	6,595.38	4,008.22	-2,587.16	-39.23
2016.....	NA	7,050.06	(X)	(X)
2017.....	NA	8,077.54	(X)	(X)
Non-bearing trees.....	**6,595.38**	**19,135.82**	**12,540.44**	**190.14**
Total.....	**197,859.18**	**194,405.26**	**-3,453.92**	**-1.75**

(X) Not applicable because the categorization method that allows the estimation of the planting year of bearing resets in mature groves was implemented in 2017.

NA Not available, considering the 2015, 2016 and 2017 plantings occurred after the mapping for the 2015 inventory.

[1] Information per planting year considers the year the original plot was planted and refers to remaining groves at the time data were collected to take inventory. Therefore, information does not depict the totality of groves established in such years, since eradication and renovation occurred along time.

[2] Snapshot of groves in March of the year the inventory is published.

[3] Groves planted in 2013 and 2014 belonged to the group of young groves in the 2015 inventory and moved to the group of mature groves in this 2018 inventory.

[4] Trees from resettings after the original plot was planted were estimated at their respective ages.

Table 66 – Oranges: Area of groves by sector and planting year [2018 inventory]

Planting year[1]	Sector					Total
	North	Northwest	Central	South	Southwest	
	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)
1979 and previous years.....	286	6	107	1,227	30	1.656
1980.....	42	11	-	77	-	130
1981.....	59	-	-	43	50	152
1982.....	17	-	-	145	-	162
1983.....	282	-	258	136	-	676
1984.....	50	8	3	155	21	237
1985.....	244	76	280	400	17	1.017
1986.....	156	492	88	704	45	1.485
1987.....	108	42	-	695	249	1.094
1988.....	30	100	402	350	40	922
1989.....	83	263	446	649	374	1.815
1990.....	326	58	1,064	978	465	2.891
1991.....	121	37	429	1,048	1,010	2.645
1992.....	451	33	167	703	1,208	2.562
1993.....	221	85	936	517	1,596	3.355
1994.....	153	124	438	632	945	2.292
1995.....	404	120	678	1,063	733	2.998
1996.....	312	80	1,118	930	653	3.093
1997.....	699	32	1,821	1,137	1,346	5.035
1998.....	910	133	2,376	1,608	589	5.616
1999.....	2,509	89	1,491	1,568	941	6.598
2000.....	3,355	216	2,866	2,757	1,014	10.208
2001.....	2,679	1,303	2,553	2,926	1,036	10.497
2002.....	2,205	785	5,513	4,074	2,754	15.331
2003.....	5,063	939	5,911	3,803	4,853	20.569
2004.....	5,472	2,033	5,860	4,152	5,081	22.598
2005.....	6,291	1,511	9,308	5,404	6,989	29.503
2006.....	6,100	2,541	6,569	4,617	6,921	26.748
2007.....	8,133	3,229	11,067	5,877	7,522	35.828
2008.....	6,814	5,956	8,531	4,752	8,951	35.004
2009.....	6,272	3,996	6,156	4,015	3,940	24.379
2010.....	5,446	3,117	4,749	4,750	2,500	20.562
2011.....	4,498	4,080	4,863	3,537	2,274	19.252
2012.....	6,265	4,207	6,798	4,344	2,427	24.041
2013.....	5,024	1,710	6,546	2,195	1,544	17.019
2014.....	1,812	933	3,563	1,343	1,052	8.703
2015.....	2,383	1,794	3,185	3,147	1,241	11.750
Mature groves.....	**85,275**	**40,139**	**106,140**	**76,458**	**70,411**	**378.423**
2016.....	2,219	1,823	2,940	2,693	1,271	10.946
2017.....	1,562	993	5,296	2,107	2,143	12.101
Young groves.....	**3,781**	**2,816**	**8,236**	**4,800**	**3,414**	**23.047**
Total.....	**89,056**	**42,955**	**114,376**	**81,258**	**73,825**	**401.470**
Percentage.....	**22.18**	**10.70**	**28.49**	**20.24**	**18.39**	**100.00**

- Represents zero.

[1] Information per planting year considers the year the original plot was planted and refers to remaining groves at the time data were collected to take inventory. Therefore, information does not depict the totality of groves established in such years, since eradication and renovation occurred along time.

Table 67 – Oranges: Trees by sector and planting year [2018 inventory]

Planting year[1]	Sector					Total
	North	Northwest	Central	South	Southwest	
	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)
1979 and previous years	76.09	2.17	16.42	247.44	8.84	350.96
1980	13.86	2.75	-	20.10	-	36.71
1981	15.56	-	-	5.93	21.49	42.98
1982	5.53	-	-	51.59	-	57.12
1983	61.82	-	83.67	39.36	-	184.85
1984	12.19	3.72	0.94	37.19	5.17	59.21
1985	42.51	30.93	77.61	91.46	5.04	247.55
1986	38.77	157.60	26.93	176.26	12.41	411.97
1987	23.04	17.80	-	173.13	102.41	316.38
1988	10.99	47.74	105.02	93.38	11.80	268.93
1989	18.95	88.74	126.80	205.44	109.56	549.49
1990	110.00	19.45	327.68	302.53	151.14	910.80
1991	37.14	16.19	127.77	311.32	281.90	774.32
1992	133.07	9.33	45.24	219.35	372.41	779.40
1993	65.75	29.38	186.24	180.44	499.16	960.97
1994	43.98	49.02	117.12	185.97	310.71	706.80
1995	150.87	43.12	232.56	361.72	321.29	1,109.56
1996	97.01	30.14	355.46	320.35	257.51	1,060.47
1997	243.94	11.32	517.03	379.06	530.71	1,682.06
1998	290.15	45.27	817.16	554.56	217.27	1,924.41
1999	775.78	35.09	459.77	503.60	357.90	2,132.14
2000	1,039.67	65.07	852.83	961.90	378.83	3,298.30
2001	942.87	364.98	829.97	1,035.54	486.78	3,660.14
2002	736.12	280.91	1,755.58	1,458.52	1,131.90	5,363.03
2003	1,871.26	338.25	1,813.66	1,366.56	1,910.40	7,300.13
2004	1,917.68	676.99	2,042.58	1,515.09	2,026.98	8,179.32
2005	2,245.21	605.76	3,373.91	2,004.25	3,139.90	11,369.03
2006	2,289.61	1,016.52	2,428.84	1,736.40	3,160.22	10,631.59
2007	3,428.07	1,330.80	4,261.58	2,246.53	3,760.39	15,027.37
2008	3,233.35	2,898.70	4,083.37	2,206.31	4,653.51	17,075.24
2009	3,012.84	1,819.79	2,895.69	1,980.45	2,102.18	11,810.95
2010	2,706.68	1,538.05	2,414.71	2,514.01	1,426.92	10,600.37
2011	2,381.87	1,955.31	2,782.19	1,849.64	1,363.28	10,332.29
2012	3,328.31	2,008.35	3,753.23	2,403.76	1,467.61	12,961.26
2013	3,035.28	924.21	3,997.90	1,324.40	973.94	10,255.73
2014	1,090.45	521.55	2,288.40	837.38	710.57	5,448.35
2015	1,382.71	1,094.74	2,064.56	1,911.55	838.73	7,292.29
6 to10 years old resets[2]	1,335.71	206.08	1,511.45	1,134.28	954.16	5,141.68
3 to 5 years old resets[2]	1,078.97	63.85	1,819.00	1,388.43	605.04	4,955.29
Bearing trees	**39,323.66**	**18,349.67**	**48,592.87**	**34,335.18**	**34,668.06**	**175,269.44**
0 to 2 years old resets[2]	734.55	174.51	1,286.96	1,108.63	703.57	4,008.22
2016	1,298.44	1,039.94	2,024.01	1,699.62	988.05	7,050.06
2017	889.45	495.13	3,784.11	1,288.67	1,620.18	8,077.54
Non-bearing trees	**2,922.44**	**1,709.58**	**7,095.08**	**4,096.92**	**3,311.80**	**19,135.82**
Total	**42,246.10**	**20,059.25**	**55,687.95**	**38,432.10**	**37,979.86**	**194,405.26**
Percentage	**21.73**	**10.32**	**28.65**	**19.77**	**19.54**	**100.00**

- Represents zero.

[1] Information per planting year considers the year the original plot was planted and refers to remaining groves at the time data were collected to take inventory. Therefore, information does not depict the totality of groves established in such years, since eradication and renovation occurred along time.

[2] Trees from resettings after the original plot was planted were estimated at their respective ages.

Table 68 – Oranges: Area of groves of early varieties by planting year [2018 inventory]

Planting year[1]	Early varieties						Total
	Hamlin	Westin	Rubi	Valencia Americana	Seleta	Pineapple	
	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)
1979 and previous years...	323	-	-	-	26	-	349
1980.....	-	-	-	-	-	-	-
1981.....	50	-	-	-	-	-	50
1982.....	3	-	-	-	-	-	3
1983.....	13	-	-	-	-	-	13
1984.....	82	-	-	-	-	-	82
1985.....	127	9	95	-	-	-	231
1986.....	78	-	67	75	-	-	220
1987.....	138	2	-	27	-	-	167
1988.....	184	8	-	-	3	-	195
1989.....	46	-	-	-	-	-	46
1990.....	118	81	-	27	-	-	226
1991.....	295	59	-	-	-	-	354
1992.....	694	-	-	27	-	11	732
1993.....	704	5	-	836	-	61	1,606
1994.....	707	9	26	175	-	-	917
1995.....	223	33	-	-	-	-	256
1996.....	347	3	-	172	-	2	524
1997.....	303	175	8	488	-	36	1,010
1998.....	615	205	51	140	-	17	1,028
1999.....	854	313	-	241	2	-	1,410
2000.....	1,256	110	38	269	-	-	1,673
2001.....	649	83	29	503	-	24	1,288
2002.....	2,214	254	183	796	3	19	3,469
2003.....	3,272	270	124	896	25	4	4,591
2004.....	3,108	618	393	744	3	26	4,892
2005.....	4,923	436	190	859	-	48	6,456
2006.....	4,879	472	773	912	-	69	7,105
2007.....	6,507	482	252	1,862	11	52	9,166
2008.....	5,744	682	785	1,584	-	104	8,899
2009.....	2,605	493	791	1,631	77	53	5,650
2010.....	1,786	402	695	620	11	108	3,622
2011.....	1,607	324	866	1,324	6	247	4,374
2012.....	2,310	241	795	1,105	-	476	4,927
2013.....	753	132	331	612	2	230	2,060
2014.....	195	16	98	45	-	167	521
2015.....	423	63	165	206	2	2	861
Mature groves.....	**48,135**	**5,980**	**6,755**	**16,176**	**171**	**1,756**	**78,973**
2016.....	449	93	373	279	-	13	1,207
2017.....	1,484	366	537	852	-	159	3,398
Young groves.....	**1,933**	**459**	**910**	**1,131**	**-**	**172**	**4,605**
Total.....	**50,068**	**6,439**	**7,665**	**17,307**	**171**	**1,928**	**83,578**
Percentage.....	**59.91**	**7.70**	**9.17**	**20.71**	**0.20**	**2.31**	**100.00**

- Represents zero.

[1] Information per planting year considers the year the original plot was planted and refers to remaining groves at the time data were collected to take inventory. Therefore, information does not depict the totality of groves established in such years, since eradication and renovation occurred along time.

Table 69 – Oranges: Trees of early varieties by planting year [2018 inventory]

Planting year[1]	Early varieties						Total
	Hamlin	Westin	Rubi	Valencia Americana	Seleta	Pineapple	
	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)
1979 and previous years…	61.73	-	-	-	6.76	-	68.49
1980.....	-	-	-	-	-	-	-
1981.....	12.39	-	-	-	-	-	12.39
1982.....	1.02	-	-	-	-	-	1.02
1983.....	4.01	-	-	-	-	-	4.01
1984.....	16.36	-	-	-	-	-	16.36
1985.....	28.55	2.75	10.89	-	-	-	42.19
1986.....	18.90	-	4.89	13.70	-	-	37.49
1987.....	25.62	0.80	-	4.27	-	-	30.69
1988.....	46.28	3.07	-	-	1.16	-	50.51
1989.....	10.03	-	-	-	-	-	10.03
1990.....	28.62	23.92	-	7.28	-	-	59.82
1991.....	66.00	14.96	-	-	-	-	80.96
1992.....	192.26	-	-	6.95	-	3.99	203.20
1993.....	196.17	2.08	-	165.23	-	19.52	383.00
1994.....	197.26	3.53	8.70	41.31	-	-	250.80
1995.....	81.45	11.89	-	-	-	-	93.34
1996.....	105.90	0.83	-	46.99	-	-	153.72
1997.....	98.19	51.15	2.30	91.69	-	11.80	255.13
1998.....	188.39	54.31	15.33	40.42	-	5.52	303.97
1999.....	240.73	98.26	-	67.61	0.92	-	407.52
2000.....	367.67	38.23	15.70	60.21	-	-	481.81
2001.....	212.54	25.43	14.73	103.92	-	7.86	364.48
2002.....	731.61	101.51	71.49	256.75	1.09	6.60	1,169.05
2003.....	1,167.23	92.01	40.70	302.08	9.77	1.27	1,613.06
2004.....	1,060.12	171.70	122.46	256.04	1.05	10.05	1,621.42
2005.....	1,769.38	150.76	71.60	310.02	-	20.47	2,322.23
2006.....	1,827.17	168.53	336.38	371.49	-	30.75	2,734.32
2007.....	2,591.27	180.54	112.51	749.13	5.04	17.93	3,656.42
2008.....	2,670.85	306.70	372.39	758.93	-	36.88	4,145.75
2009.....	1,210.53	230.26	380.30	820.50	41.21	24.68	2,707.48
2010.....	871.81	217.11	368.92	329.46	5.05	70.24	1,862.59
2011.....	798.47	161.52	474.33	679.16	3.29	172.85	2,289.62
2012.....	1,221.56	113.31	436.71	559.72	0.12	266.36	2,597.78
2013.....	450.05	83.31	214.38	372.79	1.21	132.17	1,253.91
2014.....	102.19	10.06	61.27	27.38	-	108.03	308.93
2015.....	282.30	40.02	114.44	133.67	0.91	1.21	572.55
6 to10 years old resets[2].....	924.86	78.67	119.77	186.42	3.39	12.13	1,325.24
3 to 5 years old resets[2].....	831.32	95.45	34.34	145.43	0.71	8.76	1,116.01
Bearing trees.....	**20,710.79**	**2,532.67**	**3,404.53**	**6,908.55**	**81.68**	**969.07**	**34,607.29**
0 to 2 years old resets[2].....	627.79	78.76	134.42	211.98	3.91	14.66	1,071.52
2016.....	293.55	58.02	228.79	184.00	-	10.57	774.93
2017.....	1,090.81	172.37	370.05	648.65	-	145.65	2,427.53
Non-bearing trees.....	**2,012.15**	**309.15**	**733.26**	**1,044.63**	**3.91**	**170.88**	**4,273.98**
Total.....	**22,722.94**	**2,841.82**	**4,137.79**	**7,953.18**	**85.59**	**1,139.95**	**38,881.27**
Percentage.....	**58.44**	**7.31**	**10.64**	**20.46**	**0.22**	**2.93**	**100.00**

- Represents zero.

[1] Information per planting year considers the year the original plot was planted and refers to remaining groves at the time data were collected to take inventory. Therefore, information does not depict the totality of groves established in such years, since eradication and renovation occurred along time.

[2] Trees from resettings after the original plot was planted were estimated at their respective ages.

Table 70 – Oranges: Area of groves of mid-season and late varieties by planting year [2018 inventory]

Planting year[1]	Mid-season and late varieties				Total
	Pera Rio	Valencia	Valencia Folha Murcha	Natal	
	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)
1979 and previous years...	353	737	-	217	1,307
1980.....	31	59	-	40	130
1981.....	3	31	-	68	102
1982.....	50	93	-	16	159
1983.....	192	236	7	228	663
1984.....	57	46	-	52	155
1985.....	401	154	3	228	786
1986.....	600	323	19	323	1,265
1987.....	275	279	39	334	927
1988.....	383	188	25	131	727
1989.....	721	727	41	280	1,769
1990.....	717	1,173	230	545	2,665
1991.....	810	929	37	515	2,291
1992.....	836	563	76	355	1,830
1993.....	698	404	72	575	1,749
1994.....	665	372	162	176	1,375
1995.....	937	1,240	198	367	2,742
1996.....	797	966	339	467	2,569
1997.....	1,398	1,961	90	576	4,025
1998.....	1,521	2,433	380	254	4,588
1999.....	1,865	2,617	351	355	5,188
2000.....	2,074	4,623	654	1,184	8,535
2001.....	2,540	4,081	621	1,967	9,209
2002.....	2,852	6,377	382	2,251	11,862
2003.....	5,612	7,576	192	2,598	15,978
2004.....	5,818	7,580	530	3,778	17,706
2005.....	7,869	10,197	856	4,125	23,047
2006.....	6,850	8,369	766	3,658	19,643
2007.....	10,139	11,460	1,317	3,746	26,662
2008.....	11,775	8,825	1,859	3,646	26,105
2009.....	10,557	5,499	1,209	1,464	18,729
2010.....	8,963	5,376	1,057	1,544	16,940
2011.....	7,955	5,140	712	1,071	14,878
2012.....	10,085	6,515	809	1,705	19,114
2013.....	7,889	3,985	879	2,206	14,959
2014.....	4,589	1,664	1,040	889	8,182
2015.....	6,043	1,972	915	1,959	10,889
Mature groves.....	**124,920**	**114,770**	**15,867**	**43,893**	**299,450**
2016.....	5,868	2,247	425	1,199	9,739
2017.....	5,407	1,600	305	1,391	8,703
Young groves.....	**11,275**	**3,847**	**730**	**2,590**	**18,442**
Total.....	**136,195**	**118,617**	**16,597**	**46,483**	**317,892**
Percentage.....	**42.84**	**37.31**	**5.22**	**14.62**	**100.00**

- Represents zero.

[1] Information per planting year considers the year the original plot was planted and refers to remaining groves at the time data were collected to take inventory. Therefore, information does not depict the totality of groves established in such years, since eradication and renovation occurred along time.

Table 71– Oranges: Trees of mid-season and late varieties by planting year [2018 inventory]

Planting year[1]	Mid-season and late varieties				Total
	Pera Rio	Valencia	Valencia Folha Murcha	Natal	
	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)
1979 and previous years...	92.09	141.32	-	49.06	282.47
1980.....	10.53	13.66	-	12.52	36.71
1981.....	0.56	3.32	-	26.71	30.59
1982.....	16.03	35.63	-	4.44	56.10
1983.....	61.08	71.96	2.04	45.76	180.84
1984.....	15.57	12.55	-	14.73	42.85
1985.....	109.76	47.71	1.47	46.42	205.36
1986.....	186.58	87.45	6.74	93.71	374.48
1987.....	116.80	82.43	7.68	78.78	285.69
1988.....	126.74	49.15	9.00	33.53	218.42
1989.....	236.40	206.79	14.94	81.33	539.46
1990.....	233.48	366.69	71.66	179.15	850.98
1991.....	246.12	290.76	13.31	143.17	693.36
1992.....	260.37	179.56	22.56	113.71	576.20
1993.....	231.11	132.23	27.06	187.57	577.97
1994.....	230.78	120.43	59.80	44.99	456.00
1995.....	376.82	443.47	72.29	123.64	1,016.22
1996.....	294.49	308.55	153.49	150.22	906.75
1997.....	536.56	695.65	36.62	158.10	1,426.93
1998.....	515.69	857.10	169.91	77.74	1,620.44
1999.....	641.59	853.60	121.84	107.59	1,724.62
2000.....	721.75	1,492.56	238.36	363.82	2,816.49
2001.....	917.34	1,525.32	246.06	606.94	3,295.66
2002.....	965.37	2,293.23	138.11	797.27	4,193.98
2003.....	2,080.65	2,629.12	65.62	911.68	5,687.07
2004.....	2,210.86	2,698.99	207.23	1,440.82	6,557.90
2005.....	3,204.10	3,893.53	352.45	1,596.72	9,046.80
2006.....	2,809.42	3,369.76	325.08	1,393.01	7,897.27
2007.....	4,344.75	4,771.22	614.19	1,640.79	11,370.95
2008.....	5,727.36	4,359.71	996.03	1,846.39	12,929.49
2009.....	5,107.69	2,651.56	608.87	735.35	9,103.47
2010.....	4,694.35	2,702.52	536.64	804.27	8,737.78
2011.....	4,234.84	2,826.31	413.74	567.78	8,042.67
2012.....	5,507.86	3,446.15	461.44	948.03	10,363.48
2013.....	4,838.94	2,368.47	538.62	1,255.79	9,001.82
2014.....	2,928.87	1,008.47	659.91	542.17	5,139.42
2015.....	3,843.62	1,111.58	556.48	1,208.06	6,719.74
6 to10 years old resets[2].....	1,629.08	1,580.40	164.13	442.83	3,816.44
3 to 5 years old resets[2].....	1,270.12	1,787.84	153.53	627.79	3,839.28
Bearing trees.....	**61,576.12**	**51,516.75**	**8,066.90**	**19,502.38**	**140,662.15**
0 to 2 years old resets[2].....	1,314.47	980.81	179.12	462.30	2,936.70
2016.....	3,702.86	1,558.28	275.73	738.26	6,275.13
2017.....	3,441.80	1,066.94	178.17	963.10	5,650.01
Non-bearing trees.....	**8,459.13**	**3,606.03**	**633.02**	**2,163.66**	**14,861.84**
Total.....	**70,035.25**	**55,122.78**	**8,699.92**	**21,666.04**	**155,523.99**
Percentage.....	**45.03**	**35.44**	**5.59**	**13.93**	**100.00**

- Represents zero.

