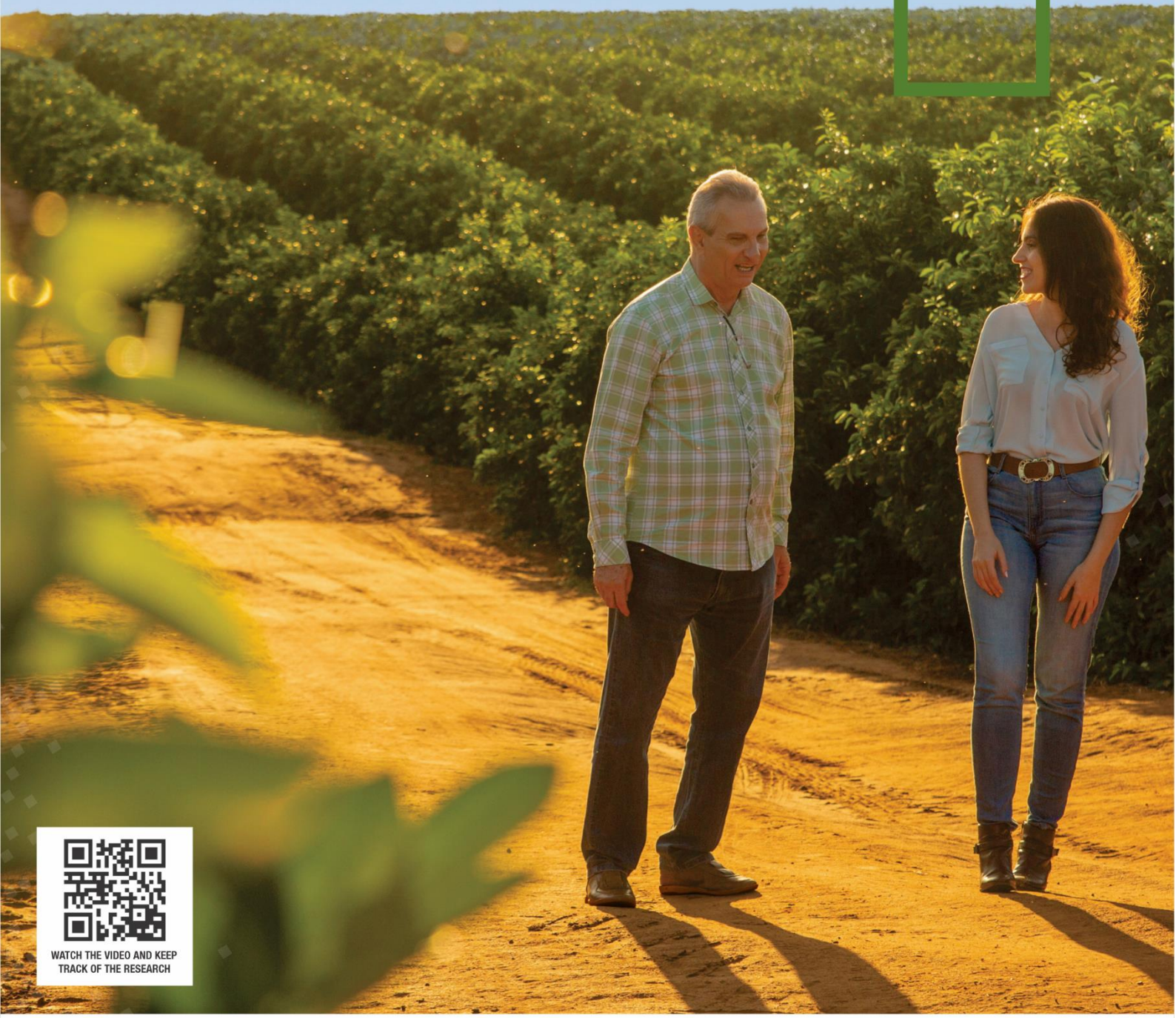
2022-2023

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



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TREE INVENTORY AND 2022-2023 ORANGE CROP FORECAST FOR THE SÃO PAULO AND WEST-SOUTHWEST MINAS GERAIS CITRUS BELT

SECTION I

TREE INVENTORY

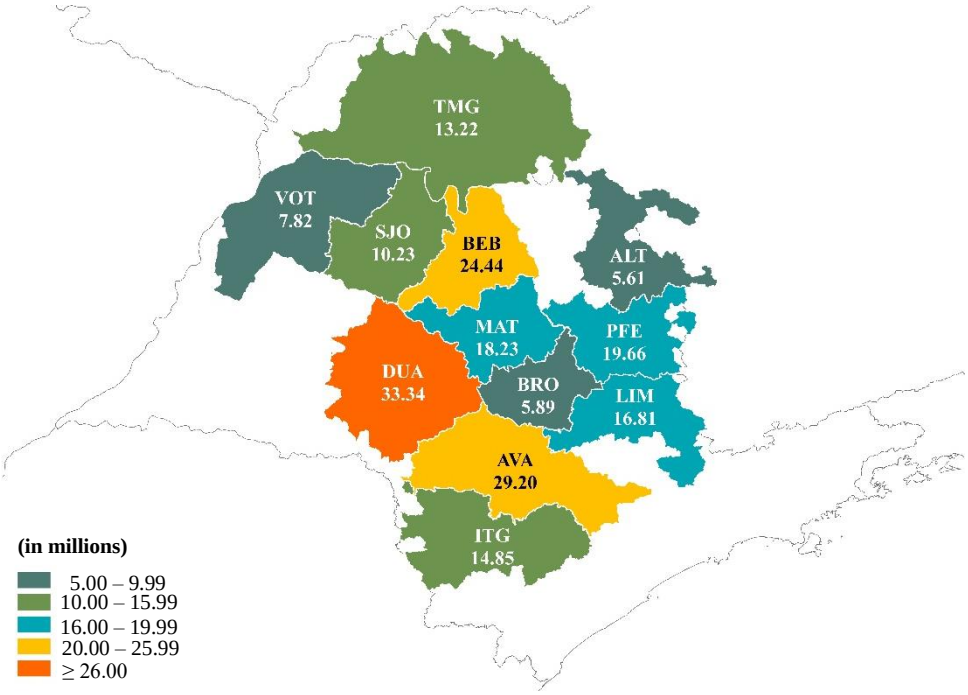
SECTION II

CROP FORECAST

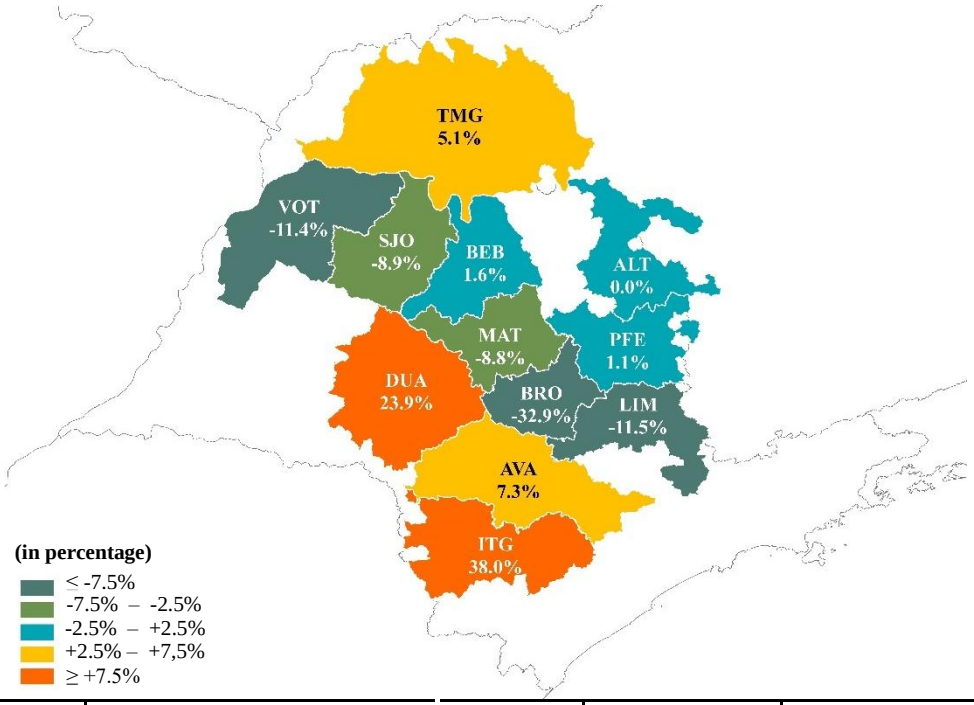
TREE INVENTORY OF THE SÃO PAULO AND WEST-SOUTHWEST MINAS GERAIS CITRUS BELT

SNAPSHOT OF GROVES IN MARCH 2022

TOTAL ORANGE TREES[1] BY REGION
Total: 199.31 million trees



VARIATION IN TOTAL ORANGE TREES BETWEEN THE 2018 AND 2022 INVENTORIES



Abbreviation	Region	Total orange trees[1]			Abbreviation	Region	Total orange trees[1]		
		2018 Inventory [2]	2022 Inventory[2]	Variation			2018 Inventory[2]	2022 Inventory[2]	Variation
		(millions)	(millions)	(%)			(millions)	(millions)	(%)
ITG.....	Itapetininga.....	10.76	14.85	38.0%	ALT.....	Altinópolis.....	5.61	5.61	0.0%
DUA.....	Duartina.....	26.91	33.34	23.9%	MAT.....	Matão.....	20.00	18.23	-8.8%
AVA.....	Avaré.....	27.22	29.20	7.3%	SJO.....	S. J. do Rio Preto	11.23	10.23	-8.9%
TMG.....	Triâng. Mineiro	12.58	13.22	5.1%	VOT.....	Votuporanga.....	8.83	7.82	-11.4%
BEB.....	Bebedouro.....	24.05	24.44	1.6%	LIM.....	Limeira.....	18.99	16.81	-11.5%
PFE.....	P.Ferreira.....	19.44	19.66	1.1%	BRO.....	Brotas.....	8.78	5.89	-32.9%

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

TREE INVENTORY OF THE SÃO PAULO AND WEST-SOUTHWEST MINAS GERAIS CITRUS BELT– SNAPSHOT OF GROVES IN MARCH 2022

Published on June 30, 2022[1]

Publication Schedule

2022-2023 Crop Year
Executive summary of the 2022-2023 orange crop forecast: May 26, 2022
March 2022 tree inventory: June 30, 2022
Crop forecast: May 26, 2022
1st Crop forecast update: September 12, 2022
2nd Crop forecast update: December 12, 2022
3rd Crop forecast update: February 10, 2023
Final crop forecast: April 10, 2023

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 8 – Nº 1 – June 30, 2022 (Portuguese version only)
Year 8 – Nº 2 – July 01, 2022 (correction of the map containing the productive trees and estimate in Portuguese and English versions)

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

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

SNAPSHOT OF GROVES IN MARCH 2022

Fundecitrus
Araraquara, São Paulo
2022

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Fundecitrus President and citrus grower

The alternation in production, expected due to the dispersion of groves in different climate and soil conditions, to the composition in terms of varieties and cultural practices, to the incidence of pests and diseases and other variables justify the determination of the productive sector to know each of these challenges in depth. The availability of reliable data will allow citrus growers and the market to have information for decision-making, preserving the culture as a source of income and work. For this reason, citrus growers and industries strengthen the Crop Forecast Survey (PES) as an essential component of the intellectual capital of the production chain, so that it maintains a basis for identifying opportunities and threats to its sustainability. The projected estimate, to be reassessed throughout the crop in the face of possible climatic variations, is 316.95 million boxes, which shows a significant increase compared to last year, of 20.53%. It is a crop very close to the average of the last ten years, with an increase of only 1.11%. There is a recovery in production after two consecutive years of small crops caused by severe droughts. Despite the increase in production, the area of the main orange varieties fell (about 4%), although the quantity of trees grew (approximately 3%), a result of increased planting density (low-density groves are eradicated and higher-density groves are planted). An adequacy for the planting density was also verified, because the plantings with very high density (about 1 thousand plants per hectare) have been found to be very difficult of being managed. A significant fact is the reduction of abandoned groves by 35%, decreasing the pressure of the greening transmitter. The number of orange farms decreased, but was offset by the increase in farms growing Sicilian lemon and Tahiti acid lime – the citrus region has 9.6 thousand citrus farms. The data is relevant to the sector because it clearly portrays the dynamics of our citrus growing in search of productivity, expanding irrigation and reducing abandoned areas. This report shows that what has been done has paved the way for current management technology, however, more investments are needed. The limits in the capacity of extensive infection control place priorities in the search for cultivars with resistance to greening bacteria. The positive data on the breeding program are more hopeful in the near future. New cultivars, which meet the market dynamics, can be expected and we will enter a new citriculture.

Antonio Juliano Ayres

Fundecitrus General Manager

The real strength of an economic segment lies in its capacity for resilience in the face of the obstacles that are inherent to the business and to so many others that arise due to impositions in the day to day. Efficiently adjusting the route is constant work. With the consolidated figures, the last two years of crops in the São Paulo and west-southwest Minas Gerais citrus belt required wisdom and determination from the citrus grower. Wisdom to see the future and determination to face so many adversities – incidence of diseases, extreme climates, the Covid-19 pandemic. In the 2022-2023 crop, we are finally moving towards a scenario of more optimism with prospects for greater productivity of groves. However, facing greening with the required seriousness by everyone in the sector is our biggest challenge. The expected yield for this crop is 920 boxes per hectare, against 280 boxes per hectare in Florida. In 2005, before greening, productivity in Florida was twice that of São Paulo. This demonstrates the destructive power of greening, if it is not taken seriously. With this disease, there is no middle ground, the rigor in management has to be extreme. Greening really is a serious matter. This serves as a wake-up call to keep our groves healthy and competitive. The work, the technical and scientific information by Fundecitrus and the greening survey allow a ‘risk zoning’ to be established. Given this, the citrus grower can adopt different management measures depending on the location of the property, in addition to helping direct planting and mitigate risk. All this information generated by the institution serves as a beacon in citriculture and is available in time for everyone, assisting in more assertive decision-making. The success of the citrus grower is the fuel that feeds Fundecitrus.

Marcos Fava Neves

PES Political-Institutional and Methodological Coordinator, part-time Full Professor at FEA-RP/USP, advisor to Markestrat and other organizations

The Crop Forecast Survey (PES) is contributing strongly another year to Brazilian agribusiness, especially for citriculture. It is an extremely important work for the result of the crop and being part of it only makes me proud, especially for having by my side many extraordinary professionals dedicating themselves totally so that this event is possible. This seed was planted by Fundecitrus, in partnership with Markestrat, FEA-RP/USP and FCAV/UNESP and is synonymous with ethics and transparency from the first moment it emerged, strengthening itself annually. Many countries are part of the moment of announcement, showing the importance and interest in this information around the world. The methodology has developed a lot over the last few years, reaching a sophisticated and quite satisfactory model, and continues to undergo improvements. It's not just about numbers, but essential information for the success of citrus growing. When we foster research and add the optimal measure of technology, we are actually investing in sustainability, as a healthy and well-planned production drives proper management, optimizes resource use, increases productivity, and ensures biodiversity. This includes the use of satellites in high definition, among other tools that offer assurance about the data, passing confidence to growers, the industry and market, which serves as an input for the growth of the economy. As a professor and researcher in agribusiness who has traveled and studied many success stories in the sector, I would like to highlight that citrus growing should be an example for other production chains in Brazil and in the world for all these great characteristics, especially the issue of transparency mentioned. Congratulations to all, once again. What PES delivers is priceless. What a beautiful tradition was created and so we continue: aiming at the success of Brazilian citrus and reaching further each year, focusing on results!

Vinícius Gustavo Trombin

Executive Coordinator of PES and partner at Markestrat

It is very common to say that each orange crop is different from the other. Nothing is more important, then, than basing on data from the current season to estimate production. Therefore, every year, thousands of field visits are carried out to measure the bearing trees and quantify the fruits. These visits are part of the objective data collection methodology, which employs proportional random sampling, to ensure impartiality and accuracy of the results. Fundecitrus, in collaboration with Markestrat, FEA-RP/USP and FCAV/Unesp, has been conducting this study for eight years with the purpose of offering sector agents reliable information to understand the current crop. But the information makes it possible to go much further than that. With the data from the tree inventory, it is possible to direct the radar beyond the short term, not out of interest in predicting the next crops, but aiming to understand changes and future opportunities in citrus growing. We hope that this information will help in the crossing between the present and the future. Act in the present, aiming for the desired future.

José Carlos Barbosa

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

The Crop Forecast Survey (PES), carried out for the eighth year by Fundecitrus, faces new challenges each year. Once again, due to the problems caused by the Coronavirus pandemic (COVID-19), it was necessary to reduce the sample size due to the restrictions imposed by the current moment, to make the collection of information feasible, however without significantly reducing the sampling accuracy. New methodologies were incorporated, aiming to improve the estimation of fruit weight and drop rate – it was necessary to project them by variety in each sector, due to the great variation in the incidence of greening between sectors areas. The results showed that, even with all the restrictions, Fundecitrus was able to carry out the research safely for the professionals involved and with the necessary reliability for the results obtained. Once again, Fundecitrus delivers to citrus growers and juice producers a new tree inventory and a crop estimate carried out with the greatest possible rigor and reliability.

ACKNOWLEDGEMENTS

We thank everyone who contributed, directly and indirectly, to the realization of this research, allowing us to achieve impartial and relevant results for the entire productive chain.

Especially, to citrus growers, for their confidence in providing data from their citrus production areas, under the commitment by Fundecitrus to use the individual information with absolute confidentiality and respect for the privacy of personal data.

To the São Paulo State department of agriculture and supply, for providing information on the amount of citrus nursery plants marketed under the permit to transit plants in 2021, and to the citrus nurseries that provided the amount of citrus nursery plants delivered to citrus growers in the same period.

To the orange juice companies Citrosuco, Cutrale and Louis Dreyfus, for allowing their groves to make up the field surveys and for providing the average size of the fruits received throughout the crop for industrial processing purposes.

To the Technical Committee, for the well reasoned recommendations that gave more accuracy to the results and effectiveness to the surveys.

To Fundecitrus employees and third parties involved in this great challenge of carrying out the surveys with the highest quality and on schedule, maintaining all precautions against the spread of covid-19.

To Embrapa, for initiating a joint effort with Fundecitrus to quantify carbon stocks in production areas and wildlife conservation and mapping, and to Innocent Drinks, for providing the necessary financial resources for the execution of this project, through the Farmer Innovation Fund, offered to projects that aim to reduce carbon in agriculture and inspire other farmers to adopt practices for this purpose.

Finally, to the Fundecitrus Management Board, for supporting this research based on measurable indicators, confirming the importance of the genuine value of data, transparency and democratization.

SUMMARY

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1 – INTRODUCTION

This publication presents the results of the eighth 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 August 2021 to May 2022. This eighth edition is similar to the 2018 inventory, because 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 (PES supervisor) and Roseli Reina (PES Specialist); 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

The Fundecitrus Management Board decided on the execution of this research having approved the budget of R$ 7.71 million for the 2021/22 cycle and R$ 586 thousand for the acquisition of satellite images. Therefore, the overall budgeted amount is R$ 8.29 million, of which 52% refer to expenses with the entire technical and administrative staff and labor charges; 34%, to expenses with travel, lodging, meals and maintenance; and the other 14% to do with investments that include satellite images, softwares lincenses, computer equipment, materials, dispute compensation and others. This budget provides financial support for the implementation of the planned activities until May 31, 2022. After that date, the budget for the financial year from June 2022 to May 2023 shall apply.

1.2 – GENERAL FIGURES

- **119 professionals directly involved in the survey**
  Field personnel: 30 agents, 10 drivers and 60 assistants;
  Laboratory personnel: 15 assistants;
  Office personnel: 1 coordinator, 1 supervisor and 1 specialist.
- **More than 916 thousand kilometers covered**
  Accumulated distance in travelling to map citrus groves: 515,070 km;
  Accumulated distance in travelling to count 5% of orange plots: 179,550 km;
  Accumulated distance in travelling to fruit stripping: 221,380 km.
- **419 cities visited**
- **345 cities with mapped citrus farms** (bearing, young and abandoned groves)
- **160 thousand 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 2020 and 2021 that has not yet entered into production.

Bearing tree: tree planted in 2019 and 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 2020 and 2021. Plots planted in 2022 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 2019 and 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

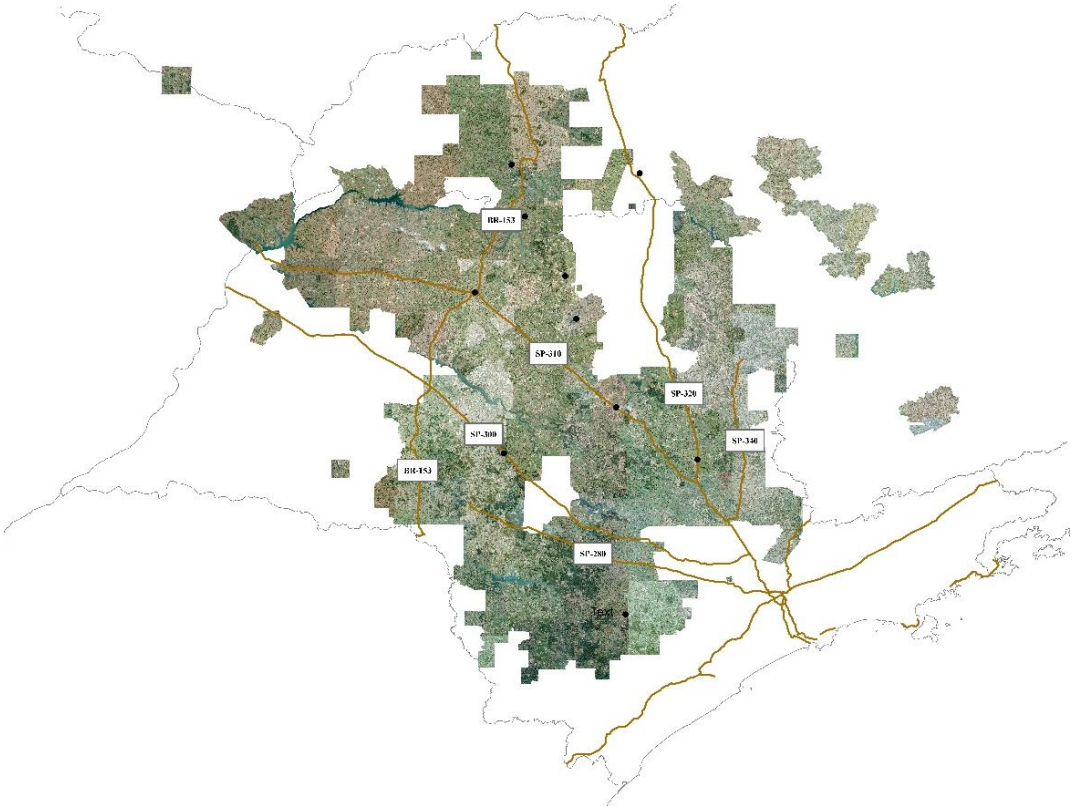
The georeferenced mapping, performed for the first time when the 2015 inventory was taken and renewed in 2018, has been updated in this 2022 inventory. In all of them, the method employed is objective and aims at producing and conveying quality technical information with scientific rigor and the least 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 13, 2021. Such months were chosen due to favorable meteorological conditions, with lower incidence of clouds and lower rainfall, which allowed for a better contrast between vegetated and bare soil areas such as roads and tracks. Scenes covered 160,000 km^2 in 419 cities in the state of São Paulo, Minas Gerais, Goiás and Mato Grosso do Sul. This coverage area is represented in Figure 1.

Figure 1 – Area covered by new satellite images including regions of São Paulo, Minas Gerais, Goiás e Mato Grosso do Sul



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 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 August 2021, 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 2018 to 2021 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 90% of the mapped area, including all oranges, had new data collected in this manner.

On farms corresponding to 7% 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.

When the owner or responsible was not found after several attempts or when the authorization was not granted, the survey was done remotely, if the citrus plots identified from the image could be viewed externally from the farm, or by statistical inference, based on the average data of their region, which occurred in 1% of the mapped area. But, when possible, their data was sought in the previous mapping, which occurred in 2% of the mapped area.

Criteria for outlining new plantings were the same used in 2018, 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 2018 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 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 2018 inventory. Plots already identified as such in the mapping that year were revisited for data update.

[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.

Finally, the outline drawing of all citrus farms and the collection of registration information made it possible to accurately update the number of farms.

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 August 16, 2021 to January 28, 2022. Each survey agent mapped an average of 243 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 1,600 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 0.5% of them in reference to variety, and in 0.3% 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 (2022) that replaces that of 2018 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 2024 for taking the 2025 inventory.

2.2 – OBJECTIVE METHOD FOR TAKING THE ORANGE TREE INVENTORY

For the tree inventory, 5% of plots in the primary base (2022) 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 2018 to 2021, 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 survey of the amount of these nursery plants is carried out by Fundecitrus from research with the main producers that have nurseries on their farms.