[1] Information per planting year considers the year the original plot was planted and refers to remaining groves at the time data were collected to take inventory. Therefore, information does not depict the totality of groves established in such years, since eradication and renovation occurred along time.

[2] Trees from resettings after the original plot was planted were estimated at their respective ages.

Table 72 – Oranges: Density[1] of young and mature groves by sector and region [2015 and 2018 inventories]

Sector and region	2015 inventory		2018 inventory	
	Young groves[2]	Mature groves[3]	Young groves[2]	Mature groves[3]
	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)
North				
Triângulo Mineiro	596	463	545	472
Bebedouro	655	450	573	464
Altinópolis	540	496	689	489
Average	**631**	**459**	**579**	**470**
Northwest				
Votuporanga	497	411	431	446
São José do Rio Preto	588	443	620	475
Average	**540**	**426**	**545**	**461**
Central				
Matão	648	414	803	464
Duartina	611	456	652	479
Brotas	639	380	638	459
Average	**631**	**427**	**705**	**470**
South				
Porto Ferreira	662	435	654	468
Limeira	658	441	586	459
Average	**661**	**438**	**623**	**464**
Southwest				
Avaré	711	492	670	497
Itapetininga	640	503	802	518
Average	**692**	**495**	**764**	**502**
Average…	**631**	**448**	**656**	**474**

[1] Weighted average density per stratum area.
[2] Groves planted in 2016 or 2017.
[3] Calculation considers total trees in the plot, that is, bearing and non-bearing trees (resets in 2016 or 2017).

Table 73 – Oranges: Density[1] of young and mature groves by variety [2015 and 2018 inventories]

Variety	2015 inventory		2018 inventory	
	Young groves[2]	Mature groves[3]	Young groves[2]	Mature groves[3]
	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)
Early				
Hamlin.....	624	432	715	443
Westin.....	649	431	502	437
Rubi.....	746	510	659	524
Valencia Americana.....	653	480	735	440
Seleta.....	725	447	(NA)	502
Pineapple.....	545	523	903	560
Average.....	**637**	**440**	**695**	**452**
Mid-season				
Pera Rio.....	637	472	634	503
Average.....	**637**	**472**	**634**	**503**
Late				
Valencia.....	622	435	683	457
Valencia Folha Murcha.....	607	418	623	519
Natal.....	652	489	658	455
Average.....	**624**	**435**	**668**	**462**
Average….....	**631**	**448**	**656**	**474**

NA Not available.
1 Weighted average density per stratum area.
2 Groves planted in 2016 or 2017.
3 Calculation considers total trees in the plot, that is, bearing and non-bearing trees (resets in 2016 or 2017).

Table 74 – Oranges: Density[1] of young groves by variety and region [2018 inventory]

Variety	Region												Average
	TMG[2]	BEB[3]	ALT[4]	VOT[5]	SJO[6]	MAT[7]	DUA[8]	BRO[9]	PFE[10]	LIM[11]	AVA[12]	ITG[13]	
	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)
Early													
Hamlin……..	718	489	942	(NA)	623	815	673	659	585	426	563	991	715
Westin……..	(NA)	485	(NA)	(NA)	534	(NA)	479	567	601	404	721	842	502
Rubi……..	(NA)	616	760	651	512	386	793	(NA)	563	434	606	781	659
Valencia Americana…..	846	578	(NA)	(NA)	626	929	675	588	796	604	576	873	735
Seleta……	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
Pineapple……..	(NA)	506	(NA)	(NA)	(NA)	1.006	(NA)	(NA)	(NA)	(NA)	(NA)	911	903
Average……..	**768**	**503**	**813**	**651**	**615**	**854**	**697**	**600**	**573**	**426**	**578**	**893**	**695**
Mid-season													
Pera Rio……	537	630	665	429	567	766	642	627	674	641	611	750	634
Average…….	**537**	**630**	**665**	**429**	**567**	**766**	**642**	**627**	**674**	**641**	**611**	**750**	**634**
Late													
Valencia……	774	551	716	(NA)	773	730	655	668	632	524	831	852	683
VFolha Murcha[14]……..	727	533	703	(NA)	546	593	604	654	609	609	698	739	623
Natal……..….	471	533	711	471	543	851	594	673	723	706	747	742	658
Average……..……...	**564**	**544**	**712**	**471**	**656**	**788**	**632**	**668**	**660**	**584**	**791**	**799**	**668**
Average…..……..……	**545**	**573**	**689**	**431**	**620**	**803**	**652**	**638**	**654**	**586**	**670**	**802**	**656**

NA Not available.
1 Weighted average density 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 75 – Oranges: Density[1] of mature groves by variety and region [2018 inventory]

Variety	Region												Average
	TMG[2]	BEB[3]	ALT[4]	VOT[5]	SJO[6]	MAT[7]	DUA[8]	BRO[9]	PFE[10]	LIM[11]	AVA[12]	ITG[13]	
	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)
Early													
Hamlin……..	426	415	496	448	461	435	434	434	465	445	474	445	443
Westin……..	474	392	451	438	299	370	367	394	516	438	467	471	437
Rubi……..	600	532	632	505	480	520	550	387	560	554	485	562	524
Valencia Americana…..	493	467	583	456	440	350	504	452	402	498	453	682	440
Seleta……	(NA)	493	(NA)	(NA)	(NA)	(NA)	577	(NA)	523	424	437	460	502
Pineapple……..	442	487	838	254	470	556	460	653	507	626	457	689	560
Average……..	**439**	**435**	**519**	**444**	**449**	**413**	**460**	**443**	**476**	**451**	**472**	**528**	**452**
Mid-season													
Pera Rio……	526	547	502	442	513	521	507	491	493	486	527	497	503
Average…….	**526**	**547**	**502**	**442**	**513**	**521**	**507**	**491**	**493**	**486**	**527**	**497**	**503**
Late													
Valencia……	459	433	462	466	471	457	455	442	434	437	488	554	457
VFolha Murcha[14]……..	563	486	515	508	523	572	555	507	512	467	551	533	519
Natal…….	438	428	487	453	456	384	446	453	459	441	490	496	455
Average……..	**456**	**437**	**469**	**469**	**475**	**453**	**463**	**448**	**448**	**442**	**492**	**528**	**462**
Average…..……	**472**	**464**	**489**	**446**	**475**	**464**	**479**	**459**	**468**	**459**	**497**	**518**	**474**

NA Not available.

[1] Weighted average density per stratum area. Calculation for groves over 2 years of age considers the total trees of the plot, that is, bearing and non-bearing trees (resets of 2016 or 2017).

[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 76 – Oranges: Density[1] of groves of up to 10 years old by variety and region [2018 inventory]

Variety	Region												Average
	TMG[2]	BEB[3]	ALT[4]	VOT[5]	SJO[6]	MAT[7]	DUA[8]	BRO[9]	PFE[10]	LIM[11]	AVA[12]	ITG[13]	
	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)
Early													
Hamlin……..	557	490	605	524	498	610	569	533	594	503	589	748	554
Westin……..	516	482	480	532	525	453	461	534	626	476	544	591	525
Rubi……..	600	556	695	506	586	523	628	464	616	543	569	685	591
Valencia Americana…..	508	528	657	488	519	640	602	527	595	473	594	743	569
Seleta……	(NA)	493	(NA)	(NA)	(NA)	(NA)	577	(NA)	523	580	(NA)	(NA)	563
Pineapple……..	442	546	838	254	518	582	607	653	507	(NA)	(NA)	759	631
Average……	**554**	**511**	**637**	**488**	**514**	**603**	**589**	**548**	**606**	**497**	**579**	**726**	**564**
Mid-season													
Pera Rio……	561	602	591	468	563	630	594	602	617	579	585	662	581
Average……..	**561**	**602**	**591**	**468**	**563**	**630**	**594**	**602**	**617**	**579**	**585**	**662**	**581**
Late													
Valencia……	538	511	542	516	528	573	595	609	594	523	603	638	563
VFolha Murcha[14]……..	590	542	549	519	548	646	638	637	653	528	626	586	592
Natal……	537	533	572	497	601	671	581	570	641	554	565	635	585
Average……..	**540**	**519**	**551**	**511**	**549**	**598**	**597**	**603**	**616**	**531**	**592**	**631**	**572**
Average…..……	**552**	**550**	**583**	**476**	**541**	**612**	**594**	**591**	**615**	**549**	**588**	**659**	**574**

NA Not available.

[1] Weighted average density per stratum area. Calculation for groves over 2 years of age considers the total trees of the plot, that is, bearing and non-bearing trees (resets of 2016 or 2017).

[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 77 – Oranges: Density[1] of groves over 10 years old by variety and region [2018 inventory]

Variety	Region												Average
	TMG[2]	BEB[3]	ALT[4]	VOT[5]	SJO[6]	MAT[7]	DUA[8]	BRO[9]	PFE[10]	LIM[11]	AVA[12]	ITG[13]	
	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)
Early													
Hamlin……..	390	381	475	369	381	359	372	386	409	425	447	406	401
Westin……..	420	356	417	401	283	329	347	366	409	398	401	408	376
Rubi……..	(NA)	393	560	(NA)	354	343	408	381	361	404	443	419	414
Valencia Americana…..	497	399	533	381	318	288	418	414	345	518	404	497	359
Seleta……	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	411	437	460	421
Pineapple……..	(NA)	430	(NA)	(NA)	419	(NA)	361	(NA)	(NA)	626	457	263	419
Average……...	**393**	**383**	**483**	**374**	**347**	**325**	**380**	**387**	**395**	**424**	**438**	**407**	**392**
Mid-season													
Pera Rio……	369	403	478	374	446	366	438	419	406	405	491	376	422
Average…….	**369**	**403**	**478**	**374**	**446**	**366**	**438**	**419**	**406**	**405**	**491**	**376**	**422**
Late													
Valencia……	388	387	450	376	390	360	394	411	381	408	460	500	409
VFolha Murcha[14]……..	506	432	503	486	485	375	486	419	402	419	414	465	440
Natal…….	400	380	482	393	336	303	390	415	368	382	455	442	397
Average……...	**394**	**389**	**456**	**399**	**379**	**345**	**401**	**412**	**380**	**405**	**457**	**468**	**408**
Average…..……	**391**	**389**	**468**	**379**	**385**	**343**	**409**	**410**	**390**	**408**	**461**	**431**	**408**

NA Not available.

1 Weighted average density per stratum area. Calculation for groves over 2 years of age considers the total trees of the plot, that is, bearing and non-bearing trees (resets of 2016 or 2017).

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 78 – Oranges: Density[1] of groves by planting year [2018 inventory]

Planting year[2]	Density
	(trees/hectare)
1979 and previous years	333
1980	340
1981	349
1982	417
1983	343
1984	302
1985	323
1986	336
1987	351
1988	330
1989	338
1990	357
1991	334
1992	343
1993	328
1994	353
1995	414
1996	381
1997	370
1998	386
1999	373
2000	366
2001	383
2002	391
2003	392
2004	401
2005	429
2006	440
2007	468
2008	518
2009	515
2010	546
2011	569
2012	570
2013	623
2014	648
2015	645
Mature groves	**474**
2016	644
2017	668
Young groves	**656**
Average	**484**

[1] Weighted average density per stratum area. Calculation for groves over 2 years of age considers the total trees of the plot, that is, bearing and non-bearing trees (resets of 2016 or 2017).

[2] Information per planting year considers the year the original plot was planted and refers to remaining groves at the time data were collected to take inventory. Therefore, information does not depict the totality of groves established in such years, since eradication and renovation occurred along time.

Table 79 – Oranges: Area of irrigated and non-irrigated groves and of groves with no information on irrigation, by sector and region[1] [2015 and 2018 inventories]

Sector and region	2015 inventory		2018 inventory	
	Irrigated area	Non-irrigated area or without irrigation information	Irrigated area	Non-irrigated area or without irrigation information
	(hectares)	(hectares)	(hectares)	(hectares)
North				
Triângulo Mineiro	16,703	9,045	21,353	5,128
Bebedouro	31,036	24,958	34,314	16,967
Altinópolis	185	10,720	974	10,320
Subtotal	**47,924**	**44,723**	**56,641**	**32,415**
Northwest				
Votuporanga	6,220	18,393	6,781	13,034
São José do Rio Preto	9,176	14,705	10,150	12,990
Subtotal	**15,396**	**33,098**	**16,931**	**26,024**
Central				
Matão	15,496	31,963	18,132	22,824
Duartina	8,720	48,088	9,304	45,263
Brotas	719	21,863	1,296	17,557
Subtotal	**24,935**	**101,914**	**28,732**	**85,644**
South				
Porto Ferreira	7,989	34,057	8,060	32,480
Limeira	4,552	42,345	5,445	35,273
Subtotal	**12,541**	**76,402**	**13,505**	**67,753**
Southwest				
Avaré	4,853	51,090	4,941	49,446
Itapetininga	139	17,607	238	19,200
Subtotal	**4,992**	**68,697**	**5,179**	**68,646**
Total	**105,788**	**324,834**	**120,988**	**280,482**
Percentage	**24.57**	**75.43**	**30.14**	**69.86**

Table 80 – Oranges: Area of irrigated and non-irrigated groves and of groves with no information on irrigation, by variety[1] [2015 and 2018 inventories]

Variety	2015 inventory		2018 inventory	
	Irrigated area	Non-irrigated area or without irrigation information	Irrigated area	Non-irrigated area or without irrigation information
	(hectares)	(hectares)	(hectares)	(hectares)
Early				
Hamlin	13,289	41,514	15,635	34,433
Westin	1,897	5,403	1,693	4,746
Rubi	1,792	5,558	2,267	5,398
Valencia Americana	5,719	11,999	5,745	11,562
Seleta	32	135	33	138
Pineapple	235	1,667	842	1,086
Subtotal	**22,964**	**66,276**	**26,215**	**57,363**
Mid-season				
Pera Rio	32,087	109,508	41,570	94,625
Subtotal	**32,087**	**109,508**	**41,570**	**94,625**
Late				
Valencia	31,752	100,449	33,872	84,745
Valencia Folha Murcha	3,023	14,678	4,143	12,454
Natal	15,962	33,923	15,188	31,295
Subtotal	**50,737**	**149,050**	**53,203**	**128,494**
Total	**105,788**	**324,834**	**120,988**	**280,482**

Table 81– Oranges: Area of irrigated and non-irrigated groves and of groves with no information on irrigation, by age groups[1] [2015 and 2018 inventories]

Grove age	2015 inventory		2018 inventory	
	Irrigated area	Non-irrigated area or without irrigation information	Irrigated area	Non-irrigated area or without irrigation information
	(hectares)	(hectares)	(hectares)	(hectares)
1 – 2 years	5,876	21,255	4,854	18,193
3 – 5 years	15,676	52,539	16,362	21,110
6 – 10 years	32,161	135,733	34,704	88,534
Over 10 years	52,075	115,307	65,068	152,645
Total	**105,788**	**324,834**	**120,988**	**280,482**

Table 82 – Oranges: Area of irrigated groves by irrigation method[1] [2015 and 2018 inventories]

Irrigation method	2015 inventory		2018 inventory	
	Irrigated area	Percentage	Irrigated area	Percentage
	(hectares)	(%)	(hectares)	(%)
Sprinkling	12,353	11.68	13,068	10.80
Localized	93,435	88.32	107,920	89.20
Total	**105,788**	**100.00**	**120,988**	**100.00**

Table 83 – Oranges: Average age[1] of mature groves by sector and region [2015 to 2018 inventories]

Sector and region	2015 inventory[2] (years)	2016 inventory[3] (years)	2017 inventory[4] (years)	2018 inventory[5] (years)
North				
Triângulo Mineiro.....	11.1	7.8	8.6	9.3
Bebedouro.....	9.2	9.5	10.1	10.6
Altinópolis.....	9.5	10.3	11.0	11.6
Average.....	**9.6**	**9.1**	**9.8**	**10.3**
Northwest				
Votuporanga.....	7.9	8.3	8.9	9.5
São José do Rio Preto.....	8.0	8.0	7.9	8.5
Average.....	**7.9**	**8.2**	**8.3**	**8.9**
Central				
Matão.....	9.3	8.9	9.4	9.0
Duartina.....	9.6	9.3	9.8	9.5
Brotas.....	7.6	10.9	11.5	12.7
Average.....	**9.0**	**9.4**	**9.9**	**9.8**
South				
Porto Ferreira.....	10.2	9.9	10.6	11.4
Limeira.....	10.6	11.7	12.5	12.1
Average.....	**10.3**	**10.8**	**11.6**	**11.8**
Southwest				
Avaré.....	11.7	10.7	11.6	12.2
Itapetininga.....	11.2	10.6	10.5	9.5
Average.....	**11.5**	**10.7**	**11.3**	**11.4**
Average….....	**9.8**	**9.8**	**10.3**	**10.5**

[1] Average age weighted by sector trees.
[2] Groves planted in 2012 and previous years.
[3] Groves planted in 2013 and previous years.
[4] Groves planted in 2014 and previous years.
[5] Groves planted in 2015 and previous years.

Table 84 – Oranges: Area of eradicated groves, eradication and renovation rates by sector and region [2016 to 2018 inventories]

Sector and region	2016 inventory		2017 inventory		2018 inventory					
	Estimated eradication from October 2014 to March 2016		Estimated eradication from April 2016 to March 2017		Estimated eradication from April 2017 to March 2018		Estimated eradication from October 2014 to March 2018		Accumulated renovation from October 2014 to March 2018	Net loss due to accumulated eradication from October 2014 to March 2018
	Area	Rate	Area	Rate	Area	Rate	Area	Rate	Area	Area
	(hectares)	(%)	(hectares)	(%)	(hectares)	(%)	(hectares)	(%)	(hectares)	(hectares)
North										
Triângulo Mineiro...	342	1.33	449	1.74	1	0.01	792	3.08	465	327
Bebedouro.....	4,015	7.17	1,838	3.28	2,801	5.00	8,654	15.45	2,912	5,742
Altinópolis.....	80	0.73	3	0.03	55	0.50	138	1.27	106	32
Subtotal.....	**4,437**	**4.79**	**2,290**	**2.47**	**2,857**	**3.08**	**9,584**	**10.34**	**3,483**	**6,101**
Northwest										
Votuporanga.....	4,480	18.21	100	0.41	987	4.01	5,567	22.62	714	4,853
S. J. do Rio Preto.....	718	3.01	1,919	8.03	675	2.83	3,312	13.87	2,240	1,072
Subtotal.....	**5,198**	**10.72**	**2,019**	**4.16**	**1,662**	**3.43**	**8,879**	**18.31**	**2,954**	**5,925**
Central										
Matão.....	5,331	11.23	3,028	6.38	2,304	4.85	10,663	22.47	3,145	7,518
Duartina.....	2,332	4.11	2,984	5.25	2,267	3.99	7,583	13.35	3,186	4,397
Brotas.....	2,847	12.60	353	1.56	890	3.94	4,090	18.11	811	3,279
Subtotal.....	**10,510**	**8.28**	**6,365**	**5.02**	**5,461**	**4.31**	**22,336**	**17.61**	**7,142**	**15,194**
South										
Porto Ferreira.....	4,368	10.39	214	0.51	1,083	2.58	5,665	13.47	2,647	3,018
Limeira.....	3,126	6.67	2,270	4.84	3,313	7.06	8,709	18.57	1,742	6,967
Subtotal.....	**7,494**	**8.42**	**2,484**	**2.79**	**4,396**	**4.94**	**14,374**	**16.16**	**4,389**	**9,985**
Southwest										
Avaré.....	409	0.73	499	0.89	1,948	3.48	2,856	5.11	536	2,320
Itapetininga.....	765	4.31	650	3.66	196	1.10	1,611	9.08	1,604	7
Subtotal.....	**1,174**	**1.59**	**1,149**	**1.56**	**2,144**	**2.91**	**4,467**	**6.06**	**2,140**	**2,327**
Total.....	**28,813**	**6.69**	**14,307**	**3.32**	**16,520**	**3.84**	**59,640**	**13.85**	**20,108**	**39,532**

Table 85 – Oranges: Area of eradicated groves, eradication and renovation rates by variety [2016 to 2018 inventories]

Variety	2016 inventory		2017 inventory		2018 inventory					
	Estimated eradication from October 2014 to March 2016		Estimated eradication from April 2016 to March 2017		Estimated eradication from April 2017 to March 2018		Estimated eradication from October 2014 to March 2018		Accumulated renovation from October 2014 to March 2018	Net loss due to accumulated eradication from October 2014 to March 2018
	Area	Rate	Area	Rate	Area	Rate	Area	Rate	Area	Area
	(hectares)	(%)	(hectares)	(%)	(hectares)	(%)	(hectares)	(%)	(hectares)	(hectares)
Early										
Hamlin.....	3,266	5.96	1,998	3.65	1,561	2.85	6,825.00	12.45	1,974	4,851
Westin.....	362	4.96	345	4.73	545	7.46	1,252	17.15	309	943
Rubi.....	153	2.08	242	3.29	271	3.69	666	9.06	323	343
Valencia Americana..	969	5.53	834	4.76	3	0.02	1,806	10.19	915	891
Seleta.....	3	1.81	7	4.22	2	1.18	12	7.10	11	1
Pineapple.....	84	4.43	5	0.26	-	-	89	4.68	21	68
Subtotal.....	**4,837**	**5.43**	**3,431**	**3.86**	**2,382**	**2.67**	**10,650**	**11.93**	**3,553**	**7,097**
Mid-season										
Pera Rio.....	11,356	8.02	4,035	2.85	5,450	3.85	20,841	14.72	8,573	12,268
Subtotal.....	**11,356**	**8.02**	**4,035**	**2.85**	**5,450**	**3.85**	**20,841**	**14.72**	**8,573**	**12,268**
Late										
Valencia.....	8,686	6.57	1,569	1.19	8,081	6.11	18,336	13.87	4,273	14,063
V.Folha Murcha[1].....	1,287	7.27	309	1.75	490	2.77	2,086	11.78	653	1,433
Natal.....	2,637	5.29	4,953	9.93	137	0.27	7,727	15.49	3,056	4,671
Subtotal.....	**12,610**	**6.31**	**6,831**	**3.42**	**8,708**	**4.36**	**28,149**	**14.09**	**7,982**	**20,167**
Total.....	**28,813**	**6.69**	**14,307**	**3.32**	**16,540**	**3.84**	**59,640**	**13.85**	**20,108**	**39,532**

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

Table 86 – Oranges: Area of eradicated groves, eradication and renovation rates by age group [2016 to 2018 inventories]

Grove age	2016 inventory		2017 inventory		2018 inventory					
	Estimated eradication from October 2014 to March 2016		Estimated eradication from April 2016 to March 2017		Estimated eradication from April 2017 to March 2018		Estimated eradication from October 2014 to March 2018		Accumulated renovation from October 2014 to March 2018	Net loss due to accumulated eradication from October 2014 to March 2018
	Area	Rate	Area	Rate	Area	Rate	Area	Rate	Area	Area
	(hectares)	(%)	(hectares)	(%)	(hectares)	(%)	(hectares)	(%)	(hectares)	(hectares)
1 – 2 years.....	953	3.51	-	-	36	0.13	989	3.65	3	986
3 – 5 years.....	1,035	1.51	138	0.20	2,543	3.70	3,716	5.41	2,573	1,143
6 – 10 years.....	8,667	5.14	12	0.01	3,347	1.99	12,026	7.14	1,393	10,633
Over 10 years……..	18,158	10.91	14,157	8.51	10,594	6.37	42,909	25.79	16,139	26,770
Total.....	**28,813**	**6.69**	**14,307**	**3.32**	**16,520**	**3.84**	**59,640**	**13.85**	**20,108**	**39,532**

- Represents zero.

Table 87 – Oranges: Area of eradicated groves and eradication rate stratified by farm size, considering the number of orange trees on the farm [2018 inventory]

Range of the number of orange trees in the farm	2018 inventory			
	Estimated eradication from October 2014 to March 2018		Accumulated renovation from October 2014 to March 2018	Net loss due to accumulated eradication from October 2014 to March 2018
	Area	Rate	Rate	Área
(trees)	(hectares)	(%)	(hectares)	(hectares)
Below 10 thousand…	11,301	27.37	1,005	10,296
10 – 19 thousand……	6,922	23.23	632	6,290
20 – 29 thousand……	8,083	33.85	623	7,460
30 – 49 thousand……	6,651	22.36	866	5,785
50 – 99 thousand……	6,549	13.84	2,761	3,788
100 – 199 thousand…	5,720	11.94	2,364	3,356
Above 200 thousand..	14,414	6.84	11,857	2,557
Total.....	**59,640**	**13.85**	**20,108**	**39,532**

Table 88 – Oranges: Dead trees and mortality rate by sector and region [2015 to 2018 inventories]

Sector and region	2015 inventory		2016 inventory		2017 inventory		2018 inventory	
	Trees	Rate	Trees	Rate	Trees	Rate	Trees	Rate
	(1,000 trees)	(%)	(1,000 trees)	(%)	(1,000 trees)	(%)	(1,000 trees)	(%)
North								
Triângulo Mineiro	89.88	0.70	60.98	0.50	22.96	0.19	66.98	0.52
Bebedouro	301.67	1.09	174.78	0.68	79.62	0.31	249.00	0.99
Altinópolis	25.44	0.44	78.60	1.41	46.47	0.82	79.60	1.34
Subtotal	**416.99**	**0.90**	**314.36**	**0.72**	**149.05**	**0.32**	**395.58**	**0.90**
Northwest								
Votuporanga	100.31	0.92	137.47	1.56	102.49	1.15	150.03	1.61
S. J. do Rio Preto	82.42	0.73	112.14	0.96	81.94	0.72	155.17	1.31
Subtotal	**182.73**	**0.83**	**249.61**	**1.21**	**184.43**	**0.91**	**305.20**	**1.45**
Central								
Matão	193.15	0.86	418.13	2.08	230.75	1.15	166.99	0.78
Duartina	192.29	0.68	579.67	2.12	224.50	0.83	324.49	1.13
Brotas	242.31	2.45	156.64	1.54	191.93	1.90	204.18	2.14
Subtotal	**627.75**	**1.03**	**1,154.44**	**2.00**	**647.18**	**1.13**	**695.66**	**1.17**
South								
Porto Ferreira	162.73	0.81	241.70	1.17	155.76	0.73	312.34	1.49
Limeira	261.88	1.16	271.73	1.31	186.89	0.92	474.32	2.31
Subtotal	**424.61**	**0.99**	**513.43**	**1.24**	**342.65**	**0.82**	**786.66**	**1.90**
Southwest								
Avaré	185.74	0.63	612.63	2.11	165.29	0.57	574.08	1.95
Itapetininga	155.81	1.61	147.77	1.59	79.99	0.85	89.30	0.80
Subtotal	**341.55**	**0.87**	**760.40**	**1.99**	**245.28**	**0.64**	**663.38**	**1.63**
Total	**1,993.63**	**0.94**	**2,992.24**	**1.48**	**1,568.59**	**0.78**	**2,846.48**	**1.38**

Table 89 – Oranges: Dead trees and mortality rate by variety [2015 to 2018 inventories]

Variety	2015 inventory		2016 inventory		2017 inventory		2018 inventory	
	Trees	Rate	Trees	Rate	Trees	Rate	Trees	Rate
	(1,000 trees)	(%)	(1,000 trees)	(%)	(1,000 trees)	(%)	(1,000 trees)	(%)
Early								
Hamlin	280.79	1.08	482.57	1.96	235.51	0.97	345.94	1.43
Westin	42.73	1.25	42.79	1.27	33.83	1.03	52.12	1.70
Rubi	26.21	0.64	58.43	1.41	36.38	0.88	51.98	1.18
Valencia Americana	70.66	0.83	201.74	2.53	64.80	1.01	79.05	0.92
Seleta	0.78	0.91	0.88	1.09	0.08	0.11	0.70	0.77
Pineapple	39.92	3.33	11.47	1.08	1.00	0.10	2.14	0.18
Subtotal	**461.09**	**1.06**	**797.88**	**1.93**	**371.60**	**0.92**	**531.93**	**1.28**
Mid-season								
Pera Rio	621.33	0.85	941.49	1.35	615.18	0.87	1,158.28	1.56
Subtotal	**621.33**	**0.85**	**941.49**	**1.35**	**615.18**	**0.87**	**1,158.28**	**1.56**
Late								
Valencia	487.26	0.78	792.46	1.34	399.10	0.67	713.58	1.22
V. Folha Murcha[1]	54.81	0.58	74.15	0.83	56.68	0.64	115.50	1.25
Natal	369.14	1.58	386.26	1.73	126.03	0.59	327.19	1.42
Subtotal	**911.21**	**0.96**	**1,252.87**	**1.38**	**581.81**	**0.64**	**1,156.27**	**1.28**
Total	**1,993.63**	**0.94**	**2,992.24**	**1.48**	**1,568.59**	**0.78**	**2,846.48**	**1.38**

Table 90 – Oranges: Dead trees and mortality rate by age group [2015 to 2018 inventory]

Age groves	2015 inventory		2016 inventory		2017 inventory		2018 inventory	
	Trees	Rate	Trees	Rate	Trees	Rate	Trees	Rate
	(1,000 trees)	(%)	(1,000 trees)	(%)	(1,000 trees)	(%)	(1,000 trees)	(%)
1 – 2 years	87.57	0.49	49.56	0.44	36.13	0.31	25.27	0.17
3 – 5 years	97.96	0.24	182.44	0.49	51.58	0.17	42.84	0.18
6 – 10 years	628.40	0.73	881.85	1.11	486.49	0.64	554.35	0.80
Over 10 years	1,179.70	1.75	1,878.39	2.57	994.39	1.19	2,224.02	2.29
Total	**1,993.63**	**0.94**	**2,992.24**	**1.48**	**1,568.59**	**0.78**	**2,846.48**	**1.38**

Table 91 – Oranges: Vacancies by sector and region [2015 to 2018 inventories]

Sector and region	2015 inventory		2016 inventory		2017 inventory		2018 inventory	
	Vacancies	Percentage	Vacancies	Percentage	Vacancies	Percentage	Vacancies	Percentage
	(1,000 holes)	(%)	(1,000 holes)	(%)	(1,000 holes)	(%)	(1,000 holes)	(%)
North								
Triângulo Mineiro	527.73	4.10	55.79	0.46	85.64	0.70	165.42	1.29
Bebedouro	1,293.68	4.68	834.85	3.23	812.27	3.19	783.02	3.12
Altinópolis	375.85	6.46	108.43	1.95	228.96	4.04	230.29	3.89
Subtotal	**2,197.26**	**4.74**	**999.07**	**2.29**	**1,126.87**	**2.59**	**1,178.73**	**2.69**
Northwest								
Votuporanga	526.01	4.84	302.25	3.43	314.42	3.51	314.99	3.39
S. J. do Rio Preto	410.43	3.64	303.81	2.59	361.26	3.18	437.31	3.70
Subtotal	**936.44**	**4.23**	**606.06**	**2.95**	**675.68**	**3.33**	**752.30**	**3.56**
Central								
Matão	1,600.59	7.10	712.02	3.53	1,091.07	5.44	1,121.38	5.27
Duartina	1,606.00	5.66	874.20	3.20	1,235.10	4.56	1,412.58	4.93
Brotas	704.79	7.11	661.02	6.51	563.16	5.58	545.29	5.72
Subtotal	**3,911.38**	**6.43**	**2,247.24**	**3.90**	**2,889.33**	**5.05**	**3,079.25**	**5.18**
South								
Porto Ferreira	1,147.63	5.69	896.13	4.33	954.43	4.45	1,185.73	5.66
Limeira	1,258.64	5.58	966.71	51.89	940.88	4.62	1,045.33	5.10
Subtotal	**2,406.27**	**5.63**	**1,862.84**	**56.23**	**1,895.31**	**4.53**	**2,231.06**	**5.38**
Southwest								
Avaré	1,608.13	5.41	783.13	2.70	1,253.31	4.30	1,709.49	5.79
Itapetininga	484.49	5.02	110.41	1.19	230.68	2.46	331.40	2.96
Subtotal	**2,092.62**	**5.31**	**893.54**	**2.33**	**1,483.99**	**3.85**	**2,040.89**	**5.02**
Total	**11,543.97**	**5.46**	**6,608.75**	**3.28**	**8,071.18**	**4.01**	**9,282.23**	**4.49**

Table 92 – Oranges: Vacancies by variety [2015 to 2018 inventories]

Variety	2015 inventory		2016 inventory		2017 inventory		2018 inventory	
	Vacancies	Percentage	Vacancies	Percentage	Vacancies	Percentage	Vacancies	Percentage
	(1,000 holes)	(%)	(1,000 holes)	(%)	(1,000 holes)	(%)	(1,000 holes)	(%)
Early								
Hamlin	1,896.91	7.29	870.24	3.53	1,073.55	4.43	1,176.62	4.85
Westin	198.25	5.79	156.22	4.62	163.17	4.99	176.84	5.76
Rubi	227.09	5.55	148.74	3.59	206.71	5.01	199.44	4.54
Valencia Americana	656.57	7.73	247.67	3.11	509.30	7.94	548.96	6.40
Seleta	9.04	10.53	3.41	4.21	4.65	6.42	4.77	5.24
Pineapple	156.77	13.08	10.33	0.97	17.31	1.64	27.24	2.33
Subtotal	**3,144.63**	**7.26**	**1,436.61**	**3.48**	**1,974.69**	**4.87**	**2,133.87**	**5.14**
Mid-season								
Pera Rio	3,322.00	4.56	2,174.03	3.12	2,497.86	3.54	3,122.28	4.20
Subtotal	**3,322.00**	**4.56**	**2,174.03**	**3.12**	**2,497.86**	**3.54**	**3,122.28**	**4.20**
Late								
Valencia	3,066.65	4.92	1,937.42	3.27	2,352.33	3.93	2,563.32	4.39
Valencia Folha Murcha	363.77	3.85	344.09	3.86	378.28	4.25	396.72	4.31
Natal	1,646.92	7.03	716.60	3.20	868.02	4.06	1,066.04	4.62
Subtotal	**5,077.34**	**5.34**	**2,998.11**	**3.31**	**3,598.63**	**3.99**	**4,026.08**	**4.44**
Total	**11,543.97**	**5.46**	**6,608.75**	**3.28**	**8,071.18**	**4.01**	**9,282.23**	**4.49**

Table 93 – Oranges: Vacancies by age group [2015 to 2018 inventories]

Groves age	2015 inventory		2016 inventory		2017 inventory		2018 inventory	
	Vacancies	Percentage	Vacancies	Percentage	Vacancies	Percentage	Vacancies	Percentage
	(1,000 holes)	(%)	(1,000 holes)	(%)	(1,000 holes)	(%)	(1,000 holes)	(%)
1 – 2 years	501.44	2.83	43.68	0.38	21.13	0.18	121.30	0.79
3 – 5 years	1,202.30	2.99	787.85	2.10	674.25	2.25	475.06	1.95
6 – 10 years	4,267.23	4.95	2,534.90	3.18	2,819.76	3.69	2,491.35	3.58
Over 10 year	5,573.00	8.29	3,242.32	4.44	4,556.04	5.47	6,194.52	6.37
Total	**11,543.97**	**5.46**	**6,608.75**	**3.28**	**8,071.18**	**4.01**	**9,282.23**	**4.49**

Table 94 – Other oranges[1]: Area and number of trees by region, variety and age [2018 inventory] (continues next page)

Region and variety	Area	Trees 0 – 2 years			Trees 3 – 5 years	Trees 6 – 10 years	Trees over 10 years	Total
		2016	2017	Resets				
	(hectares)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)
Triângulo Mineiro								
Washington Navel and Baianinha	38	-	-	-	-	3.13	8.98	12.11
Charmute de Brotas	8	-	-	-	-	-	2.93	2.93
Acidless sweet oranges and sweet lime[2]	21	0.16	-	-	-	3.23	4.49	7.88
Other	5	-	-	-	-	1.81	-	1.81
Subtotal	**72**	**0.16**	**-**	**-**	**-**	**8.17**	**16.40**	**24.73**
Bebedouro								
Washington Navel and Baianinha	29	0.20	-	-	1.38	0.83	8.79	11.20
Charmute de Brotas	4	-	-	-	-	2.10	-	2.10
Acidless sweet oranges and sweet lime[2]	445	13.97	4.65	-	67.59	87.57	19.81	193.59
Other	98	0.26	0.26	-	13.68	36.52	8.71	59.43
Subtotal	**576**	**14.43**	**4.91**	**-**	**82.65**	**127.02**	**37.31**	**266.32**
Altinópolis								
Washington Navel and Baianinha	14	-	-	-	0.14	-	4.31	4.45
Charmute de Brotas	49	-	-	-	-	3.85	16.55	20.40
Acidless sweet oranges and sweet lime[2]	127	-	4.97	0.10	18.42	10.05	21.64	55.18
Other	4	-	-	-	-	-	1.64	1.64
Subtotal	**194**	**-**	**4.97**	**0.10**	**18.56**	**13.90**	**44.14**	**81.67**
Votuporanga								
Washington Navel and Baianinha	16	0.17	5.21	-	-	-	4.32	9.70
Charmute de Brotas	-	-	-	-	-	-	-	-
Acidless sweet oranges and sweet lime[2]	170	7.89	-	0.55	38.16	39.45	12.48	98.53
Other	32	0.95	-	0.11	0.84	7.42	1.85	11.17
Subtotal	**218**	**9.01**	**5.21**	**0.66**	**39.00**	**46.87**	**18.65**	**119.40**
São José do Rio Preto								
Washington Navel and Baianinha	35	-	-	0.93	11.83	6.14	0.07	18.97
Charmute de Brotas	1	-	-	0.05	0.62	-	-	0.67
Acidless sweet oranges and sweet lime[2]	30	1.00	-	0.07	0.95	12.04	5.30	19.36
Other	16	-	-	0.44	-	6.82	-	7.26
Subtotal	**82**	**1.00**	**-**	**1.49**	**13.40**	**25.00**	**5.37**	**46.26**
Matão								
Washington Navel and Baianinha	3	-	-	0.07	0.26	0.16	0.63	1.12
Charmute de Brotas	7	-	-	0.48	1.93	0.52	-	2.93
Acidless sweet oranges and sweet lime[2]	396	3.21	9.75	11.94	54.39	63.14	49.52	191.95
Other	66	5.05	42.05	0.22	0.87	3.42	0.88	52.49
Subtotal	**472**	**8.26**	**51.80**	**12.71**	**57.45**	**67.24**	**51.03**	**248.49**

Table 94 – Other oranges[1]: Area and number of trees by region, variety and age [2018 inventory] (continued)

Region and variety	Area	Trees 0 – 2 years			Trees 3 – 5 years	Trees 6 – 10 years	Trees over 10 years	Total
		2016	2017	Resets				
	(hectares)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)
Duartina								
Washington Navel and Baianinha	53	1.79	-	0.79	10.33	22.59	0.02	35.52
Charmute de Brotas	153	-	-	1.16	13.57	34.35	21.18	70.26
Acidless sweet oranges and sweet lime[2]	374	17.85	-	4.20	68.21	98.66	36.53	225.45
Other	38	5.98	32.48	0.03	0.94	-	-	39.43
Subtotal	**618**	**25.62**	**32.48**	**6.18**	**93.05**	**155.60**	**57.73**	**370.66**
Brotas								
Washington Navel and Baianinha	35	-	-	0.37	-	7.65	6.20	14.22
Charmute de Brotas	529	7.47	-	1.60	-	33.35	124.24	166.66
Acidless sweet oranges and sweet lime[2]	557	7.32	5.55	5.82	37.74	33.27	127.04	216.74
Other	237	-	-	2.28	14.69	13.27	53.32	83.56
Subtotal	**1,358**	**14.79**	**5.55**	**10.07**	**52.43**	**87.54**	**310.80**	**481.18**
Porto Ferreira								
Washington Navel and Baianinha	461	17.31	8.65	11.42	48.38	35.56	105.51	226.83
Charmute de Brotas	327	-	4.75	7.84	11.12	37.99	87.06	148.76
Acidless sweet oranges and sweet lime[2]	1,830	63.54	46.83	43.11	86.44	160.67	505.25	905.84
Other	16	1.41	-	0.28	1.45	1.11	2.31	6.56
Subtotal	**2,634**	**82.26**	**60.23**	**62.65**	**147.39**	**235.33**	**700.13**	**1,287.99**
Limeira								
Washington Navel and Baianinha	775	38.96	40.58	19.80	76.60	44.65	142.41	363.00
Charmute de Brotas	395	4.48	26.22	11.65	43.09	28.86	75.30	189.60
Acidless sweet oranges and sweet lime[2]	1,824	66.93	28.26	71.19	150.09	227.27	355.98	899.72
Other	431	13.48	0.26	13.63	58.59	156.62	16.07	258.65
Subtotal	**3,425**	**123.85**	**95.32**	**116.27**	**328.37**	**457.40**	**589.76**	**1,710.97**
Avaré								
Washington Navel and Baianinha	778	14.25	23.57	8.41	24.65	90.75	185.59	347.22
Charmute de Brotas	334	-	9.61	4.20	5.98	75.84	65.58	161.21
Acidless sweet oranges and sweet lime[2]	885	48.92	32.32	11.88	28.89	140.14	176.56	438.71
Other	72	-	24.70	0.05	-	-	10.40	35.15
Subtotal	**2,069**	**63.17**	**90.20**	**24.54**	**59.52**	**306.73**	**438.13**	**982.29**
Itapetininga								
Washington Navel and Baianinha	386	4.85	4.45	13.32	12.71	91.95	39.52	166.80
Charmute de Brotas	175	4.34	6.70	8.20	7.84	25.83	24.23	77.14
Acidless sweet oranges and sweet lime[2]	247	-	1.19	10.34	9.99	31.65	44.17	97.34
Other	357	153.63	54.83	1.65	62.96	12.89	6.85	292.81
Subtotal	**1,165**	**162.82**	**67.17**	**33.51**	**93.50**	**162.32**	**114.77**	**634.09**
Total	**12,883**	**505.37**	**417.84**	**268.18**	**985.32**	**1,693.12**	**2,384.22**	**6,254.05**

- Represents zero.
1 Resets were considered as old as the original planted grove.
2 Acidless sweet oranges: Lima Verde, Lima Tardia, Piralima, Lima Sorocaba, Lima Roque e João Nunes.
Sweet lime: Palestine sweet lime.