To estimate the area of these groves, the average density stratified by variety and region of these newly implemented plots and mapped during counting is used. From the sum of the number of trees from the CDA-SP with those from the research carried out with such growers, the nursery plants used for resetting are subtracted, thus obtaining the estimate of the number of trees planted in the groves 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 2022 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 31 and March 21, 2022. Each survey agent counted an average of 15,400 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

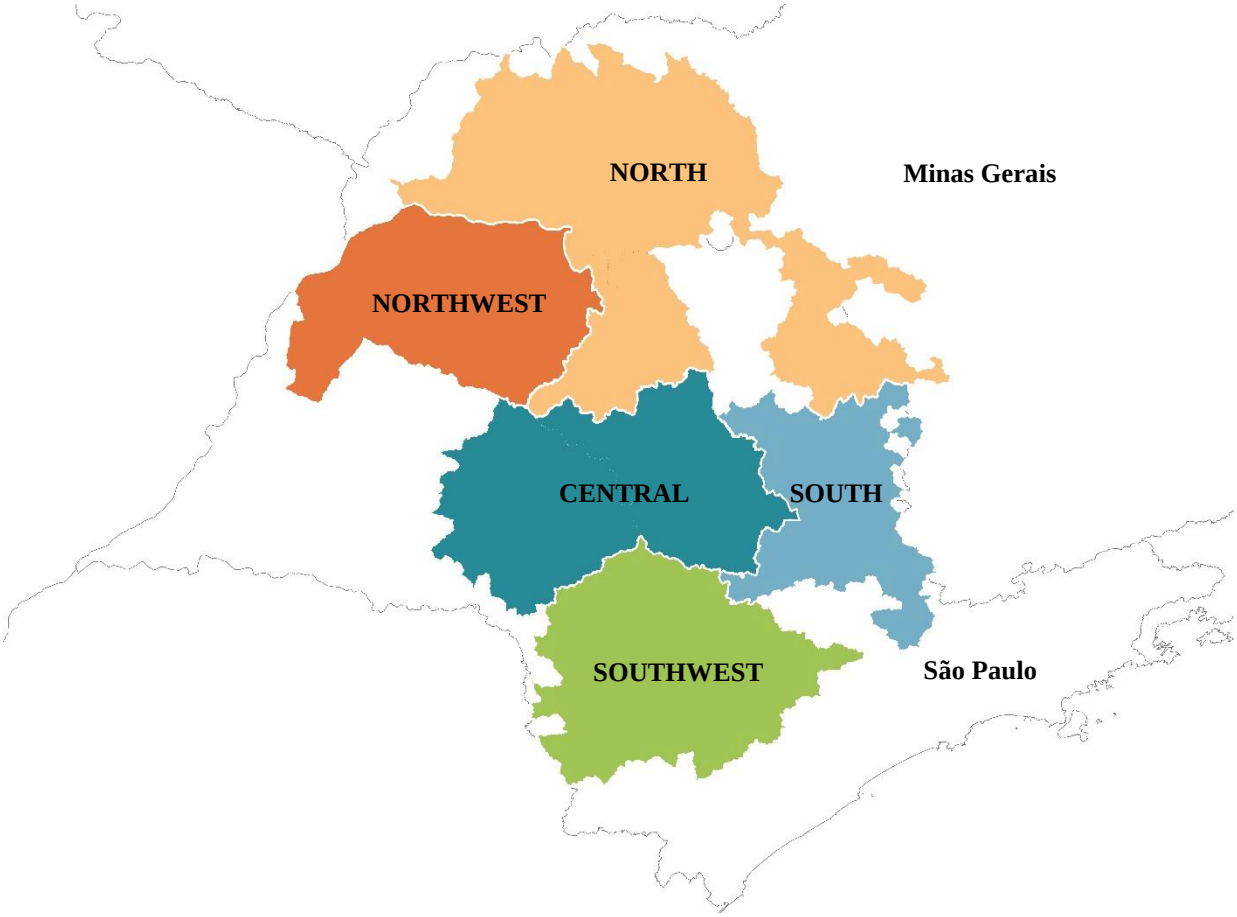
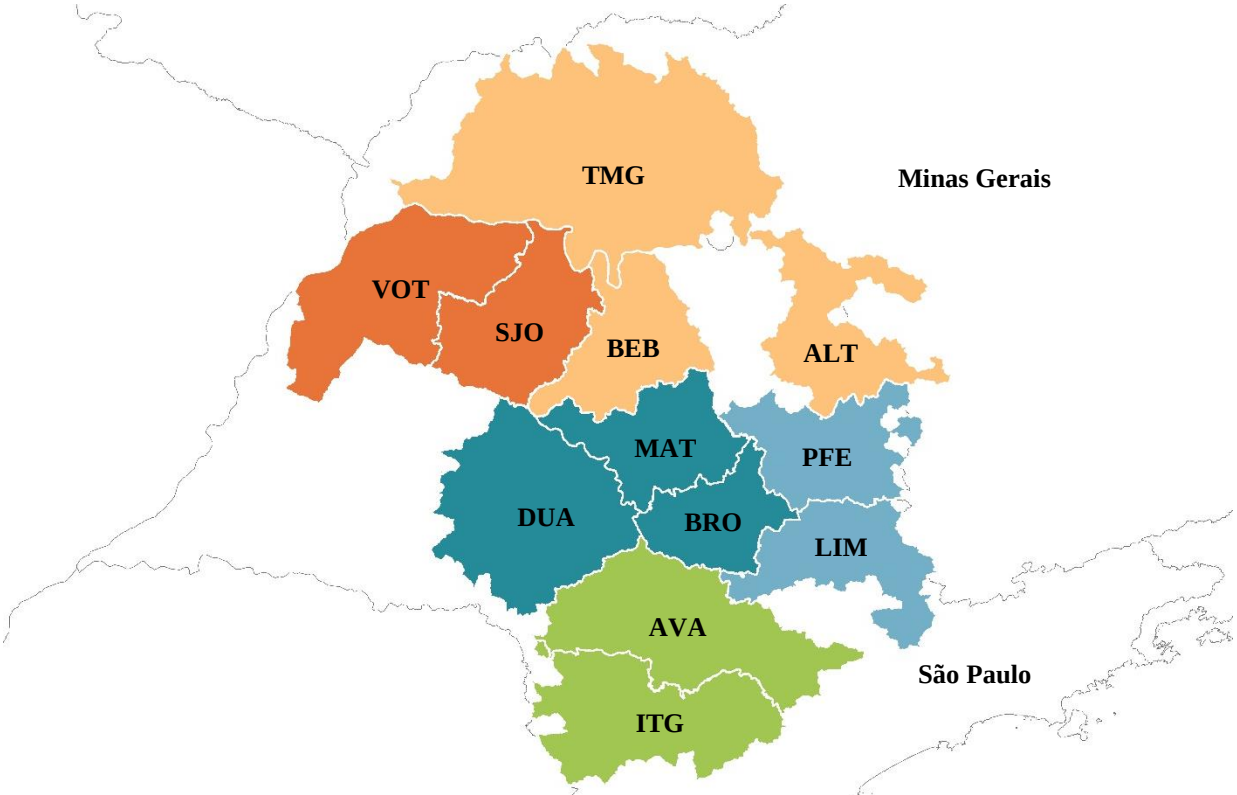


Figure 3 – Division of the citrus belt into 12 regions and respective sectors



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 75 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) 36 cities	Ariranha, Barretos, Bebedouro, Cajobi, Catanduva, Catiguá, Colina, Colômbia, Elisiário, Embaúba, Guaraci, Ibirá, Irapuã, Itajobi, Jaborandi, Marapoama, Monte Azul Paulista, Novais, Olímpia, Palmares Paulista, Paraíso, Pindorama, Pirangi, Pitangueiras, Sales, Santa Adélia, Severínia, Tabapuã, Taiaçu, Taiuva, Taquaral, Terra Roxa, Uchoa, Urupês, Viradouro, Vista Alegre do Alto
	Altinópolis (ALT) 23 cities	Alterosa, Altinópolis, Batatais, Brodowski, Cajuru, Cassia dos Coqueiros, Cristais Paulista, Delfinópolis, Fortaleza de Minas, Franca, Ibiraci, Igarapava, Jacuí, Jeriquara, Monte Santo de Minas, Nova Resende, Patrocínio Paulista, Pedregulho, Sacramento, Santo Antônio da Alegria, São Pedro da União, São Sebastião do Paraíso, São Tomás de Aquino
Northwest 89 cities	Votuporanga (VOT) 54 cities	Alvares Florence, Américo de Campos, Andradina, Aparecida d'Oeste, Aspásia, Auriflama, Cardoso, Dirce Reis, Dolcinópolis, Estrela d'Oeste, Fernandópolis, General Salgado, Guaraçaí, Guarani d'Oeste, Guzolândia, Indiaporã, Jales, Macedônia, Marinópolis, Meridiano, Mesópolis, Mira Estrela, Mirandópolis, Murutinga do Sul, Nova Canaã Paulista, Ouroeste, Palmeira d'Oeste, Paranapuã, Parisi, Pedranópolis, Pereira Barreto, Pontalinda, Pontes Gestal, Populina, Riolândia, Rubineia, 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
	São José do Rio Preto (SJO) 35 cities	Adolfo, Altair, Bady Bassitt, Bálsamo, Cedral, Cosmorama, Floreal, Guapiaçu, Icem, Ipiguá, Jaci, José Bonifácio, Macaubal, Magda, Mendonça, Mirassol, Mirassolândia, 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 Sul, Tanabi, Ubarana, Zacarias
Central 76 cities	Matão (MAT) 21 cities	Américo Brasiliense, Araraquara, Bariri, Boa Esperança do Sul, Borborema, Candido Rodrigues, Fernando Prestes, Gavião Peixoto, Ibitinga, Itaju, Itápolis, Jaboticabal, Matão, Monte Alto, Motuca, Nova Europa, Novo Horizonte, Rincão, Santa Lucia, Tabatinga, Taquaritinga
	Duartina (DUA) 40 cities	Agudos, Alvinlândia, Arealva, Avaí, Balbinos, Bauru, Boraceia, 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, Pongai, Presidente Alves, Quatá, 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 48 cities	Porto Ferreira (PFE) 18 cities	Aguaí, Casa Branca, Descalvado, Guaranésia, Itobi, Luiz 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) 30 cities	Amparo, Araras, Artur Nogueira, Atibaia, Bragança Paulista, Charqueada, Conchal, Cordeirópolis, Cosmópolis, Engenheiro Coelho, Espírito Santo do Pinhal, Estiva Gerbi, Holambra, Iracemápolis, Itapira, Jaguariúna, Jarinu, Leme, Limeira, Lindóia, Mogi Guaçu, Mogi Mirim, Monte Alegre do Sul, Paulínia, Pinhalzinho, Piracicaba, Rio Claro, Santo Antônio de Posse, Serra Negra, Socorro
Southwest 48 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, Piraju, Porangaba, Porto Feliz, Pratânia, Salto de Pirapora, São Manuel, Sorocaba, Tatuí
	Itapetininga (ITG) 19 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
5 sectors	12 regions	336 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, Seleta, Pineapple and Alvorada[1] 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] The full nomenclature is "Mapa - EECB IAC Alvorada", however the shortened name "Alvorada" was used in this report to represent this variety due to space constraints in the tables. This variety was included in this 2022 inventory in the group of main oranges, while in previous inventories it belonged to the group called "other oranges"

Age groups

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

Age group	Planting years
1 to 2 years.....	2021, 2020
3 to 5 years.....	2019, 2018, 2017
6 to 10 years.....	2016, 2015, 2014, 2013, 2012
Over 10 years.....	2011 and previous years

3 – RESULTS

3.1 – MAIN CONCLUSIONS ON THE TREE INVENTORY

In this eighth publication, we present the update of the tree inventory of the São Paulo and west-southwest Minas Gerais citrus belt, the result of the third mapping carried out by Fundecitrus, a field scan work, facilitated by satellite images covering more than 160,000 km². In this scan, all the plots planted after the 2018 mapping were registered and all the plots that had already been registered in the previous mapping were revisited to completely update their data.

This publication portrays the estimated situation of citrus groves updated in March 2022 and resembles the inventories made in 2015 and 2018 because they were also based on mappings of all the citrus groves completed shortly before their publications. For this reason, the data from these inventories are compared with the current ones to evaluate the changes that have occurred in the citrus region. The recent mapping, finalized in January 2022, allowed updating the information of the groves planted in 2018, 2019 and 2020 with their real values, when in previous inventories these plantings had been 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 consumed locally; and (3) farms drawn counting for 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 area planted with citrus decreases again, but the intensity of the reduction was lower than that observed in the previous mapping. Between 2015 and 2018, the reduction was of 16,956 hectares, and now, between 2018 and 2022, the reduction is of 3,714 hectares, moving from 465,635 hectares to 461,921 hectares. Once again, areas with orange groves reduce participation in the citrus belt, from approximately 89% to 86%, and those with acid limes and lemons gain importance, rising from 8% to 11%. Tangerines are stable at about 3%.

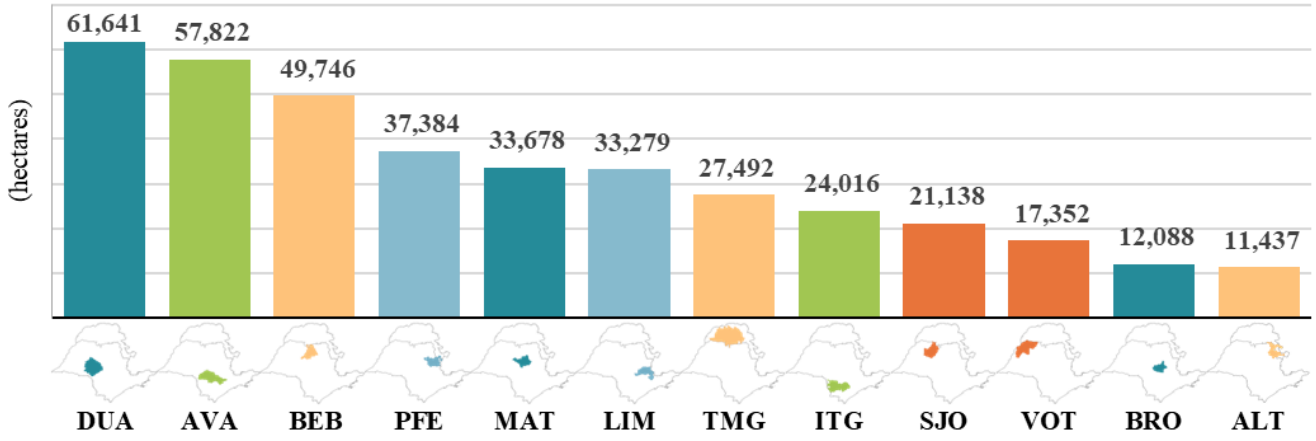
The area of the acid limes and lemons groves, which had increased by 11,142 hectares between 2015 and 2018, expanded by another 12,731 hectares between 2018 and 2022, reaching an area of 51,809 hectares. About 65% of this area is concentrated in just two regions, Bebedouro, with 38% and Matão, with 27%. The distribution by variety shows that approximately 89% of this area is planted with Tahiti acid lime, 11% with Sicilian lemon and 1% with other varieties, including those not identified by survey agents.

The area of tangerine groves remains stable in relation to that of the 2018 inventory, given that the increase was only of 379 hectares. In this new inventory, these groves cover 12,583 hectares and are better distributed throughout the citrus belt compared to the acid limes and lemons. The main production regions are: Limeira (16%), Votuporanga (12%), Bebedouro (12%), Itapetininga (12%), Porto Ferreira (11%), Duartina (10%) and Matão (8%). The Murcott variety has the largest share, with about 46% of the area; Ponkan has 40%; and the other varieties, 14%.

The orange groves, including all varieties, cover 397,529 hectares. Despite this new mapping revealing a decrease in the orange area with 16,824 hectares compared to the 2018 inventory, the data point to a more positive perspective, as they show that the area loss is significantly lower than that verified between 2015 and 2018, which reached 30,232 hectares.

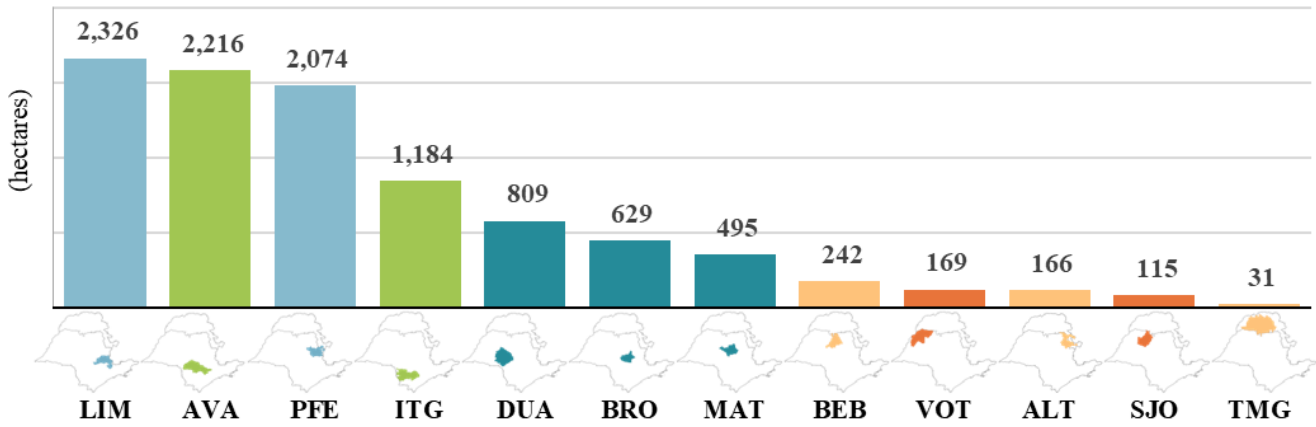
Data from orange groves were compiled in two groups. The first, named only as “oranges", leads with about 97% of the planted area (387,073 hectares) and brings together the Hamlin, Westin, Rubi, Valencia Americana, Seleta, Pineapple, Alvorada, Pera Rio, Valencia, Valencia Folha Murcha and Natal varieties. Half of the area planted with these varieties is concentrated in only four regions: Duartina (61,641 hectares), Avaré (57,822 hectares), Bebedouro (49,746 hectares) and Porto Ferreira (37,384 hectares). The other half is distributed in eight regions: Matão (33,678 hectares), Limeira (33,279 hectares), Triângulo Mineiro

(27,492 hectares), Itapetininga (24,016 hectares), São José do Rio Preto (21,138 hectares), Votuporanga (17,352 hectares), Brotas (12,088 hectares) and Altinópolis (11,437 hectares).



Graph 1 – Oranges: Groves area of the varieties of the group called "oranges" [2022 inventory]

The second group, called “other oranges”, occupies only approximately 3% of the planted area (10,456 hectares) and comprises the Washington Navel, Baianinha, Charmute de Brotas, acidless sweet oranges, sweet lime and other varieties. The groves of this second group are mostly in the south and southwest sectors, which together have 75% of the total area of these varieties: Limeira (2,326 hectares), Avaré (2,216 hectares), Porto Ferreira (2,074 hectares) and Itapetininga (1,184 hectares). The other eight regions represent a quarter of the area, which is distributed as follows: Duartina (809 hectares), Brotas (629 hectares), Matão (495 hectares), Bebedouro (242 hectares), Votuporanga (169 hectares), Altinópolis (166 hectares), São José do Rio Preto (115 hectares), Triângulo Mineiro (31 hectares). Regarding the varieties, acidless sweet oranges, which include, among other varieties, Lima Verde, Lima Sorocaba, Lima Roque and Lima Tardia, occupy approximately half of the area; Washington Navel and Baianinha, 22%; Charmute de Brotas, 14%; and the others, 14%.



Graph 2 – Other Oranges: Groves area of the varieties of the group called "other oranges" [2022 inventory]

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

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

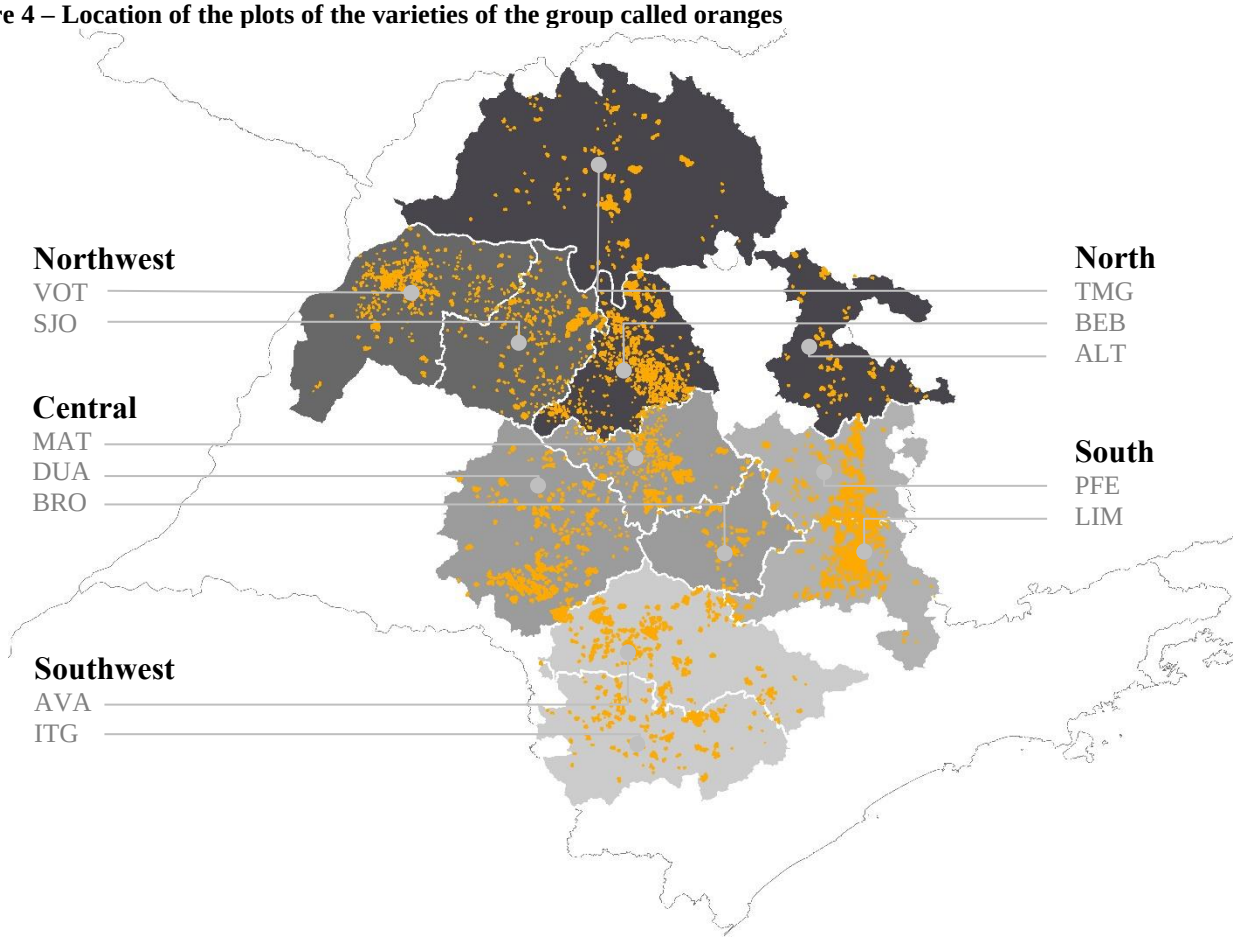


Figure 5 – Location of the plots of the varieties of the group called other oranges