Table 95–Acid limes and lemons: Area and planting holes estimated[1] by region, variety and age of plot [2018 inventory]

Region and variety	Area	Plots 0 – 2 years		Plots 3 – 5 years	Plots 6 – 10 years	Plots over 10 years	Plots of non-identified age	Total
		2016	2017					
	(hectares)	(1,000 holes)	(1,000 holes)	(1,000 holes)	(1,000 holes)	(1,000 holes)	(1,000 holes)	(1,000 holes)
Triângulo Mineiro								
Tahiti acid lime	369	4.76	-	73.58	76.16	52.99	-	207.49
Sicilian lemon.....	-	-	-	-	-	-	-	-
Other including non-identified ones	-	-	-	-	-	-	-	-
Subtotal.....	**369**	**4.76**	**-**	**73.58**	**76.16**	**52.99**	**-**	**207.49**
Bebedouro								
Tahiti acid lime	14,881	527.99	612.93	1,409.39	2,414.03	937.61	42.14	5,944.09
Sicilian lemon.....	74	1.98	8.22	8.68	30.84	0.35	-	50.07
Other including non-identified ones	100	1.03	-	8.69	27.02	5.04	3.25	45.03
Subtotal.....	**15,055**	**531.00**	**621.15**	**1,426.76**	**2,471.89**	**943.00**	**45.39**	**6,039.19**
Altinópolis								
Tahiti acid lime	45	3.19	4.65	1.31	7.81	2.65	4.23	23.84
Sicilian lemon.....	-	-	-	-	-	-	-	-
Other including non-identified ones	-	-	-	0.59	-	-	-	0.59
Subtotal.....	**45**	**3.19**	**4.65**	**1.90**	**7.81**	**2.65**	**4.23**	**24.43**
Votuporanga								
Tahiti acid lime	3,762	101.49	195.81	325.18	415.35	245.70	73.54	1,357.07
Sicilian lemon.....	1	-	-	-	-	0.43	-	0.43
Other including non-identified ones	8	-	4.87	1.14	-	-	0.56	6.57
Subtotal.....	**3,771**	**101.49**	**200.68**	**326.32**	**415.35**	**246.13**	**74.10**	**1,364.07**
São José do Rio Preto								
Tahiti acid lime	996	42.09	20.57	60.77	67.15	143.67	16.58	350.83
Sicilian lemon.....	1	-	-	0.52	-	-	-	0.52
Other including non-identified ones	-	-	-	-	-	-	-	-
Subtotal.....	**997**	**42.09**	**20.57**	**61.29**	**67.15**	**143.67**	**16.58**	**351.35**
Matão								
Tahiti acid lime	10,179	479.49	763.09	1,159.91	1,101.25	1,122.12	16.32	4,642.18
Sicilian lemon.....	37	-	15.14	-	0.26	-	-	15.40
Other including non-identified ones	122	13.98	2.83	18.73	16.02	0.61	1.68	53.85
Subtotal.....	**10,338**	**493.47**	**781.06**	**1,178.64**	**1,117.53**	**1,122.73**	**18.00**	**4,711.43**
Duartina								
Tahiti acid lime	446	23.99	7.73	99.79	19.09	41.00	18.35	209.95
Sicilian lemon.....	489	12.82	35.89	14.91	175.03	0.95	12.61	252.21
Other including non-identified ones	14	0.13	0.71	6.30	-	-	1.38	8.52
Subtotal.....	**949**	**36.94**	**44.33**	**121.00**	**194.12**	**41.95**	**32.34**	**470.68**
Brotas								
Tahiti acid lime	62	10.07	2.01	2.28	6.80	5.85	8.67	35.68
Sicilian lemon.....	368	0.40	1.49	84.39	2.79	38.00	5.87	132.94
Other including non-identified ones	138	0.25	-	15.67	7.39	22.11	-	45.42
Subtotal.....	**568**	**10.72**	**3.50**	**102.34**	**16.98**	**65.96**	**14.54**	**214.04**
Porto Ferreira								
Tahiti acid lime	639	40.24	34.27	65.82	173.30	48.70	0.84	363.17
Sicilian lemon.....	495	53.33	58.36	71.79	57.04	6.85	-	247.37
Other including non-identified ones	20	7.15	-	1.88	1.92	-	-	10.95
Subtotal.....	**1,154**	**100.72**	**92.63**	**139.49**	**232.26**	**55.55**	**0.84**	**621.49**
Limeira								
Tahiti acid lime	3,629	119.32	214.31	380.42	507.02	334.80	34.08	1,589.95
Sicilian lemon.....	657	64.11	22.03	92.78	178.92	4.96	2.24	365.04
Other including non-identified ones	22	0.06	2.83	2.89	1.87	3.56	-	11.21
Subtotal.....	**4,308**	**183.49**	**239.17**	**476.09**	**687.81**	**343.32**	**36.32**	**1,966.20**
Avaré								
Tahiti acid lime	35	2.05	1.35	8.05	4.28	0.78	1.99	18.50
Sicilian lemon.....	1,343	43.18	26.40	98.93	445.28	12.71	-	626.50
Other including non-identified ones	-	-	-	-	-	-	-	-
Subtotal.....	**1,378**	**45.23**	**27.75**	**106.98**	**449.56**	**13.49**	**1.99**	**645.00**
Itapetininga								
Tahiti acid lime	33	-	-	12.14	4.36	-	4.97	21.47
Sicilian lemon.....	112	-	-	9.12	30.35	-	2.30	41.77
Other including non-identified ones	1	-	-	1.14	-	-	-	1.14
Subtotal.....	**146**	**-**	**-**	**22.40**	**34.71**	**-**	**7.27**	**64.38**
Total.....	**39,078**	**1,553.10**	**2,035.49**	**4,036.79**	**5,771.33**	**3,031.44**	**251.60**	**16,679.75**

- Represents zero.[1]

The method employed for mapping groves of acid limes and lemons was reduced to the outline of the plots, and data about variety and number of trees were supplied by the farmer or person in charge. Whenever such information was not provided, the number of holes was calculated by the area of the plot divided by the spacing, which was identified by visual evaluation. The counting of 5% of the plots was not performed for this group of citrus species.

Table 96 – Tangerines: Area and planting holes[1] estimated by region, variety and age of plot [2018 inventory]

Region and variety	Area	Plots 0 – 2 years		Plots 3 – 5 years	Plots 6 – 10 years	Plots over 10 years	Plots of non-identified age	Total
		2016	2017					
	(hectares)	(1,000 holes)	(1,000 holes)	(1,000 holes)	(1,000 holes)	(1,000 holes)	(1,000 holes)	(1,000 holes)
Triângulo Mineiro								
Ponkan	176	2.14	11.11	15.63	10.71	34.39	2.47	76.45
Murcott	14	-	-	-	0.87	3.82	-	4.69
Other	44	0.47	-	0.64	11.63	9.03	0.97	22.74
Subtotal	**234**	**2.61**	**11.11**	**16.27**	**23.21**	**47.24**	**3.44**	**103.88**
Bebedouro								
Ponkan	914	65.70	43.55	115.08	199.41	53.35	20.22	497.31
Murcott	281	12.89	14.19	20.62	57.73	30.50	2.23	138.16
Other	159	6.60	19.80	17.45	19.88	12.00	1.10	76.83
Subtotal	**1,354**	**85.19**	**77.54**	**153.15**	**277.02**	**95.85**	**23.55**	**712.30**
Altinópolis								
Ponkan	104	1.16	30.18	17.84	11.66	5.01	0.43	66.28
Murcott	80	-	-	11.66	18.85	4.39	-	34.90
Other	16	-	-	3.10	-	1.96	3.19	8.25
Subtotal	**200**	**1.16**	**30.18**	**32.60**	**30.51**	**11.36**	**3.62**	**109.43**
Votuporanga								
Ponkan	945	28.60	65.65	176.44	122.64	45.52	68.20	507.05
Murcott	83	19.14	5.10	19.31	1.47	-	-	45.02
Other	58	4.08	9.48	14.61	4.21	1.40	1.63	35.41
Subtotal	**1,086**	**51.82**	**80.23**	**210.36**	**128.32**	**46.92**	**69.83**	**587.48**
São José do Rio Preto								
Ponkan	337	9.46	24.14	60.74	54.23	48.00	2.99	199.56
Murcott	81	0.30	-	-	2.19	25.17	-	27.66
Other	30	2.45	-	12.49	3.27	0.79	0.31	19.31
Subtotal	**448**	**12.21**	**24.14**	**73.23**	**59.69**	**73.96**	**3.30**	**246.53**
Matão								
Ponkan	321	30.94	2.55	63.77	28.23	27.59	19.14	172.22
Murcott	433	29.26	5.80	82.25	11.17	86.05	3.82	218.35
Other	35	0.95	-	12.05	3.95	2.61	1.21	20.77
Subtotal	**789**	**61.15**	**8.35**	**158.07**	**43.35**	**116.25**	**24.17**	**411.34**
Duartina								
Ponkan	351	37.20	0.45	102.14	23.08	39.29	4.97	207.13
Murcott	865	34.69	-	31.29	23.82	253.89	-	343.69
Other	202	0.52	0.76	9.04	183.09	3.27	0.49	197.17
Subtotal	**1,418**	**72.41**	**1.21**	**142.47**	**229.99**	**296.45**	**5.46**	**747.99**
Brotas								
Ponkan	34	3.09	5.77	9.72	0.60	0.04	2.10	21.32
Murcott	204	17.25	-	50.20	8.30	23.90	24.99	124.64
Other	134	3.01	-	6.67	1.94	50.17	1.61	63.40
Subtotal	**372**	**23.35**	**5.77**	**66.59**	**10.84**	**74.11**	**28.70**	**209.36**
Porto Ferreira								
Ponkan	246	12.68	7.86	35.69	28.64	35.46	25.57	145.90
Murcott	1,094	47.52	43.05	112.89	53.79	254.01	46.24	557.50
Other	82	-	5.08	10.27	2.14	11.98	21.43	50.90
Subtotal	**1,422**	**60.20**	**55.99**	**158.85**	**84.57**	**301.45**	**93.24**	**754.30**
Limeira								
Ponkan	1,074	24.82	23.97	181.92	214.49	197.10	6.12	648.42
Murcott	1,326	67.70	57.60	215.48	53.58	307.42	4.94	706.72
Other	132	9.45	17.59	35.84	7.55	25.96	-	96.39
Subtotal	**2,532**	**101.97**	**99.16**	**433.24**	**275.62**	**530.48**	**11.06**	**1,451.53**
Avaré								
Ponkan	214	3.13	4.28	7.07	44.11	38.62	1.76	98.97
Murcott	725	45.61	37.08	25.62	81.26	122.58	69.31	381.46
Other	145	15.43	2.36	19.22	10.63	14.84	-	62.48
Subtotal	**1,084**	**64.17**	**43.72**	**51.91**	**136.00**	**176.04**	**71.07**	**542.91**
Itapetininga								
Ponkan	570	4.99	5.45	48.11	80.33	55.12	99.15	293.15
Murcott	421	12.47	2.83	28.75	70.73	52.08	71.65	238.51
Other	274	5.34	27.56	24.65	35.78	38.05	11.63	143.01
Subtotal	**1,265**	**22.80**	**35.84**	**101.51**	**186.84**	**145.25**	**182.43**	**674.67**
Total	**12,204**	**559.04**	**473.24**	**1,598.25**	**1,485.96**	**1,915.36**	**519.87**	**6,551.72**

- Represents zero.

[1] The method employed for mapping tangerines groves was reduced to the outline of the plots, and data about variety and number of trees were supplied by the farmer or person in charge. Whenever such information was not provided, the number of holes was calculated by the area of the plot divided by the spacing, which was identified by visual evaluation. The counting of 5% of the plots was not performed for this group of citrus species.

Table 97 – Oranges: Cities with groves by sector and region [2018 inventory]

Sector	Region	Cities
North 69 cities	Triângulo Mineiro (TMG) 15 cities	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 cities	Ariranha, Barretos, Bebedouro, Cajobi, Catanduva, Catiguá, Colina, Colômbia, Elisiário, Embaúba, Guaraci, Ibirá, Irapuã, Itajobi, Marapoama, Monte Azul Paulista, Novais, Olímpia, Palmares Paulista, Paraíso, Pirangi, Pitangueiras, Sales, Santa Adélia, Severínia, Tabapuã, Taiaçu, Taiúva, Taquaral, Terra Roxa, Uchoa, Urupês, Viradouro, Vista Alegre do Alto.
	Altinópolis (ALT) 20 cities	Altinópolis, Batatais, Brodowski, Cajuru, Cássia dos Coqueiros, Cristais Paulista, Fortaleza de Minas, Franca, Ibiraci, Igarapava, Jacuí, Jeriquara, Monte Santo de Minas, Nova Resende, Patrocínio Paulista, Pedregulho, Santo Antônio da Alegria, São Pedro da União, São Sebastião do Paraíso, São Tomás de Aquino.
Northwest 86 cities	Votuporanga (VOT) 52 cities	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, Murutinga do Sul, Nova Canaã Paulista, Ouroeste, Palmeira d'Oeste, Paranapuã, Parisi, Pedranópolis, 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) 34 cities	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, Zacarias.
Central 73 cities	Matão (MAT) 20 cities	Américo Brasiliense, Araraquara, Bariri, Boa Esperança do Sul, Borborema, Cândido Rodrigues, Fernando Prestes, Gavião Peixoto, Ibitinga, Itaju, Itápolis, Matão, Monte Alto, Motuca, Nova Europa, Novo Horizonte, Rincão, Santa Lúcia, Tabatinga, Taquaritinga.
	Duartina (DUA) 38 cities	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) 15 cities	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 43 cities	Porto Ferreira (PFE) 17 cities	Aguaí, Caconde, Casa Branca, Descalvado, Itobi, Luís Antônio, Mococa, Pirassununga, Porto Ferreira, Santa Cruz da Conceição, Santa Cruz das Palmeiras, Santa Rita do Passa Quatro, Santa Rosa de Viterbo, São João da Boa Vista, São Simão, Tambaú, Vargem Grande do Sul.
	Limeira (LIM) 26 cities	Águas de Lindóia, 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, Santo Antônio de Posse, Serra Negra, Socorro.
Southwest 49 cities	Avaré (AVA) 29 cities	Águas de Santa Bárbara, Angatuba, Anhembi, Araçoiaba da Serra, Arandu, Avaré, Bofete, Borebi, Botucatu, Capela do Alto, Cerqueira César, Cesário Lange, Conchas, Guareí, Iaras, Iperó, Itatinga, Lençóis Paulista, Manduri, Óleo, Pardinho, Porangaba, Porto Feliz, Pratânia, Salto de Pirapora, São Manuel, Sorocaba, Tatuí, Tietê.
	Itapetininga (ITG) 20 cities	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.
Total 5 sectors	Total 12 regions	Total 320 cities

Table 98 – Other oranges: Cities with groves by sector and region [2018 inventory]

Sector	Region	Cities
North 37 cities	Triângulo Mineiro (TMG) 4 cities	Monte Alegre de Minas, Prata, Uberaba, Conceição das Alagoas.
	Bebedouro (BEB) 21 cities	Ariranha, Barretos, Bebedouro, Cajobi, Colômbia, Embaúba, Itajobi, Marapoama, Monte Azul Paulista, Olímpia, Paraíso, Pirangi, Pitangueiras, Santa Adélia, Severínia, Taiaçu, Taiúva, Uchoa, Urupês, Vista Alegre do Alto, Terra Roxa.
	Altinópolis (ALT) 12 cities	Altinópolis, Batatais, Brodowski, Cássia dos Coqueiros, Ibiraci, Monte Santo de Minas, Nova Resende, Patrocínio Paulista, Pedregulho, Santo Antônio da Alegria, São Pedro da União, São Sebastião do Paraíso.
Northwest 36 cities	Votuporanga (VOT) 25 cities	Álvares Florence, Aspásia, Estrela d'Oeste, Fernandópolis, Jales, Macedônia, Mesópolis, Murutinga do Sul, Palmeira d'Oeste, Paranapuã, Parisi, Pontalinda, Santa Albertina, Santa Clara d'Oeste, Santa Fé do Sul, Santa Salete, Santana da Ponte Pensa, São João das Duas Pontes, Sud Mennucci, Três Fronteiras, Turmalina, Urânia, Vitória Brasil, Votuporanga, Auriflama.
	São José do Rio Preto (SJO) 11 cities	Altair, Bálsamo, Cedral, Ipiguá, José Bonifácio, Mendonça, Mirassolândia, Monte Aprazível, Nhandeara, Nova Aliança, Potirendaba.
Central 48 cities	Matão (MAT) 12 cities	Américo Brasiliense, Bariri, Boa Esperança do Sul, Borborema, Fernando Prestes, Ibitinga, Itaju, Itápolis, Monte Alto, Novo Horizonte, Tabatinga, Taquaritinga.
	Duartina (DUA) 23 cities	Alvinlândia, Arealva, Avaí, Cabrália Paulista, Cafelândia, Campos Novos Paulista, Duartina, Fernão, Guaimbê, Iacanga, Lucianópolis, Marília, Paulistânia, Pederneiras, Piratininga, Presidente Alves, São Pedro do Turvo, Ubirajara, Agudos, Echaporã, Espírito Santo do Turvo, Guarantã, Santa Cruz do Rio Pardo.
	Brotas (BRO) 13 cities	Analândia, Bocaina, Brotas, Corumbataí, Dois Córregos, Itirapina, Mineiros do Tietê, Santa Maria da Serra, Torrinha, Trabiju, Ribeirão Bonito, São Carlos, São Pedro.
South 31 cities	Porto Ferreira (PFE) 12 cities	Aguaí, Casa Branca, Descalvado, Mococa, Pirassununga, Porto Ferreira, Santa Cruz das Palmeiras, Santa Rita do Passa Quatro, São João da Boa Vista, São Simão, Tambaú, Vargem Grande do Sul.
	Limeira (LIM) 19 cities	Amparo, Araras, Artur Nogueira, Bragança Paulista, Conchal, Cordeirópolis, Cosmópolis, Engenheiro Coelho, Espírito Santo do Pinhal, Estiva Gerbi, Holambra, Jaguariúna, Leme, Limeira, Mogi Guaçu, Mogi Mirim, Piracicaba, Santo Antônio de Posse, Águas de Lindóia.
Southwest 36 cities	Avaré (AVA) 19 cities	Águas de Santa Bárbara, Angatuba, Anhembi, Araçoiaba da Serra, Avaré, Botucatu, Capela do Alto, Guareí, Iperó, Itatinga, Manduri, Porto Feliz, Pratânia, Salto de Pirapora, Sorocaba, Tatuí, Arandu, Cerqueira César, Conchas.
	Itapetininga (ITG) 17 cities	Alambari, Buri, Capão Bonito, Itaberá, Itaí, Itapetininga, Itapeva, Itaporanga, Paranapanema, São Miguel Arcanjo, Sarapuí, Tejupá, Coronel Macedo, Itararé, Pilar do Sul, Sarutaiá, Taquarivaí.
Total 5 sectors	Total 12 regions	Total 188 cities

Table 99 – Acid limes and lemons: Cities with groves by sector and region [2018 inventory]

Sector	Region	Cities
North 47 cities	Triângulo Mineiro (TMG) 8 cities	Campina Verde, Campo Florido, Frutal, Monte Alegre de Minas, Prata, Uberaba, Conceição das Alagoas, Iturama.
	Bebedouro (BEB) 33 cities	Ariranha, Barretos, Bebedouro, Cajobi, Colina, Colômbia, Elisiário, Embaúba, Guaraci, Ibirá, Irapuã, Itajobi, Marapoama, Monte Azul Paulista, Novais, Olímpia, Paraíso, Pirangi, Sales, Santa Adélia, Severínia, Tabapuã, Taiaçu, Taiúva, Taquaral, Uchoa, Urupês, Viradouro, Vista Alegre do Alto, Catanduva, Catiguá, Palmares Paulista, Pindorama.
	Altinópolis (ALT) 6 cities	Altinópolis, Brodowski, Monte Santo de Minas, Patrocínio Paulista, Santo Antônio da Alegria, São Sebastião do Paraíso.
Northwest 70 cities	Votuporanga (VOT) 45 cities	Álvares Florence, Aparecida d'Oeste, Aspásia, Dolcinópolis, Estrela d'Oeste, Fernandópolis, Guaraçaí, Guarani d'Oeste, Jales, Macedônia, Marinópolis, Meridiano, Mesópolis, Mira Estrela, Murutinga do Sul, Palmeira d'Oeste, Paranapuã, Parisi, Pedranópolis, Pontalinda, Populina, Rubinéia, Santa Albertina, 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, Três Fronteiras, Turmalina, Urânia, Valentim Gentil, Vitória Brasil, Votuporanga, Mirandópolis, Dirce Reis, Guzolândia, Nova Canaã Paulista, Ouroeste, Pereira Barreto, Pontes Gestal.
	São José do Rio Preto (SJO) 25 cities	Adolfo, Altair, Bady Bassitt, Bálsamo, Cedral, Cosmorama, Jaci, Ipiguá, José Bonifácio, Mendonça, Mirassolândia, Nhandeara, Nova Aliança, Palestina, Nova Granada, Planalto, Potirendaba, São José do Rio Preto, Tanabi, Macaubal, Guapiaçu, Neves Paulista, Onda Verde, Sebastianópolis do Sul, Zacarias.
Central 57 cities	Matão (MAT) 17 cities	Bariri, Boa Esperança do Sul, Borborema, Cândido Rodrigues, Fernando Prestes, Ibitinga, Itápolis, Itaju, Matão, Monte Alto, Motuca, Nova Europa, Novo Horizonte, Taquaritinga, Tabatinga, Araraquara, Jaboticabal.
	Duartina (DUA) 31 cities	Arealva, Avaí, Bauru, Cabrália Paulista, Cafelândia, Campos Novos Paulista, Fernão, Duartina, Getulina, Guaimbê, Iacanga, Lins, Lucianópolis, Pederneiras, Marília, Piratininga, Presidente Alves, São Pedro do Turvo, Ubirajara, Álvaro de Carvalho, Boracéia, Echaporã, Gália, Guaiçara, Guarantã, Ocauçu, Pirajuí, Pongaí, Promissão, Reginópolis, Uru.
	Brotas (BRO) 9 cities	Analândia, Bocaina, Corumbataí, Brotas, Dois Córregos, Itirapina, Mineiros do Tietê, Trabiju, Ribeirão Bonito.
South 40 cities	Porto Ferreira (PFE) 16 cities	Aguaí, Casa Branca, Pirassununga, Mococa, Porto Ferreira, Santa Rita do Passa Quatro, São João da Boa Vista, São Simão, Tambaú, Guaxupé, Guaranésia, Itobi, Luís Antônio, Santa Rosa de Viterbo, São José do Rio Pardo, Vargem Grande do Sul.
	Limeira (LIM) 24 cities	Araras, Artur Nogueira, Cordeirópolis, Conchal, Cosmópolis, Engenheiro Coelho, Espírito Santo do Pinhal, Estiva Gerbi, Holambra, Iracemápolis, Jaguariúna, Leme, Limeira, Mogi Guaçu, Mogi Mirim, Piracicaba, Rio Claro, Santo Antônio de Posse, Serra Negra, Itatiba, Monte Alegre do Sul, Pinhalzinho, Charqueada, Itapira.
Southwest 20 cities	Avaré (AVA) 13 cities	Águas de Santa Bárbara, Angatuba, Avaré, Araçoiaba da Serra, Botucatu, Capela do Alto, Itatinga, Porto Feliz, Sorocaba, Tatuí, Arandu, Cabreúva, Cerqueira César.
	Itapetininga (ITG) 7 cities	Buri, Itaberá, Itapeva, Itaí, Itaporanga, Paranapanema, São Miguel Arcanjo.
Total 5 sectors	Total 12 regions	Total 234 cities