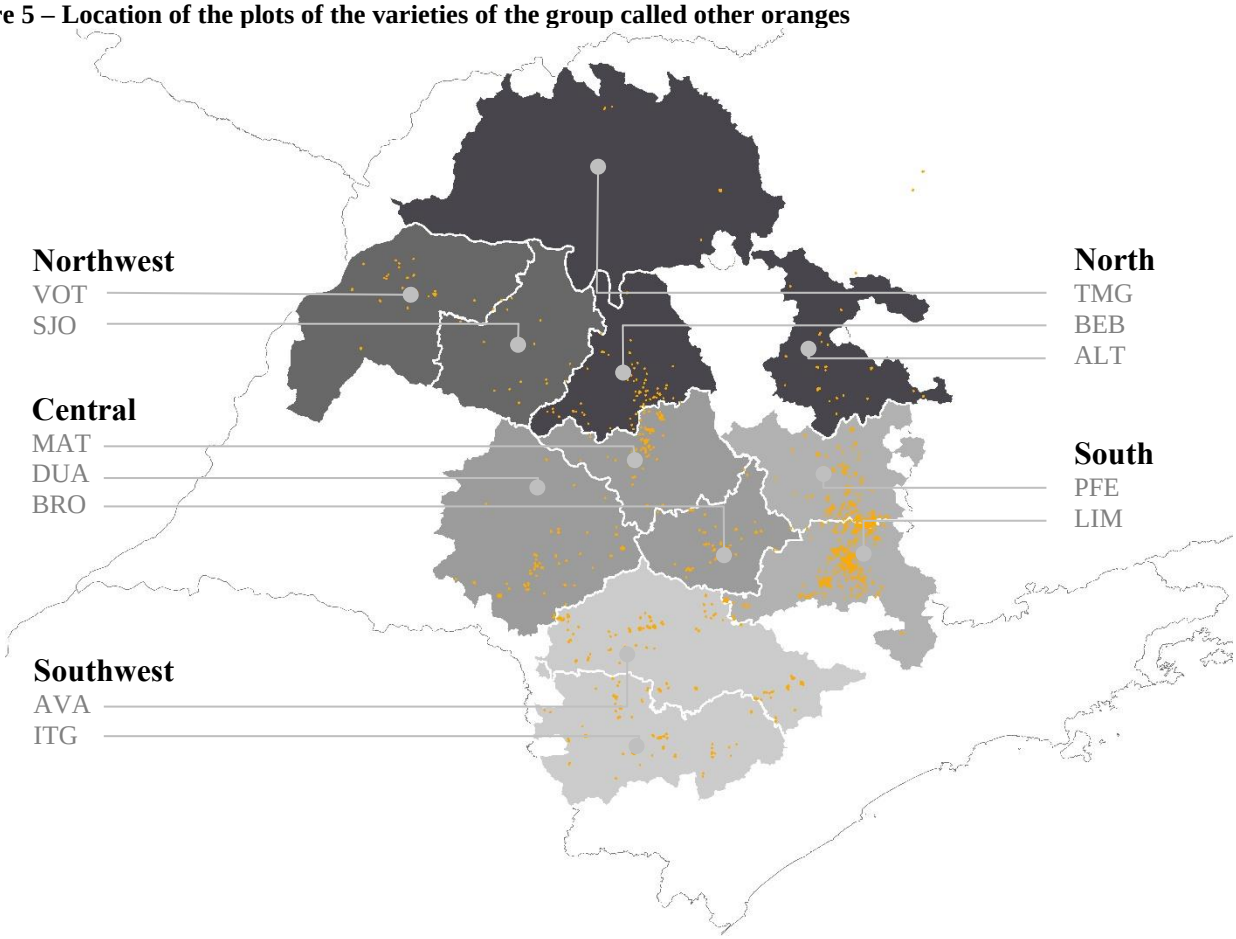


Figure 6 – Location of the plots of the varieties of acid limes and lemons

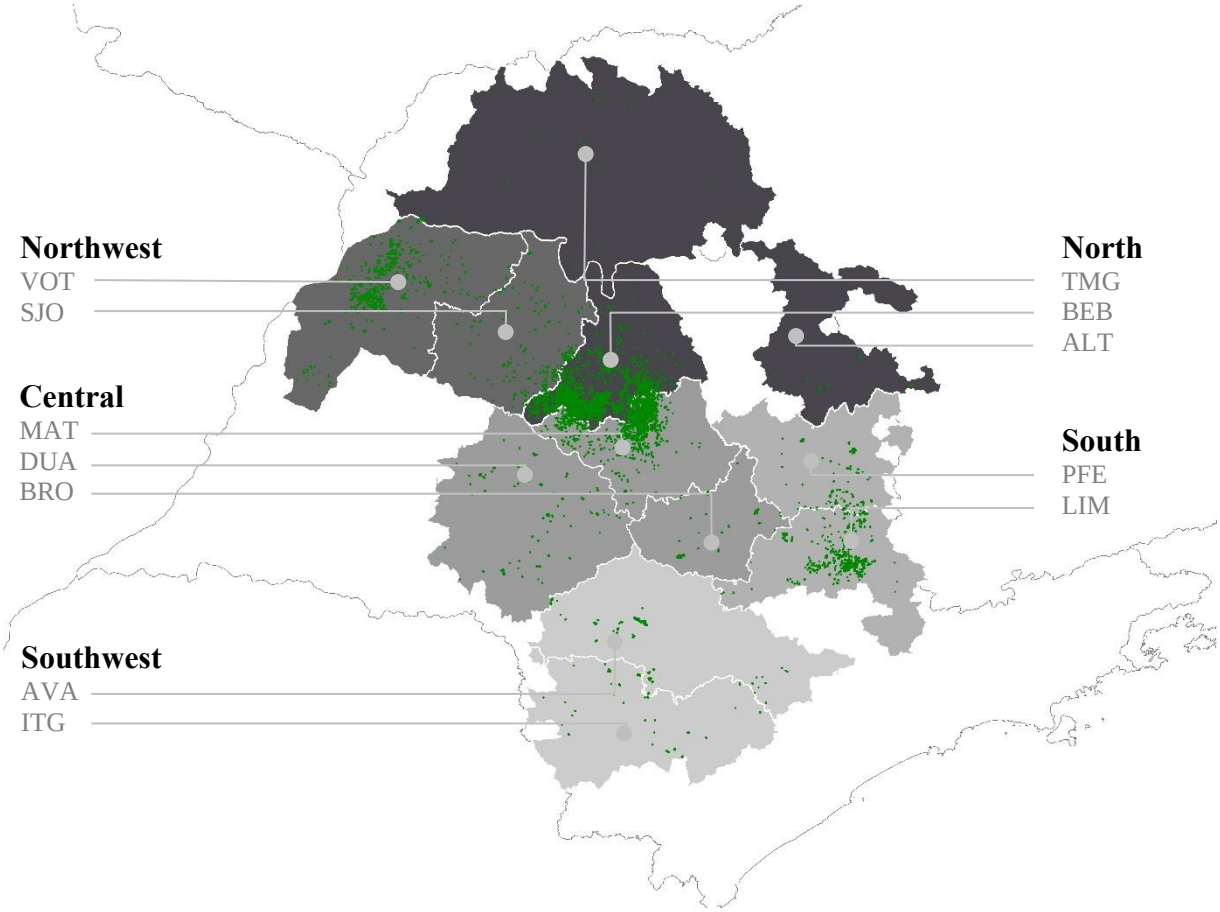
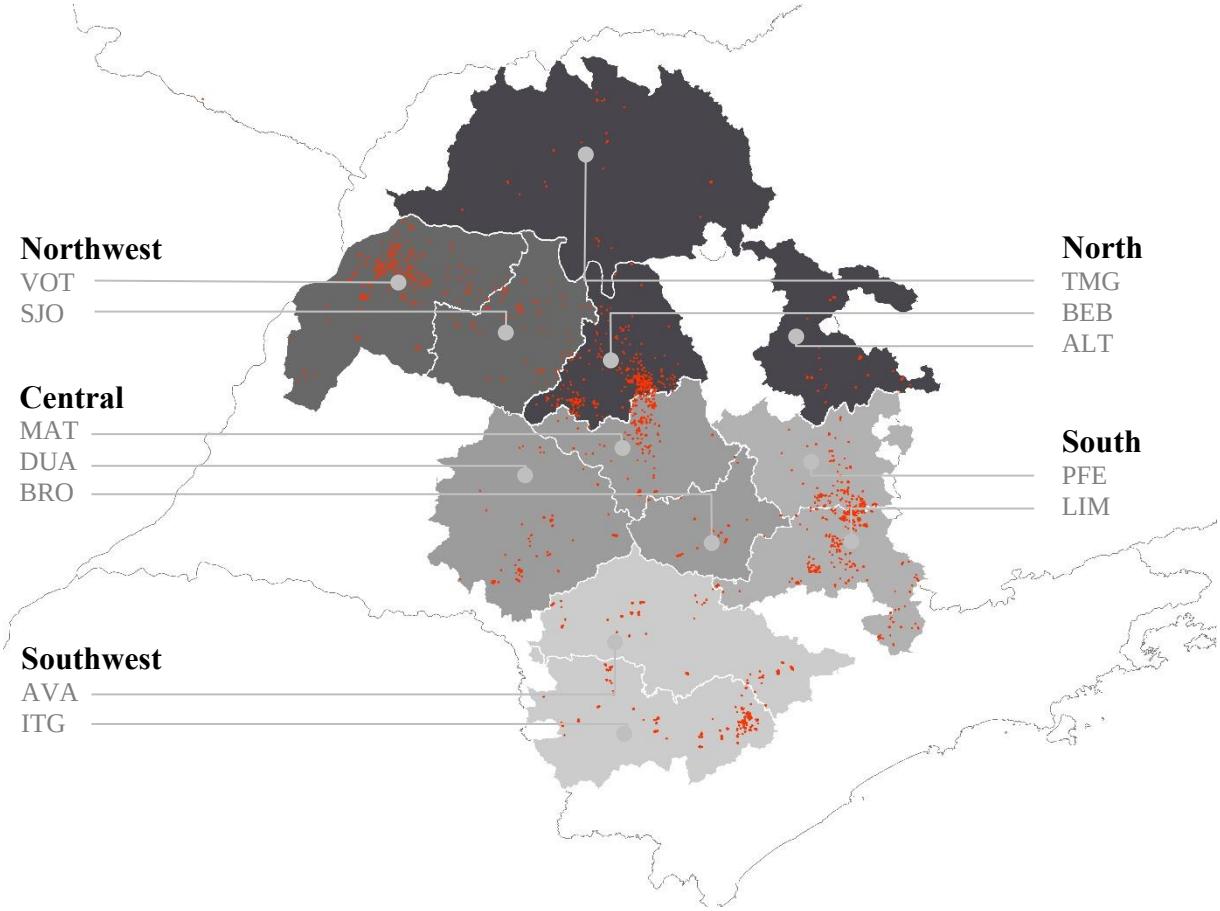
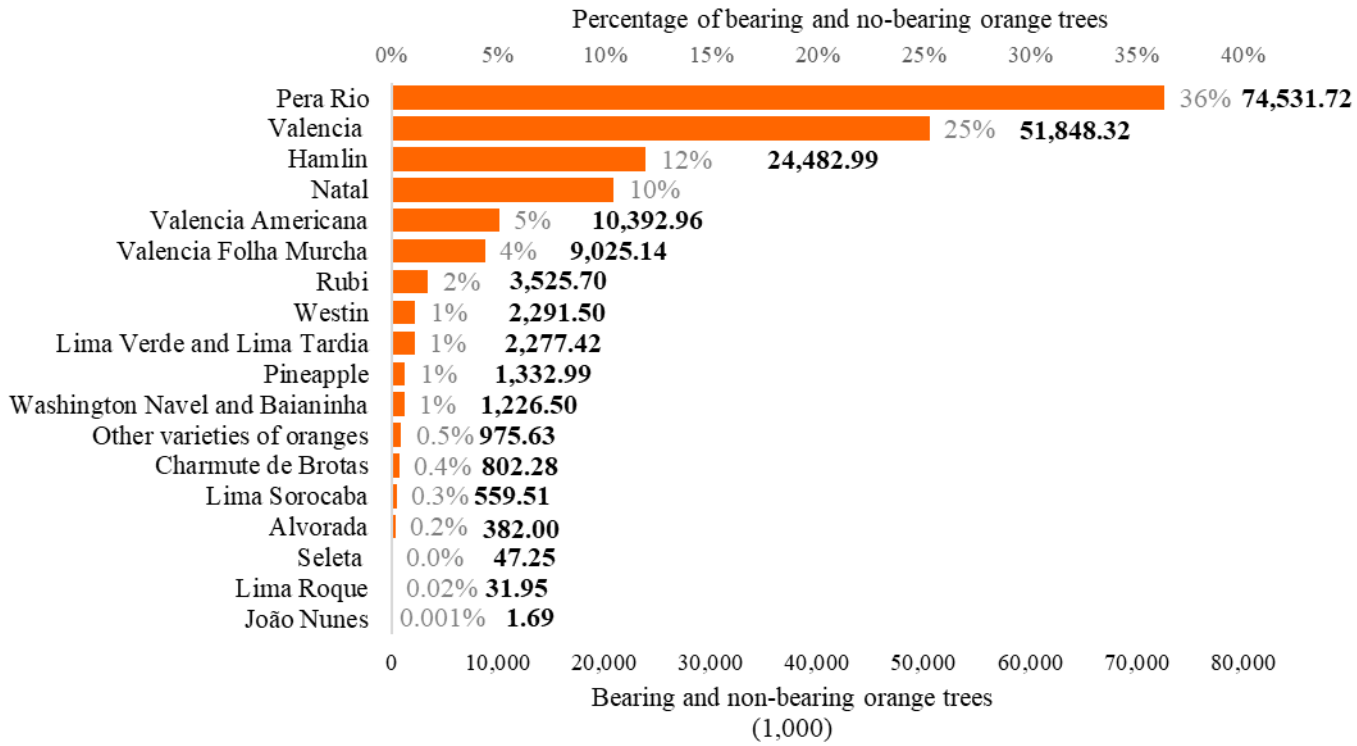


Figure 7 – Location of the plots of the varieties of tangerines



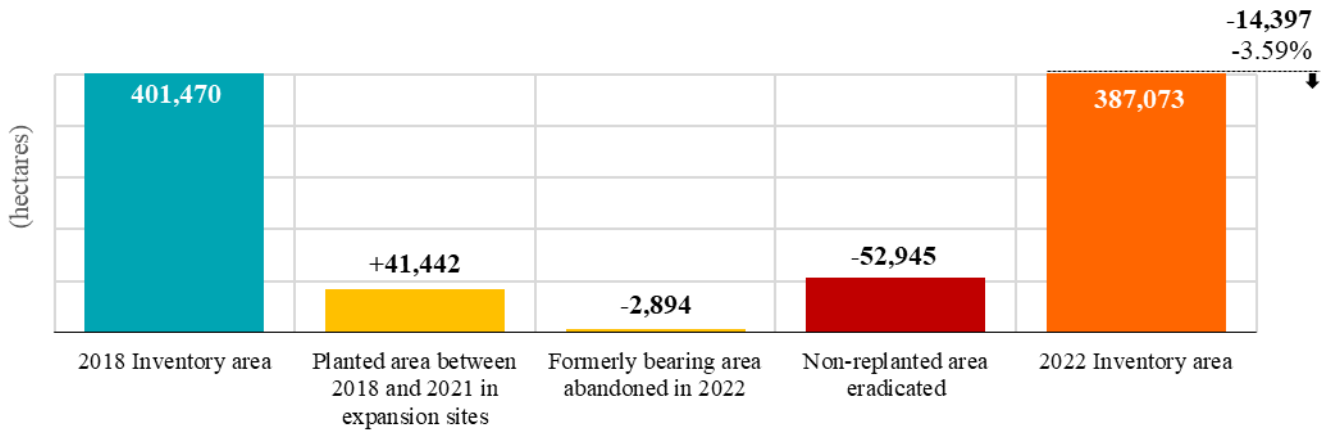
In relation to the varieties of the main oranges, practically 90% of the citrus belt is formed by five varieties: Pera Rio (mid-season) with 36% of the total; Valencia (late) with 25%; Hamlin (early) with 12%; Natal (late) with 10%; and Valencia Americana (early) with 5%. Graph 3 shows the complete distribution of the volume of trees by variety and their shares in relation to the total number of orange trees.



Graph 3 – Oranges and others: Distribution of productive and non-productive orange trees by variety [2022 inventory]

From this point on, the observations made are limited to the group of main varieties, called only "oranges", which has greater representation in the citrus belt.

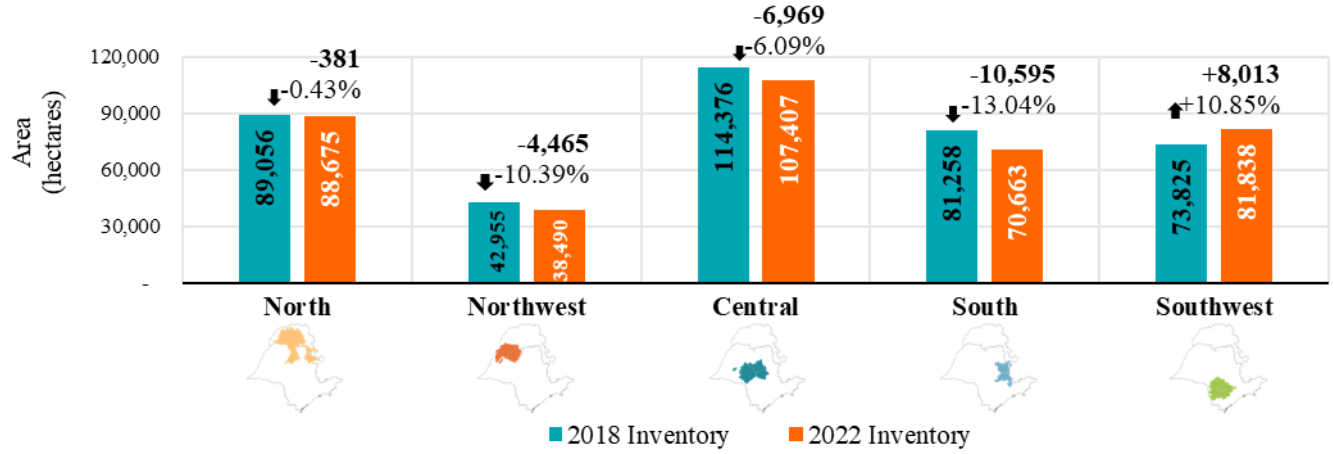
The area with groves of the main oranges (387,073 hectares) presented in this inventory is of 14,397 hectares smaller than the area existing in 2018, as shown in Graph 4. This reduction means a net change of -3.59%. This figure is determined from the area of groves in the 2018 inventory (401,470 hectares) plus the expansion area (+41,442 hectares), which refers to plantings in new areas between 2018 and 2021. From this total, the loss of groves (hectares) that occurred after the 2018 inventory is discounted, referring to the eradicated areas (-52,945 hectares), which were not reset with orange, and to the areas that were abandoned (-2,894 hectares).



Graph 4 – Oranges: Acreage update [2018 and 2022 inventories]

The groves implemented in 2019, 2020 and 2021 total 60,794 hectares, which corresponds to a planted area of around 20,000 hectares, on average, per year, almost double that observed in the period between 2015 and 2017. Of this total, 46% are plantings carried out in renovation areas and 54% in expansion areas. In the varietal distribution, the Pera Rio occupies 45% of plantings, which shows an increase in the share of this variety in relation to its share in mature groves, which is 36%. The remaining groves planted in recent years are formed with: Valencia (17%); Hamlin (10%); Valencia Americana (9%); Natal (8%); Valencia Folha Murcha (5%); Rubi (3%); Westin (2%); and Pineapple, Alvorada and Seleta (together with approximately 1%). More than half of these groves are located in two sectors of the citrus belt: 30% in the central sector and 25% in the southwest. The south sector has 18%, the north, 15% and the northwest, 12%.

Among the five sectors of the citrus belt, the southwest is the only one that had orange area growth, equivalent to 8,013 hectares or 10.85% in the comparison to the inventories of 2018 and 2022, as shown in Graph 5. The decrease in area of the other sectors means that new plantings are not enough to compensate for the area of groves lost to eradication or abandonment. The south sector presents the greatest loss of area, 13.04% lower than that of the 2018 inventory. This reduction is related to the high incidence of greening plants present in this sector. The northwest, with a current area 10.39% lower than in 2018, is in second place among the sectors that had the most decrease. One of the causes is the water deficit, which in the last two years has hit this region with greater intensity, resulting in the lowest productivity in the entire citrus belt.



Graph 5 – Oranges: Area of groves by sector [2018 and 2022 inventories]

The average eradication rate of the citrus belt is 7.65%, estimated for the period from April/2021 to March/2022, practically equal to that of the previous year (7.26%), but higher than those verified in the inventories of 2019 and 2020, which were, on average, 4.10%. The highest eradication rate, 30.13%, in that same period, is observed in farms with fewer than 10 thousand trees, whose average size is approximately 20 hectares.

These farms have a small extension of area, so most of the plots are located near their borders, where greening vector insects arrive, which leaves most of their trees more exposed to contamination. In medium and large farms, the opposite occurs, since the amount of border plots is proportionally smaller than that of internal plots. These plots, located in the border strip, function as protective barriers, since insects, coming from outside, soon land on the first plants located on the periphery of the farms, which attenuates the dispersion of the disease to the internal plots, where the largest share of trees is. This characteristic of how the disease spreads portrays the difficulty of producing orange on small farms these days. But it's not the only challenge. Small-scale production also suffers from the incompatibility in cost and design of modern agricultural machinery and implements.

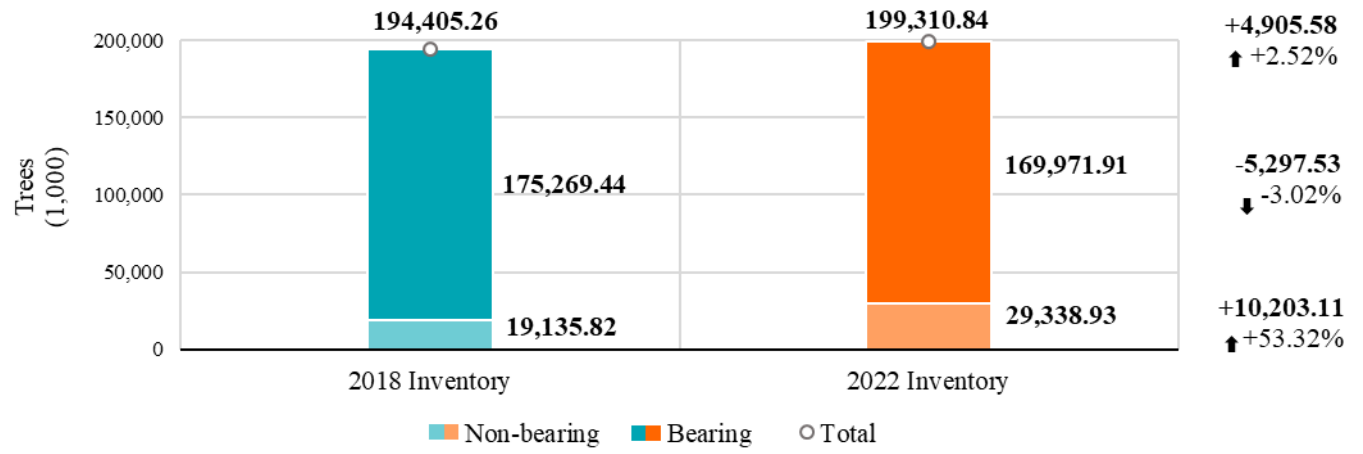
These facts, added to the cycle of high prices of other agricultural commodities, such as grain and sugarcane, are leading to a reduction in the number of orange farms in the citrus belt, from 5,882 to 5,134.

Between the 2018 and 2022 inventories, 748 farms that have left the activity. It must be considered that most of these orange farms are small: 76% have up to 50 hectares. With the decrease in the number of small farms, the average size of orange farms has been increasing with each mapping: in 2015, it was 57 hectares; in 2018, 68 hectares; and, in 2022, 75 hectares. In addition to the farms that are dedicated to oranges, those that produce acid lime, lemons and tangerines are also part of the belt; totaling 9,600 citrus farms. In the distribution between sectors, it is noted that the largest citrus farms are located in the southwest sector, with an average size of 194 hectares, and the smallest in the northwest sector, with 28 hectares. In the other sectors, the average sizes are: central, 62 hectares; south, 38 hectares; and north, 35 hectares.

The cycle of high prices for agricultural commodities also led to an increase in demand for land for food production and, consequently, the rise in the price of rural real estate. In this context, many groves with low productivity or that were abandoned became areas of interest, including because, generally, they are constituted of land with high availability of nutrients, due to the cumulative effect of several years of fertilization. This dynamic, in addition to increasing the eradication of groves that presented low productivity, also intensified the elimination of abandoned groves. In 2015, there were 9,952 abandoned hectares, an area that fell to 6,050 in 2018 and 3,948 in 2022. Of the 6,050 hectares of abandoned groves found in the 2018 inventory, only 143 hectares remain abandoned, 991 hectares have been reset with citrus and the majority, 4,916 hectares, are either planted with other crops or bare soil.

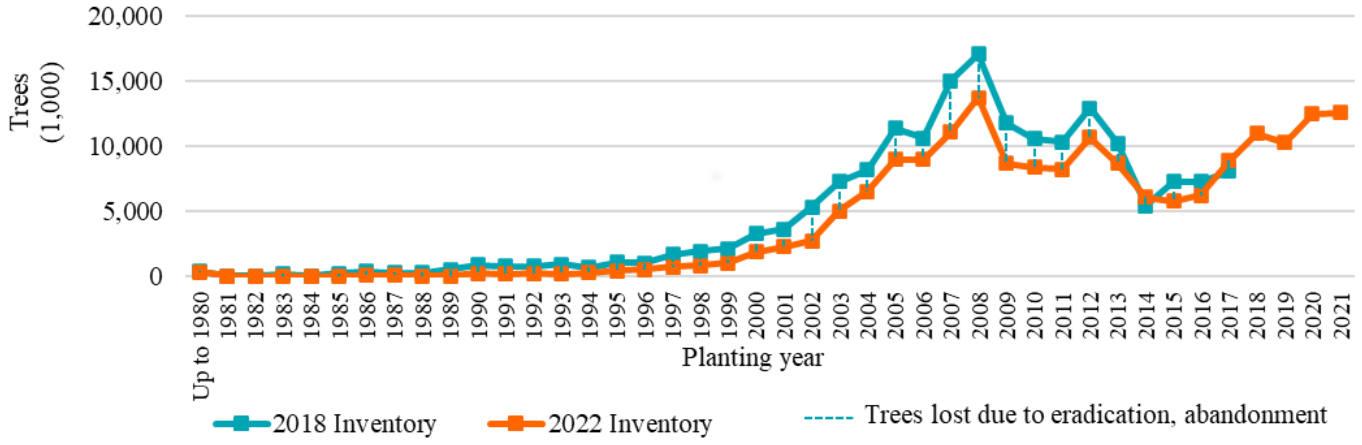
One positive finding of this new inventory is the increase in irrigated groves. The share of the irrigated area in relation to the total was 24.6% in 2015, went to 30.1% in 2018, and now reaches 36.3%. If only mature groves are considered, the share of irrigated area rises to 38.9%. In absolute values, the Votuporanga region is the one that had the highest growth in irrigation use, with an increase of 5.556 hectares compared to 2018. The regions in which irrigated areas participate with more than half of the total area are: Triângulo Mineiro (87%), Bebedouro (74%), Votuporanga (71%), Matão (60%) and São José do Rio Preto (54%). In relation to the system used, approximately 94% is drip, the technology with the best efficiency and water savings, because irrigation is localized in the roots of the plants.

Bearing orange trees total 169.97 million and non-bearing trees 29.34 million, totaling 199.31 million trees, as shown in Graph 6.



Graph 6 – Oranges: Total trees, bearing and non-bearing trees [2018 and 2022 inventories]

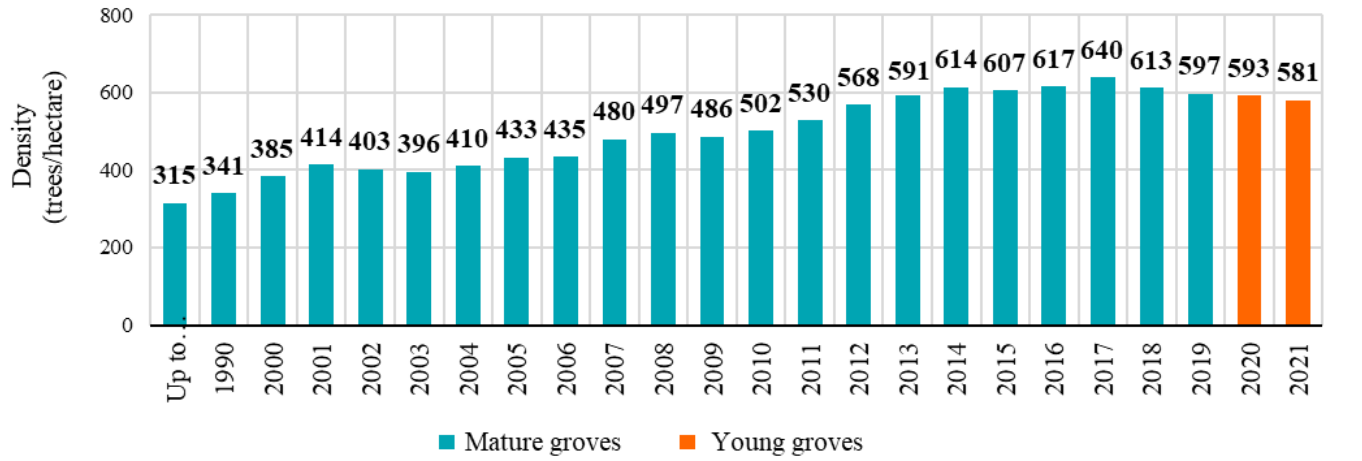
Compared to the 2018 inventory, the total number of trees increased by approximately 4.91 million plants, equivalent to +2.52%, as a result of the resumption of new plantings that occurred in recent years, which can be seen in Graph 7. In these more recent plantings, the density of plants per hectare is higher than in the older plots, implemented about two or more decades ago and which are now being eradicated. Therefore, although the number of trees has increased, the area has decreased by 3.59% since 2018.



Graph 7 – Oranges: Trees per plot planting year, resets not included [2018 and 2022 inventories]

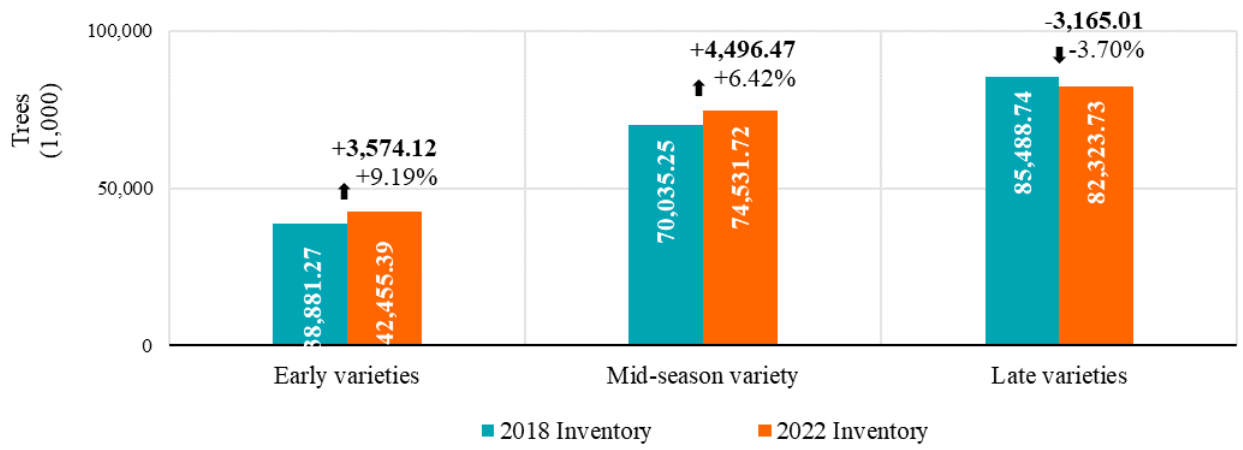
Graph 8 shows that planting density grew from 2004, but from 2018 onwards, it began to decline. The difficulty of management in very high-density groves showed that the ratio of plants per hectare had reached the extreme and needed to be readjusted. Groves implemented in 2021, for example, have an average of 581 trees per hectare, about 10% fewer plants than those formed in 2017.

The average density of groves in formation in the regions of Brotas, Matão, Duartina, Itapetininga, Porto Ferreira and Limeira is between 620 and 653 trees per hectare. In the regions of Bebedouro, Altinópolis, Avaré and São José do Rio Preto, between 514 and 583 plants per hectare, and in the region of Votuporanga the lowest average density was verified, 424 plants per hectare. The average density of groves in this inventory is 587 trees per hectare. The average density of mature groves is now 506 trees per hectare. The overall average is 515 trees per hectare.



Graph 8 – Oranges: Average density of groves per year of planting

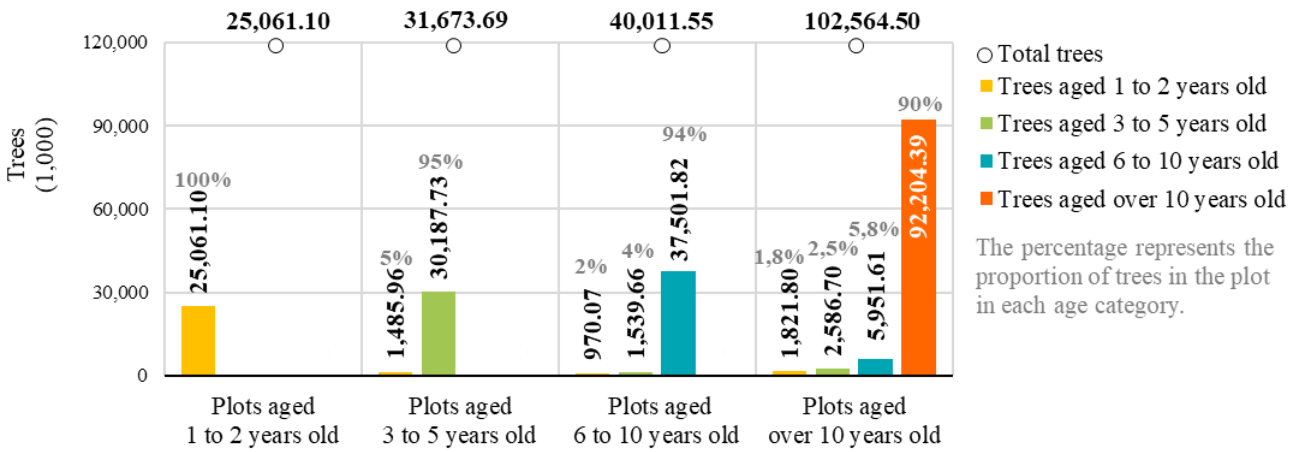
The distribution of citrus varieties by maturity time shows that, in relation to the 2018 inventory, the trees of the early varieties, including bearing and non-bearing ones, increased +9.19%; the mid-season ones increased +6.42%; and the late ones decreased -3.70%. Currently, 42.46 million of the trees are early varieties, normally harvested between May and August; 74.53 million are mid-season, normally harvested between July and October; and 82.32 million are late varieties, normally harvested between October and January, as shown in Graph 9. Climatic variations and other factors, such as crop size, can bring forward or extend the harvest period from one year to another.