Table 100 – Tangerines: Cities with groves by sector and region [2018 inventory]

Sector	Region	Cities
North 49 cities	Triângulo Mineiro (TMG) 7 cities	Campina Verde, Campo Florido, Frutal, Itapagipe, Monte Alegre de Minas, Prata, Uberaba.
	Bebedouro (BEB) 30 cities	Ariranha, Barretos, Bebedouro, Cajobi, Colina, Colômbia, Elisiário, Embaúba, Ibirá, Irapuã, Marapoama, Guaraci, Itajobi, Monte Azul Paulista, Novais, Olímpia, Paraíso, Pirangi, Pitangueiras, Sales, Severínia, Santa Adélia, Tabapuã, Taiaçu, Taiúva, Taquaral, Uchoa, Urupês, Viradouro, Vista Alegre do Alto.
	Altinópolis (ALT) 12 cities	Altinópolis, Cajuru, Ibiraci, Itamogi, Jacuí, Monte Santo de Minas, Nova Resende, Patrocínio Paulista, Pedregulho, Santo Antônio da Alegria, São Pedro da União, São Sebastião do Paraíso.
Northwest 66 cities	Votuporanga (VOT) 44 cities	Álvares Florence, Américo de Campos, Andradina, Aparecida d'Oeste, Aspásia, Cardoso, Dolcinópolis, Estrela d'Oeste, Fernandópolis, Guaraçaí, Guarani d'Oeste, Jales, Macedônia, Marinópolis, Meridiano, Mesópolis, Mira Estrela, Murutinga do Sul, Palmeira d'Oeste, Paranapuã, Parisi, Pedranópolis, Pontalinda, Populina, 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, Mirandópolis.
	São José do Rio Preto (SJO) 22 cities	Adolfo, Altair, Bady Bassitt, Bálsamo, Cedral, Cosmorama, Floreal, Ipiguá, Jaci, José Bonifácio, Mendonça, Mirassolândia, Monte Aprazível, Nhandeara, Nova Aliança, Nova Granada, Palestina, Paulo de Faria, Planalto, Potirendaba, São José do Rio Preto, Tanabi.
Central 49 cities	Matão (MAT) 18 cities	Américo Brasiliense, Bariri, Boa Esperança do Sul, Borborema, Cândido Rodrigues, Fernando Prestes, Gavião Peixoto, Ibitinga, Itaju, Itápolis, Matão, Monte Alto, Motuca, Nova Europa, Novo Horizonte, Santa Lúcia, Tabatinga, Taquaritinga.
	Duartina (DUA) 21 cities	Alvinlândia, Arealva, Avaí, Bauru, Cabrália Paulista, Cafelândia, Campos Novos Paulista, Duartina, Fernão, Getulina, Guaimbê, Iacanga, Lins, Lucianópolis, Marília, Paulistânia, Pederneiras, Piratininga, Presidente Alves, São Pedro do Turvo, Ubirajara.
	Brotas (BRO) 10 cities	Analândia, Bocaina, Brotas, Corumbataí, Dois Córregos, Itirapina, Mineiros do Tietê, Santa Maria da Serra, Torrinha, Trabiju.
South 42 cities	Porto Ferreira (PFE) 13 cities	Aguaí, Casa Branca, Descalvado, Mococa, Pirassununga, Porto Ferreira, Santa Cruz da Conceição, Santa Cruz das Palmeiras, Santa Rita do Passa Quatro, São João da Boa Vista, São Simão, Tambaú, Guaxupé.
	Limeira (LIM) 29 cities	Amparo, Araras, Artur Nogueira, Bragança Paulista, Conchal, Cordeirópolis, Cosmópolis, Engenheiro Coelho, Espírito Santo do Pinhal, Estiva Gerbi, Holambra, Iracemápolis, Jaguariúna, Jarinu, Leme, Limeira, Mogi Guaçu, Mogi Mirim, Paulínia, Piracicaba, Rio Claro, Santo Antônio de Posse, Serra Negra, Socorro, Atibaia, Itatiba, Lindóia, Monte Alegre do Sul, Pinhalzinho.
Southwest 28 cities	Avaré (AVA) 16 cities	Águas de Santa Bárbara, Angatuba, Anhembi, Araçoiaba da Serra, Avaré, Botucatu, Capela do Alto, Guareí, Iperó, Itatinga, Manduri, Porto Feliz, Pratânia, Salto de Pirapora, Sorocaba, Tatuí.
	Itapetininga (ITG) 12 cities	Alambari, Buri, Capão Bonito, Itaberá, Itaí, Itapetininga, Itapeva, Itaporanga, Paranapanema, São Miguel Arcanjo, Sarapuí, Tejupá.
Total 5 sectors	Total 12 regions	Total 234 cities

3.3 – ABANDONED CITRUS GROVES

Abandoned groves are plots where no management signs are identified, therefore showing no pruning/mowing, insufficient plant health control, high infestation of pests and diseases, with frequent rotten fruit on the ground, and cattle present in the plot. In many cases, the grove degradation is so severe that it prevents agents entering to collect data such as tree spacing, planting year and variety.

Because of this restriction, for most of the abandoned groves mapped in the first survey (2015) it was not possible to differentiate areas per citrus species (orange, lime or tangerine).

Now, in the case of the 2018 inventory, most of the groves identified as abandoned had been mapped in 2015 as bearing groves, so their differentiation into species was possible. Areas in these groves are accounted for separately and are not part of the inventory of bearing and non-bearing trees.

Table 101 – All citrus: Area and percentage of abandoned groves in relation to the total area [2015 and 2018 inventories]

Sector and region	2015 inventory		2018 inventory						
	Total	Percentage	Oranges	Other oranges	Acid limes and lemons	Tangerines	Non-identified species	Total	Percentage
	(hectares)	(%)	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)	(%)
North									
Triângulo Mineiro	218	0.82	30	42	-	-	-	72	0.27
Bebedouro.....	1,091	1.54	158	82	72	1	-	313	0.46
Altinópolis.....	144	1.26	14	-	-	-	-	14	0.12
Subtotal.....	**1,453**	**1.33**	**202**	**124**	**72**	**1**	**-**	**399**	**0.37**
Northwest									
Votuporanga.....	1,051	3.58	760	-	66	14	-	840	3.37
S. J. do Rio Preto...	818	3.16	519	-	22	3	-	544	2.21
Subtotal.....	**1,869**	**3.38**	**1,279**	**-**	**88**	**17**	**-**	**1,384**	**2.79**
Central									
Matão.....	1,353	2.37	221	13	154	1	-	389	0.74
Duartina.....	1,889	3.05	691	317	127	127	-	1,262	2.19
Brotas.....	1,399	5.22	663	101	3	123	-	890	4.21
Subtotal.....	**4,641**	**3.18**	**1,575**	**431**	**284**	**251**	**-**	**2,541**	**1.94**
South									
Porto Ferreira.....	427	0.92	165	-	-	16	-	181	0.40
Limeira.....	830	1.49	1,112	74	47	123	6	1,362	2.67
Subtotal.....	**1,257**	**1.23**	**1,277**	**74**	**47**	**139**	**6**	**1,543**	**1.60**
Southwest									
Avaré.....	677	1.11	68	84	12	7	-	171	0.29
Itapetininga.....	55	0.29	-	1	3	8	-	12	0.05
Subtotal.....	**732**	**0.91**	**68**	**85**	**15**	**15**	**-**	**183**	**0.23**
Total.....	**9,952**	**2.02**	**4,401**	**714**	**506**	**423**	**6**	**6,050**	**1.30**

- Represents zero.

Table 102 – All citrus: Status in 2018 of areas of abandoned groves in the 2015 inventory [2015 and 2018 inventories]

Sector and region	2015 inventory	Status in 2018							
	Total	Abandoned	Renovated			Recovered			Other crop or bare land
			All oranges	Acid limes and lemons	Tangerines	All oranges	Acid limes and lemons	Tangerines	
	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)
North									
Triângulo Mineiro...	218	1	19	-	-	-	-	-	198
Bebedouro.....	1,091	56	33	10	3	30	8	20	931
Altinópolis.....	144	1	-	-	-	-	-	-	143
Subtotal.....	**1,453**	**58**	**52**	**10**	**3**	**30**	**8**	**20**	**1,272**
Northwest									
Votuporanga.....	1,051	77	22	8	8	6	-	-	930
S. J. do Rio Preto.....	818	108	1	2	-	2	-	-	705
Subtotal.....	**1,869**	**185**	**23**	**10**	**8**	**8**	**-**	**-**	**1,635**
Central									
Matão.....	1,353	21	3	1	-	2	2	1	1,323
Duartina.....	1,889	337	152	-	5	6	-	2	1,387
Brotas.....	1,399	70	-	-	-	9	-	-	1,320
Subtotal.....	**4,641**	**428**	**155**	**1**	**5**	**17**	**2**	**3**	**4,030**
South									
Porto Ferreira.....	427	20	8	-	-	-	1	5	393
Limeira.....	830	58	2	-	-	24	-	1	745
Subtotal.....	**1,257**	**78**	**10**	**-**	**-**	**24**	**1**	**6**	**1,138**
Southwest									
Avaré.....	677	1	11	-	-	19	-	-	646
Itapetininga.....	55	-	55	-	-	-	-	-	-
Subtotal.....	**732**	**1**	**66**	**-**	**-**	**19**	**-**	**-**	**646**
Total.....	**9,952**	**750**	**306**	**21**	**16**	**98**	**11**	**29**	**8,721**

- Represents zero.

2018-2019 ORANGE CROP FORECAST FOR SÃO PAULO AND WEST-SOUTHWEST MINAS GERAIS CITRUS BELT

MAY FORECAST

Fundecitrus
SCIENCE AND SUSTAINABILITY IN CITRICULTURE

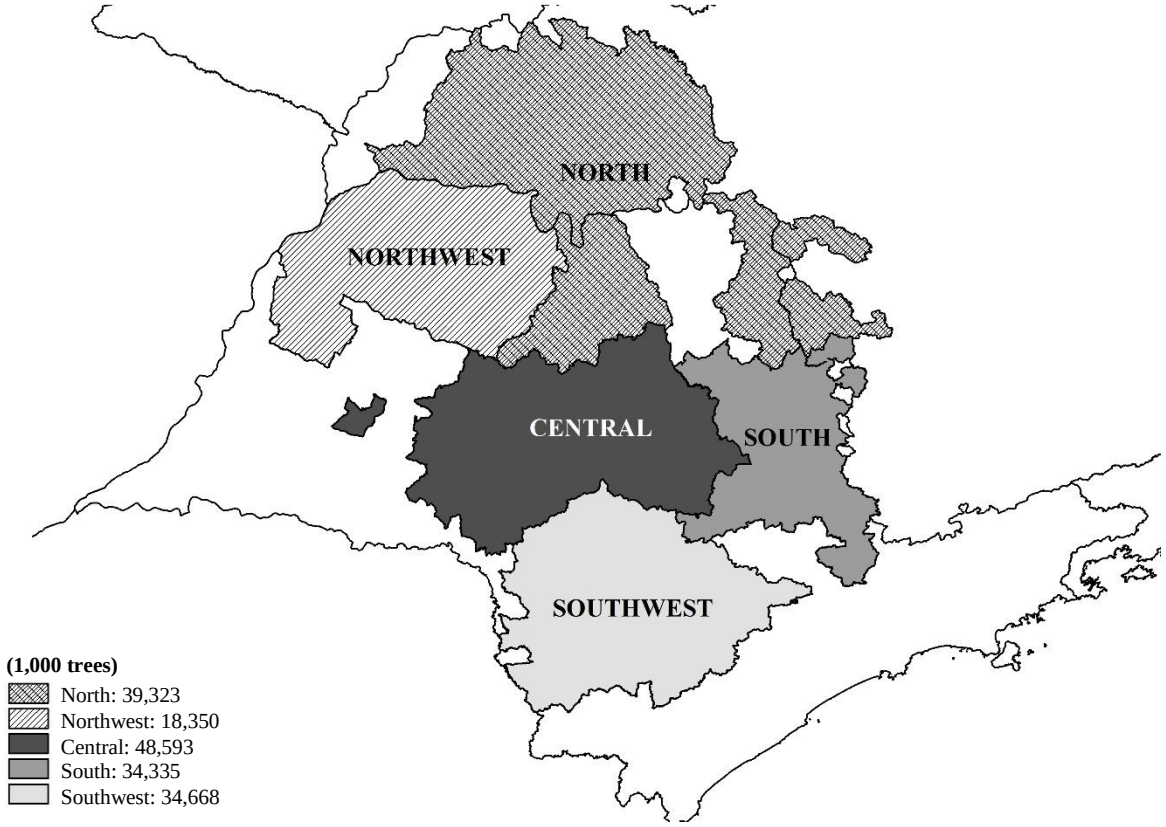
PES
Crop Forecast Survey

Markestrat
value generation

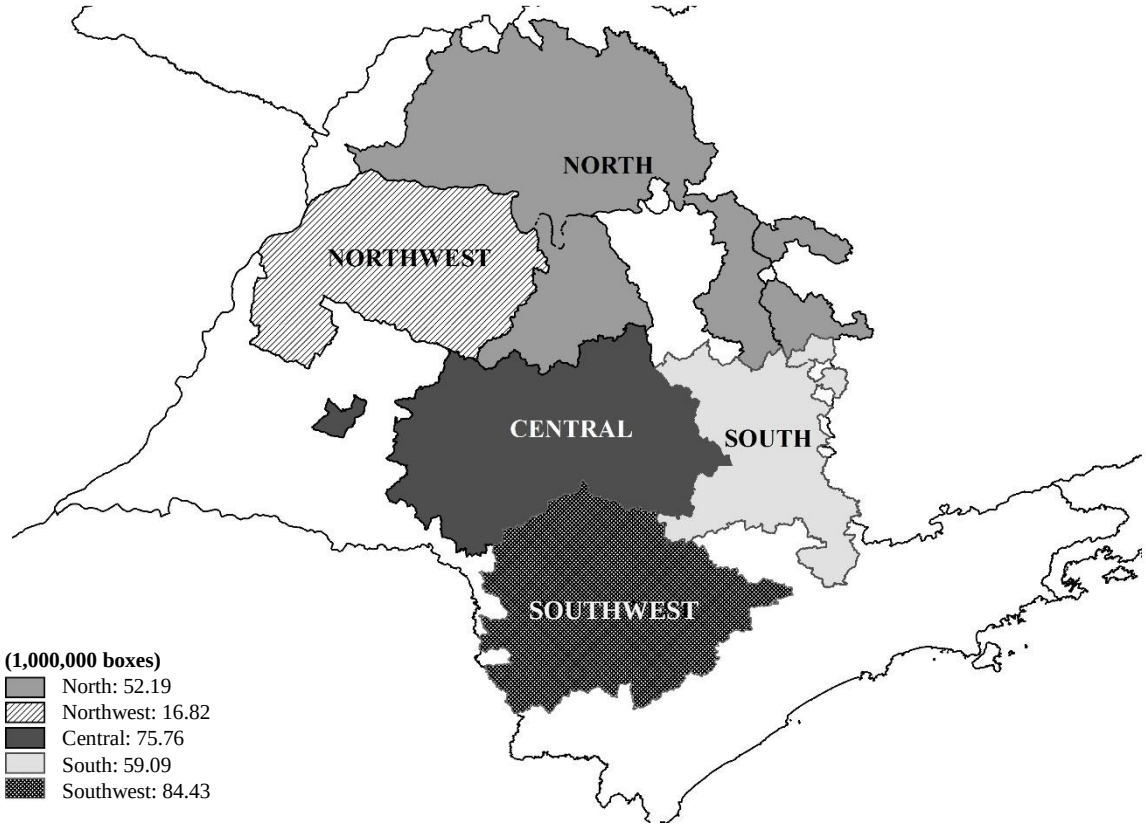
fea-RP

unesp
Jaboticabal

ORANGE[1] BEARING TREES BY SECTOR
Total: 175.27 million trees



2018-2019 ORANGE[1] CROP FORECAST BY SECTOR[2]
Total: 288.29 million boxes of 40.8 kg



[1] Snapshot in March 2018. Varieties: Hamlin, Westin, Rubi, Valencia Americana, Seleta, Pineapple, Pera Rio, Valencia, Valencia Folha Murcha and Natal.
[2] Status in May 2018.

2018-2019 ORANGE CROP FORECAST FOR SÃO PAULO AND WEST-SOUTHWEST MINAS GERAIS CITRUS BELT – MAY FORECAST

Published on May 21, 2018[1]

Publication Schedule

2018-2019 Crop Year
2018-2019 Crop executive summary: May 9, 2018
March 2018 Tree inventory: May 21, 2018
Crop forecast: May 21, 2018
1st Crop forecast update: September 10, 2018
2nd Crop forecast update: December 10, 2018
3rd Crop forecast update: February 11, 2019
Final crop forecast: April 10, 2019

Throughout the crop year, the crop forecast will be updated in the months mentioned in the schedule above with data on fruit drop and fruit size (fruit per box) collected in the months previous to the forecast updates. With the aim of meeting the demands both from the citrus sector and the press, we reserve the right to enlarge, review and deepen the information already published. It is therefore recommended that the most recent publication available at www.fundecitrus.com.br be used.

[1] Year 4 – Nº 1 – May 21, 2018 (Portuguese version only)
Year 4 – Nº 2 – May 25, 2018 (Portuguese version only)
Year 4 – Nº 3 – May 29, 2018 (Portuguese and English versions)

Improvements resulting from text review and from information included are presented in a consolidated form on the last page of this report.

Performed by FUNDECITRUS in cooperation with MARKESTRAT, FEA-RP/USP and the department of Math and Science of FCAV/Unesp

2018-2019 ORANGE CROP FORECAST FOR SÃO PAULO AND WEST-SOUTHWEST MINAS GERAIS CITRUS BELT

MAY FORECAST

Fundecitrus
Araraquara, São Paulo
2018

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1 – 2018-2019 ORANGE CROP FORECAST

The 2018-2019 orange crop forecast for São Paulo and west-southwest Minas Gerais citrus belt, published on May 9, 2018 by Fundecitrus in cooperation with Markestrat, FEA-RP/USP and FCAV/Unesp, is 288.29 million boxes (40.8 kg). This total includes:

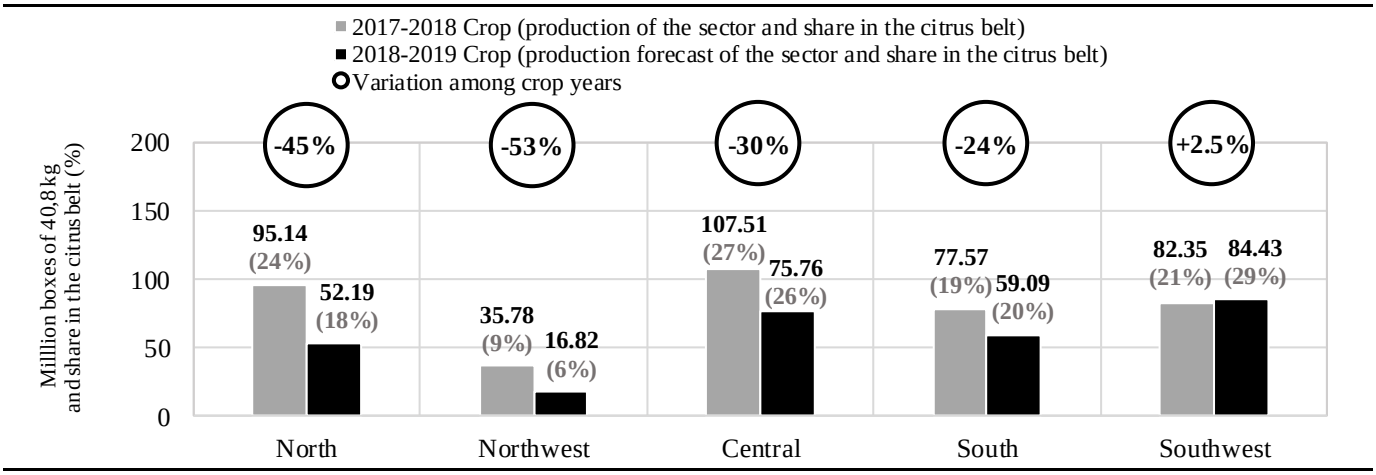
- 55.81 million boxes of the Hamlin, Westin and Rubi varieties;
- 16.55 million boxes of the Valencia Americana, Seleta and Pineapple varieties;
- 81.16 million boxes of the Pera Rio variety;
- 99.80 million boxes of Valencia and Valencia Folha Murcha varieties;
- 34.97 million boxes of the Natal variety.

16.16 million boxes of the estimated production are expected to be produced in the Triângulo Mineiro.

The current crop is 28% smaller than the previous one of 398.35 million boxes. The sharpest decrease occurred in the mid-season variety Pera Rio (-31%), followed by late varieties (-27%) and early varieties (-24%).

In comparison to the average crop size for the last ten years, the 2018-2019 crop is 11% smaller. Since it is below 300 million boxes, this crop is considered small, similarly to three crops in the last decade (2010-2011, 2013-2014 and 2016-2017). In that same period, four crops were medium size, that is, between 300 and 330 million boxes (2008-2009, 2009-2010, 2014-2015 and 2015-2016), none produced between 330 and 360 million boxes, which would be considered medium to large, and finally, three were large, that is, above 360 million boxes (2011-2012, 2012-2013 and 2017-2018).

Only the southwest sector, where approximately 30% of the total estimated production is expected to be harvested, has had a slight increase of +2.5% in this crop as compared to the previous one. In the other sectors, which together are expected to harvest the other 70%, the crop loss is significant and breaks down into the following percentages: -45% in the north sector, -53% in the northwest sector, -30% in the central sector and -24% in the south sector, as presented in Graph 1.



Graph 1 – Production by sector (in boxes and share in the citrus belt) and variation among crop years

In terms of yield, the southwest sector continues to present the largest production per area in the whole citrus belt, with 1,199 boxes per hectare, and also per plant, with 2.44 boxes per tree, whereas in the other sectors the average numbers of boxes are 662 and 1.45, respectively. Yield per area varies in comparison to the previous crop as follows: +4% in the southwest sector and -34% in the others. Since the first crop forecast by Fundecitrus, for 2015-2016, the southwest sector has kept the highest production indexes with less amplitude of variation between crop years.

The average yields in the citrus belt in this crop season are lower as compared to the previous ones, having declined from 1,033 to 762 boxes per hectare and from 2.28 to 1.64 boxes per tree.

2 – OBJECTIVE SURVEY METHOD FOR THE ORANGE CROP FORECAST

In order to perform this estimate, the objective method used in previous crop seasons was maintained, which is based on quantitative data – field measurements, counting and weighing of fruit – applied to the equation represented below.

$$\text{Forecasted production} = \frac{\text{Bearing trees} \times \text{Fruit per tree} \times (1 - \text{Drop rate \%}) \times (1 - \text{CF \%})}{\text{Fruit per box}}$$

where CF is the correction factor

For increased critical mass and transparency, this survey has since its implementation developed activities with the follow-up from a technical committee organized in the 2015-2016 crop year with the purpose of offering operational improvement. This committee is made up by citrus growers, representatives of orange juice companies, academics, as well as Fundecitrus researchers and supervisors.

Results from the inventory and tree stripping were obtained throughout the survey, then compiled and restricted until the date of this publication to the following professionals: Antonio Juliano Ayres (Fundecitrus general manager); Fernando Alvarinho Delgado, Renato Tadeu Rovarotto and Roseli Reina (PES supervisors); Vinícius Gustavo Trombin (executive coordinator linked to Markestrat); Marcos Fava Neves (political-institutional and methodological coordinator linked to FEA-RP/USP and Markestrat); and José Carlos Barbosa (methodology analyst linked to the department of Math and Science of FCAV/Unesp). All of them were subject to confidentiality obligations with regard to PES information before its announcement was made public, according to agreements signed between each of them and Fundecitrus. As for antitrust practices, they were all complied with through the adoption of measures necessary to prevent any communication or sharing of individual information with competitive content among the orange juice companies that collaborate with Fundecitrus in this project or between these and citrus growers.

This team, together with Fundecitrus President Lourival Carmo Monaco, concluded the crop forecast on May 9, 2018, at 9:30 a.m., in a closed meeting with no external communication channel beyond participants. Following that, at 10 a.m., Fundecitrus President began the public announcement of the crop forecast at the Fundecitrus auditorium in Araraquara-SP, which was broadcast live on the website (www.fundecitrus.com.br). Fundecitrus general manager Antonio Juliano Ayres presented the detailed data. After the crop forecast announcement, the 2018-2019 Crop Executive Summary was made available on the Fundecitrus website.

Details on the estimate for the four components of the equation follow.

BEARING TREES

The estimated total of bearing trees is 175.27 million, which constitutes a slight increase of 0.3% as compared to that total in the 2017-2018 crop. Trees planted in 2015 and previous years are considered bearing trees in this crop. Varieties included in this estimate represent 97% of trees and also 97% of the area of orange groves comprising the inventory in the current year.

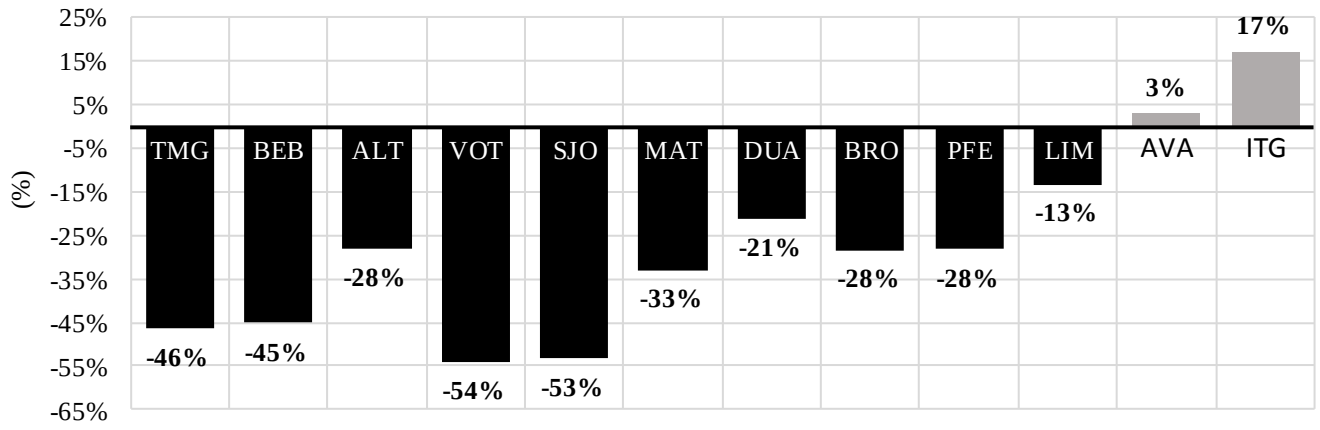
Information on bearing trees was obtained from the Tree inventory of São Paulo and west-southwest Minas Gerais citrus belt: snapshot of groves in March 2018, which was taken based on a new mapping of groves performed from September 8, 2017 to January 29, 2018, and on the counting of trees present in 5% of the orange plots, from January 29 to March 7, 2018.

FRUIT PER TREE

The average number of fruit per tree in April 2018, without considering the drop that will occur throughout the crop season, is 564.

In the regions of Itapetininga, Avaré and Duartina, more favorable climatic conditions in the fall of 2017, with heavy rainfall in June 2017 facilitated flowering in late August and early September 2017, with proper first bloom and fruit set. In the regions of Itapetininga and Avaré there was even an increase in the number of fruit per tree in this crop season as compared to that in the previous one, of 17% and 3%, respectively, as presented in Graph 2.

In the other regions of the citrus belt, a long drought between July and September 2017, in addition to the low temperatures typical of winter, caused the stress necessary for floral induction upon the first rainfall in October 2017. However, the adverse climatic conditions added to the high fruit load produced in the previous crop, that is, the 2017-2018 crop, that remained longer in the plant due to the slower harvest pace – typical characteristic of large crops – negatively influenced the productive potential. In these regions, flowering in late October and early November 2017 was less intense and the fruit set after first and second blooms was affected by the high temperatures in October, allowing for new flowering in early 2018, although still poor and of low vigor, which led to a significant drop in the number of fruit per tree as compared to that of the last crop.



Graph 2 – Variation in the number of fruit per tree in the 2018-2019 crop as compared to 2017-2018 per region

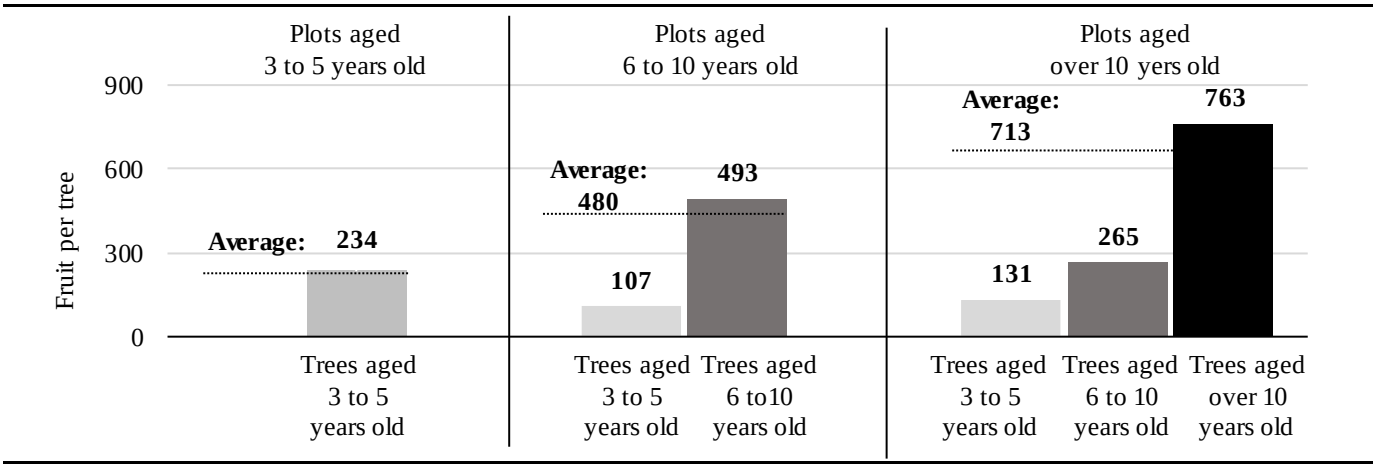
With the exception of the region of Itapetininga, where temperatures were not critical for citrus, the period of higher vulnerability was October 5 to 21, 2017. In this 17-day interval maximum temperatures of at least 35ºC (95°F) were observed in several cities in all other regions comprising the citrus belt, according to data from Somar Meteorologia.

The heat lasted longer in cities in the Triângulo Mineiro Gerais and Bebedouro, where high temperatures were observed for all days in that period. Similar temperatures were also recorded in other locations for shorter periods of time: 16 days for cities in the region of São José do Rio Preto, ten days for cities in the regions of Votuporanga and Matão, and from nine to three days in cities located in the other regions. Temperature peaks varied from 36.5ºC (97.7°F) in the region of Altinópolis to 40.1ºC (104.18°F) in the region of southwest Minas Gerais. It is noteworthy that the actual temperature observed in groves in full sun can be 1ºC (33.8°F) to 3ºC (37.4°F) above that read on thermometers at weather stations, which are in the shade.

The compensatory effect of the low fruit setting in the first and second blooms in these regions resulted in an increased number of fruit in the third and fourth blooms. Another difference in these regions as compared to the others is the delayed fruit development due to later flowering.

In the whole citrus belt, the classification of the stripped fruit into blooms indicates that 71% of the crop results from the first bloom, 13% from the second, 13% from the third and 3% from the fourth. For the estimate, fruit from the first, second, and third blooms were all considered. For fruit from the fourth bloom, a fruit set rate of 33% was applied. In the separation of fruit per bloom, off-season fruit was identified and resulted from late and sporadic flowers from the previous crop season, not accounted for in the current crop forecast.

The yield of three to five years old plots is 234 fruit per tree in this crop. In six to ten years old plots an average of 480 fruit per tree is estimated, with 493 fruit per tree for original plantings and 107 fruit per tree for three to five years old resets. Plots over 10 years old have an expected average of 713 fruit per tree and a yield of 763 fruit per tree for the original plantings, 265 fruit per tree for six to ten years old resets and 131 fruit per tree for three to five years old resets. Yields are presented in Graph 3.



Graph 3 – Age-stratified number of fruit per tree in the plot

The number of fruit per tree, although influenced by other factors such as plant age, is closely related to variety. In the group of early varieties – Hamlin, Westin and Rubi – an average of 766 fruit per tree were counted. As already known, varieties of these groups are more productive than the others, therefore their production is estimated to be 36% above average in this crop. Next in the sequence are: other early varieties, with 664 fruit per tree; the late season Natal variety, with 603 fruit per tree; the late season Valencia and Valencia Folha Murcha varieties, with 560 fruit per tree; and last, the Pera Rio variety, with 454 fruit per tree.

The method used consists of tree stripping, that is, the advanced harvest of all fruit in the tree, regardless of the bloom they are from. Tree stripping in this crop occurred in the period from March 15 to April 25, 2018. Fruit harvested was taken to a tree stripping laboratory in Araraquara, where each sample was separated into the different blooms they were from. Fruit was quantified by automatic counting equipment and then weighed.

A total of 2,560 trees were stripped, although 12 samples were eliminated because they presented measurements that were too divergent from expected. Trees were drawn for stripping in two phases. The first drawing, by the method of stratified random sampling included 2,200 trees distributed proportionally to the total orange trees in the citrus belt and stratified according to their region, variety and age. The second drawing was aimed at increasing the estimate precision and included 360 resets of ages lower than those in the age groups of the groves they were part of. These resets correspond to replacements made mainly to offset tree losses caused by greening, citrus canker and other diseases. The tree population in this second drawing comprehends plots that were counted in full to update the inventory and that meet the stratification criteria.

The stratification factor "region" is comprised of 12 groups encompassing the 320 cities where there are farms with mature orange groves. In addition to the subdivision into the 12 regions, the following charts present the five subdivisions of the factor "variety" and the six subdivisions of the factor "age". Combinations of these factors result in 360 strata.

Chart 1 – Make-up by sector of regions of the citrus belt included 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 – Make-up by maturity time of variety groups included in the drawing

Maturity time	Variety group
Early	Hamlin, Westin and Rubi
Other early	Valencia Americana, Seleta and Pineapple
Mid-season	Pera Rio
Late	Valencia and Valencia Folha Murcha
	Natal

Chart 3 – Make-up of age groups from the combined age of plots and age of trees

Age of plots[1]	Age of trees[2]
3 to 5 years old	3 to 5 years old
6 to 10 years old	3 to 5 years old
6 to 10 years old	6 to 10 years old
Over 10 years old	3 to 5 years old
Over 10 years old	6 to 10 years old
Over 10 years old	Over 10 years old

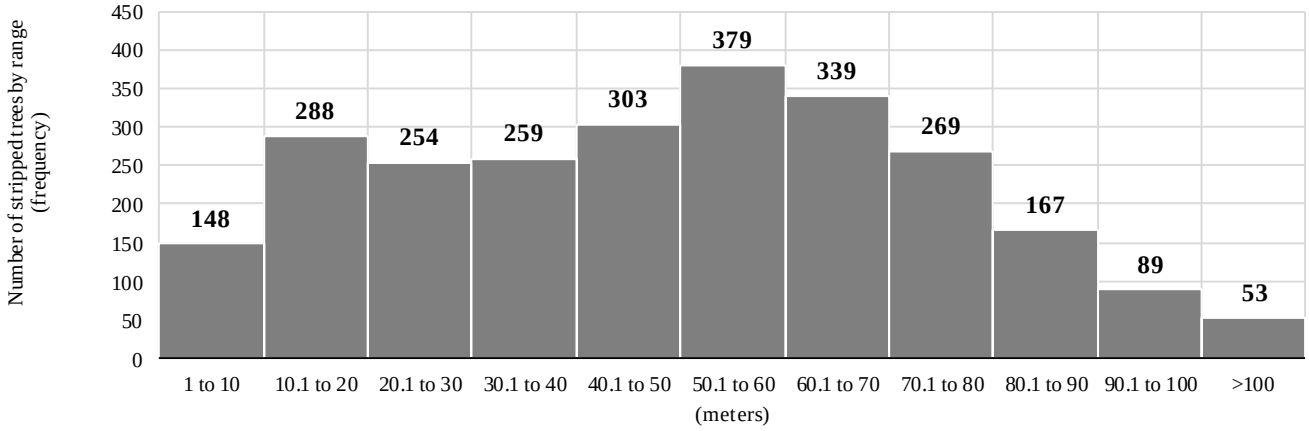
[1] Ages and planting years: 3 to 5 years old (2013 to 2015), 6 to 10 years old (2008 to 2012) and over 10 years old (2007 and previous years). Calculated based on the plot planting year.

[2] Estimated from information provided by growers on years resets were planted in the plot and from visual aspects of plants such as trunk circumference, height and shape of canopy, among other factors.

For the 2,200 trees in the first drawing, the location in the plot of the tree to be stripped is predetermined and varies every crop season. This makes the selection of the tree to be unbiased, that is, free from interference of the survey agent. Otherwise the choice could be skewed towards trees with more or less fruit. For the 2018-2019 crop, the tree in the drawn plot is the one located in the 25th planting hole in the 15th row. In case there is a vacancy or dead tree in that position, or yet a tree of an age different from that of trees originally planted in the plot, the third plant down is selected. Should that situation repeat itself three more plants down are counted, until a tree of the drawn age is found. If the plot does not have 15 or more planting rows, the counting restarts in the existing rows until number 15 is reached. For the second drawing of 360 resets, the stripped tree is found in the plot after visual aspects are considered, such as trunk circumference and size of canopy.

Graph 4 presents the distance (in meters) from the stripped tree to the nearest border of the plot, which shows the majority of ranges with similar frequencies, with a central figure between 50 and 60 meters of

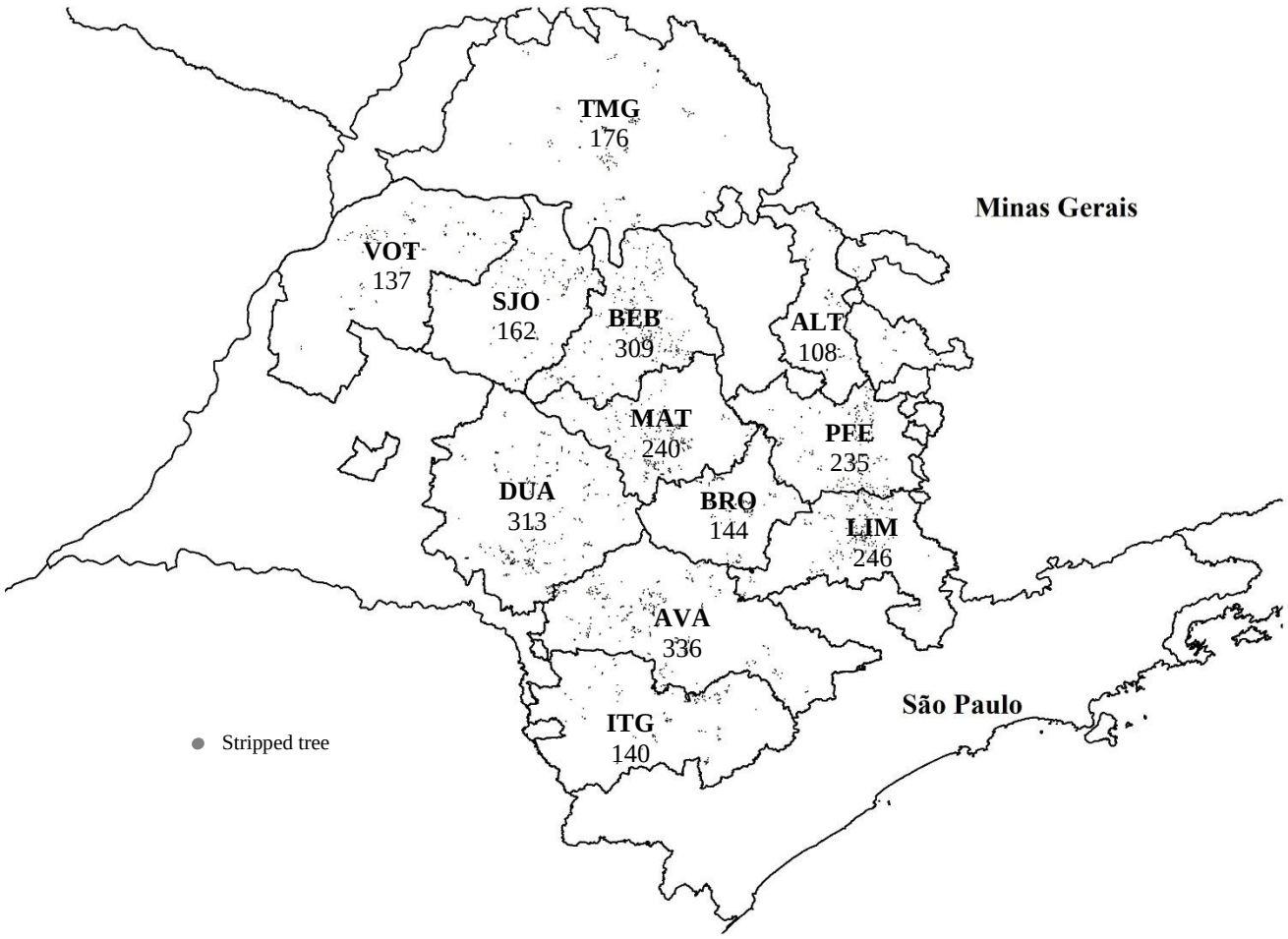
distance from the stripped tree to the nearest border. Most of the 148 plots with the shortest distances, from one to ten meters, are small – approximately 70% of them have up to four hectares.