Graph 9 – Oranges: Trees by variety ripening season [inventories from 2018 to 2022]

The average age of mature groves is 10.8 years. Of the 387,073 hectares, 42% are up to 10 years old; 29% are 11 to 15 years old; 22% are 16 to 20 years old; and 7% are over 20 years old. This last parcel of groves, over 20 years old, comprises 28,226 hectares.

The segregation of the plots in the different age categories reveals that most of the trees are in the older age range, that is, in the plots older than 10 years. In these plots, there are 102.57 million trees; of which 90% belong to the same age group as the plots and the remaining trees come from resets that occurred after implementation: 5.8% are between 6 and 10 years old; 2.5%, from 3 to 6 years; and 1.8%, less than 3 years old. The 6 to 10 year old plots, formed between 2012 and 2016, have 40.01 million trees. The plots with 3 to 5 years were planted between 2017 and 2019 and have 31.67 million trees. The plots less than 3 years old, that is, implemented in 2020 and 2021, did not reach the mature stage, and contain 25.06 million plants. On the general average, the percentage of dead trees in the citrus belt is 1.45%, and of vacancies, 4.61%. Graph 10 shows the distribution of trees by age category in all age groups of groves.



Graph 10 – Oranges: Trees by age groups and age ranges of the plot

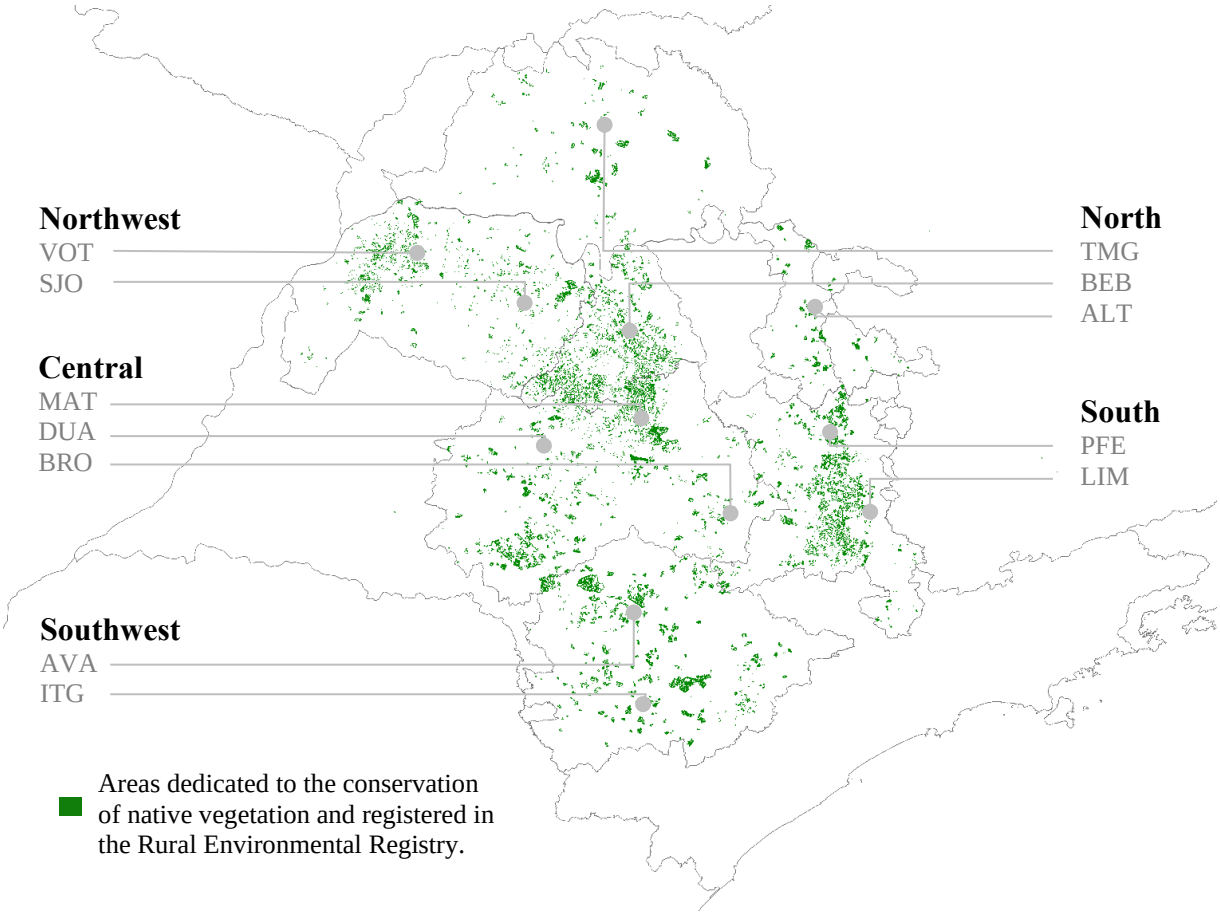
Due to the changes that have occurred in relation to citrus farms since the mapping that gave rise to the 2018 inventory, with the entry of farms that began to grow citrus and others that have changed culture, this new inventory also updates the data of the areas dedicated to the preservation of native vegetation and biodiversity within each of the citrus farms that appear in the new mapping carried out by Fundecitrus in 2022 and registered in the Rural Environmental Registry (CAR is the acronym in Portuguese).

The method used was developed by Embrapa Territorial and had already been used in 2020 by Fundecitrus. The first step consisted in the download of geocoded data from the CAR, based on the Serviço Florestal Brasileiro, linked to the Department of Agriculture, Livestock and Supply. This stage included the available

data of all rural farms located in the municipalities of the citrus belt. The next step was to segregate the subpopulation of this CAR database that belongs to citrus farms, crossing this base with the location of citrus farms. Subsequently, polygon overlaps and duplications were purged, applying the method developed by Embrapa[2]. Finally, from this subpopulation of CAR data, the areas of permanent protection (APP), legal reserve areas (ARL) and surplus native vegetation were computed and the areas occupied by rivers and lakes, discounted. Although the best efforts have been made to present the net result of the preservation area, there are methodological restrictions that make it difficult to have the same precision obtained in the dimensioning of the area destined to citrus cultivation. Among the reasons are the impossibility of locating areas intended for legal reserve compensation outside citrus farms and the use of polygons of vegetation areas that do not have the same accuracy as citrus polygons.

The research revealed that green areas total 159,629 hectares (Figure 8), which means that, on average, there is one hectare dedicated to environmental preservation for every 2.89 hectares destined to citrus cultivation. These protected areas contribute to the maintenance of the biodiversity of fauna and flora, and also help in the preservation of water resources and the well-being of society as a whole. This study complements the citriculture analyses and portrays the natural wealth of the largest citrus belt in the world.

Figure 8 – Location of the areas dedicated to environmental preservation within the citrus farms



[2] EMBRAPA TERRITORIAL. Agriculture and environmental conservation: an analysis of the Rural Environment Registry. Campinas, 2018. Available on: < https://www.embrapa.br/car >. Access on: May 5, 2020.

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, Alvorada, Pera Rio, Valencia, Natal and Valencia Folha Murcha varieties.

Table 1 – All citrus: Area of groves by sector [2015, 2018 and 2022 inventories and accumulated variation]

Inventory, sector and variation	Oranges[1]	Other oranges[2]	Acid limes and lemons[3]	Tangerines[4]	Total	Percentage of sectors
	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)	(%)
2015 inventory						
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**	**(X)**
2022 inventory						
North.....	88,675	439	20,016	1,977	111,107	24.05
Northwest.....	38,490	284	6,867	1,937	47,578	10.30
Central.....	107,407	1,933	16,558	2,712	128,610	27.84
South.....	70,663	4,400	6,010	3,428	84,501	18.29
Southwest.....	81,838	3,400	2,358	2,529	90,125	19.51
Total.....	**387,073**	**10,456**	**51,809**	**12,583**	**461,921**	**100.00**
Citrus percentage.....	**83.80**	**2.26**	**11.22**	**2.72**	**100.00**	**(X)**
Accumulated variation						
Hectares.....	**-14,397**	**-2,427**	**12,731**	**379**	**-3,714**	**(X)**
Percentage.....	**-3.59**	**-18.84**	**32.58**	**3.11**	**-0.80**	**(X)**

(X) Not applicable
1 Oranges: Hamlin, Westin, Rubi, Valencia Americana, Seleta, Pineapple, Alvorada, Pera Rio, Valencia, Valencia Folha Murcha and 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

Table 2 – All citrus: Farms with citrus groves, stratified by sector [2015, 2018 and 2022 inventories]

Sector	2015 inventory		2018 inventory		2022 inventory	
	(number)	(%)	(number)	(%)	(number)	(%)
North.....	3,149	27.24	2,526	25.66	3,148	32.79
Northwest.....	2,756	23.84	2,128	21.62	1,677	17.47
Central.....	2,511	21.72	1,873	19.02	2,083	21.70
South.....	2,735	23.66	2,919	29.65	2,228	23.21
Southwest.....	410	3.54	399	4.05	464	4.83
Total.....	**11,561**	**100.00**	**9,845**	**100.00**	**9,600**	**100.00**

Table 3 – Oranges: Farms with orange groves, stratified by size of area with oranges [2015, 2018 and 2022 inventories]

Range of the farm size considering the total orange area	2015 inventory				2018 inventory				2022 inventory			
	Farms with orange groves		Orange area		Farms with orange groves		Orange area		Farms with orange groves		Orange area	
			Total	Irrigate area			Total	Irrigate area			Total	Irrigate area
(hectares)	(número)	(%)	(hectares)	(%)	(número)	(%)	(hectares)	(%)	(número)	(%)	(hectares)	(%)
0.1 – 10.....	3,651	48.12	18,007	9.05	2,514	42.74	12,003	10.95	2,025	39.44	8,933	29.62
10.1 – 50.....	2,631	34.67	62,654	11.54	2,169	36.88	48,914	13.6	1,881	36.64	40,470	27.77
50.1 – 100.....	605	7.97	42,524	15.66	521	8.86	36,628	16.82	495	9.64	33,562	24.22
100.1 – 500.....	558	7.35	117,871	20.77	528	8.98	110,664	22.21	578	11.26	114,037	27.29
500.1 – 1,000.....	79	1.04	55,400	22.1	84	1.43	59,287	34.64	95	1.85	64,562	36.50
Above 1,000.....	64	0.85	134,166	39.91	66	1.12	133,974	46.09	60	1.17	125,509	50.90
Total.....	**7,588**	**100.00**	**430,622**	**24.57**	**5,882**	**100.00**	**401,470**	**30.14**	**5,134**	**100.00**	**387,073**	**36.32**
Average per farm...			**56.75**				**68.25**				**75.39**	

Table 4 – Oranges: Farms with orange groves, stratified by number of orange trees [2015, 2018 and 2022 inventories]

Range of the number of orange trees in the farm	2015 inventory		2018 inventory		2022 inventory			
	Farms with orange groves	Non-bearing and bearing trees	Farms with orange groves	Non-bearing and bearing trees	Farms with orange groves		Non-bearing and bearing trees	
(árvores)	(number)	(1,000 trees)	(number)	(1,000 trees)	(número)	(%)	(1,000 trees)	(%)
Below 10 thousand...	5,149	18,009.14	3,780	13,830.44	3,056	59.52	11,217.08	5.63
10.1 – 19 thousand....	977	13,799.92	720	9,847.82	681	13.26	9,191.01	4.61
20 – 29 thousand.....	421	10,223.12	360	8,395.74	317	6.17	7,521.88	3.77
30 – 49 thousand.....	383	14,605.90	339	12,710.74	333	6.49	12,259.56	6.15
50 – 99 thousand.....	301	20,810.02	314	21,233.87	348	6.78	23,468.88	11.78
100 – 199 thousand...	176	24,989.87	171	22,645.08	198	3.86	26,637.65	13.36
Above 200 thousand.	181	95,421.23	198	105,741.56	201	3.92	109,014.78	54.70
Total.....	**7,588**	**197,859.18**	**5,882**	**194,405.26**	**5,134**	**100.00**	**199,310.84**	**100.00**
Average per farm....		**26,075**		**33,051**			**38,822**	

Table 5 – Oranges: Orange plots stratified by plot area size [2015, 2018 and 2022 inventories]

Plot area	2015 inventory		2018 inventory		2022 inventory	
(hectares)	(number)	(%)	(number)	(%)		
Below 1.....	3,336	6.58	3,398	6.74	2,331	5.15
1.1 – 4.....	14,300	28.22	14,368	28.49	11,588	25.60
4.1 – 10.....	17,953	35.43	18,335	36.36	17,103	37.79
10.1 – 20.....	10,391	20.52	10,042	19.91	10,120	22.36
Above 20.....	4,688	9.25	4,283	8.49	4,118	9.10
Total.....	**50,668**	**100.00**	**50,426**	**100.00**	**45,260**	**100.00**
	(hectares)		(hectares)		(hectares)	
Average per plot.....	**8.50**		**7.96**		**8.55**	

Table 6 – Oranges and others[1]: Area of groves by sector [2018, 2022 inventories and accumulated variation]

Inventory and sector	Total	Changes						Accumulated variation
		Groves per planting year after the 2018 inventory					Accumulated loss of groves due to eradication and abandonment	
		2018	2019	2020	2021	Total		
	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)	(%)
2018 inventory								
North	89,898	-	-	-	-	-	-	-
Northwest	43,255	-	-	-	-	-	-	-
Central	116,824	-	-	-	-	-	-	-
South	87,317	-	-	-	-	-	-	-
Southwest	77,059	-	-	-	-	-	-	-
Total	**414,353**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
2022 inventory								
North	89,114	3,166	3,395	2,678	3,314	12,553	-5,951	-0.87
Northwest	38,774	2,638	2,595	2,353	2,294	9,880	-9,957	-10.36
Central	109,340	7,108	4,767	6,463	7,168	25,506	-21,324	-6.41
South	75,063	3,673	3,774	3,677	4,228	15,352	-18,073	-14.03
Southwest	85,238	2,959	4,110	6,272	4,981	18,322	-3,964	10.61
Total	**397,529**	**19,544**	**18,641**	**21,443**	**21,985**	**81,613**	**-59,269**	**-4.06**

- Not available.

1 Oranges: Hamlin, Westin, Rubi, Valencia Americana, Seleta, Pineapple, Alvorada, Pera Rio, Valencia, Valencia Folha Murcha and 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

Table 7 – Other oranges: Area of groves by variety [2015, 2018 and 2022 inventories]

Variety	2015 inventory	2018 inventory	2022 inventory	
	Area	Area	Area	Percentage
	(hectares)	(hectares)	(hectares)	(%)
Washington Navel and Baianinha	-	2,623	2,295	21.95
Charmute de Brotas	-	1,982	1,509	14.43
Acidless sweet oranges and sweet lime	-	6,906	5,219	49.91
Other varieties	-	1,372	1,433	13.71
Total	**13,963**	**12,883**	**10,456**	**100.00**

Table 8 – Acid limes and lemons: Area of groves by variety [2015, 2018 and 2022 inventories]

Variety	2015 inventory	2018 inventory	2022 inventory	
	Area	Area	Area	Percentage
	(hectares)	(hectares)	(hectares)	(%)
Tahiti acid lime (Persian lime)	-	35,076	45,872	88.54
Sicilian lemon	-	3,577	5,474	10.57
Other varieties including non-identified ones	-	425	463	0.89
Total	**27,936**	**39,078**	**51,809**	**100.00**

Table 9 – Tangerines: Area of groves by variety [2015, 2018 and 2022 inventories]

Variety	2015 inventory	2018 inventory	2022 inventory	
	Area	Area	Area	Percentage
	(hectares)	(hectares)	(hectares)	(%)
Ponkan	-	5,286	5,065	40.25
Murcott	-	5,607	5,810	46.17
Other varieties	-	1,311	1,708	13.57
Total	**10,070**	**12,204**	**12,583**	**100.00**

Table 10 – Oranges: Area of groves by sector [2018 and 2022 inventories and accumulated variation]

Inventory and sector	Total	Changes						Accumulated variation
		Groves per planting year after the 2018 inventory					Accumulated loss of groves due to eradication and abandonment	
		2018	2019	2020	2021	Total		
	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)	(%)
2018 inventory								
North	89,056	-	-	-	-	-	-	-
Northwest	42,955	-	-	-	-	-	-	-
Central	114,376	-	-	-	-	-	-	-
South	81,258	-	-	-	-	-	-	-
Southwest	73,825	-	-	-	-	-	-	-
Total	**401,470**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
2022 inventory								
North	88,675	3,109	3,333	2,668	3,301	12,411	-5,894	-0.43
Northwest	38,490	2,635	2,540	2,350	2294	9,819	-10,066	-10.39
Central	107,407	7,005	4,680	6,363	7,113	25,161	-19,717	-6.09
South	70,663	3,384	3,621	3,550	4,018	14,573	-16,513	-13.04
Southwest	81,838	2,758	3,936	6,085	4,942	17,721	-3,650	10.85
Total	**387,073**	**18,891**	**18,110**	**21,016**	**21,668**	**79,685**	**-55,839**	**-3.59**

- Not available

Table 11 – Oranges: Groves planted from 2018 to 2021 in expansion and renovation areas [2022 inventory]

Sector	Groves planted in 2018, 2019, 2020 and 2021 (after the 2018 inventory)				
	Total	In expansion areas		In renovation areas	
	(hectares)	(hectares)	(%)	(hectares)	(%)
North	12,461	6,066	48.68	6,395	51.32
Northwest	10,081	5,039	49.99	5,042	50.01
Central	24,149	13,795	57.12	10,354	42.88
South	15,410	6,718	43.60	8,692	56.40
Southwest	17,584	9,824	55.87	7,760	44.13
Total	**79,685**	**41,442**	**52.01**	**38,243**	**47.99**

Table 12 – Oranges: Trees by sector [2018 and 2022 inventories and accumulated variation]

Inventory and sector	Total	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)	(%)
2018 inventory									
North	42,246.10	-	-	2,922.44	-	-	39,323.66	-	-
Northwest	20,059.25	-	-	1,709.58	-	-	18,349.67	-	-
Central	55,687.95	-	-	7,095.08	-	-	48,592.87	-	-
South	38,432.10	-	-	4,096.92	-	-	34,335.18	-	-
Southwest	37,979.86	-	-	3,311.80	-	-	34,668.06	-	-
Total	**194,405.26**	**-**	**-**	**19,135.82**	**-**	**-**	**175,269.44**	**-**	**-**
2022 inventory									
North	43,272.67	1,026.57	2.43	4,090.08	1,167.64	39.95	39,182.59	-141.07	-0.36
Northwest	18,052.05	-2007.2	-10.01	2,330.78	621.2	36.34	15,721.27	-2628.4	-14.32
Central	57,466.71	1778.76	3.19	9,727.43	2,632.35	37.10	47,739.28	-853.59	-1.76
South	36,472.67	-1,959.43	-5.10	6,084.79	1987.87	48.52	30,387.88	-3,947.30	-11.50
Southwest	44,046.74	6,066.88	15.97	7,105.85	3794.05	114.56	36,940.89	2272.83	6.56
Total	**199,310.84**	**4,905.58**	**2.52**	**29,338.93**	**10,203.11**	**53.32**	**169,971.91**	**-5,297.53**	**-3.02**

- Not available

Table 13 – Oranges: Area of groves by variety group [2018 and 2022 inventories and accumulated variation]

Inventory and variety group	Total	Changes						Accumulated variation
		Groves per planting year after the 2018 inventory					Accumulated loss of groves due to eradication and abandonment	
		2018	2019	2020	2021	Total		
	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)	(%)
2018 inventory								
Hamlin, Westin and Rubi.....	64,172	-	-	-	-	-	-	-
Other early[1].....	19,406	-	-	-	-	-	-	-
Pera Rio.....	136,195	-	-	-	-	-	-	-
Valencia and V.Folha Murcha[2]	135,214	-	-	-	-	-	-	-
Natal.....	46,483	-	-	-	-	-	-	-
Total.....	**401,470**	-	-	-	-	-	-	-
2022 inventory								
Hamlin, Westin and Rubi…….	62,722	2217	2819	3,130	2,768	10,934	-7,234	-2.26
Other early[1].....	22,701	2102	1613	1,974	2,693	8,382	-1,983	16.98
Pera Rio.....	137,863	8,571	8,115	9,605	9,487	35,778	-20,624	1.22
Valencia and V.Folha Murcha[2]	121,531	4,445	3,747	4,601	5,166	17,959	-20,442	-10.12
Natal.....	42,256	1,556	1,816	1,706	1,554	6,632	-5,557	-9.09
Total.....	**387,073**	**18,891**	**18,110**	**21,016**	**21,668**	**79,685**	**-55,839**	**-3.59**

- Not available
1 Valencia Americana, Seleta, Pineapple and Alvorada
2 Valencia Folha Murcha

Table 14 – Oranges: Trees by variety group [2018 and 2022 inventories and accumulated variation]

Inventory and sector	Total	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)	(%)
2018 inventory									
Hamlin, Westin and Rubi.....	29,702.55	-	-	3,054.56	-	-	26,647.99	-	-
Other early[1].....	9,178.72	-	-	1,219.42	-	-	7,959.30	-	-
Pera Rio.....	70,035.25	-	-	8,459.13	-	-	61,576.12	-	-
Valencia and V.Folha Murcha[2]	63,822.70	-	-	4,239.05	-	-	59,583.65	-	-
Natal.....	21,666.04	-	-	2,163.66	-	-	19,502.38	-	-
Total.....	**194,405.26**	-	-	**19,135.82**	-	-	**175,269.44**	-	-
2022 inventory									
Hamlin, Westin and Rubi.....	30,300.19	597.64	2.01	4,149.61	1,095.05	35.85	26,150.58	-497.41	-1.87
Other early[1].....	12,155.20	2,976.48	32.43	3,111.05	1,891.63	155.13	9,044.15	1,084.85	13.63
Pera Rio.....	74,531.72	4,496.47	6.42	12,494.55	4,035.42	47.70	62,037.17	461.05	0.75
Valencia and V.Folha Murcha[2]	60,873.46	-2,949.24	-4.62	7,132.62	2,893.57	68.26	53,740.84	-5,842.81	-9.81
Natal.....	21,450.27	-215.77	-1.00	2,451.10	287.44	13.28	18,999.17	-503.21	-2.58
Total.....	**199,310.84**	**4,905.58**	**2.52**	**29,338.93**	**10,203.11**	**53.32**	**169,971.91**	**-5,297.53**	**-3.02**

- Not available
1 Valencia Americana, Seleta, Pineapple and Alvorada
2 Valencia Folha Murcha

Table 15 – Oranges: Stratification of total planting holes of groves [2022 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.....	72.80	2,133.91	13.04	133.38	2,353.13
Other early[1].....	183.53	198.18	5.60	8.16	395.47
Pera Rio.....	652.37	4,322.19	38.65	88.81	5,102.02
Valencia and V.Folha Murcha[2].....	71.17	4,026.14	14.84	51.55	4,163.70
Natal.....	50.72	1,509.03	11.63	25.36	1,596.74
Subtotal.....	**1,030.59**	**12,189.45**	**83.76**	**307.26**	**13,611.06**
Bebedouro					
Hamlin, Westin and Rubi.....	399.47	3,875.60	68.86	218.63	4,562.56
Other early[1].....	698.54	1,590.19	47.19	139.31	2,475.23
Pera Rio.....	990.19	6,772.69	127.34	278.95	8,169.17
Valencia and V.Folha Murcha[2].....	482.30	7,308.58	70.53	240.82	8,102.23
Natal.....	121.85	2,200.15	21.87	78.65	2,422.52
Subtotal.....	**2,692.35**	**21,747.21**	**335.79**	**956.36**	**25,731.71**
Altinópolis					
Hamlin, Westin and Rubi.....	62.34	881.26	19.37	58.66	1021.63
Other early[1].....	3.04	98.86	1.66	15.96	119.52
Pera Rio.....	221.85	1,813.06	79.15	103.23	2,217.29
Valencia and V.Folha Murcha[2].....	73.01	2,092.87	51.91	125.25	2,343.04
Natal.....	6.90	359.88	6.94	23.42	397.14
Subtotal.....	**367.14**	**5,245.93**	**159.03**	**326.52**	**6,098.62**
Votuporanga					
Hamlin, Westin and Rubi.....	41.20	363.76	14.21	6.83	426.00
Other early[1].....	89.43	112.38	3.37	4.42	209.60
Pera Rio.....	1018.29	5,124.79	165.97	208.74	6,517.79
Valencia and V.Folha Murcha[2].....	22.57	694.52	38.00	26.72	781.81
Natal.....	89.09	262.71	32.45	27.49	411.74
Subtotal.....	**1260.58**	**6,558.16**	**254.00**	**274.20**	**8,346.94**
São José do Rio Preto					
Hamlin, Westin and Rubi.....	136.59	1,696.35	79.82	89.66	2,002.42
Other early[1].....	223.00	1,620.73	41.63	104.81	1,990.17
Pera Rio.....	586.59	2,163.89	65.08	146.01	2,961.57
Valencia and V.Folha Murcha[2].....	61.29	2,447.90	33.92	107.86	2,650.97
Natal.....	62.73	1,234.24	10.87	36.81	1,344.65
Subtotal.....	**1,070.20**	**9,163.11**	**231.32**	**485.15**	**10,949.78**
Matão					
Hamlin, Westin and Rubi.....	353.04	2,520.86	60.98	165.34	3,100.22
Other early[1].....	695.12	1,419.04	19.32	117.62	2,251.10
Pera Rio.....	944.73	5,881.96	70.98	429.47	7,327.14
Valencia and V.Folha Murcha[2].....	399.50	4,159.33	103.06	285.23	4,947.12
Natal.....	632.09	1,227.72	14.41	79.66	1,953.88
Subtotal.....	**3,024.48**	**15,208.91**	**268.75**	**1,077.32**	**19,579.46**
Duartina					
Hamlin, Westin and Rubi.....	647.88	3,672.69	84.30	269.52	4,674.39
Other early[1].....	672.74	1,413.74	7.98	113.49	2,207.95
Pera Rio.....	1,917.67	11,227.93	257.67	669.52	14,072.79
Valencia and V.Folha Murcha[2].....	2,354.50	8,415.48	172.01	485.27	11,427.26
Natal.....	188.98	2,832.13	58.48	275.27	3,354.86
Subtotal.....	**5,781.77**	**27,561.97**	**580.44**	**1,813.07**	**35,737.25**
Brotas					
Hamlin, Westin and Rubi.....	78.44	757.04	45.60	61.85	942.93
Other early[1].....	7.29	212.83	3.52	30.11	253.75
Pera Rio.....	334.90	1,562.91	22.07	93.74	2,013.62
Valencia and V.Folha Murcha[2].....	435.07	2,010.02	54.08	151.31	2,650.48
Natal.....	65.48	425.60	3.91	60.53	555.52
Subtotal.....	**921.18**	**4,968.40**	**129.18**	**397.54**	**6,416.30**

Table 15 – Oranges: Stratification of total planting holes of groves [2022 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.....	587.68	2,525.70	40.80	146.37	3,300.55
Other early[1].....	93.43	302.80	1.66	18.30	416.19
Pera Rio.....	1,533.09	6,382.24	87.72	298.21	8,301.26
Valencia and V.Folha Murcha[2].....	690.51	5,399.22	90.15	261.40	6,441.28
Natal.....	394.42	1,749.90	13.26	104.45	2,262.03
Subtotal.....	**3,299.13**	**16,359.86**	**233.59**	**828.73**	**20,721.31**
Limeira					
Hamlin, Westin and Rubi.....	337.96	2,276.17	65.10	185.82	2,865.05
Other early[1].....	74.69	174.61	0.83	10.85	260.98
Pera Rio.....	1,570.65	5,836.28	165.62	403.26	7,975.81
Valencia and V.Folha Murcha[2].....	634.27	4,534.79	149.51	365.63	5,684.20
Natal.....	168.09	1,206.17	33.56	39.07	1,446.89
Subtotal.....	**2,785.66**	**14,028.02**	**414.62**	**1,004.63**	**18,232.93**
Avaré					
Hamlin, Westin and Rubi.....	924.22	4,082.80	55.99	453.7	5,516.71
Other early[1].....	120.68	763.90	1.33	51.00	936.91
Pera Rio.....	1944.09	6,970.65	91.11	615.96	9,621.81
Valencia and V.Folha Murcha[2].....	1233.81	9,145.63	130.95	442.78	10,953.17
Natal.....	297.77	3,715.72	12.28	294.52	4,320.29
Subtotal.....	**4,520.57**	**24,678.70**	**291.66**	**1,857.96**	**31,348.89**
Itapetininga					
Hamlin, Westin and Rubi.....	507.99	1364.44	29.93	64.50	1,966.86
Other early[1].....	249.56	1136.89	11.22	46.24	1443.91
Pera Rio.....	780.13	3,978.58	30.05	152.49	4,941.25
Valencia and V.Folha Murcha[2].....	674.62	3,506.36	9.05	125.31	4,315.34
Natal.....	372.98	2,275.92	11.38	59.76	2,720.04
Subtotal.....	**2,585.28**	**12,262.19**	**91.63**	**448.30**	**15,387.40**
Total.....	**29,338.93**	**169,971.91**	**3,073.77**	**9,777.04**	**212,161.65**
Percentage.....	**13.83**	**80.11**	**1.45**	**4.61**	**100.00**
Accumulated variation					
Trees/holes….....	**10,203.11**	**-5,297.53**	**227.29**	**494.81**	**5,627.68**
Percentage.....	**53.32**	**-3.02**	**7.98**	**5.33**	**2.72**

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

Table 16 – Oranges: Trees by age group and age group of plot – Citrus belt [2022 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.....	25,061.10	-	-	-	25,061.10	12.57
3 – 5 years.....	1,485.96	30,187.73	-	-	31,673.69	15.89
6 – 10 years.....	970.07	1,539.66	37,501.82	-	40,011.55	20.07
Over 10 years.....	1,821.80	2,586.70	5,951.61	92,204.39	102,564.50	51.46
Total.....	**29,338.93**	**34,314.09**	**43,453.43**	**92,204.39**	**199,310.84**	**100.00**
Percentage.....	**14.72**	**17.22**	**21.80**	**46.26**	**100.00**	

Ages and planting years: 1 – 2 years (2020 and 2021), 3 – 5 years (2017 to 2019), 6 – 10 years (2012 to 2016) and over 10 years (2011 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 [2022 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 ……	3,326.35	-	-	-	3,326.35	7.69
3 – 5 years ……	158.11	4,273.05	-	-	4,431.16	10.24
6 – 10 years ……..	171.70	294.86	9,786.70	-	10,253.26	23.69
Over 10 years….....	433.92	573.83	1,665.11	22,589.04	25,261.90	58.38
Subtotal……	**4,090.08**	**5,141.74**	**11,451.81**	**22,589.04**	**43,272.67**	**21.71**
Northwest						
1 – 2 years ……	2,144.59	-	-	-	2,144.59	11.88
3 – 5 years ……	80.96	3,196.04	-	-	3,277.00	18.15
6 – 10 years ……..	41.11	63.47	4,643.41	-	4,747.99	26.30
Over 10 years….....	64.12	151.16	215.29	7,451.90	7,882.47	43.67
Subtotal……	**2,330.78**	**3,410.67**	**4,858.70**	**7,451.90**	**18,052.05**	**9.06**
Central						
1 – 2 years ……	8,686.76	-	-	-	8,686.76	15.12
3 – 5 years ……	563.64	10,889.62	-	-	11,453.26	19.93
6 – 10 years ……..	287.86	568.59	11,950.49	-	12,806.94	22.29
Over 10 years…….	189.17	749.35	1,728.38	21,852.85	24,519.75	42.67
Subtotal……	**9,727.43**	**12,207.56**	**13,678.87**	**21,852.85**	**57,466.71**	**28.83**
South						
1 – 2 years ……	4,731.49	-	-	-	4,731.49	12.97
3 – 5 years ……	499.61	5,625.79	-	-	6,125.40	16.79
6 – 10 years ……..	328.82	500.28	6,378.37	-	7,207.47	19.76
Over 10 years….....	524.87	496.81	1,383.22	16,003.41	18,408.31	50.47
Subtotal……	**6,084.79**	**6,622.88**	**7,761.59**	**16,003.41**	**36,472.67**	**18.30**
Southwest						
1 – 2 years ……	6,171.91	-	-	-	6,171.91	14.01
3 – 5 years ……	183.64	6,203.23	-	-	6,386.87	14.50
6 – 10 years ……..	140.58	112.46	4,742.85	-	4,995.89	11.34
Over 10 years….....	609.72	615.55	959.61	24,307.19	26,492.07	60.15
Subtotal……	**7,105.85**	**6,931.24**	**5,702.46**	**24,307.19**	**44,046.74**	**22.10**
Total……..	**29,338.93**	**34,314.09**	**43,453.43**	**92,204.39**	**199,310.84**	**100.00**

Table 18 – Oranges: Trees by age group, age group of plot and variety [2022 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 ……	3,309.65	-	-	-	3,309.65	10.92
3 – 5 years ……	342.98	4,394.71	-	-	4,737.69	15.64
6 – 10 years ……..	79.86	140.92	3,473.08	-	3,693.86	12.19
Over 10 years….....	417.12	645.03	1,377.94	16,118.90	18,558.99	61.25
Subtotal……	**4,149.61**	**5,180.66**	**4,851.02**	**16,118.90**	**30,300.19**	**15.20**
Other early						
1 – 2 years ……	2,876.01	-	-	-	2,876.01	23.66
3 – 5 years ……	77.31	3,272.66	-	-	3,349.97	27.56
6 – 10 years ……..	32.27	69.31	1,573.47	-	1,675.05	13.78
Over 10 years….....	125.46	144.57	283.26	3,700.88	4,254.17	35.00
Subtotal……	**3,111.05**	**3,486.54**	**1,856.73**	**3,700.88**	**12,155.20**	**6.10**
Pera Rio						
1 – 2 years ……	10,633.12	-	-	-	10,633.12	14.27
3 – 5 years ……	703.72	12,670.29	-	-	13,374.01	17.94
6 – 10 years ……..	548.40	738.52	17,685.02	-	18,971.94	25.45
Over 10 years..…...	609.31	711.81	1,558.67	28,672.86	31,552.65	42.33
Subtotal……	**12,494.55**	**14,120.62**	**19,243.69**	**28,672.86**	**74,531.72**	**37.39**
Valencia, V.F. Murcha						
1 – 2 years ……	6,153.41	-	-	-	6,153.41	10.11
3 – 5 years ……	251.62	6,474.02	-	-	6,725.64	11.05
6 – 10 years ……..	206.71	368.52	10,645.22	-	11,220.45	18.43
Over 10 years….....	520.88	861.78	2,200.45	33,190.85	36,773.96	60.41
Subtotal……	**7,132.62**	**7,704.32**	**12,845.67**	**33,190.85**	**60,873.46**	**30.54**
Natal						
1 – 2 years ……	2,088.91	-	-	-	2,088.91	9.74
3 – 5 years ……	110.33	3,376.05	-	-	3,486.38	16.25
6 – 10 years ……..	102.83	222.39	4,125.03	-	4,450.25	20.75
Over 10 years….....	149.03	223.51	531.29	10,520.90	11,424.73	53.26
Subtotal……	**2,451.10**	**3,821.95**	**4,656.32**	**10,520.90**	**21,450.27**	**10.76**
Total……..	**29,338.93**	**34,314.09**	**43,453.43**	**92,204.39**	**199,310.84**	**100.00**

Table 19 – Hamlin, Westin and Rubi: Trees by age group and age group of plot – North Sector [2022 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.....	70.26	-	-	-	70.26
3 – 5 years.....	0.66	69.31	-	-	69.97
6 – 10 years.....	0.28	1.83	369.97	-	372.08
Over 10 years.....	1.60	4.10	49.60	1,639.10	1,694.40
Subtotal.....	**72.80**	**75.24**	**419.57**	**1,639.10**	**2,206.71**
Bebedouro					
1 – 2 years.....	246.60	-	-	-	246.60
3 – 5 years.....	50.26	418.91	-	-	469.17
6 – 10 years.....	2.28	18.17	437.31	-	457.76
Over 10 years.....	100.33	122.11	250.26	2,628.84	3,101.54
Subtotal.....	**399.47**	**559.19**	**687.57**	**2,628.84**	**4,275.07**
Altinópolis					
1 – 2 years.....	28.12	-	-	-	28.12
3 – 5 years.....	0.16	31.16	-	-	31.32
6 – 10 years.....	0.50	2.57	70.73	-	73.80
Over 10 years.....	33.56	31.20	97.74	647.86	810.36
Subtotal.....	**62.34**	**64.93**	**168.47**	**647.86**	**943.60**
North					
1 – 2 years.....	344.98	-	-	-	344.98
3 – 5 years.....	51.08	519.38	-	-	570.46
6 – 10 years.....	3.06	22.57	878.01	-	903.64
Over 10 years.....	135.49	157.41	397.60	4,915.80	5,606.30
Total.....	**534.61**	**699.36**	**1,275.61**	**4,915.80**	**7,425.38**

Ages and planting years: 1 – 2 years (2020 and 2021), 3 – 5 years (2017 to 2019), 6 – 10 years (2012 to 2016) and over 10 years (2011 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 [2022 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.....	36.96	-	-	-	36.96
3 – 5 years.....	0.48	99.13	-	-	99.61
6 – 10 years.....	0.05	0.84	87.24	-	88.13
Over 10 years.....	3.71	1.50	7.91	167.14	180.26
Subtotal.....	**41.20**	**101.47**	**95.15**	**167.14**	**404.96**
São José do Rio Preto					
1 – 2 years.....	131.77	-	-	-	131.77
3 – 5 years.....	1.08	170.35	-	-	171.43
6 – 10 years.....	0.71	8.58	435.35	-	444.64
Over 10 years.....	3.03	24.29	32.36	1,025.42	1,085.10
Subtotal.....	**136.59**	**203.22**	**467.71**	**1,025.42**	**1,832.94**
Northwest					
1 – 2 years.....	168.73	-	-	-	168.73
3 – 5 years.....	1.56	269.48	-	-	271.04
6 – 10 years.....	0.76	9.42	522.59	-	532.77
Over 10 years.....	6.74	25.79	40.27	1,192.56	1,265.36
Total.....	**177.79**	**304.69**	**562.86**	**1,192.56**	**2,237.90**

Ages and planting years: 1 – 2 years (2020 and 2021), 3 – 5 years (2017 to 2019), 6 – 10 years (2012 to 2016) and over 10 years (2011 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 [2022 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.....	304.42	-	-	-	304.42
3 – 5 years.....	24.13	824.75	-	-	848.88
6 – 10 years.....	8.40	29.69	186.69	-	224.78
Over 10 years.....	16.09	25.35	69.40	1,384.98	1,495.82
Subtotal.....	**353.04**	**879.79**	**256.09**	**1,384.98**	**2,873.90**
Duartina					
1 – 2 years.....	577.01	-	-	-	577.01
3 – 5 years.....	46.09	884.66	-	-	930.75
6 – 10 years.....	12.86	33.21	467.99	-	514.06
Over 10 years.....	11.92	148.01	223.25	1,915.57	2,298.75
Subtotal.....	**647.88**	**1,065.88**	**691.24**	**1,915.57**	**4,320.57**
Brotas					
1 – 2 years.....	54.84	-	-	-	54.84
3 – 5 years.....	20.42	64.60	-	-	85.02
6 – 10 years.....	0.41	4.54	177.35	-	182.30
Over 10 years.....	2.77	7.81	69.75	432.99	513.32
Subtotal.....	**78.44**	**76.95**	**247.10**	**432.99**	**835.48**
Central					
1 – 2 years.....	936.27	-	-	-	936.27
3 – 5 years.....	90.64	1,774.01	-	-	1,864.65
6 – 10 years.....	21.67	67.44	832.03	-	921.14
Over 10 years.....	30.78	181.17	362.40	3,733.54	4,307.89
Total.....	**1,079.36**	**2,022.62**	**1,194.43**	**3,733.54**	**8,029.95**

Ages and planting years: 1 – 2 years (2020 and 2021), 3 – 5 years (2017 to 2019), 6 – 10 years (2012 to 2016) and over 10 years (2011 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 [2022 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.....	432.15	-	-	-	432.15
3 – 5 years.....	93.26	609.84	-	-	703.10
6 – 10 years.....	19.64	14.34	407.79	-	441.77
Over 10 years.....	42.63	62.46	176.10	1,255.17	1,536.36
Subtotal.....	**587.68**	**686.64**	**583.89**	**1,255.17**	**3,113.38**
Limeira					
1 – 2 years.....	248.68	-	-	-	248.68
3 – 5 years.....	26.04	327.93	-	-	353.97
6 – 10 years.....	18.52	23.14	332.93	-	374.59
Over 10 years.....	44.72	60.22	166.41	1,365.54	1,636.89
Subtotal.....	**337.96**	**411.29**	**499.34**	**1,365.54**	**2,614.13**
South					
1 – 2 years.....	680.83	-	-	-	680.83
3 – 5 years.....	119.30	937.77	-	-	1,057.07
6 – 10 years.....	38.16	37.48	740.72	-	816.36
Over 10 years.....	87.35	122.68	342.51	2,620.71	3,173.25
Total.....	**925.64**	**1,097.93**	**1,083.23**	**2,620.71**	**5,727.51**

Ages and planting years: 1 – 2 years (2020 and 2021), 3 – 5 years (2017 to 2019), 6 – 10 years (2012 to 2016) and over 10 years (2011 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 [2022 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.....	772.59	-	-	-	772.59
3 – 5 years.....	70.68	315.31	-	-	385.99
6 – 10 years.....	11.92	3.36	197.69	-	212.97
Over 10 years.....	69.03	157.11	234.91	3,174.42	3,635.47
Subtotal.....	**924.22**	**475.78**	**432.60**	**3,174.42**	**5,007.02**
Itapetininga					
1 – 2 years.....	406.25	-	-	-	406.25
3 – 5 years.....	9.72	578.76	-	-	588.48
6 – 10 years.....	4.29	0.65	302.04	-	306.98
Over 10 years.....	87.73	0.87	0.25	481.87	570.72
Subtotal.....	**507.99**	**580.28**	**302.29**	**481.87**	**1,872.43**
Southwest					
1 – 2 years.....	1,178.84	-	-	-	1,178.84
3 – 5 years.....	80.40	894.07	-	-	974.47
6 – 10 years.....	16.21	4.01	499.73	-	519.95
Over 10 years.....	156.76	157.98	235.16	3,656.29	4,206.19
Total.....	**1,432.21**	**1,056.06**	**734.89**	**3,656.29**	**6,879.45**

Ages and planting years: 1 – 2 years (2020 and 2021), 3 – 5 years (2017 to 2019), 6 – 10 years (2012 to 2016) and over 10 years (2011 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 [2022 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.....	180.95	-	-	-	180.95
3 – 5 years.....	0.23	83.88	-	-	84.11
6 – 10 years.....	-	0.07	30.17	-	30.24
Over 10 years.....	2.35	0.07	6.66	77.33	86.41
Subtotal.....	**183.53**	**84.02**	**36.83**	**77.33**	**381.71**
Bebedouro					
1 – 2 years.....	585.66	-	-	-	585.66
3 – 5 years.....	15.91	307.04	-	-	322.95
6 – 10 years.....	14.96	21.11	223.99	-	260.06
Over 10 years.....	82.01	89.49	115.59	832.97	1,120.06
Subtotal.....	**698.54**	**417.64**	**339.58**	**832.97**	**2,288.73**
Altinópolis					
1 – 2 years.....	2.25	-	-	-	2.25
3 – 5 years.....	0.11	1.68	-	-	1.79
6 – 10 years.....	0.24	1.81	19.73	-	21.78
Over 10 years.....	0.44	1.97	7.78	65.89	76.08
Subtotal.....	**3.04**	**5.46**	**27.51**	**65.89**	**101.90**
North					
1 – 2 years.....	768.86	-	-	-	768.86
3 – 5 years.....	16.25	392.60	-	-	408.85
6 – 10 years.....	15.20	22.99	273.89	-	312.08
Over 10 years.....	84.80	91.53	130.03	976.19	1,282.55
Total.....	**885.11**	**507.12**	**403.92**	**976.19**	**2,772.34**

Ages and planting years: 1 – 2 years (2020 and 2021), 3 – 5 years (2017 to 2019), 6 – 10 years (2012 to 2016) and over 10 years (2011 and earlier)

- Represents zero

[1] Valencia Americana, Seleta, Pineapple and Alvorada

[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 [2022 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.....	87.51	-	-	-	87.51
3 – 5 years.....	0.07	19.63	-	-	19.70
6 – 10 years.....	0.38	1.39	15.59	-	17.36
Over 10 years.....	1.47	0.93	8.91	65.93	77.24
Subtotal.....	**89.43**	**21.95**	**24.50**	**65.93**	**201.81**
São José do Rio Preto					
1 – 2 years.....	214.06	-	-	-	214.06
3 – 5 years.....	8.57	850.60	-	-	859.17
6 – 10 years.....	0.31	7.08	207.40	-	214.79
Over 10 years.....	0.06	12.10	19.23	524.32	555.71
Subtotal.....	**223.00**	**869.78**	**226.63**	**524.32**	**1,843.73**
Northwest					
1 – 2 years.....	301.57	-	-	-	301.57
3 – 5 years.....	8.64	870.23	-	-	878.87
6 – 10 years.....	0.69	8.47	222.99	-	232.15
Over 10 years.....	1.53	13.03	28.14	590.25	632.95
Total.....	**312.43**	**891.73**	**251.13**	**590.25**	**2,045.54**

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, Pineapple and Alvorada

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 [2022 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.....	688.05	-	-	-	688.05
3 – 5 years.....	1.30	560.94	-	-	562.24
6 – 10 years.....	3.11	2.83	291.18	-	297.12
Over 10 years.....	2.66	2.12	21.85	540.12	566.75
Subtotal.....	**695.12**	**565.89**	**313.03**	**540.12**	**2,114.16**
Duartina					
1 – 2 years.....	621.10	-	-	-	621.10
3 – 5 years.....	26.65	487.73	-	-	514.38
6 – 10 years.....	5.38	25.55	323.28	-	354.21
Over 10 years.....	19.61	15.22	41.42	520.54	596.79
Subtotal.....	**672.74**	**528.50**	**364.70**	**520.54**	**2,086.48**
Brotas					
1 – 2 years.....	1.65	-	-	-	1.65
3 – 5 years.....	3.76	23.38	-	-	27.14
6 – 10 years.....	1.88	2.58	97.59	-	102.05
Over 10 years.....	-	0.47	5.71	83.10	89.28
Subtotal.....	**7.29**	**26.43**	**103.30**	**83.10**	**220.12**
Central					
1 – 2 years.....	1,310.80	-	-	-	1,310.80
3 – 5 years.....	31.71	1,072.05	-	-	1,103.76
6 – 10 years.....	10.37	30.96	712.05	-	753.38
Over 10 years.....	22.27	17.81	68.98	1,143.76	1,252.82
Total.....	**1,375.15**	**1,120.82**	**781.03**	**1,143.76**	**4,420.76**

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, Pineapple and Alvorada

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 [2022 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.....	80.84	-	-	-	80.84
3 – 5 years.....	3.63	132.40	-	-	136.03
6 – 10 years.....	0.30	0.50	24.89	-	25.69
Over 10 years.....	8.66	8.16	16.27	120.58	153.67
Subtotal.....	**93.43**	**141.06**	**41.16**	**120.58**	**396.23**
Limeira					
1 – 2 years.....	69.85	-	-	-	69.85
3 – 5 years.....	0.04	13.43	-	-	13.47
6 – 10 years.....	0.75	0.48	15.58	-	16.81
Over 10 years.....	4.05	1.18	5.85	138.09	149.17
Subtotal.....	**74.69**	**15.09**	**21.43**	**138.09**	**249.30**
South					
1 – 2 years.....	150.69	-	-	-	150.69
3 – 5 years.....	3.67	145.83	-	-	149.50
6 – 10 years.....	1.05	0.98	40.47	-	42.50
Over 10 years.....	12.71	9.34	22.12	258.67	302.84
Total.....	**168.12**	**156.15**	**62.59**	**258.67**	**645.53**

Ages and planting years: 1 – 2 years (2020 and 2021), 3 – 5 years (2017 to 2019), 6 – 10 years (2012 to 2016) and over 10 years (2011 and earlier)

- Represents zero

1 Valencia Americana, Seleta, Pineapple and Alvorada

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 [2022 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.....	113.60	-	-	-	113.60
3 – 5 years.....	4.68	174.73	-	-	179.41
6 – 10 years.....	1.42	2.57	27.02	-	31.01
Over 10 years.....	0.98	9.59	32.22	517.77	560.56
Subtotal.....	**120.68**	**186.89**	**59.24**	**517.77**	**884.58**
Itapetininga					
1 – 2 years.....	230.49	-	-	-	230.49
3 – 5 years.....	12.36	617.22	-	-	629.58
6 – 10 years.....	3.54	3.34	297.05	-	303.93
Over 10 years.....	3.17	3.27	1.77	214.24	222.45
Subtotal.....	**249.56**	**623.83**	**298.82**	**214.24**	**1,386.45**
Southwest					
1 – 2 years.....	344.09	-	-	-	344.09
3 – 5 years.....	17.04	791.95	-	-	808.99
6 – 10 years.....	4.96	5.91	324.07	-	334.94
Over 10 years.....	4.15	12.86	33.99	732.01	783.01
Total.....	**370.24**	**810.72**	**358.06**	**732.01**	**2,271.03**

Ages and planting years: 1 – 2 years (2020 and 2021), 3 – 5 years (2017 to 2019), 6 – 10 years (2012 to 2016) and over 10 years (2011 and earlier)

- Represents zero

1 Valencia Americana, Seleta, Pineapple and Alvorada

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 [2022 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.....	637.72	-	-	-	637.72
3 – 5 years.....	6.11	630.92	-	-	637.03
6 – 10 years.....	6.25	10.74	1,977.24	-	1,994.23
Over 10 years….....	2.29	3.55	33.26	1,666.48	1,705.58
Subtotal.....	**652.37**	**645.21**	**2,010.50**	**1,666.48**	**4,974.56**
Bebedouro					
1 – 2 years.....	769.08	-	-	-	769.08
3 – 5 years.....	45.80	1,160.69	-	-	1,206.49
6 – 10 years.....	91.62	139.16	2,562.35	-	2,793.13
Over 10 years.....	83.69	71.48	225.25	2,613.76	2,994.18
Subtotal.....	**990.19**	**1,371.33**	**2,787.60**	**2,613.76**	**7,762.88**
Altinópolis					
1 – 2 years.....	179.65	-	-	-	179.65
3 – 5 years.....	5.74	69.13	-	-	74.87
6 – 10 years.....	1.19	20.13	205.57	-	226.89
Over 10 years.....	35.27	42.23	117.03	1,358.97	1,553.50
Subtotal.....	**221.85**	**131.49**	**322.60**	**1,358.97**	**2,034.91**
North					
1 – 2 years.....	1,586.45	-	-	-	1,586.45
3 – 5 years.....	57.65	1,860.74	-	-	1,918.39
6 – 10 years.....	99.06	170.03	4,745.16	-	5,014.25
Over 10 years.....	121.25	117.26	375.54	5,639.21	6,253.26
Total.....	**1,864.41**	**2,148.03**	**5,120.70**	**5,639.21**	**14,772.35**

Ages and planting years: 1 – 2 years (2020 and 2021), 3 – 5 years (2017 to 2019), 6 – 10 years (2012 to 2016) and over 10 years (2011 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 [2022 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.....	928.36	-	-	-	928.36
3 – 5 years.....	50.86	1,244.44	-	-	1,295.30
6 – 10 years.....	15.23	16.89	1,201.13	-	1,233.25
Over 10 years.....	23.84	22.74	50.05	2,589.54	2,686.17
Subtotal.....	**1,018.29**	**1,284.07**	**1,251.18**	**2,589.54**	**6,143.08**
São José do Rio Preto					
1 – 2 years.....	541.37	-	-	-	541.37
3 – 5 years.....	12.02	447.01	-	-	459.03
6 – 10 years.....	7.37	7.13	777.68	-	792.18
Over 10 years.....	25.83	51.67	34.51	845.89	957.90
Subtotal.....	**586.59**	**505.81**	**812.19**	**845.89**	**2,750.48**
Northwest					
1 – 2 years.....	1,469.73	-	-	-	1,469.73
3 – 5 years.....	62.88	1,691.45	-	-	1,754.33
6 – 10 years.....	22.60	24.02	1,978.81	-	2,025.43
Over 10 years.....	49.67	74.41	84.56	3,435.43	3,644.07
Total.....	**1,604.88**	**1,789.88**	**2,063.37**	**3,435.43**	**8,893.56**

Ages and planting years: 1 – 2 years (2020 and 2021), 3 – 5 years (2017 to 2019), 6 – 10 years (2012 to 2016) and over 10 years (2011 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 [2022 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.....	843.85	-	-	-	843.85
3 – 5 years.....	51.35	968.55	-	-	1,019.90
6 – 10 years.....	33.75	79.34	2,853.68	-	2,966.77
Over 10 years.....	15.78	19.36	98.22	1,862.81	1,996.17
Subtotal.....	**944.73**	**1,067.25**	**2,951.90**	**1,862.81**	**6,826.69**
Duartina					
1 – 2 years.....	1,589.38	-	-	-	1,589.38
3 – 5 years.....	167.24	2,724.30	-	-	2,891.54
6 – 10 years.....	138.49	174.06	2,455.74	-	2,768.29
Over 10 years.....	22.56	162.79	308.32	5,402.72	5,896.39
Subtotal.....	**1,917.67**	**3,061.15**	**2,764.06**	**5,402.72**	**13,145.60**
Brotas					
1 – 2 years.....	243.15	-	-	-	243.15
3 – 5 years.....	83.09	268.17	-	-	351.26
6 – 10 years.....	8.30	15.21	740.80	-	764.31
Over 10 years.....	0.36	12.35	83.13	443.25	539.09
Subtotal.....	**334.90**	**295.73**	**823.93**	**443.25**	**1,897.81**
Central					
1 – 2 years.....	2,676.38	-	-	-	2,676.38
3 – 5 years.....	301.68	3,961.02	-	-	4,262.70
6 – 10 years.....	180.54	268.61	6,050.22	-	6,499.37
Over 10 years.....	38.70	194.50	489.67	7,708.78	8,431.65
Total.....	**3,197.30**	**4,424.13**	**6,539.89**	**7,708.78**	**21,870.10**