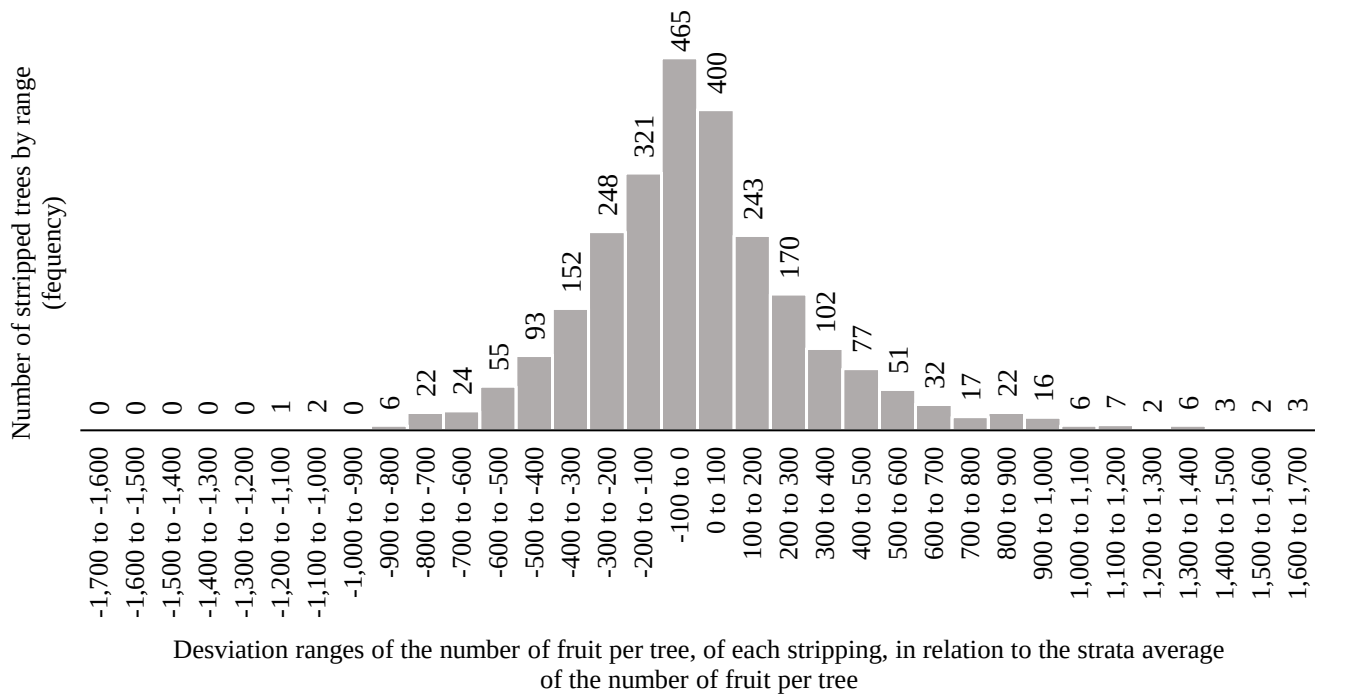
Graph 4 – Histogram of the distance from the stripped tree to the nearest border of the plot

Figure 1 shows the location and number of stripped trees in each sector of the citrus belt.

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

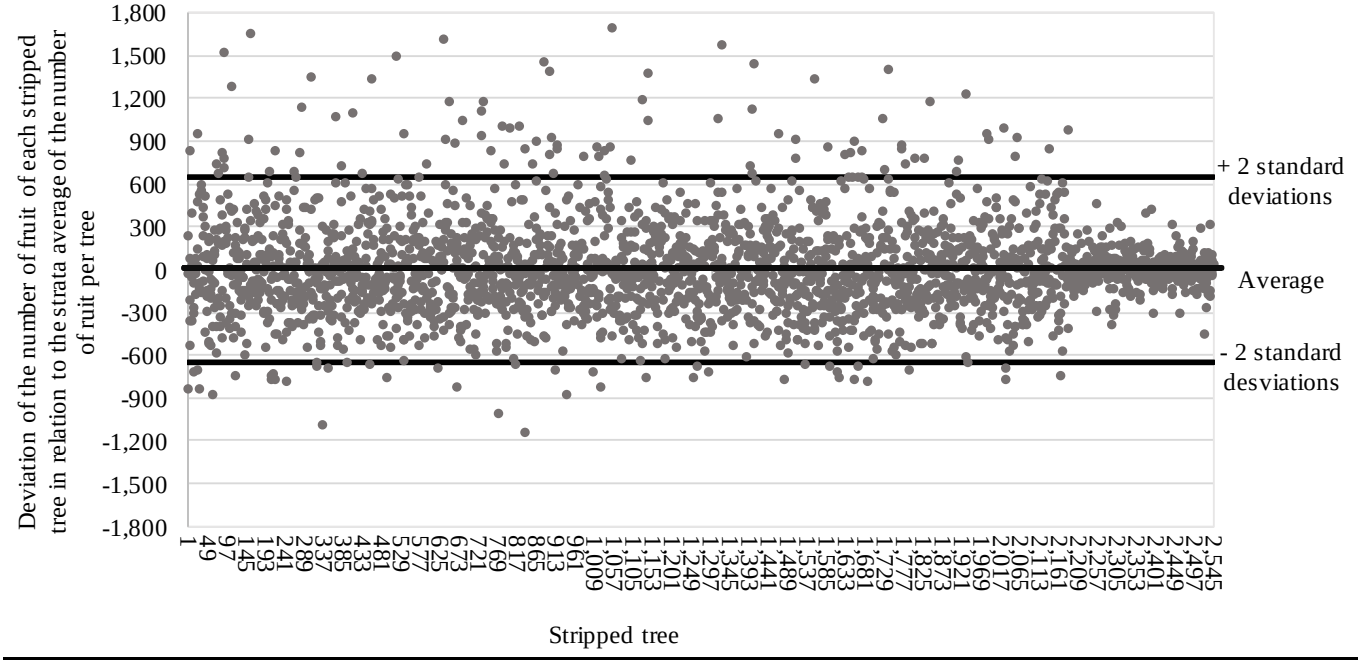


The average number of fruit per tree may vary plus or minus 13 fruits, which corresponds to 2.3% of the average number of fruit per tree obtained at stripping. This figure is within the expected error of 2% to 3% used in sizing the sample. The yield deviation distribution analysis for each stripped tree in relation to the stratum average shows that sample data is randomly distributed according to a normal distribution, as presented in Graph 5.



Graph 5 – Histogram of deviation of fruit per tree at stripping

Graph 6 shows the dispersion of deviations of each stripped tree in relation to the stratum average. It is observed that 95% of samples fall within the average $\pm$ 2 standard deviations, that is, 564 fruits.



Graph 6 – Deviation on the number of fruit at each stripping in relation to the stratum average

The tree harvested upon permit from citrus growers is indemnified at R$ 38.00 through an online payment system where citrus growers can register and redeem the amount due.

DROP RATE – fruit drop index, either natural or caused by other reasons, from tree stripping to final plot harvest

The projected average drop rate is 17.0% distributed as follows: 11.0% for the early Hamlin, Westin and Rubi and other early varieties; 17.5% for the mid-season Pera Rio variety; 20.0% for the late Valencia and Valencia Folha Murcha varieties; and 20.5% for the late Natal variety. This rate is applied to the number of fruit in the tree in April 2018, when trees are stripped. The result of this calculation is the estimate of the number of fruit that will be available in the tree at harvest, since part of the oranges in the tree in the beginning of the crop season will fall throughout that period due to physiological drop, mechanized activities, pests and diseases and adverse climatic conditions.

This projected drop rate is considered high for a year with less fruit per tree. However, the expected drier year, with temperatures above their pattern as of October – according to information presented by the meteorology company Climatempo in April, 2018 – should increase the severity of greening symptoms, which may reflect into fruit drop. Among pests and diseases, greening impacted the fruit drop rate the most in the 2017-2018 crop, when it was responsible for 4.06% of the total 17.31%. In the 2016-2017 crop this index was 1.37% of the total 13.73%. The leap in fruit drop due to greening between the two last crops shows that severity is increasing in diseased trees, and the more diseased the tree, the higher the fruit drop.

Monthly and continuous monitoring by Fundecitrus as of May 2018 in 1,200 orange plots visited up to their complete harvest serves as basis to correct the rate projected at the time of this publication and consequently to correct the production estimate as well. This year 300 plots were added to monitoring for an improved precision of the fruit drop rate in strata.

FRUIT PER BOX – fruit size, that is, number of oranges to reach the weight of 40.8 kg (box) at harvest

The final fruit size projection is 256 fruits per 40.8 kg box, that is, 292 fruits per box for the group of early varieties made up by Hamlin, Westin and Rubi; 255 fruits per box for the group of other early varieties and also for the mid-season variety Pera Rio; and 240 fruits per box for the late varieties Valencia, Valencia Folha Murcha and Natal.

The final fruit size was estimated by a regression model that considered the final fruit size as the dependent variable (fruits per box at harvest) and the number of fruits per tree counted at stripping, the initial fruit size (fruits per box at stripping) and the rainfall accumulated from May to July as independent variables. Data from the last ten crops, 2008-2009 to 2017-2018, was used in the regression and is presented in Table 1. Results obtained show an adjusted R^2 of 0.87. That means the three independent variables together explain 87% of the variation in the final fruit size (fruits per box at harvest), at a coefficient that can vary from 0 to 100%, which shows how important these variables are for the final fruit size. The comparison between the final fruit size estimated by this model and the final fruit size observed in the last ten crops presents an average error of $\pm$ 3%.

Data relative to the final fruit size (fruits per box at harvest), the number of fruit per tree counted at stripping and the initial fruit size (fruits per box at stripping) for the series from 2008-2009 to 2014-2015 was provided by the orange juice companies associated to Fundecitrus – Citrosuco, Cutrale and Louis Dreyfus, which separately have estimated the production for the citrus region since 1988, with the use of objective methodology. Data was supplied individually and under a formal confidentiality agreement to an independent consulting firm for the determination of the average. Individual data supplied by each company was kept confidential. Data relative to the crops 2015-2016 to 2017-2018 comes from results of estimates performed by Fundecitrus. Data on rainfall accumulated from May to July was supplied by Somar Meteorologia.

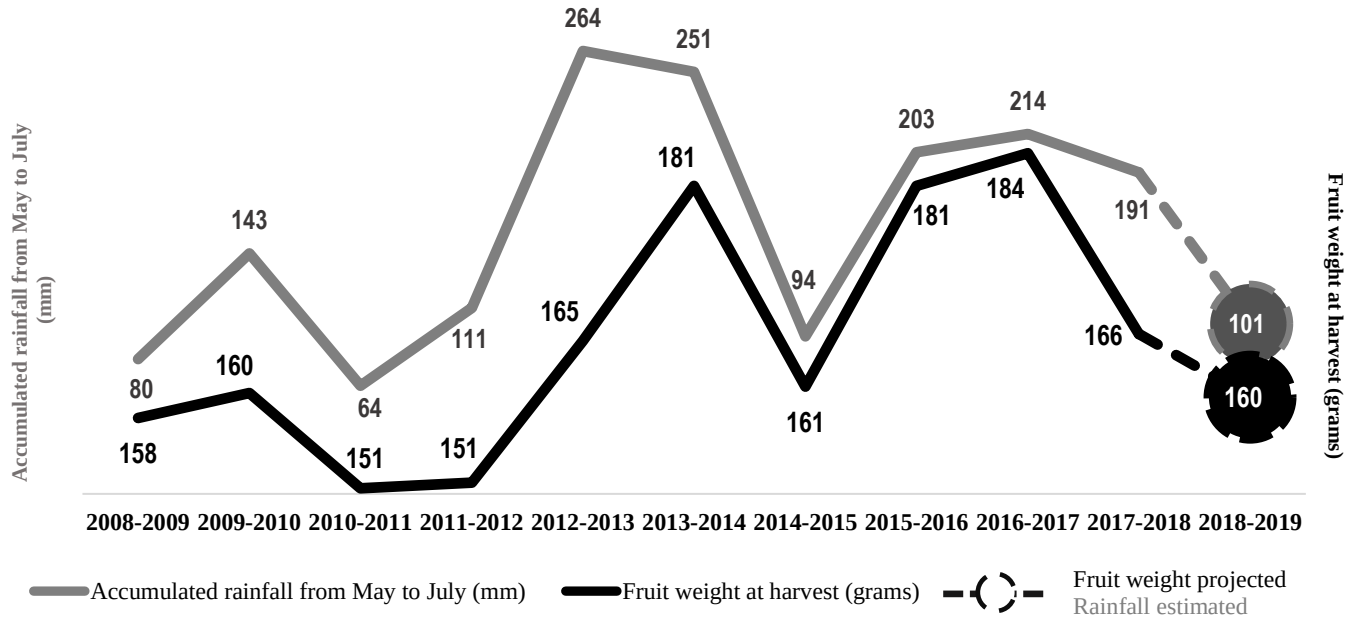
Data used in the model to estimate the final fruit size in this crop comprises figures from the 2018 stripping and the rainfall predicted for May to July 2018 in volumes close to the climatological average (1981 – 2010) calculated with information from the Climatempo website. Final fruit size estimated by the regression is 258 for the 2018-2019 crop. This size was corrected by the regression that used the observed size as the dependent variable and the estimated size as the independent variable. The size projected by this other regression is 256 fruits per box for the 2018-2019 crop.

Table 1 – Data for the 2008/2009 crop to the 2017/2018 crop and data used to estimate the final fruit size in the 2018-2019 crop

Crop	Fruits per tree at stripping	Initial fruit size at stripping	Accumulated rainfall from May to July	Final fruit size observed at harvest	Final fruit size estimated by the model	Error	Absolute error
	(number)	(fruits/box)	(millimeters)	(fruits/box)	(fruits/box)	(%)	(%)
2008-2009	659	421	80	255	265	+4%	+4%
2009-2010	624	431	143	250	255	+2%	+2%
2010-2011	532	457	64	271	251	-7%	+7%
2011-2012	859	401	116	269	264	-2%	+2%
2012-2013	764	439	268	250	235	-6%	+6%
2013-2014	515	338	247	224	216	-3%	+3%
2014-2015	646	373	102	256	250	-2%	+2%
2015-2016	498	391	204	226	234	+4%	+4%
2016-2017	430	358	214	222	222	0%	0%
2017-2018	753	393	184	246	251	+2%	+2%
2018-2019	564	446	101[e]	(X)	256	(X)	(X)

Source: Fundecitrus (2015-2016 crop to 2017-2018 crop), CitrusBr (2008-2009 crop to 2014-2015 crop), Somar Meteorologia and Climatempo.
(X) Not applicable.
[e] Estimated.

The average size of 256 fruits per box is equivalent to oranges weighing 160 grams, which are smaller as compared to those in the previous crop year, when each unit weighed an average of 166 grams. Graph 7 presents data on rainfall accumulated from May to July and the weight of fruits at harvest for the mentioned crop years.



Graph 7 – Influence of accumulated rainfall from May to July on fruit weight at harvest
Source: Fundecitrus (2015-2016 crop to 2018-2019 crop), CitrusBr (2008-2009 crop to 2014-2015 crop), Somar Meteorologia and Climatempo

Combined data clearly reveals the correlation between these two variables, showing that rainfall in this period causes a direct effect on fruit weight at harvest. This finding is recent and should improve the final fruit size estimate that is carried out in May and may be corrected in the estimate updates throughout the crop season based on observed actual data.

In crop years when rainfall was large in volume in these three months, oranges were heavier, whereas in less rainy periods their growth was reduced, indicating that these variables are directly proportional. In the 2011-2012, 2012-2013 and 2017-2018 crop years, the slope of the two lines was less symmetrical, which is explained by the high number of fruit per tree in these crop years with limited fruit development due to increased competition for plant reserves. Hence, variables other than rainfall were used in the regression model.

The result of the equation used to estimate the crop is corrected by the application of a correction factor. That is necessary because of the variables not considered in the calculations, such as diverse planting densities, which are not included in the stratification of groves, or losses of trees throughout the crop season caused by eradications, abandonments or deaths. The correction factor of 0.10 applied in this crop is the same used in the 2017-2018 crop and represents the average of the indexes of the 2015-2016 and 2016-2017 crops estimated by Fundecitrus.

3 – TABLES OF DATA

The following tables present the 2018-2019 orange crop forecast per sector, age, bloom and variety. In tables 13 to 17, the number of fruits per tree at stripping is presented separately for the 12 regions. If the estimate were made per region, the number of stripped trees would be statistically insufficient. Hence, the maximum detail on the estimate is per sector. Still, the margin of error of the production estimate per sector is higher than the production estimate for the citrus belt as a whole.

Unexpected variations in fruit size and drop rate may change the estimate performed and will be accounted for throughout the crop by ongoing field monitoring for production estimate updates. Calculations made used whole numbers and all decimal points. Occasional divergences between figures on tables result from rounding numbers.

Table 2 – 2018-2019 Orange crop forecast by sector

Sector	Mature groves area	Average density[1] of mature groves	Bearing trees	Fruit per tree at stripping[2]	2018-2019 Orange crop forecast		
					Per tree	Per hectare	Total
	(hectares)	(trees/ hectare)	(1,000 trees)	(number)	(boxes/ tree)	(boxes/ hectare)	(1,000,000 boxes)
North.....	85,275	470	39,323	456	1.33	612	52.19
Northwest.....	40,139	461	18,350	314	0.92	419	16.82
Central.....	106,140	470	48,593	533	1.56	714	75.76
South.....	76,458	464	34,335	592	1.72	773	59.09
Southwest.....	70,411	502	34,668	834	2.44	1,199	84.43
Total.....	**378,423**	**474**	**175,269**	**564**	**1.64**	**762**	**288.29**

1 Calculation considers the total number of trees in the plot, that is, bearing and non-bearing trees (2016 or 2017 resets).
2 Weighted average per total stratum fruit.

Table 3 – 2018-2019 Orange crop forecast by tree age group (continues below)

Age of plots	Mature groves area	Average density[1] of mature groves	Bearing trees by age group				Fruit per tree at stripping by age group of trees[2]			
			3 – 5 years	6 – 10 years	Over 10 years	Total	3 – 5 years	6 – 10 years	Over 10 years	Total
	(hectares)	(trees/ hectare)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(fruit/ tree)	(fruit/ tree)	(fruit/ tree)	(fruit/ tree)
3 – 5 years.....	37,472	636	22,996	-	-	22,996	**234**	-	-	234
6 – 10 years.....	123,238	540	2,202	62,780	-	64,982	107	**493**	-	480
Over 10 years…...	217,713	408	2,940	4,955	79,396	87,291	131	265	**763**	713
Total.....	**378,423**	**474**	**28,138**	**67,735**	**79,396**	**175,269**	**213**	**476**	**763**	**564**

- Represents zero.
1 Calculation considers the total number of trees in the plot, that is, bearing and non-bearing trees (2016 or 2017 resets).
2 Weighted average per total stratum fruit.

Table 3 – 2018-2019 Orange crop forecast by tree age group (continued)

Plots age	2018-2019 Orange crop forecast by tree age group				2018-2019 Orange crop forecast by tree age group			
	3 – 5 years	6 – 10 years	Over 10 years	Total	3 – 5 years	6 – 10 years	Over 10 years	Total
	(boxes/ tree)	(boxes/ tree)	(boxes/ tree)	(boxes/ tree)	(1,000,000 boxes)	(1,000,000 boxes)	(1,000,000 boxes)	(1,000,000 boxes)
3 – 5 years.....	0.69	-	-	0.69	**15.82**	-	-	15.82
6 – 10 years.....	0.31	1.44	-	1.40	0.68	**90.32**	-	91.00
Over 10 years…...	0.38	0.77	2.22	2.08	1.13	3.81	**176.53**	181.47
Total.....	**0.63**	**1.39**	**2.22**	**1.64**	**17.63**	**94.13**	**176.53**	**288.29**

- Represents zero.
1 Calculation considers the total number of trees in the plot, that is, bearing and non-bearing trees (2016 or 2017 resets).

Table 4 – 2018-2019 Orange crop forecast by bloom

Bloom	2018-2019 Orange crop forecast	Percentage of the orange crop forecast by bloom
	(1,000,000 boxes)	(percentage)
1st.....	203.94	70.74
2nd	36.66	12.72
3rd.....	38.33	13.30
4th	9.36	3.25
Total.....	**288.29**	**100.00**

Table 5 – 2018-2019 Orange crop forecast in percentage of bloom by region

Bloom	North[1]				Northwest[2]			Central[3]				South[4]			Sothwest[5]			Total
	TMG	BEB	ALT	**AVE**[6]	VOT	SJO	**AVE**[6]	MAT	DUA	BRO	**AVE**[6]	PFE	LIM	**AVE**[6]	AVA	ITG	**AVE**[6]	
	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
1st.....	80.4	69.3	79.8	**74.6**	54.9	66.8	**62.2**	54.0	66.9	68.3	**63.0**	70.4	66.1	**68.1**	78.7	79.2	**78.8**	**70.7**
2nd.....	9.9	13.9	13.2	**12.5**	16.6	10.8	**13.0**	11.5	12.8	13.2	**12.5**	12.4	14.6	**13.6**	11.5	14.9	**12.4**	**12.7**
3rd.....	6.7	13.4	4.6	**9.8**	21.6	13.0	**16.3**	31.1	17.4	14.2	**21.2**	12.6	16.1	**14.4**	7.8	4.5	**7.0**	**13.3**
4th.....	3.0	3.4	2.4	**3.1**	6.8	9.4	**8.4**	3.3	2.9	4.3	**3.2**	4.7	3.2	**3.9**	2.0	1.4	**1.9**	**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 AVE – Weighted average per total stratum fruit.