Ages and planting years: 1 – 2 years (2020 and 2021), 3 – 5 years (2017 to 2019), 6 – 10 years (2012 to 2016) and over 10 years (2011 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 [2022 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.....	1,275.51	-	-	-	1,275.51
3 – 5 years.....	55.59	1,231.84	-	-	1,287.43
6 – 10 years.....	78.98	118.35	1,937.96	-	2,135.29
Over 10 years.....	123.01	128.07	225.80	2,740.22	3,217.10
Subtotal.....	**1,533.09**	**1,478.26**	**2,163.76**	**2,740.22**	**7,915.33**
Limeira					
1 – 2 years.....	1,168.88	-	-	-	1,168.88
3 – 5 years.....	173.91	1,463.48	-	-	1,637.39
6 – 10 years.....	100.77	107.53	1,135.09	-	1,343.39
Over 10 years.....	127.09	51.89	195.28	2,883.01	3,257.27
Subtotal.....	**1,570.65**	**1,622.90**	**1,330.37**	**2,883.01**	**7,406.93**
South					
1 – 2 years.....	2,444.39	-	-	-	2,444.39
3 – 5 years.....	229.50	2,695.32	-	-	2,924.82
6 – 10 years.....	179.75	225.88	3,073.05	-	3,478.68
Over 10 years.....	250.10	179.96	421.08	5,623.23	6,474.37
Total.....	**3,103.74**	**3,101.16**	**3,494.13**	**5,623.23**	**15,322.26**

Ages and planting years: 1 – 2 years (2020 and 2021), 3 – 5 years (2017 to 2019), 6 – 10 years (2012 to 2016) and over 10 years (2011 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 [2022 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.....	1,785.03	-	-	-	1,785.03
3 – 5 years.....	5.91	902.59	-	-	908.50
6 – 10 years.....	49.91	38.66	883.67	-	972.24
Over 10 years.....	103.24	122.95	167.88	4,854.90	5,248.97
Subtotal.....	**1,944.09**	**1,064.20**	**1,051.55**	**4,854.90**	**8,914.74**
Itapetininga					
1 – 2 years.....	671.14	-	-	-	671.14
3 – 5 years.....	46.10	1,559.17	-	-	1,605.27
6 – 10 years.....	16.54	11.32	954.11	-	981.97
Over 10 years.....	46.35	22.73	19.94	1,411.31	1,500.33
Subtotal.....	**780.13**	**1,593.22**	**974.05**	**1,411.31**	**4,758.71**
Southwest					
1 – 2 years.....	2,456.17	-	-	-	2,456.17
3 – 5 years.....	52.01	2,461.76	-	-	2,513.77
6 – 10 years.....	66.45	49.98	1,837.78	-	1,954.21
Over 10 years.....	149.59	145.68	187.82	6,266.21	6,749.30
Total.....	**2,724.22**	**2,657.42**	**2,025.60**	**6,266.21**	**13,673.45**

Ages and planting years: 1 – 2 years (2020 and 2021), 3 – 5 years (2017 to 2019), 6 – 10 years (2012 to 2016) and over 10 years (2011 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 [2022 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.....	62.43	-	-	-	62.43
3 – 5 years.....	0.45	76.49	-	-	76.94
6 – 10 years.....	3.98	5.82	1,458.79	-	1,468.59
Over 10 years.....	4.31	3.47	31.79	2,449.78	2,489.35
Subtotal.....	**71.17**	**85.78**	**1,490.58**	**2,449.78**	**4,097.31**
Bebedouro					
1 – 2 years.....	398.44	-	-	-	398.44
3 – 5 years.....	13.09	704.84	-	-	717.93
6 – 10 years.....	25.00	32.71	1,685.90	-	1,743.61
Over 10 years.....	45.77	100.55	408.37	4,376.21	4,930.90
Subtotal.....	**482.30**	**838.10**	**2,094.27**	**4,376.21**	**7,790.88**
Altinópolis					
1 – 2 years.....	60.94	-	-	-	60.94
3 – 5 years.....	2.92	116.53	-	-	119.45
6 – 10 years.....	2.05	2.57	40.72	-	45.34
Over 10 years.....	7.10	51.50	147.65	1,733.90	1,940.15
Subtotal.....	**73.01**	**170.60**	**188.37**	**1,733.90**	**2,165.88**
North					
1 – 2 years.....	521.81	-	-	-	521.81
3 – 5 years.....	16.46	897.86	-	-	914.32
6 – 10 years.....	31.03	41.10	3,185.41	-	3,257.54
Over 10 years.....	57.18	155.52	587.81	8,559.89	9,360.40
Total.....	**626.48**	**1,094.48**	**3,773.22**	**8,559.89**	**14,054.07**

Ages and planting years: 1 – 2 years (2020 and 2021), 3 – 5 years (2017 to 2019), 6 – 10 years (2012 to 2016) and over 10 years (2011 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 [2022 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.....	14.87	-	-	-	14.87
3 – 5 years.....	2.04	63.88	-	-	65.92
6 – 10 years.....	0.17	0.71	27.48	-	28.36
Over 10 years.....	5.49	1.70	11.44	589.31	607.94
Subtotal.....	**22.57**	**66.29**	**38.92**	**589.31**	**717.09**
São José do Rio Preto					
1 – 2 years.....	53.48	-	-	-	53.48
3 – 5 years.....	0.75	130.93	-	-	131.68
6 – 10 years.....	6.37	13.99	1,102.21	-	1,122.57
Over 10 years.....	0.69	34.35	45.03	1,121.39	1,201.46
Subtotal.....	**61.29**	**179.27**	**1,147.24**	**1,121.39**	**2,509.19**
Northwest					
1 – 2 years.....	68.35	-	-	-	68.35
3 – 5 years.....	2.79	194.81	-	-	197.60
6 – 10 years.....	6.54	14.70	1,129.69	-	1,150.93
Over 10 years.....	6.18	36.05	56.47	1,710.70	1,809.40
Total.....	**83.86**	**245.56**	**1,186.16**	**1,710.70**	**3,226.28**

Ages and planting years: 1 – 2 years (2020 and 2021), 3 – 5 years (2017 to 2019), 6 – 10 years (2012 to 2016) and over 10 years (2011 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 [2022 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.....	349.74	-	-	-	349.74
3 – 5 years.....	16.67	583.76	-	-	600.43
6 – 10 years.....	15.08	44.03	1,468.65	-	1,527.76
Over 10 years.....	18.01	27.16	106.23	1,929.50	2,080.90
Subtotal.....	**399.50**	**654.95**	**1,574.88**	**1,929.50**	**4,558.83**
Duartina					
1 – 2 years.....	2,216.67	-	-	-	2,216.67
3 – 5 years.....	54.48	2,325.24	-	-	2,379.72
6 – 10 years.....	35.52	82.88	1,601.59	-	1,719.99
Over 10 years.....	47.83	241.43	357.60	3,806.74	4,453.60
Subtotal.....	**2,354.50**	**2,649.55**	**1,959.19**	**3,806.74**	**10,769.98**
Brotas					
1 – 2 years.....	413.89	-	-	-	413.89
3 – 5 years.....	2.36	180.28	-	-	182.64
6 – 10 years.....	1.49	12.28	281.50	-	295.27
Over 10 years.....	17.33	28.24	184.02	1,323.70	1,553.29
Subtotal.....	**435.07**	**220.80**	**465.52**	**1,323.70**	**2,445.09**
Central					
1 – 2 years.....	2,980.30	-	-	-	2,980.30
3 – 5 years.....	73.51	3,089.28	-	-	3,162.79
6 – 10 years.....	52.09	139.19	3,351.74	-	3,543.02
Over 10 years.....	83.17	296.83	647.85	7,059.94	8,087.79
Total.....	**3,189.07**	**3,525.30**	**3,999.59**	**7,059.94**	**17,773.90**

Ages and planting years: 1 – 2 years (2020 and 2021), 3 – 5 years (2017 to 2019), 6 – 10 years (2012 to 2016) and over 10 years (2011 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 [2022 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.....	560.99	-	-	-	560.99
3 – 5 years.....	14.09	723.47	-	-	737.56
6 – 10 years.....	51.14	62.03	867.12	-	980.29
Over 10 years.....	64.29	68.69	252.95	3,424.96	3,810.89
Subtotal.....	**690.51**	**854.19**	**1,120.07**	**3,424.96**	**6,089.73**
Limeira					
1 – 2 years.....	389.27	-	-	-	389.27
3 – 5 years.....	118.22	504.98	-	-	623.20
6 – 10 years.....	24.59	75.65	759.60	-	859.84
Over 10 years.....	102.19	93.38	274.58	2,826.60	3,296.75
Subtotal.....	**634.27**	**674.01**	**1,034.18**	**2,826.60**	**5,169.06**
South					
1 – 2 years.....	950.26	-	-	-	950.26
3 – 5 years.....	132.31	1,228.45	-	-	1,360.76
6 – 10 years.....	75.73	137.68	1,626.72	-	1,840.13
Over 10 years.....	166.48	162.07	527.53	6,251.56	7,107.64
Total.....	**1,324.78**	**1,528.20**	**2,154.25**	**6,251.56**	**11,258.79**

Ages and planting years: 1 – 2 years (2020 and 2021), 3 – 5 years (2017 to 2019), 6 – 10 years (2012 to 2016) and over 10 years (2011 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 [2022 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.....	1,020.00	-	-	-	1,020.00
3 – 5 years.....	16.35	491.35	-	-	507.70
6 – 10 years.....	36.56	30.75	844.28	-	911.59
Over 10 years.....	160.90	174.85	357.61	7,246.79	7,940.15
Subtotal.....	**1,233.81**	**696.95**	**1,201.89**	**7,246.79**	**10,379.44**
Itapetininga					
1 – 2 years.....	612.69	-	-	-	612.69
3 – 5 years.....	10.20	572.27	-	-	582.47
6 – 10 years.....	4.76	5.10	507.38	-	517.24
Over 10 years.....	46.97	36.46	23.18	2,361.97	2,468.58
Subtotal.....	**674.62**	**613.83**	**530.56**	**2,361.97**	**4,180.98**
Southwest					
1 – 2 years.....	1,632.69	-	-	-	1,632.69
3 – 5 years.....	26.55	1,063.62	-	-	1,090.17
6 – 10 years.....	41.32	35.85	1,351.66	-	1,428.83
Over 10 years.....	207.87	211.31	380.79	9,608.76	10,408.73
Total.....	**1,908.43**	**1,310.78**	**1,732.45**	**9,608.76**	**14,560.42**

Ages and planting years: 1 – 2 years (2020 and 2021), 3 – 5 years (2017 to 2019), 6 – 10 years (2012 to 2016) and over 10 years (2011 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 [2022 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.....	47.43	-	-	-	47.43
3 – 5 years.....	0.67	48.31	-	-	48.98
6 – 10 years.....	0.25	0.44	220.45	-	221.14
Over 10 years.....	2.37	4.37	25.35	1,210.11	1,242.20
Subtotal.....	**50.72**	**53.12**	**245.80**	**1,210.11**	**1,559.75**
Bebedouro					
1 – 2 years.....	52.35	-	-	-	52.35
3 – 5 years.....	14.79	417.98	-	-	432.77
6 – 10 years.....	22.97	36.70	462.76	-	522.43
Over 10 years.....	31.74	43.28	129.41	1,110.02	1,314.45
Subtotal.....	**121.85**	**497.96**	**592.17**	**1,110.02**	**2,322.00**
Altinópolis					
1 – 2 years.....	4.47	-	-	-	4.47
3 – 5 years.....	1.21	136.18	-	-	137.39
6 – 10 years.....	0.13	1.03	21.02	-	22.18
Over 10 years.....	1.09	4.46	19.37	177.82	202.74
Subtotal.....	**6.90**	**141.67**	**40.39**	**177.82**	**366.78**
North					
1 – 2 years.....	104.25	-	-	-	104.25
3 – 5 years.....	16.67	602.47	-	-	619.14
6 – 10 years.....	23.35	38.17	704.23	-	765.75
Over 10 years.....	35.20	52.11	174.13	2,497.95	2,759.39
Total.....	**179.47**	**692.75**	**878.36**	**2,497.95**	**4,248.53**

Ages and planting years: 1 – 2 years (2020 and 2021), 3 – 5 years (2017 to 2019), 6 – 10 years (2012 to 2016) and over 10 years (2011 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 [2022 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.....	85.44	-	-	-	85.44
3 – 5 years.....	3.23	72.76	-	-	75.99
6 – 10 years.....	0.42	0.41	68.03	-	68.86
Over 10 years.....	-	1.03	1.88	118.60	121.51
Subtotal.....	**89.09**	**74.20**	**69.91**	**118.60**	**351.80**
São José do Rio Preto					
1 – 2 years.....	50.77	-	-	-	50.77
3 – 5 years.....	1.86	97.31	-	-	99.17
6 – 10 years.....	10.10	6.45	721.30	-	737.85
Over 10 years.....	-	0.85	3.97	404.36	409.18
Subtotal.....	**62.73**	**104.61**	**725.27**	**404.36**	**1,296.97**
Northwest					
1 – 2 years.....	136.21	-	-	-	136.21
3 – 5 years.....	5.09	170.07	-	-	175.16
6 – 10 years.....	10.52	6.86	789.33	-	806.71
Over 10 years.....	-	1.88	5.85	522.96	530.69
Total.....	**151.82**	**178.81**	**795.18**	**522.96**	**1,648.77**

Ages and planting years: 1 – 2 years (2020 and 2021), 3 – 5 years (2017 to 2019), 6 – 10 years (2012 to 2016) and over 10 years (2011 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 [2022 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.....	602.98	-	-	-	602.98
3 – 5 years.....	22.57	482.44	-	-	505.01
6 – 10 years.....	6.50	12.42	362.32	-	381.24
Over 10 years.....	0.04	1.30	30.98	338.26	370.58
Subtotal.....	**632.09**	**496.16**	**393.30**	**338.26**	**1,859.81**
Duartina					
1 – 2 years.....	128.11	-	-	-	128.11
3 – 5 years.....	43.10	441.40	-	-	484.50
6 – 10 years.....	15.01	48.73	553.59	-	617.33
Over 10 years…….....	2.76	42.56	83.92	1,661.93	1,791.17
Subtotal.....	**188.98**	**532.69**	**637.51**	**1,661.93**	**3,021.11**
Brotas					
1 – 2 years.....	51.92	-	-	-	51.92
3 – 5 years.....	0.43	69.42	-	-	69.85
6 – 10 years.....	1.68	1.24	88.54	-	91.46
Over 10 years.....	11.45	15.18	44.58	206.64	277.85
Subtotal.....	**65.48**	**85.84**	**133.12**	**206.64**	**491.08**
Central					
1 – 2 years.....	783.01	-	-	-	783.01
3 – 5 years.....	66.10	993.26	-	-	1,059.36
6 – 10 years.....	23.19	62.39	1,004.45	-	1,090.03
Over 10 years.....	14.25	59.04	159.48	2,206.83	2,439.60
Total.....	**886.55**	**1,114.69**	**1,163.93**	**2,206.83**	**5,372.00**

Ages and planting years: 1 – 2 years (2020 and 2021), 3 – 5 years (2017 to 2019), 6 – 10 years (2012 to 2016) and over 10 years (2011 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 [2022 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.....	351.56	-	-	-	351.56
3 – 5 years.....	11.63	399.26	-	-	410.89
6 – 10 years.....	24.43	78.29	599.77	-	702.49
Over 10 years.....	6.80	11.59	38.62	622.37	679.38
Subtotal.....	**394.42**	**489.14**	**638.39**	**622.37**	**2,144.32**
Limeira					
1 – 2 years.....	153.76	-	-	-	153.76
3 – 5 years.....	3.20	219.16	-	-	222.36
6 – 10 years.....	9.70	19.97	297.64	-	327.31
Over 10 years.....	1.43	11.17	31.36	626.87	670.83
Subtotal.....	**168.09**	**250.30**	**329.00**	**626.87**	**1,374.26**
South					
1 – 2 years.....	505.32	-	-	-	505.32
3 – 5 years.....	14.83	618.42	-	-	633.25
6 – 10 years.....	34.13	98.26	897.41	-	1,029.80
Over 10 years.....	8.23	22.76	69.98	1,249.24	1,350.21
Total.....	**562.51**	**739.44**	**967.39**	**1,249.24**	**3,518.58**

Ages and planting years: 1 – 2 years (2020 and 2021), 3 – 5 years (2017 to 2019), 6 – 10 years (2012 to 2016) and over 10 years (2011 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 [2022 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.....	197.58	-	-	-	197.58
3 – 5 years.....	5.74	423.49	-	-	429.23
6 – 10 years.....	11.02	12.53	480.16	-	503.71
Over 10 years.....	83.43	61.70	116.32	2,621.52	2,882.97
Subtotal.....	**297.77**	**497.72**	**596.48**	**2,621.52**	**4,013.49**
Itapetininga					
1 – 2 years.....	362.54	-	-	-	362.54
3 – 5 years.....	1.90	568.34	-	-	570.24
6 – 10 years.....	0.62	4.18	249.45	-	254.25
Over 10 years.....	7.92	26.02	5.53	1,422.40	1,461.87
Subtotal.....	**372.98**	**598.54**	**254.98**	**1,422.40**	**2,648.90**
Southwest					
1 – 2 years.....	560.12	-	-	-	560.12
3 – 5 years.....	7.64	991.83	-	-	999.47
6 – 10 years.....	11.64	16.71	729.61	-	757.96
Over 10 years.....	91.35	87.72	121.85	4,043.92	4,344.84
Total.....	**670.75**	**1,096.26**	**851.46**	**4,043.92**	**6,662.39**

Ages and planting years: 1 – 2 years (2020 and 2021), 3 – 5 years (2017 to 2019), 6 – 10 years (2012 to 2016) and over 10 years (2011 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 [2022 inventory and accumulated variation]

Sector and region	2022 inventory			Accumulated variation (△) since 2018 inventory		
	Area of young groves[1]	Area of mature groves[2]	Total			
	(A)	(B)	(C)	(△ A)	(△ B)	(△ C)
	(hectares)	(hectares)	(hectares)	(%)	(%)	(%)
North						
Triângulo Mineiro	1,713	25,779	27,492	61.15	1.42	3.82
Bebedouro	3,743	46,003	49,746	64.67	-6.13	-2.99
Altinópolis	513	10,924	11,437	15.28	0.69	1.27
Subtotal	**5,969**	**82,706**	**88,675**	**57.87**	**-3.01**	**-0.43**
Northwest						
Votuporanga	2,715	14,637	17,352	144.15	-21.74	-12.43
São José do Rio Preto	1,929	19,209	21,138	13.20	-10.39	-8.65
Subtotal	**4,644**	**33,846**	**38,490**	**64.91**	**-15.68**	**-10.39**
Central						
Matão	4,281	29,397	33,678	44.82	-22.64	-17.77
Duartina	8,021	53,620	61,641	75.40	7.25	12.96
Brotas	1,174	10,914	12,088	66.05	-39.85	-35.88
Subtotal	**13,476**	**93,931**	**107,407**	**63.62**	**-11.50**	**-6.09**
South						
Porto Ferreira	4,294	33,090	37,384	65.86	-12.81	-7.78
Limeira	3,274	30,005	33,279	48.08	-22.08	-18.27
Subtotal	**7,568**	**63,095**	**70,663**	**57.67**	**-17.48**	**-13.04**
Southwest						
Avaré	7,441	50,381	57,822	650.10	-5.64	6.32
Itapetininga	3,586	20,430	24,016	48.06	20.06	23.55
Subtotal	**11,027**	**70,811**	**81,838**	**222.99**	**0.57**	**10.85**
Total	**42,684**	**344,389**	**387,073**	**85.20**	**-8.99**	**-3.59**
Percentage	**11.03**	**88.97**	**100.00**	**(X)**	**(X)**	**(X)**

(X) Not applicable
- Represents zero
[1] Groves planted in 2020 and 2021
[2] Groves planted in 2019 and in previous years

Table 45 – Oranges: Non-bearing and bearing trees by sector and region [2022 inventory and accumulated variation]

Sector and region	2022 inventory					Accumulated variation (△) since 2018 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.....	998.79	31.80	1,030.59	12,189.45	13,220.04	72.51	-39.58	63.17	1.98	5.05
Bebedouro.....	2,052.13	640.22	2,692.35	21,747.21	24,439.56	57.52	27.18	49.07	-2.22	1.63
Altinópolis.....	275.43	91.71	367.14	5,245.93	5,613.07	-10.04	-48.63	-24.25	2.27	-0.02
Subtotal	**3,326.35**	**763.73**	**4,090.08**	**39,182.59**	**43,272.67**	**52.03**	**3.97**	**39.95**	**-0.36**	**2.43**
Northwest										
Votuporanga.....	1,153.14	107.44	1,260.58	6,558.16	7,818.74	140.82	83.63	134.60	-20.90	-11.43
S. J. do Rio Preto.....	991.45	78.75	1,070.20	9,163.11	10,233.31	-6.13	-32.11	-8.70	-8.91	-8.88
Subtotal.....	**2,144.59**	**186.19**	**2,330.78**	**15,721.27**	**18,052.05**	**39.71**	**6.69**	**36.34**	**-14.32**	**-10.01**
Central										
Matão.....	2,789.04	235.44	3,024.48	15,208.91	18,233.39	17.53	-31.87	11.25	-11.98	-8.82
Duartina.....	5,132.27	649.50	5,781.77	27,561.97	33,343.74	72.06	-15.62	54.07	19.00	23.89
Brotas.....	765.45	155.73	921.18	4,968.40	5,889.58	69.31	-9.28	47.68	-39.06	-32.89
Subtotal.....	**8,686.76**	**1,040.67**	**9,727.43**	**47,739.28**	**57,466.71**	**49.56**	**-19.14**	**37.10**	**-1.76**	**3.19**
South										
Porto Ferreira.....	2,701.05	598.08	3,299.13	16,359.86	19,658.99	59.44	23.26	51.38	-5.23	1.12
Limeira.....	2,030.44	755.22	2,785.66	14,028.02	16,813.68	56.89	21.14	45.27	-17.83	-11.46
Subtotal.....	**4,731.49**	**1,353.30**	**6,084.79**	**30,387.88**	**36,472.67**	**58.33**	**22.07**	**48.52**	**-11.50**	**-5.10**
Southwest										
Avaré.....	3,888.80	631.77	4,520.57	24,678.70	29,199.27	485.61	3.26	254.31	-4.88	7.27
Itapetininga.....	2,283.11	302.17	2,585.28	12,262.19	14,847.47	17.43	229.34	26.98	40.57	38.00
Subtotal.....	**6,171.91**	**933.94**	**7,105.85**	**36,940.89**	**44,046.74**	**136.63**	**32.74**	**114.56**	**6.56**	**15.97**
Total.....	**25,061.10**	**4,277.83**	**29,338.93**	**169,971.91**	**199,310.84**	**65.66**	**6.73**	**53.32**	**-3.02**	**2.52**
Percentage.....	**85.42**	**14.58**	**14.72**	**85.28**	**100.00**	**(X)**	**(X)**	**(X)**	**(X)**	**(X)**

(X) Not applicable
- Represents zero
[1] Trees planted in 2020 and 2021
[2] Groves planted in 2020 and 2021
[3] Groves planted in 2019 and in previous years
[4] Trees planted in 2019 and in previous years

Table 46 – Oranges: Area of groves by age group of plots, sector and region [2022 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....	1,713	1,920	7,197	16,662	27,492
Bebedouro.....	3,743	5,920	9,715	30,368	49,746
Altinópolis.....	513	561	734	9,629	11,437
Subtotal.....	**5,969**	**8,401**	**17,646**	**56,659**	**88,675**
Northwest					
Votuporanga.....	2,715	3,685	3,030	7,922	17,352
S. J. Rio Preto.....	1,929	2,634	6,390	10,185	21,138
Subtotal.....	**4,644**	**6,319**	**9,420**	**18,107**	**38,490**
Central					
Matão.....	4,281	4,993	8,850	15,554	33,678
Duartina.....	8,021	11,550	9,966	32,104	61,641
Brotas.....	1174	1,318	2,319	7,277	12,088
Subtotal.....	**13,476**	**17,861**	**21,135**	**54,935**	**107,407**
South					
Porto Ferreira....	4,294	5,088	6,666	21,336	37,384
Limeira.....	3,274	4,675	4,937	20,393	33,279
Subtotal.....	**7,568**	**9,763**	**11,603**	**41,729**	**70,663**
Southwest					
Avaré.....	7441	3,652	3,835	42,894	57,822
Itapetininga.....	3,586	5,513	3,655	11,262	24,016
Subtotal.....	**11,027**	**9,165**	**7,490**	**54,156**	**81,838**
Total.....	**42,684**	**51,509**	**67,294**	**225,586**	**387,073**
Percentage.....	**11.03**	**13.31**	**17.39**	**58.28**	**100.00**

- Represents zero
[1] Area of young orange groves

Table 47 – Oranges: Trees by age group, age group of plot, sector and region [2022 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	998.79	8.12	908.91	10.76	18.90	4,056.62	12.92	15.56	146.66	7,042.80	13,220.04
Bebedouro.....	2,052.13	139.85	3,009.46	156.83	247.85	5,372.31	343.54	426.91	1,128.88	11,561.80	24,439.56
Altinópolis.....	275.43	10.14	354.68	4.11	28.11	357.77	77.46	131.36	389.57	3,984.44	5,613.07
Subtotal.....	**3,326.35**	**158.11**	**4,273.05**	**171.70**	**294.86**	**9,786.70**	**433.92**	**573.83**	**1,665.11**	**22,589.04**	**43,272.67**
Northwest											
Votuporanga...	1,153.14	56.68	1,499.84	16.25	20.24	1,399.47	34.51	27.90	80.19	3,530.52	7,818.74
S J Rio Preto...	991.45	24.28	1,696.20	24.86	43.23	3,243.94	29.61	123.26	135.10	3,921.38	10,233.31
Subtotal.....	**2,144.59**	**80.96**	**3,196.04**	**41.11**	**63.47**	**4,643.41**	**64.12**	**151.16**	**215.29**	**7,451.90**	**18,052.05**
Central											
Matão.....	2,789.04	116.02	3,420.44	66.84	168.31	5,162.52	52.58	75.29	326.68	6,055.67	18,233.39
Duartina.....	5,132.27	337.56	6,863.33	207.26	364.43	5,402.19	104.68	610.01	1,014.51	13,307.50	33,343.74
Brotas.....	765.45	110.06	605.85	13.76	35.85	1,385.78	31.91	64.05	387.19	2,489.68	5,889.58
Subtotal.....	**8,686.76**	**563.64**	**10,889.62**	**287.86**	**568.59**	**11,950.49**	**189.17**	**749.35**	**1,728.38**	**21,852.85**	**57,466.71**
South											
Porto Ferreira..	2,701.05	178.20	3,096.81	174.49	273.51	3,837.53	245.39	278.97	709.74	8,163.30	19,658.99
Limeira.....	2,030.44	321.41	2,528.98	154.33	226.77	2,540.84	279.48	217.84	673.48	7,840.11	16,813.68
Subtotal.....	**4,731.49**	**499.61**	**5,625.79**	**328.82**	**500.28**	**6,378.37**	**524.87**	**496.81**	**1,383.22**	**16,003.41**	**36,472.67**
Southwest											
Avaré.....	3,888.80	103.36	2,307.47	110.83	87.87	2,432.82	417.58	526.20	908.94	18,415.40	29,199.27
Itapetininga.....	2,283.11	80.28	3,895.76	29.75	24.59	2,310.03	192.14	89.35	50.67	5,891.79	14,847.47
Subtotal.....	**6,171.91**	**183.64**	**6,203.23**	**140.58**	**112.46**	**4,742.85**	**609.72**	**615.55**	**959.61**	**24,307.19**	**44,046.74**
Total.....	**25,061.10**	**1,485.96**	**30,187.73**	**970.07**	**1,539.66**	**37,501.82**	**1,821.80**	**2,586.70**	**5,951.61**	**92,204.39**	**199,310.84**
Percentage.....	**12.57**	**0.75**	**15.15**	**0.49**	**0.77**	**18.82**	**0.91**	**1.30**	**2.99**	**46.26**	**100.00**

Table 48 – Oranges: Area of groves of early varieties by sector and region [2022 inventory]