Table 6 – 2018-2019 Orange crop forecast and its components by variety group

Variety group	Mature groves area	Average density[1] of mature groves	Components of May/2018 forecast				2018-2019 Orange crop forecast		
			Bearing trees	Fruit per tree at stripping[2]	Fruit estimated per box	Estimated drop rate	Per tree	Per hectare	Total
	(hectares)	(trees/ hectare)	(1,000 trees)	(number)	(number)	(%)	(boxes/ tree)	(boxes/ hectare)	(1,000,000 boxes)
Early:									
Hamlin, Westin and Rubi.....	60,870	452	26,649	766	292	11.00	2.09	917	55.81
Other early:									
Valencia Americana, Seleta, Pineapple.....	18,103	452	7,959	664	255	11.00	2.08	914	16.55
Mid-season:									
Pera Rio.....	124,920	503	61,575	454	255	17.50	1.32	650	81.16
Late:									
Valencia and VFolha Murcha[3]	130,637	465	59,583	560	240	20.00	1.67	764	99.80
Natal.....	43,893	455	19,503	603	240	20.50	1.79	797	34.97
Average.....	**(X)**	**474**	**(X)**	**564**	**256**	**17.00**	**1.64**	**762**	**(X)**
Total.....	**378,423**	**(X)**	**175,269**	**(X)**	**(X)**	**(X)**	**(X)**	**(X)**	**288.29**

(X) Not applicable.
1 Calculation considers the total number of trees in the plot, that is, bearing and non-bearing trees (2016 or 2017 resets).
2 Weighted average per total stratum fruit.
3 V.Folha Murcha – Valencia Folha Murcha.

Table 7 – 2018-2019 Orange crop forecast by variety group and sector

Variety group	2018-2019 Orange crop forecast					
	Sector					
	North	Northwest	Central	South	Southwest	Total
	(1,000,000 boxes)	(1,000,000 boxes)	(1,000,000 boxes)	(1,000,000 boxes)	(1,000,000 boxes)	(1,000,000 boxes)
Early:						
Hamlin, Westin and Rubi.....	12.47	3.54	12.70	11.22	15.88	55.81
Other early:						
Valencia Americana, Seleta, Pineapple.....	3.31	2.43	5.86	1.10	3.85	16.55
Mid-season:						
Pera Rio.....	10.74	6.70	23.97	20.29	19.46	81.16
Late:						
Valencia and V.Folha Murcha[3]	18.89	2.71	25.24	20.73	32.23	99.80
Natal.....	6.78	1.44	7.99	5.75	13.01	34.97
Average.....	**52.19**	**16.82**	**75.76**	**59.09**	**84.43**	**288.29**

Table 8 – 2018-2019 Orange crop forecast by variety group – North Sector

Variety group	Mature groves area	Average density[1] of mature groves	Bearing trees	Fruit per tree at stripping[2]	2018-2019 Orange crop forecast		
					Per tree	Per hectare	Total
	(hectares)	(trees/ hectare)	(1,000 trees)	(number)	(boxes/ tree)	(boxes/ hectare)	(1,000,000 boxes)
Early:							
Hamlin, Westin and Rubi.....	17,293	435	7,302	625	1.71	721	12.47
Other early:							
Valencia Americana, Seleta, Pineapple.....	4,364	477	2,014	525	1.64	758	3.31
Mid-season:							
Pera Rio.....	23,078	534	12,120	305	0.89	465	10.74
Late:							
Valencia and V.Folha Murcha[3]	31,618	450	14,055	449	1.34	597	18.89
Natal.....	8,922	436	3,832	595	1.77	760	6.78
Average.....	**(X)**	**470**	**(X)**	**456**	**1.33**	**612**	**(X)**
Total.....	**85,275**	**(X)**	**39,323**	**(X)**	**(X)**	**(X)**	**52.19**

Table 9 – 2018-2019 Orange crop forecast by variety group – Northwest Sector

Variety group	Mature groves area	Average density[1] of mature groves	Bearing trees	Fruit per tree at stripping[2]	2018-2019 Orange crop forecast		
					Per tree	Per hectare	Total
	(hectares)	(trees/ hectare)	(1,000 trees)	(number)	(boxes/ tree)	(boxes/ hectare)	(1,000,000 boxes)
Early:							
Hamlin, Westin and Rubi.....	5,947	454	2,658	487	1.33	595	3.54
Other early:							
Valencia Americana, Seleta, Pineapple.....	3,047	439	1,303	596	1.86	798	2.43
Mid-season:							
Pera Rio.....	19,305	460	8,814	262	0.76	347	6.70
Late:							
Valencia and V.Folha Murcha[3]	8,070	482	3,864	235	0.70	336	2.71
Natal.....	3,770	456	1,711	283	0.84	382	1.44
Average.....	**(X)**	**461**	**(X)**	**314**	**0.92**	**419**	**(X)**
Total.....	**40,139**	**(X)**	**18,350**	**(X)**	**(X)**	**(X)**	**16.82**

(X) Not applicable.

[1] Calculation considers the total number of trees in the plot, that is, bearing and non-bearing trees (2016 or 2017 resets).

[2] Weighted average per total stratum fruit.

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

Table 10 – 2018-2019 Orange crop forecast by variety group – Central Sector

Variety group	Mature groves area	Average density[1] of mature groves	Bearing trees	Fruit per tree at stripping[2]	2018-2019 Orange crop forecast		
					Per tree	Per hectare	Total
	(hectares)	(trees/ hectare)	(1,000 trees)	(number)	(boxes/ tree)	(boxes/ hectare)	(1,000,000 boxes)
Early:							
Hamlin, Westin and Rubi.....	15,803	442	6,782	685	1.87	804	12.70
Other early:							
Valencia Americana, Seleta, Pineapple.....	7,130	424	2,938	637	1.99	822	5.86
Mid-season:							
Pera Rio.....	35,500	510	17,777	465	1.35	675	23.97
Late:							
Valencia and V.Folha Murcha[3]	36,690	465	16,511	511	1.53	688	25.24
Natal.....	11,017	429	4,585	587	1.74	725	7.99
Average.....	**(X)**	**470**	**(X)**	**533**	**1.56**	**714**	**(X)**
Total.....	**106,140**	**(X)**	**48,593**	**(X)**	**(X)**	**(X)**	**75.76**

Table 11 – 2018-2019 Orange crop forecast by variety group – South Sector

Variety group	Mature groves area	Average density[1] of mature groves	Bearing trees	Fruit per tree at stripping[2]	2018-2019 Orange crop forecast		
					Per tree	Por hectare	Total
	(hectares)	(trees/ hectare)	(1,000 trees)	(number)	(boxes/ tree)	(boxes/ hectare)	(1,000,000 boxes)
Early:							
Hamlin, Westin and Rubi.....	10,837	466	4,923	833	2.28	1.035	11.22
Other early:							
Valencia Americana, Seleta, Pineapple.....	1,295	434	550	636	2.00	849	1.10
Mid-season:							
Pera Rio.....	27,061	489	12,628	554	1.61	750	20.29
Late:							
Valencia and V.Folha Murcha[3]	29,656	443	12,911	537	1.61	699	20.73
Natal.....	7,609	452	3,323	583	1.73	756	5.75
Average.....	**(X)**	**464**	**(X)**	**592**	**1.72**	**773**	**(X)**
Total.....	**76,458**	**(X)**	**34,335**	**(X)**	**(X)**	**(X)**	**59.09**

Table 12 – 2018-2019 Orange crop forecast by variety group – Southwest Sector

Variety group	Mature groves area	Average density[1] of mature groves	Bearing trees	Fruit per tree at stripping[2]	2018-2019 Orange crop forecast		
					Per tree	Por hectare	Total
	(hectares)	(trees/ hectare)	(1,000 trees)	(number)	(boxes/ tree)	(boxes/ hectare)	(1,000,000 boxes)
Early:							
Hamlin, Westin and Rubi.....	10,990	475	4,984	1,165	3.19	1,445	15.88
Other early:							
Valencia Americana, Seleta, Pineapple.....	2,267	520	1,154	1,066	3.34	1,698	3.85
Mid-season:							
Pera Rio.....	19,976	519	10,236	655	1.90	974	19.45
Late:							
Valencia and V.Folha Murcha[3]	24,603	505	12,242	880	2.63	1,310	32.22
Natal.....	12,575	492	6,052	723	2.15	1,036	13.03
Average.....	**(X)**	**502**	**(X)**	**834**	**2.44**	**1,199**	**(X)**
Total.....	**70,411**	**(X)**	**34,668**	**(X)**	**(X)**	**(X)**	**84.43**

(X) Not applicable.

[1] Calculation considers the total number of trees in the plot, that is, bearing and non-bearing trees (2016 or 2017 resets).

[2] Weighted average per total stratum fruit.

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

Table 13 – Fruit per tree at stripping[1] by age group, region and variety – North Sector [April 2018 stripping]

Region and variety groups	Plots 3 – 5 years Trees 3 – 5 years	Plots 6 – 10 years Trees 3 – 5 years	Plots 6 – 10 years Trees 6 – 10 years	Plots 6 – 10 years Average	Plots over 10 years Trees 3 – 5 years	Plots over 10 years Trees 6 – 10 years	Plots over 10 years Trees over 10 years	Plots over 10 years Average	Average
	(number)	(number)	(number)	(number)	(number)	(number)	(number)	(number)	(number)
TMG[2]									
Early:									
Hamlin, Westin and Rubi.....	441	90	354	351	268	707	813	797	649
Other early varieties[3].....	249	135	514	511	155	224	1.090	1.085	703
Mid-season:									
Pera Rio.....	156	31	329	324	121	313	404	400	295
Late:									
Valencia and V.Folha Murcha[4]....	454	56	320	318	213	464	560	556	441
Natal.....	149	18	355	355	60	337	907	851	671
Average[1].....	**285**	**44**	**334**	**330**	**179**	**421**	**693**	**678**	**465**
BEB[5]									
Early:									
Hamlin, Westin and Rubi.....	353	37	582	560	73	158	690	619	587
Other early varieties[3].....	249	54	520	504	37	192	568	523	498
Mid-season:									
Pera Rio.....	190	25	300	280	24	92	412	374	273
Late:									
Valencia and V.Folha Murcha[4]....	160	186	373	365	38	127	511	464	391
Natal.....	208	41	708	686	44	69	656	595	532
Average[1].....	**193**	**65**	**414**	**396**	**48**	**130**	**566**	**512**	**415**
ALT[6]									
Early:									
Hamlin, Westin and Rubi.....	428	127	352	312	135	611	1.022	918	756
Other early varieties[3].....	(N/D)	74	529	500	227	557	1.079	922	693
Mid-season:									
Pera Rio.....	114	66	564	553	51	111	483	432	448
Late:									
Valencia and V.Folha Murcha[4]....	197	225	364	351	86	147	839	757	678
Natal.....	252	261	519	512	90	108	733	715	626
Average[1].....	**219**	**160**	**463**	**441**	**95**	**230**	**748**	**676**	**609**
Average sector.....	**223**	**76**	**389**	**377**	**77**	**184**	**638**	**589**	**456**

1 Weighted average per total stratum fruit.
2 TMG – Triângulo Mineiro.
3 Valencia Americana, Seleta and Pineapple.
4 V.Folha Murcha – Valencia Folha Murcha.
5 BEB – Bebedouro.
6 ALT – Altinópolis.

Table 14 – Fruit per tree at stripping[1] by age group, region and variety – Northwest Sector [April 2018 stripping]

Region and variety groups	Plots 3 – 5 years	Plots 6 – 10 years			Plots over 10 years				Average
	Trees 3 – 5 years	Trees 3 – 5 years	Trees 6 – 10 years	Average	Trees 3 – 5 years	Trees 6 – 10 years	Trees over 10 years	Average	
	(number)	(number)	(number)	(number)	(number)	(number)	(number)	(number)	(number)
VOT[2]									
Early:									
Hamlin, Westin and Rubi.....	61	16	311	307	156	500	180	180	257
Other early varieties[3].....	365	43	564	546	(N/D)	193	778	775	589
Mid-season:									
Pera Rio.....	141	83	259	258	72	9	338	332	262
Late:									
Valencia and V.Folha Murcha[4]....	284	26	151	149	72	(N/D)	206	206	169
Natal.....	127	29	141	141	184	81	917	905	431
Average[1].....	**146**	**64**	**249**	**247**	**99**	**23**	**357**	**352**	**266**
SJO[5]									
Early:									
Hamlin, Westin and Rubi.....	116	115	384	380	22	500	984	964	532
Other early varieties[3].....	147	117	502	494	76	79	933	918	597
Mid-season:									
Pera Rio.....	88	134	239	236	8	163	384	369	261
Late:									
Valencia and V.Folha Murcha[4]....	94	20	313	310	72	220	247	247	257
Natal.....	63	20	501	485	11	236	312	308	236
Average[1].....	**86**	**98**	**351**	**347**	**18**	**215**	**523**	**511**	**354**
Average sector.....	**106**	**86**	**301**	**298**	**36**	**134**	**452**	**444**	**314**

[1] Weighted average per total stratum fruit.
[2] VOT – Votuporanga.
[3] Valencia Americana, Seleta and Pineapple.
[4] V.Folha Murcha – Valencia Folha Murcha.
[5] SJO - São José do Rio Preto.

Table 15 – Fruit per tree at stripping[1] by age group, region and variety – Central Sector [April 2018 stripping]

Region and variety groups	Plots 3 – 5 years	Plots 6 – 10 years			Plots over 10 years				Average
	Trees 3 – 5 years	Trees 3 – 5 years	Trees 6 – 10 years	Average	Trees 3 – 5 years	Trees 6 – 10 years	Trees over 10 years	Average	
	(number)	(number)	(number)	(number)	(number)	(number)	(number)	(number)	(number)
MAT[2]									
Early:									
Hamlin, Westin and Rubi.....	540	222	439	433	231	201	633	588	502
Other early varieties[3].....	657	164	609	599	185	429	710	683	646
Mid-season:									
Pera Rio.....	217	116	430	417	95	309	922	877	462
Late:									
Valencia and V.Folha Murcha[4]....	288	234	386	383	243	265	542	498	407
Natal.....	219	137	495	492	88	540	665	640	513
Average[1].....	**257**	**168**	**435**	**428**	**209**	**312**	**695**	**649**	**471**
DUA[6]									
Early:									
Hamlin, Westin and Rubi.....	241	221	871	806	152	523	1.223	1.146	931
Other early varieties[3].....	667	120	449	444	178	363	864	826	646
Mid-season:									
Pera Rio.....	222	64	476	456	120	188	602	577	472
Late:									
Valencia and V.Folha Murcha[4]....	267	180	691	664	131	235	738	694	624
Natal.....	318	61	630	604	198	159	770	717	632
Average[1].....	**282**	**140**	**608**	**581**	**143**	**261**	**758**	**718**	**606**
BRO[7]									
Early:									
Hamlin, Westin and Rubi.....	307	137	393	377	37	149	543	475	437
Other early varieties[3].....	434	151	593	579	506	473	666	623	540
Mid-season:									
Pera Rio.....	156	104	798	729	50	35	553	462	442
Late:									
Valencia and V.Folha Murcha[4]....	84	28	311	295	39	64	618	511	451
Natal.....	156	201	473	470	123	308	736	621	535
Average[1].....	**177**	**87**	**483**	**457**	**57**	**108**	**602**	**507**	**457**
Average sector.....	**259**	**138**	**520**	**502**	**150**	**199**	**709**	**652**	**533**

1 Weighted average per total stratum fruit.
2 MAT – Matão.
3 V.Americana – Valencia Americana, Seleta and Pineapple.
4 V.Folha Murcha – Valencia Folha Murcha.
6 DUA – Duartina.
7 BRO – Brotas.

Table 16 – Fruit per tree at stripping[1] by age group, region and variety – South Sector [April 2018 stripping]

Region and variety groups	Plots 3 – 5 years Trees 3 – 5 years	Plots 6 – 10 years Trees 3 – 5 years	Plots 6 – 10 years Trees 6 – 10 years	Plots 6 – 10 years Average	Plots over 10 years Trees 3 – 5 years	Plots over 10 years Trees 6 – 10 years	Plots over 10 years Trees over 10 years	Plots over 10 years Average	Average
	(number)	(number)	(number)	(number)	(number)	(number)	(number)	(number)	(number)
PFE[2]									
Early:									
Hamlin, Westin and Rubi.....	105	170	575	554	65	337	1,377	1,127	812
Other early varieties[3].....	502	210	495	471	127	376	716	660	591
Mid-season:									
Pera Rio.....	320	113	499	485	227	211	704	627	523
Late:									
Valencia and V.Folha Murcha[4]....	252	65	445	428	107	380	590	561	492
Natal.....	211	341	302	302	962	248	912	846	568
Average[1].....	**264**	**118**	**479**	**465**	**240**	**299**	**752**	**687**	**557**
LIM[5]									
Early:									
Hamlin, Westin and Rubi.....	102	110	600	587	135	430	1,150	1,042	852
Other early varieties[3].....	502	207	693	666	252	989	771	746	716
Mid-season:									
Pera Rio.....	175	199	575	560	125	453	763	737	582
Late:									
Valencia and V.Folha Murcha[4]....	172	51	454	442	103	576	705	681	582
Natal.....	212	230	405	403	215	456	851	833	604
Average[1].....	**174**	**150**	**531**	**518**	**124**	**503**	**809**	**773**	**626**
Average sector.....	**227**	**133**	**506**	**492**	**200**	**382**	**782**	**730**	**592**

[1] Weighted average per total stratum fruit.
[2] PFE – Porto Ferreira.
[3] V.Americana – Valencia Americana, Seleta and Pineapple
[4] V.Folha Murcha – Valencia Folha Murcha.
[5] LIM – Limeira.

Table 17 – Fruit per tree at stripping[1] by age group, region and variety – Southwest Sector [April 2018 stripping]

Region and variety groups	Plots 3 – 5 years Trees 3 – 5 years	Plots 6 – 10 years Trees 3 – 5 years	Plots 6 – 10 years Trees 6 – 10 years	Plots 6 – 10 years Average	Plots over 10 years Trees 3 – 5 years	Plots over 10 years Trees 6 – 10 years	Plots over 10 years Trees over 10 years	Plots over 10 years Average	Average
	(number)	(number)	(number)	(number)	(number)	(number)	(number)	(number)	(number)
AVA[2]									
Early:									
Hamlin, Westin and Rubi.....	204	121	1,133	1,076	62	514	1,429	1,329	1,232
Other early varieties[3].....	192	210	905	894	266	343	1,591	1,539	1,306
Mid-season:									
Pera Rio.....	174	24	623	605	103	189	774	728	638
Late:									
Valencia and V.Folha Murcha[4]....	351	18	818	787	145	275	958	909	848
Natal.....	450	70	611	606	61	423	835	785	708
Average[1].....	**282**	**50**	**760**	**737**	**104**	**330**	**993**	**936**	**839**
ITG[5]									
Early:									
Hamlin, Westin and Rubi.....	405	417	805	804	301	749	876	868	817
Other early varieties[3].....	384	91	765	756	(N/D)	(N/D)	1,117	1,117	692
Mid-season:									
Pera Rio.....	343	166	649	645	125	320	933	922	701
Late:									
Valencia and V.Folha Murcha[4]....	313	159	917	911	50	372	1,162	1,157	985
Natal.....	462	137	483	481	115	499	941	940	758
Average[1].....	**367**	**155**	**752**	**747**	**137**	**586**	**1,000**	**993**	**817**
Average sector.....	**313**	**63**	**757**	**741**	**105**	**348**	**995**	**947**	**834**

1 Weighted average per total stratum fruit.
2 AVA – Avaré.
3 V.Americana – Valencia Americana, Seleta and Pineapple
4 V.Folha Murcha – Valencia Folha Murcha.
5 ITG – Itapetininga.

ANNEX: DIFFERENCES BETWEEN PUBLISHED VERSIONS

The following chart presents improvement resulting from text review and information included to meet demands from the citrus segment and the press. Slight text and formatting adjustments that do not change the meaning of the text are not shown on the chart.

Chart 4 – Differences between published versions

Section	Page in the version Nº 1	Page in the versions Nº 2 and Nº 3	Change
I	19	19	Included segment: "After that date the budget referring to the period from June 2018 to May 2019 will come into force."
I	28	28	Included segment: "Plots previously registered as Valencia Argentina in the 2015 mapping were updated to Valencia Americana in this mapping."
I	29	29	6th Paragraph. Presentation of cities changed from increasing to decreasing order.
I	32	32	3rd Paragraph. From "...eradicated areas (39.533)..." to " "...eradicated areas (39.532)..."
I	34	34	2nd Paragraph. Included segment: "and smaller area of abandoned groves".
I	34	34	3rd Paragraph. Correction of number rounding: From: "...is the Northwest sector, with 2.78..." to "...is the Northwest sector, with 2.79%".From "...South sector, with 1.59%;" to "...South sector, with 1.60%;"
I	35	35	3rd Paragraph. Included segment: "...followed by Itapetininga, with 802;..."
I	36	36	4th Paragraph. Correction of number of farms. From "1,713" to "1,706".
I	36	36	6th Paragraph. Correction of number rounding. From "30.17%" to "30.14%".
I	39	39	Table 8. Changed variety name "true lemon" to "Sicilian lemon".
I	40	40	Table 11. Total figures remained the same, although figures in the strata were corrected
I	89	89	Table 73. Changed data related to the 2015 inventory of varieties Seleta and Pineapple, as well as the average
I	98	98	Tables 84 and 85. Total figures remained the same, although figures in the strata were corrected.
I	104	104	Table 96. Included words "All the" in the column relative to orange groves.
I	12	12	2nd Paragraph. From "...since the previous crop..." to "...since the 2015-2016 crop..."
I	14	14	4th Paragraph. "other early" varieties changed place in the sentence.
I	102	102 to 109	Inserted Tables 94 to 100 (except for table 97).
II	25	25	Table 6. Figures were reversed between columns: "Fruits per box", "Fruits per box" and "Drop rate".

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