Sector and region		Early varieties						
	Hamlin	Westin	Rubi	Valencia Americana	Seleta	Pineapple	Alvorada	Total
	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)
North								
Triâng.Mineiro.....	4,971	2	232	691	-	9	-	5,905
Bebedouro.....	8,498	203	786	4,292	3	238	-	14,020
Altinópolis.....	1,601	43	193	212	-	-	-	2,049
Subtotal.....	**15,070**	**248**	**1,211**	**5,195**	**3**	**247**	**-**	**21,974**
Northwest								
Votuporanga.....	523	48	200	416	-	14	-	1,201
S. J. Rio Preto.....	3,676	43	438	3,090	-	200	104	7,551
Subtotal.....	**4,199**	**91**	**638**	**3,506**	**-**	**214**	**104**	**8,752**
Central								
Matão.....	5,513	47	97	3,481	-	534	-	9,672
Duartina.....	6,880	200	1,446	3,586	31	59	27	12,229
Brotas.....	1,519	137	135	359	-	152	-	2,302
Subtotal.....	**13,912**	**384**	**1,678**	**7,426**	**31**	**745**	**27**	**24,203**
South								
Porto Ferreira.....	3,758	1,409	754	723	35	15	5	6,699
Limeira.....	3,733	1,376	273	475	23	3	32	5,915
Subtotal.....	**7,491**	**2,785**	**1,027**	**1,198**	**58**	**18**	**37**	**12,614**
Southwest								
Avaré.....	9,436	529	784	1,675	-	71	85	12,580
Itapetininga.....	2,231	310	698	824	1	967	269	5,300
Subtotal.....	**11,667**	**839**	**1,482**	**2,499**	**1**	**1,038**	**354**	**17,880**
Total.....	**52,339**	**4,347**	**6,036**	**19,824**	**93**	**2,262**	**522**	**85,423**
Percentage.....	**61.27**	**5.09**	**7.07**	**23.21**	**0.11**	**2.65**	**0.61**	**100.00**

- Represents zero

Table 49 – Oranges: Trees of early varieties by sector and region [2022 inventory]

Sector and region		Early varieties						
	Hamlin	Westin	Rubi	Valencia Americana	Seleta	Pineapple	Alvorada	Total
	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)
North								
Triâng.Mineiro.....	2,077.52	1.20	127.99	377.50	-	4.21	-	2,588.42
Bebedouro.....	3,715.58	105.67	453.82	2,171.94	1.83	114.96	-	6,563.80
Altinópolis.....	795.61	25.96	122.03	101.90	-	-	-	1,045.50
Subtotal.....	**6,588.71**	**132.83**	**703.84**	**2,651.34**	**1.83**	**119.17**	**-**	**10,197.72**
Northwest								
Votuporanga.....	273.16	23.38	108.42	194.18	-	7.63	-	606.77
S. J. Rio Preto.....	1,613.72	19.47	199.75	1,637.02	-	116.32	90.39	3,676.67
Subtotal.....	**1,886.88**	**42.85**	**308.17**	**1,831.20**	**-**	**123.95**	**90.39**	**4,283.44**
Central								
Matão.....	2,805.75	17.17	50.98	1,817.91	-	296.25	-	4,988.06
Duartina.....	3,333.22	115.30	872.05	2,014.44	17.31	35.73	19.00	6,407.05
Brotas.....	707.39	49.88	78.21	135.68	-	84.44	-	1,055.60
Subtotal.....	**6,846.36**	**182.35**	**1,001.24**	**3,968.03**	**17.31**	**416.42**	**19.00**	**12,450.71**
South								
Porto Ferreira.....	1,872.45	755.82	485.11	367.77	17.40	8.21	2.85	3,509.61
Limeira.....	1,767.82	694.35	151.96	220.26	10.18	1.12	17.74	2,863.43
Subtotal.....	**3,640.27**	**1,450.17**	**637.07**	**588.03**	**27.58**	**9.33**	**20.59**	**6,373.04**
Southwest								
Avaré.....	4,225.81	316.57	464.64	779.10	-	36.77	68.71	5,891.60
Itapetininga.....	1,294.96	166.73	410.74	575.26	0.53	627.35	183.31	3,258.88
Subtotal.....	**5,520.77**	**483.30**	**875.38**	**1,354.36**	**0.53**	**664.12**	**252.02**	**9,150.48**
Total.....	**24,482.99**	**2,291.50**	**3,525.70**	**10,392.96**	**47.25**	**1,332.99**	**382**	**42,455.39**
Percentage.....	**57.67**	**5.40**	**8.30**	**24.48**	**0.11**	**3.14**	**0.90**	**100.00**

- Represents zero

Table 50 – Oranges: Area of groves of mid-season and late varieties by sector and region [2022 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.....	9,299	8,390	351	3,547	21,587
Bebedouro.....	14,039	15,319	1,394	4,974	35,726
Altinópolis.....	4,099	4,039	453	797	9,388
Subtotal.....	**27,437**	**27,748**	**2,198**	**9,318**	**66,701**
Northwest					
Votuporanga.....	13,823	1,035	409	884	16,151
S. J. Rio Preto.....	5,718	4,231	975	2,663	13,587
Subtotal.....	**19,541**	**5,266**	**1,384**	**3,547**	**29,738**
Central					
Matão.....	11,946	8,348	607	3,105	24,006
Duartina.....	23,342	16,311	3,523	6,236	49,412
Brotas.....	3,534	4,397	766	1,089	9,786
Subtotal.....	**38,822**	**29,056**	**4,896**	**10,430**	**83,204**
South					
Porto Ferreira.....	14,211	10,330	2,278	3,866	30,685
Limeira.....	13,532	8,664	2,546	2,622	27,364
Subtotal.....	**27,743**	**18,994**	**4,824**	**6,488**	**58,049**
Southwest					
Avaré.....	16,965	18,685	1,619	7,973	45,242
Itapetininga.....	7,355	5,557	1304	4,500	18,716
Subtotal.....	**24,320**	**24,242**	**2,923**	**12,473**	**63,958**
Total.....	**137,863**	**105,306**	**16,225**	**42,256**	**301,650**
Percentage.....	**45.70**	**34.91**	**5.38**	**14.01**	**100.00**

Table 51 – Oranges: Trees of mid-season and late varieties by sector and region [2022 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.....	4,974.56	3,893.69	203.62	1,559.75	10,631.62
Bebedouro.....	7,762.88	7,080.83	710.05	2,322.00	17,875.76
Altinópolis.....	2,034.91	1,908.11	257.77	366.78	4,567.57
Subtotal.....	**14,772.35**	**12,882.63**	**1,171.44**	**4,248.53**	**33,074.95**
Northwest					
Votuporanga.....	6,143.08	511.21	205.88	351.8	7,211.97
S. J. Rio Preto.....	2,750.48	2,019.93	489.26	1,296.97	6,556.64
Subtotal.....	**8,893.56**	**2,531.14**	**695.14**	**1,648.77**	**13,768.61**
Central					
Matão.....	6,826.69	4,200.29	358.54	1,859.81	13,245.33
Duartina.....	13,145.60	8,675.72	2,094.26	3,021.11	26,936.69
Brotas.....	1,897.81	2,057.68	387.41	491.08	4,833.98
Subtotal.....	**21,870.10**	**14,933.69**	**2,840.21**	**5,372.00**	**45,016.00**
South					
Porto Ferreira.....	7,915.33	4,882.86	1,206.87	2,144.32	16,149.38
Limeira.....	7,406.93	3,820.91	1,348.15	1,374.26	13,950.25
Subtotal.....	**15,322.26**	**8,703.77**	**2,555.02**	**3,518.58**	**30,099.63**
Southwest					
Avaré.....	8,914.74	9,404.77	974.67	4,013.49	23,307.67
Itapetininga.....	4,758.71	3,392.32	788.66	2,648.90	11,588.59
Subtotal.....	**13,673.45**	**12,797.09**	**1,763.33**	**6,662.39**	**34,896.26**
Total.....	**74,531.72**	**51,848.32**	**9,025.14**	**21,450.27**	**156,855.45**
Percentage.....	**47.52**	**33.05**	**5.75**	**13.68**	**100.00**

Table 52 – Oranges: Area of groves by age group of plots, region and variety – North Sector [2022 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.....	93	128	498	4,252	4,971
Westin.....	-	2	-	-	2
Rubi.....	28	5	105	94	232
V.Americana[3].....	271	145	51	224	691
Seleta.....	-	-	-	-	-
Pineapple.....	5	-	4	-	9
Alvorada.....	-	-	-	-	-
Pera Rio	1,107	1,398	3,430	3,364	9,299
Valencia.....	104	128	2,602	5,556	8,390
V.Folha Murcha[4]	24	7	100	220	351
Natal.....	81	107	407	2,952	3,547
Subtotal.....	**1,713**	**1,920**	**7,197**	**16,662**	**27,492**
Percentage.....	**6.23**	**6.98**	**26.18**	**60.61**	**31.00**
BEB[5]					
Hamlin.....	464	917	424	6,693	8,498
Westin.....	3	4	38	158	203
Rubi.....	46	16	281	443	786
V.Americana[3].....	959	586	425	2,322	4,292
Seleta.....	-	-	3	-	3
Pineapple.....	20	13	45	160	238
Alvorada.....	-	-	-	-	-
Pera Rio	1,362	2,310	4,551	5,816	14,039
Valencia.....	691	1,334	2,700	10,594	15,319
V.Folha Murcha[4]	101	96	327	870	1,394
Natal.....	97	644	921	3,312	4,974
Subtotal.....	**3,743**	**5,920**	**9,715**	**30,368**	**49,746**
Percentage.....	**13.61**	**21.53**	**35.34**	**110.46**	**56.10**
ALT[7]					
Hamlin.....	55	14	18	1,514	1,601
Westin.....	-	10	-	33	43
Rubi.....	-	24	98	71	193
V.Americana[3].....	2	4	37	169	212
Seleta.....	-	-	-	-	-
Pineapple.....	-	-	-	-	-
Alvorada.....	-	-	-	-	-
Pera Rio	342	127	412	3,218	4,099
Valencia.....	60	56	98	3,825	4,039
V.Folha Murcha[4]	47	121	26	259	453
Natal.....	7	205	45	540	797
Subtotal.....	**513**	**561**	**734**	**9,629**	**11,437**
Percentage.....	**1.87**	**2.04**	**2.67**	**35.02**	**12.90**
Total.....	**5,969**	**8,401**	**17,646**	**56,659**	**88,675**

- 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 [2022 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.....	56.54	0.63	65.56	0.26	1.68	300.56	1.60	4.03	49.35	1,597.31	2,077.52
Westin.....	-	0.01	1.19	-	-	-	-	-	-	-	1.20
Rubi.....	13.72	0.02	2.56	0.02	0.15	69.41	-	0.07	0.25	41.79	127.99
V.Americana[2].....	178.60	0.23	83.88	-	0.06	28.32	2.35	0.07	6.66	77.33	377.50
Seleta.....	-	-	-	-	-	-	-	-	-	-	-
Pineapple.....	2.35	-	-	-	0.01	1.85	-	-	-	-	4.21
Alvorada.....	-	-	-	-	-	-	-	-	-	-	-
Pera Rio	637.72	6.11	630.92	6.25	10.74	1,977.24	2.29	3.55	33.26	1,666.48	4,974.56
Valencia.....	50.66	0.41	72.22	2.84	5.71	1,403.72	3.88	3.24	31.79	2,319.22	3,893.69
V.Folha Murcha[3]	11.77	0.04	4.27	1.14	0.11	55.07	0.43	0.23	-	130.56	203.62
Natal.....	47.43	0.67	48.31	0.25	0.44	220.45	2.37	4.37	25.35	1,210.11	1,559.75
Subtotal.....	**998.79**	**8.12**	**908.91**	**10.76**	**18.90**	**4,056.62**	**12.92**	**15.56**	**146.66**	**7,042.80**	**13,220.04**
Percentage.....	**7.56**	**0.06**	**6.88**	**0.08**	**0.14**	**30.69**	**0.10**	**0.12**	**1.11**	**53.27**	**30.55**
BEB[4]											
Hamlin.....	219.07	46.86	409.83	1.23	10.03	243.46	78.70	98.86	223.59	2,383.95	3,715.58
Westin.....	2.76	0.56	1.50	0.11	0.89	21.13	5.39	5.78	6.64	60.91	105.67
Rubi.....	24.77	2.84	7.58	0.94	7.25	172.72	16.24	17.47	20.03	183.98	453.82
V.Americana[2].....	573.72	15.49	301.13	13.59	19.19	199.77	78.19	85.49	107.37	778.00	2,171.94
Seleta.....	-	-	-	0.11	0.15	1.57	-	-	-	-	1.83
Pineapple.....	11.94	0.42	5.91	1.26	1.77	22.65	3.82	4.00	8.22	54.97	114.96
Alvorada.....	-	-	-	-	-	-	-	-	-	-	-
Pera Rio	769.08	45.80	1,160.69	91.62	139.16	2,562.35	83.69	71.48	225.25	2,613.76	7,762.88
Valencia.....	344.55	11.53	653.82	21.42	28.43	1,508.96	39.11	89.49	371.44	4,012.08	7,080.83
V.Folha Murcha[3]	53.89	1.56	51.02	3.58	4.28	176.94	6.66	11.06	36.93	364.13	710.05
Natal.....	52.35	14.79	417.98	22.97	36.70	462.76	31.74	43.28	129.41	1,110.02	2,322.00
Subtotal.....	**2,052.13**	**139.85**	**3,009.46**	**156.83**	**247.85**	**5,372.31**	**343.54**	**426.91**	**1,128.88**	**11,561.80**	**24,439.56**
Percentage.....	**8.40**	**0.57**	**12.31**	**0.64**	**1.01**	**21.98**	**1.41**	**1.75**	**4.62**	**47.31**	**56.48**
ALT[5]											
Hamlin.....	28.12	0.05	9.95	0.03	1.31	11.84	25.90	29.02	94.80	594.59	795.61
Westin.....	-	0.04	7.31	-	-	-	2.16	0.62	0.83	15.00	25.96
Rubi.....	-	0.07	13.90	0.47	1.26	58.89	5.50	1.56	2.11	38.27	122.03
V.Americana[2].....	2.25	0.11	1.68	0.24	1.81	19.73	0.44	1.97	7.78	65.89	101.90
Seleta.....	-	-	-	-	-	-	-	-	-	-	-
Pineapple.....	-	-	-	-	-	-	-	-	-	-	-
Alvorada.....	-	-	-	-	-	-	-	-	-	-	-
Pera Rio	179.65	5.74	69.13	1.19	20.13	205.57	35.27	42.23	117.03	1,358.97	2,034.91
Valencia.....	35.09	0.98	39.00	1.66	2.12	33.04	5.73	48.64	139.70	1,602.15	1,908.11
V.Folha Murcha[3]	25.85	1.94	77.53	0.39	0.45	7.68	1.37	2.86	7.95	131.75	257.77
Natal.....	4.47	1.21	136.18	0.13	1.03	21.02	1.09	4.46	19.37	177.82	366.78
Subtotal.....	**275.43**	**10.14**	**354.68**	**4.11**	**28.11**	**357.77**	**77.46**	**131.36**	**389.57**	**3,984.44**	**5,613.07**
Percentage.....	**4.91**	**0.18**	**6.32**	**0.07**	**0.50**	**6.37**	**1.38**	**2.34**	**6.94**	**70.99**	**12.97**
Total.....	**3,326.35**	**158.11**	**4,273.05**	**171.7**	**294.86**	**9,786.70**	**433.92**	**573.83**	**1,665.11**	**22,589.04**	**43,272.67**

- 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 [2022 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.....	67	112	91	253	523
Westin.....	10	3	-	35	48
Rubi.....	-	93	54	53	200
V.Americana[3].....	159	64	34	159	416
Seleta.....	-	-	-	-	-
Pineapple.....	11	-	-	3	14
Alvorada.....	-	-	-	-	-
Pera Rio	2,246	3,049	2,634	5,894	13,823
Valencia.....	25	118	73	819	1,035
V.Folha Murcha[4]	5	66	2	336	409
Natal.....	192	180	142	370	884
Subtotal.....	**2,715**	**3,685**	**3,030**	**7,922**	**17,352**
Percentage.....	**15.65**	**21.24**	**17.46**	**45.65**	**45.08**
SJO[5]					
Hamlin.....	190	236	809	2,441	3,676
Westin.....	7	2	3	31	43
Rubi.....	16	16	80	326	438
V.Americana[3].....	468	926	480	1,216	3,090
Seleta.....	-	-	-	-	-
Pineapple.....	-	92	-	108	200
Alvorada.....	8	96	-	-	104
Pera Rio	1,069	916	1,517	2,216	5,718
Valencia.....	102	204	1,919	2,006	4,231
V.Folha Murcha[4]	-	-	331	644	975
Natal.....	69	146	1,251	1,197	2,663
Subtotal.....	**1,929**	**2,634**	**6,390**	**10,185**	**21,138**
Percentage.....	**9.13**	**12.46**	**30.23**	**48.18**	**54.92**
Total.....	**4,644**	**6,319**	**9,420**	**18,107**	**38,490**

- 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 [2022 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.....	32.47	0.22	46.55	0.03	0.57	59.88	2.56	1.06	6.78	123.04	273.16
Westin.....	4.49	0.01	1.99	-	-	-	0.42	0.16	0.41	15.90	23.38
Rubi.....	-	0.25	50.59	0.02	0.27	27.36	0.73	0.28	0.72	28.20	108.42
V.Americana[2].....	81.58	0.07	19.63	0.38	1.39	15.59	1.42	0.91	8.86	64.35	194.18
Seleta.....	-	-	-	-	-	-	-	-	-	-	-
Pineapple.....	5.93	-	-	-	-	-	0.05	0.02	0.05	1.58	7.63
Alvorada.....	-	-	-	-	-	-	-	-	-	-	-
Pera Rio	928.36	50.86	1,244.44	15.23	16.89	1,201.13	23.84	22.74	50.05	2,589.54	6,143.08
Valencia.....	12.07	1.18	36.82	0.17	0.70	26.94	3.71	1.25	10.57	417.80	511.21
V.Folha Murcha[3]	2.80	0.86	27.06	-	0.01	0.54	1.78	0.45	0.87	171.51	205.88
Natal.....	85.44	3.23	72.76	0.42	0.41	68.03	-	1.03	1.88	118.60	351.80
Subtotal.....	**1,153.14**	**56.68**	**1,499.84**	**16.25**	**20.24**	**1,399.47**	**34.51**	**27.90**	**80.19**	**3,530.52**	**7,818.74**
Percentage.....	**14.75**	**0.72**	**19.18**	**0.21**	**0.26**	**17.90**	**0.44**	**0.36**	**1.03**	**45.15**	**43.31**
SJO[4]											
Hamlin.....	117.45	1.03	162.26	0.53	8.30	391.88	2.26	18.67	24.08	887.26	1,613.72
Westin.....	4.34	0.01	1.63	-	-	1.21	0.06	0.45	0.66	11.11	19.47
Rubi.....	9.98	0.04	6.46	0.18	0.28	42.26	0.71	5.17	7.62	127.05	199.75
V.Americana[2].....	207.87	8.10	697.05	0.31	7.08	207.40	0.06	10.60	16.74	481.81	1,637.02
Seleta.....	-	-	-	-	-	-	-	-	-	-	-
Pineapple.....	-	-	69.82	-	-	-	-	1.50	2.49	42.51	116.32
Alvorada.....	6.19	0.47	83.73	-	-	-	-	-	-	-	90.39
Pera Rio	541.37	12.02	447.01	7.37	7.13	777.68	25.83	51.67	34.51	845.89	2,750.48
Valencia.....	53.48	0.75	130.93	5.31	10.64	944.50	0.44	24.36	29.31	820.21	2,019.93
V.Folha Murcha[3]	-	-	-	1.06	3.35	157.71	0.25	9.99	15.72	301.18	489.26
Natal.....	50.77	1.86	97.31	10.10	6.45	721.30	-	0.85	3.97	404.36	1,296.97
Subtotal.....	**991.45**	**24.28**	**1,696.20**	**24.86**	**43.23**	**3,243.94**	**29.61**	**123.26**	**135.10**	**3,921.38**	**10,233.31**
Percentage.....	**9.69**	**0.24**	**16.58**	**0.24**	**0.42**	**31.70**	**0.29**	**1.20**	**1.32**	**38.32**	**56.69**
Total.....	**2,144.59**	**80.96**	**3,196.04**	**41.11**	**63.47**	**4,643.41**	**64.12**	**151.16**	**215.29**	**7,451.90**	**18,052.05**

- 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 [2022 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.....	522	1,151	358	3,482	5,513
Westin.....	-	-	9	38	47
Rubi.....	-	6	29	62	97
V.Americana[3].....	1,064	753	88	1,576	3,481
Seleta.....	-	-	-	-	-
Pineapple.....	-	32	502	-	534
Alvorada.....	-	-	-	-	-
Pera Rio	1,387	1,506	4,591	4,462	11,946
Valencia.....	310	889	2,591	4,558	8,348
V.Folha Murcha[4]	134	20	72	381	607
Natal.....	864	636	610	995	3,105
Subtotal.....	**4,281**	**4,993**	**8,850**	**15,554**	**33,678**
Percentage.....	**12.71**	**14.83**	**26.28**	**46.18**	**31.36**
DUA[5]					
Hamlin.....	729	974	603	4,574	6,880
Westin.....	36	88	8	68	200
Rubi.....	128	457	292	569	1,446
V.Americana[3].....	887	846	644	1,209	3,586
Seleta.....	-	-	-	31	31
Pineapple.....	-	30	23	6	59
Alvorada.....	-	20	7	-	27
Pera Rio	2,734	4,481	4,436	11,691	23,342
Valencia.....	2,428	2,990	2,243	8,650	16,311
V.Folha Murcha[4]	871	818	553	1,281	3,523
Natal.....	208	846	1,157	4,025	6,236
Subtotal.....	**8,021**	**11,550**	**9,966**	**32,104**	**61,641**
Percentage.....	**13.01**	**18.74**	**16.17**	**52.08**	**57.39**
BRO[6]					
Hamlin.....	16	70	241	1,192	1,519
Westin.....	11	14	1	111	137
Rubi.....	59	76	-	-	135
V.Americana[3].....	3	46	35	275	359
Seleta.....	-	-	-	-	-
Pineapple.....	-	-	152	-	152
Alvorada.....	-	-	-	-	-
Pera Rio	406	622	1,245	1,261	3,534
Valencia.....	477	182	426	3,312	4,397
V.Folha Murcha[4]	107	180	59	420	766
Natal.....	95	128	160	706	1,089
Subtotal.....	**1,174**	**1,318**	**2,319**	**7,277**	**12,088**
Percentage.....	**9.71**	**10.90**	**19.18**	**60.20**	**11.25**
Total.....	**13,476**	**17,861**	**21,135**	**54,935**	**107,407**

- 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 [2022 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.....	304.42	23.83	820.72	7.56	26.70	167.86	15.36	24.65	67.79	1,346.86	2,805.75
Westin.....	-	-	-	0.18	0.65	4.08	0.22	0.20	0.48	11.36	17.17
Rubi.....	-	0.30	4.03	0.66	2.34	14.75	0.51	0.50	1.13	26.76	50.98
V.Americana[2].....	688.05	1.30	527.15	-	0.82	33.84	2.66	2.12	21.85	540.12	1,817.91
Seleta.....	-	-	-	-	-	-	-	-	-	-	-
Pineapple.....	-	-	33.79	3.11	2.01	257.34	-	-	-	-	296.25
Alvorada.....	-	-	-	-	-	-	-	-	-	-	-
Pera Rio	843.85	51.35	968.55	33.75	79.34	2,853.68	15.78	19.36	98.22	1,862.81	6,826.69
Valencia.....	235.34	16.32	573.90	14.56	42.38	1,431.01	16.00	25.07	95.95	1,749.76	4,200.29
V.Folha Murcha[3]	114.40	0.35	9.86	0.52	1.65	37.64	2.01	2.09	10.28	179.74	358.54
Natal.....	602.98	22.57	482.44	6.50	12.42	362.32	0.04	1.30	30.98	338.26	1,859.81
Subtotal.....	**2,789.04**	**116.02**	**3,420.44**	**66.84**	**168.31**	**5,162.52**	**52.58**	**75.29**	**326.68**	**6,055.67**	**18,233.39**
Percentage.....	**15.30**	**0.64**	**18.76**	**0.37**	**0.92**	**28.31**	**0.29**	**0.41**	**1.79**	**33.21**	**31.73**
DUA[4]											
Hamlin.....	459.22	27.66	539.32	7.91	24.32	317.36	9.64	127.66	201.95	1,618.18	3,333.22
Westin.....	26.81	2.72	50.93	0.10	0.19	3.19	0.21	1.87	1.95	27.33	115.30
Rubi.....	90.98	15.71	294.41	4.85	8.70	147.44	2.07	18.48	19.35	270.06	872.05
V.Americana[2].....	621.10	25.51	456.95	4.96	25.16	303.84	18.85	14.98	40.15	502.94	2,014.44
Seleta.....	-	-	-	-	-	-	0.66	0.21	1.11	15.33	17.31
Pineapple.....	-	1.14	17.45	0.42	0.39	13.77	0.10	0.03	0.16	2.27	35.73
Alvorada.....	-	-	13.33	-	-	5.67	-	-	-	-	19.00
Pera Rio	1,589.38	167.24	2,724.30	138.49	174.06	2,455.74	22.56	162.79	308.32	5,402.72	13,145.60
Valencia.....	1,630.18	43.34	1,849.56	27.20	65.84	1,269.12	37.81	203.31	323.40	3,225.96	8,675.72
V.Folha Murcha[3]	586.49	11.14	475.68	8.32	17.04	332.47	10.02	38.12	34.20	580.78	2,094.26
Natal.....	128.11	43.10	441.40	15.01	48.73	553.59	2.76	42.56	83.92	1,661.93	3,021.11
Subtotal.....	**5,132.27**	**337.56**	**6,863.33**	**207.26**	**364.43**	**5,402.19**	**104.68**	**610.01**	**1,014.51**	**13,307.50**	**33,343.74**
Percentage.....	**15.39**	**1.01**	**20.58**	**0.62**	**1.09**	**16.20**	**0.31**	**1.83**	**3.04**	**39.91**	**58.02**
BRO[5]											
Hamlin.....	10.94	8.83	27.97	0.40	4.54	176.61	2.34	7.46	65.29	403.01	707.39
Westin.....	7.06	1.65	5.20	0.01	-	0.74	0.43	0.35	4.46	29.98	49.88
Rubi.....	36.84	9.94	31.43	-	-	-	-	-	-	-	78.21
V.Americana[2].....	1.65	3.76	23.38	0.42	0.47	16.72	-	0.47	5.71	83.10	135.68
Seleta.....	-	-	-	-	-	-	-	-	-	-	-
Pineapple.....	-	-	-	1.46	2.11	80.87	-	-	-	-	84.44
Alvorada.....	-	-	-	-	-	-	-	-	-	-	-
Pera Rio	243.15	83.09	268.17	8.30	15.21	740.80	0.36	12.35	83.13	443.25	1,897.81
Valencia.....	337.73	1.19	90.78	1.38	11.95	248.48	14.74	25.04	163.20	1,163.19	2,057.68
V.Folha Murcha[3]	76.16	1.17	89.50	0.11	0.33	33.02	2.59	3.20	20.82	160.51	387.41
Natal.....	51.92	0.43	69.42	1.68	1.24	88.54	11.45	15.18	44.58	206.64	491.08
Subtotal.....	**765.45**	**110.06**	**605.85**	**13.76**	**35.85**	**1,385.78**	**31.91**	**64.05**	**387.19**	**2,489.68**	**5,889.58**
Percentage.....	**13.00**	**1.87**	**10.29**	**0.23**	**0.61**	**23.53**	**0.54**	**1.09**	**6.57**	**42.27**	**10.25**
Total.....	**8,686.76**	**563.64**	**10,889.62**	**287.86**	**568.59**	**11,950.49**	**189.17**	**749.35**	**1,728.38**	**21,852.85**	**57,466.71**

- 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 [2022 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.....	302	759	254	2,443	3,758
Westin.....	181	228	163	837	1,409
Rubi.....	169	147	224	214	754
V.Americana[3].....	108	181	33	401	723
Seleta.....	8	5	-	22	35
Pineapple.....	-	-	7	8	15
Alvorada.....	5	-	-	-	5
Pera Rio	2,090	2,073	3,331	6,717	14,211
Valencia.....	741	799	1,089	7,701	10,330
V.Folha Murcha[4]....	155	358	492	1,273	2,278
Natal.....	535	538	1,073	1,720	3,866
Subtotal.....	**4,294**	**5,088**	**6,666**	**21,336**	**37,384**
Percentage.....	**11.49**	**13.61**	**17.83**	**57.07**	**52.90**
LIM[5]					
Hamlin.....	272	386	381	2,694	3,733
Westin.....	105	189	255	827	1,376
Rubi.....	41	60	75	97	273
V.Americana[3].....	101	11	24	339	475
Seleta.....	-	7	-	16	23
Pineapple.....	-	-	-	3	3
Alvorada.....	23	5	4	-	32
Pera Rio	1,936	2,559	2,288	6,749	13,532
Valencia.....	290	629	960	6,785	8,664
V.Folha Murcha[4].....	274	447	452	1,373	2,546
Natal.....	232	382	498	1,510	2,622
Subtotal.....	**3,274**	**4,675**	**4,937**	**20,393**	**33,279**
Percentage.....	**9.84**	**14.05**	**14.84**	**61.28**	**47.10**
Total.....	**7,568**	**9,763**	**11,603**	**41,729**	**70,663**

- 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 [2022 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.....	194.68	55.08	400.59	6.86	4.95	150.48	26.48	42.33	146.06	844.94	1,872.45
Westin.....	118.75	22.86	125.28	5.62	4.13	113.25	12.41	15.45	23.06	315.01	755.82
Rubi.....	118.72	15.32	83.97	7.16	5.26	144.06	3.74	4.68	6.98	95.22	485.11
V.Americana[2].....	73.23	3.55	129.32	0.25	0.42	20.97	8.10	7.27	15.27	109.39	367.77
Seleta.....	4.76	0.08	3.08	-	-	-	0.24	0.68	0.54	8.02	17.40
Pineapple.....	-	-	-	0.05	0.08	3.92	0.32	0.21	0.46	3.17	8.21
Alvorada.....	2.85	-	-	-	-	-	-	-	-	-	2.85
Pera Rio	1,275.51	55.59	1,231.84	78.98	118.35	1,937.96	123.01	128.07	225.80	2,740.22	7,915.33
Valencia.....	470.94	9.75	501.96	31.46	38.38	585.31	53.09	57.26	217.01	2,917.70	4,882.86
V.Folha Murcha[3]	90.05	4.34	221.51	19.68	23.65	281.81	11.20	11.43	35.94	507.26	1,206.87
Natal.....	351.56	11.63	399.26	24.43	78.29	599.77	6.80	11.59	38.62	622.37	2,144.32
Subtotal.....	**2,701.05**	**178.20**	**3,096.81**	**174.49**	**273.51**	**3,837.53**	**245.39**	**278.97**	**709.74**	**8,163.30**	**19,658.99**
Percentage.....	**13.74**	**0.91**	**15.75**	**0.89**	**1.39**	**19.52**	**1.25**	**1.42**	**3.61**	**41.52**	**53.90**
LIM[4]											
Hamlin.....	159.08	13.25	181.18	8.52	10.52	175.99	31.59	44.59	129.52	1,013.58	1,767.82
Westin.....	63.90	9.81	112.45	7.57	9.56	118.86	11.70	13.94	32.88	313.68	694.35
Rubi.....	25.70	2.98	34.30	2.43	3.06	38.08	1.43	1.69	4.01	38.28	151.96
V.Americana[2].....	58.26	0.02	6.49	0.63	0.40	13.00	3.78	1.11	5.58	130.99	220.26
Seleta.....	-	0.01	3.58	-	-	-	0.23	0.06	0.23	6.07	10.18
Pineapple.....	-	-	-	-	-	-	0.04	0.01	0.04	1.03	1.12
Alvorada.....	11.59	0.01	3.36	0.12	0.08	2.58	-	-	-	-	17.74
Pera Rio	1,168.88	173.91	1,463.48	100.77	107.53	1,135.09	127.09	51.89	195.28	2,883.01	7,406.93
Valencia.....	174.37	56.89	286.70	16.96	48.70	498.37	80.19	74.22	230.64	2,353.87	3,820.91
V.Folha Murcha[3]	214.90	61.33	218.28	7.63	26.95	261.23	22.00	19.16	43.94	472.73	1,348.15
Natal.....	153.76	3.20	219.16	9.70	19.97	297.64	1.43	11.17	31.36	626.87	1,374.26
Subtotal.....	**2,030.44**	**321.41**	**2,528.98**	**154.33**	**226.77**	**2,540.84**	**279.48**	**217.84**	**673.48**	**7,840.11**	**16,813.68**
Percentage.....	**12.08**	**1.91**	**15.04**	**0.92**	**1.35**	**15.11**	**1.66**	**1.30**	**4.01**	**46.63**	**46.10**
Total.....	**4,731.49**	**499.61**	**5,625.79**	**328.82**	**500.28**	**6,378.37**	**524.87**	**496.81**	**1,383.22**	**16,003.41**	**36,472.67**

- 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 [2022 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.....	1,430	317	235	7,454	9,436
Westin.....	86	124	29	290	529
Rubi.....	180	114	37	453	784
V.Americana[3].....	115	224	44	1,292	1,675
Seleta.....	-	-	-	-	-
Pineapple.....	21	-	-	50	71
Alvorada.....	46	39	-	-	85
Pera Rio	3,340	1,452	1,386	10,787	16,965
Valencia.....	1,717	548	973	15,447	18,685
V.Folha Murcha[4]	163	215	374	867	1,619
Natal.....	343	619	757	6,254	7,973
Subtotal.....	**7,441**	**3,652**	**3,835**	**42,894**	**57,822**
Percentage.....	**12.87**	**6.32**	**6.63**	**74.18**	**70.65**
ITG[5]					
Hamlin.....	334	546	347	1,004	2,231
Westin.....	53	45	45	167	310
Rubi.....	265	208	74	151	698
V.Americana[3].....	109	430	219	66	824
Seleta.....	-	-	-	1	1
Pineapple.....	148	369	151	299	967
Alvorada.....	126	42	101	-	269
Pera Rio	1,073	2,201	1,532	2,549	7,355
Valencia.....	603	561	636	3,757	5,557
V.Folha Murcha[4]	338	319	136	511	1,304
Natal.....	537	792	414	2,757	4,500
Subtotal.....	**3,586**	**5,513**	**3,655**	**11,262**	**24,016**
Percentage.....	**14.93**	**22.96**	**15.22**	**46.89**	**29.35**
Total.....	**11,027**	**9,165**	**7,490**	**54,156**	**81,838**

- 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 [2022 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.....	625.15	29.22	166.98	9.13	2.90	157.60	48.82	144.84	209.17	2,832.00	4,225.81
Westin.....	58.57	21.39	76.50	1.12	0.18	16.09	7.20	4.36	9.17	121.99	316.57
Rubi.....	88.87	20.07	71.83	1.67	0.28	24.00	13.01	7.91	16.57	220.43	464.64
V.Americana[2].....	64.66	4.68	142.71	1.42	2.57	27.02	0.98	8.29	30.59	496.18	779.10
Seleta.....	-	-	-	-	-	-	-	-	-	-	-
Pineapple.....	12.25	-	-	-	-	-	-	1.30	1.63	21.59	36.77
Alvorada.....	36.69	-	32.02	-	-	-	-	-	-	-	68.71
Pera Rio	1,785.03	5.91	902.59	49.91	38.66	883.67	103.24	122.95	167.88	4,854.90	8,914.74
Valencia.....	920.46	10.71	333.92	24.35	20.75	610.22	142.88	163.81	337.66	6,840.01	9,404.77
V.Folha Murcha[3]	99.54	5.64	157.43	12.21	10.00	234.06	18.02	11.04	19.95	406.78	974.67
Natal.....	197.58	5.74	423.49	11.02	12.53	480.16	83.43	61.70	116.32	2,621.52	4,013.49
Subtotal.....	**3,888.80**	**103.36**	**2,307.47**	**110.83**	**87.87**	**2,432.82**	**417.58**	**526.20**	**908.94**	**18,415.40**	**29,199.27**
Percentage.....	**13.32**	**0.35**	**7.90**	**0.38**	**0.30**	**8.33**	**1.43**	**1.80**	**3.11**	**63.07**	**66.29**
ITG[4]											
Hamlin.....	206.25	5.99	412.31	3.89	0.32	232.11	55.68	0.61	0.25	377.55	1,294.96
Westin.....	33.38	0.72	32.25	0.16	0.13	28.66	16.76	0.14	-	54.53	166.73
Rubi.....	166.62	3.01	134.20	0.24	0.20	41.27	15.29	0.12	-	49.79	410.74
V.Americana[2].....	61.16	2.54	334.13	3.54	3.34	136.81	3.12	3.22	1.74	25.66	575.26
Seleta.....	-	-	-	-	-	-	0.05	0.05	0.03	0.40	0.53
Pineapple.....	93.79	8.90	251.39	-	-	85.09	-	-	-	188.18	627.35
Alvorada.....	75.54	0.92	31.70	-	-	75.15	-	-	-	-	183.31
Pera Rio	671.14	46.10	1,559.17	16.54	11.32	954.11	46.35	22.73	19.94	1,411.31	4,758.71
Valencia.....	391.64	6.48	370.50	2.98	3.32	432.11	36.77	28.72	19.89	2,099.91	3,392.32
V.Folha Murcha[3]	221.05	3.72	201.77	1.78	1.78	75.27	10.20	7.74	3.29	262.06	788.66
Natal.....	362.54	1.90	568.34	0.62	4.18	249.45	7.92	26.02	5.53	1,422.40	2,648.90
Subtotal.....	**2,283.11**	**80.28**	**3,895.76**	**29.75**	**24.59**	**2,310.03**	**192.14**	**89.35**	**50.67**	**5,891.79**	**14,847.47**
Percentage.....	**15.38**	**0.54**	**26.24**	**0.20**	**0.17**	**15.56**	**1.29**	**0.60**	**0.34**	**39.68**	**33.71**
Total.....	**6,171.91**	**183.64**	**6,203.23**	**140.58**	**112.46**	**4,742.85**	**609.72**	**615.55**	**959.61**	**24,307.19**	**44,046.74**

- 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 [2022 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.....	15,070	4,199	13,912	7,491	11,667	52,339	61.27	13.52
Westin.....	248	91	384	2,785	839	4,347	5.09	1.12
Rubi.....	1,211	638	1,678	1,027	1,482	6,036	7.07	1.56
Valencia Americana.....	5,195	3,506	7,426	1,198	2,499	19,824	23.21	5.12
Seleta.....	3	-	31	58	1	93	0.11	0.02
Pineapple.....	247	214	745	18	1,038	2,262	2.65	0.58
Alvorada.....	-	104	27	37	354	522	0.61	0.13
Subtotal.....	**21,974**	**8,752**	**24,203**	**12,614**	**17,880**	**85,423**	**100.00**	**22.07**
Mid-season								
Pera Rio	27,437	19,541	38,822	27,743	24,320	137,863	100.00	35.62
Subtotal.....	**27,437**	**19,541**	**38,822**	**27,743**	**24,320**	**137,863**	**100.00**	**35.62**
Late								
Valencia.....	27,748	5,266	29,056	18,994	24,242	105,306	64.29	27.21
V.Folha Murcha[1].....	2,198	1,384	4,896	4,824	2,923	16,225	9.91	4.19
Natal.....	9,318	3,547	10,430	6,488	12,473	42,256	25.80	10.92
Subtotal.....	**39,264**	**10,197**	**44,382**	**30,306**	**39,638**	**163,787**	**100.00**	**42.31**
Total.....	**88,675**	**38,490**	**107,407**	**70,663**	**81,838**	**387,073**	**(X)**	**100.00**
Percentage.....	**22.91**	**9.94**	**27.75**	**18.26**	**21.14**	**100.00**	**(X)**	**(X)**

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

Table 63 – Oranges: Trees by sector and variety [2022 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.....	6,588.71	1,886.88	6,846.36	3,640.27	5,520.77	24,482.99	57.67	12.28
Westin.....	132.83	42.85	182.35	1,450.17	483.30	2,291.50	5.40	1.15
Rubi.....	703.84	308.17	1,001.24	637.07	875.38	3,525.70	8.30	1.77
Valencia Americana.....	2,651.34	1,831.20	3,968.03	588.03	1,354.36	10,392.96	24.48	5.21
Seleta.....	1.83	-	17.31	27.58	0.53	47.25	0.11	0.02
Pineapple.....	119.17	123.95	416.42	9.33	664.12	1,332.99	3.14	0.67
Alvorada.....	-	90.39	19.00	20.59	252.02	382.00	0.90	0.19
Subtotal.....	**10,197.72**	**4,283.44**	**12,450.71**	**6,373.04**	**9,150.48**	**42,455.39**	**100.00**	**21.30**
Mid-season								
Pera Rio	14,772.35	8,893.56	21,870.10	15,322.26	13,673.45	74,531.72	100.00	37.39
Subtotal.....	**14,772.35**	**8,893.56**	**21,870.10**	**15,322.26**	**13,673.45**	**74,531.72**	**100.00**	**37.39**
Late								
Valencia.....	12,882.63	2,531.14	14,933.69	8,703.77	12,797.09	51,848.32	62.98	26.01
V.Folha Murcha[1].....	1,171.44	695.14	2,840.21	2,555.02	1,763.33	9,025.14	10.96	4.53
Natal.....	4,248.53	1,648.77	5,372.00	3,518.58	6,662.39	21,450.27	26.06	10.76
Subtotal.....	**18,302.60**	**4,875.05**	**23,145.90**	**14,777.37**	**21,222.81**	**82,323.73**	**100.00**	**41.30**
Total.....	**43,272.67**	**18,052.05**	**57,466.71**	**36,472.67**	**44,046.74**	**199,310.84**	**(X)**	**100.00**
Percentage.....	**21.71**	**9.06**	**28.83**	**18.30**	**22.10**	**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 [2018 and 2022 inventories and accumulated variation]

Planting year[1]	2018 inventory[2]	2022 inventory[2]	Accumulated variation[3]	
	(hectares)	(hectares)	(hectares)	(percentage)
1979 and previous years	1,656	1,292	-364	-21.98
1980	130	68	-62	-47.69
1981	152	98	-54	-35.53
1982	162	39	-123	-75.93
1983	676	169	-507	-75.00
1984	237	24	-213	-89.87
1985	1,017	190	-827	-81.32
1986	1,485	417	-1,068	-71.92
1987	1,094	278	-816	-74.59
1988	922	133	-789	-85.57
1989	1,815	194	-1,621	-89.31
1990	2,891	722	-2,169	-75.03
1991	2,645	690	-1,955	-73.91
1992	2,562	725	-1,837	-71.70
1993	3,355	616	-2,739	-81.64
1994	2,292	964	-1,328	-57.94
1995	2,998	1,067	-1,931	-64.41
1996	3,093	1,614	-1,479	-47.82
1997	5,035	1,917	-3,118	-61.93
1998	5,616	2,227	-3,389	-60.35
1999	6,598	3,158	-3,440	-52.14
2000	10,208	5,498	-4,710	-46.14
2001	10,497	6,126	-4,371	-41.64
2002	15,331	7,579	-7,752	-50.56
2003	20,569	13,992	-6,577	-31.98
2004	22,598	17,905	-4,693	-20.77
2005	29,503	23,078	-6,425	-21.78
2006	26,748	23,062	-3,686	-13.78
2007	35,828	25,774	-10,054	-28.06
2008	35,004	30,632	-4,372	-12.49
2009	24,379	19,871	-4,508	-18.49
2010	20,562	18,407	-2,155	-10.48
2011	19,252	17,060	-2,192	-11.39
2012	24,041	19,901	-4,140	-17.22
2013	17,019	15,671	-1,348	-7.92
2014	8,703	10,629	1,926	22.13
2015	11,750	10,257	-1,493	-12.71
2016[4]	(X)	10,836	-110	-1.00
2017[4]	(X)	14,508	2,407	19.89
2018	NA	18,891	(X)	(X)
2019	NA	18,110	(X)	(X)
Mature groves	**378,423**	**344,389**	**-34,034**	**-8.99**
2016[4]	10,946	(X)	(X)	(X)
2017[4]	12,101	(X)	(X)	(X)
2018	NA	(X)	(X)	(X)
2019	NA	(X)	(X)	(X)
2020	NA	21,016	(X)	(X)
2021	NA	21,668	(X)	(X)
Young groves	**23,047**	**42,684**	**19,637**	**85.20**
Total	**401,470**	**387,073**	**-14,397**	**-3.59**

(X) Not applicable

NA Not available, considering the 2018, 2019, 2020 and 2021 plantings occurred after the mapping for the 2018 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 March 2018 to March 2022

[4] Groves planted in 2016 and 2017 belonged to the group of young groves in the 2018 inventory and moved to the group of mature groves in this 2022 inventory

Table 65 – Oranges: Trees by planting year [2018 and 2022 inventories and accumulated variation]

Planting year[1]	2018 inventory[2]	2022 inventory[2]	Accumulated variation[3]	
	(1,000 trees)	(1,000 trees)	(1,000 trees)	(percentage)
1979 and previous years.....	350.96	329.79	-21.17	-6.03
1980.....	36.71	17.01	-19.70	-53.66
1981.....	42.98	37.50	-5.48	-12.75
1982.....	57.12	13.19	-43.93	-76.91
1983.....	184.85	44.52	-140.33	-75.92
1984.....	59.21	12.15	-47.06	-79.48
1985.....	247.55	35.60	-211.95	-85.62
1986.....	411.97	113.28	-298.69	-72.50
1987.....	316.38	75.57	-240.81	-76.11
1988.....	268.93	43.49	-225.44	-83.83
1989.....	549.49	56.52	-492.97	-89.71
1990.....	910.80	219.88	-690.92	-75.86
1991.....	774.32	203.97	-570.35	-73.66
1992.....	779.40	245.87	-533.53	-68.45
1993.....	960.97	188.55	-772.42	-80.38
1994.....	706.80	285.94	-420.86	-59.54
1995.....	1,109.56	420.41	-689.15	-62.11
1996.....	1,060.47	559.86	-500.61	-47.21
1997.....	1,682.06	728.03	-954.03	-56.72
1998.....	1,924.41	821.04	-1,103.37	-57.34
1999.....	2,132.14	1,067.39	-1,064.75	-49.94
2000.....	3,298.30	1,905.92	-1,392.38	-42.22
2001.....	3,660.14	2,304.72	-1,355.42	-37.03
2002.....	5,363.03	2,767.24	-2,595.79	-48.40
2003.....	7,300.13	5,031.45	-2,268.68	-31.08
2004.....	8,179.32	6,565.79	-1,613.53	-19.73
2005.....	11,369.03	8,988.42	-2,380.61	-20.94
2006.....	10,631.59	8,990.88	-1,640.71	-15.43
2007.....	15,027.37	11,082.95	-3,944.42	-26.25
2008.....	17,075.24	13,730.34	-3,344.90	-19.59
2009.....	11,810.95	8,698.05	-3,112.90	-26.36
2010.....	10,600.37	8,373.92	-2,226.45	-21.00
2011.....	10,332.29	8,245.15	-2,087.14	-20.20
2012.....	12,961.26	10,683.82	-2,277.44	-17.57
2013.....	10,255.73	8,703.83	-1,551.90	-15.13
2014.....	5,448.35	6,085.87	637.52	11.70
2015.....	7,292.29	5,779.72	-1,512.57	-20.74
2016[4].....	(X)	6,248.58	-801.48	-11.37
2017[4].....	(X)	8,879.46	801.92	9.93
2018.....	NA	10,992.29	(X)	(X)
2019.....	NA	10,315.98	(X)	(X)
6 to 10 years old resets[4].....	4,955.29	5,951.61	996.32	20.11
3 to 5 years old resets[4].....	5,141.68	4,126.36	-1,015.32	-19.75
Bearing trees.....	**175,269.44**	**169,971.91**	**-5,297.53**	**-3.02**
0 a 2 years old resets[4].....	4,008.22	4,277.83	269.61	6.73
2016.....	7,050.06	(X)	(X)	(X)
2017.....	8,077.54	(X)	(X)	(X)
2018.....	NA	(X)	(X)	(X)
2019.....	NA	(X)	(X)	(X)
2020.....	NA	12,469.17	(X)	(X)
2021.....	NA	12,591.93	(X)	(X)
Non-bearing trees.....	**19,135.82**	**29,338.93**	**10,203.11**	**53.32**
Total.....	**194,405.26**	**199,310.84**	**4,905.58**	**2.52**

NA Not available, considering the 2018, 2019, 2020 and 2021 plantings occurred after the mapping for the 2018 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 2016 and 2017 belonged to the group of young groves in the 2018 inventory and moved to the group of mature groves in this 2022 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 [2022 inventory]

Planting year[1]	Sector					Total
	North	Northwest	Central	South	Southwest	
	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)
1979 and previous years.....	247	-	82	933	30	1,292
1980.....	-	19	-	49	-	68
1981.....	14	-	7	32	45	98
1982.....	3	-	-	36	-	39
1983.....	138	-	-	31	-	169
1984.....	-	-	-	-	24	24
1985.....	6	-	27	157	-	190
1986.....	6	-	-	373	38	417
1987.....	-	-	-	278	-	278
1988.....	27	-	27	53	26	133
1989.....	28	42	5	102	17	194
1990.....	88	27	238	228	141	722
1991.....	97	-	9	378	206	690
1992.....	249	-	-	216	260	725
1993.....	130	39	43	212	192	616
1994.....	94	11	98	83	678	964
1995.....	297	33	90	241	406	1,067
1996.....	268	-	366	447	533	1,614
1997.....	421	-	94	337	1,065	1,917
1998.....	639	6	400	513	669	2,227
1999.....	1,779	5	147	721	506	3,158
2000.....	2,347	71	978	1,433	669	5,498
2001.....	2,259	161	590	2,527	589	6,126
2002.....	1,594	220	1,510	1,898	2,357	7,579
2003.....	3,890	574	3,204	2,814	3,510	13,992
2004.....	4,899	929	4,371	3,046	4,660	17,905
2005.....	5,026	699	7,636	3,364	6,353	23,078
2006.....	5,755	1,468	6,105	3,087	6,647	23,062
2007.....	6,491	1,205	7,459	3,716	6,903	25,774
2008.....	5,731	4,181	8,441	3,743	8,536	30,632
2009.....	5,412	2,381	4,807	2,885	4,386	19,871
2010.....	4,752	2,664	4,338	4,274	2,379	18,407
2011.....	3,972	3,372	3,863	3,522	2,331	17,060
2012.....	6,429	2,838	5,482	2,980	2,172	19,901
2013.....	4,646	1,933	5,611	1,836	1,645	15,671
2014.....	2,155	1,247	4,260	1,864	1,103	10,629
2015.....	2,236	1,807	2,782	2,216	1,216	10,257
2016.....	2,180	1,595	3,000	2,707	1,354	10,836
2017.....	1,959	1,144	6,176	2,758	2,471	14,508
2018.....	3,109	2,635	7,005	3,384	2,758	18,891
2019.....	3,333	2,540	4,680	3,621	3,936	18,110
Mature groves.....	**82,706**	**33,846**	**93,931**	**63,095**	**70,811**	**344,389**
2020.....	2,668	2,350	6,363	3,550	6,085	21,016
2021.....	3,301	2,294	7,113	4,018	4,942	21,668
Young groves.....	**5,969**	**4,644**	**13,476**	**7,568**	**11,027**	**42,684**
Total.....	**88,675**	**38,490**	**107,407**	**70,663**	**81,838**	**387,073**
Percentage.....	**22.91**	**9.94**	**27.75**	**18.26**	**21.14**	**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 [2022 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.....	78.18	-	13.11	230.45	8.05	329.79
1980.....	-	4.06	-	12.95	-	17.01
1981.....	4.47	-	3.11	8.67	21.25	37.50
1982.....	1.55	-	-	11.64	-	13.19
1983.....	35.80	-	-	8.72	-	44.52
1984.....	-	-	-	-	12.15	12.15
1985.....	2.65	-	7.86	25.09	-	35.60
1986.....	1.47	-	-	92.81	19.00	113.28
1987.....	-	-	-	75.57	-	75.57
1988.....	8.87	-	7.49	15.40	11.73	43.49
1989.....	9.28	10.27	2.05	28.43	6.49	56.52
1990.....	30.48	7.61	68.81	66.52	46.46	219.88
1991.....	31.02	-	2.75	114.23	55.97	203.97
1992.....	79.36	-	-	76.83	89.68	245.87
1993.....	31.05	15.30	9.37	76.84	55.99	188.55
1994.....	25.90	3.12	24.62	31.82	200.48	285.94
1995.....	103.35	10.76	27.01	90.30	188.99	420.41
1996.....	81.04	-	109.19	161.46	208.17	559.86
1997.....	159.59	-	37.61	117.26	413.57	728.03
1998.....	218.19	2.12	158.32	190.52	251.89	821.04
1999.....	568.33	1.43	52.72	234.09	210.82	1,067.39
2000.....	757.13	25.21	329.02	506.55	288.01	1,905.92
2001.....	799.27	72.94	212.20	907.41	312.90	2,304.72
2002.....	540.81	79.11	534.88	689.00	923.44	2,767.24
2003.....	1,464.94	172.46	1,018.41	1,039.59	1,336.05	5,031.45
2004.....	1,727.28	274.57	1,602.67	1,135.55	1,825.72	6,565.79
2005.....	1,796.55	261.59	2,831.58	1,285.56	2,813.14	8,988.42
2006.....	2,160.65	549.27	2,332.46	1,137.35	2,811.15	8,990.88
2007.....	2,787.10	473.43	3,078.91	1,444.99	3,298.52	11,082.95
2008.....	2,529.50	1,974.49	3,595.05	1,475.33	4,155.97	13,730.34
2009.....	2,383.02	951.62	1,960.15	1,209.48	2,193.78	8,698.05
2010.....	2,222.84	1,121.87	1,840.43	1,898.11	1,290.67	8,373.92
2011.....	1,949.37	1,440.67	1,993.07	1,604.89	1,257.15	8,245.15
2012.....	3,517.55	1,274.11	2,931.05	1,649.84	1,311.27	10,683.82
2013.....	2,682.37	900.20	3,083.93	1,016.23	1,021.10	8,703.83
2014.....	1,231.51	599.55	2,527.48	1,038.50	688.83	6,085.87
2015.....	1,210.77	986.57	1,605.82	1,215.69	760.87	5,779.72
2016.....	1,144.50	882.98	1,802.21	1,458.11	960.78	6,248.58
2017.....	1,009.01	572.80	4,028.59	1,527.80	1,741.26	8,879.46
2018.....	1,586.09	1,412.14	4,243.16	1,977.86	1,773.04	10,992.29
2019.....	1,677.95	1,211.10	2,617.87	2,120.13	2,688.93	10,315.98
6 to10 years old resets[2].....	1,665.11	215.29	1,728.38	1,383.22	959.61	5,951.61
3 to 5 years old resets[2].....	868.69	214.63	1,317.94	997.09	728.01	4,126.36
Bearing trees.....	**39,182.59**	**15,721.27**	**47,739.28**	**30,387.88**	**36,940.89**	**169,971.91**
0 to 2 years old resets[2].....	763.73	186.19	1,040.67	1,353.30	933.94	4,277.83
2020.....	1,501.60	1,141.72	4,079.67	2,207.48	3,538.70	12,469.17
2021.....	1,824.75	1,002.87	4,607.09	2,524.01	2,633.21	12,591.93
Non-bearing trees.....	**4,090.08**	**2,330.78**	**9,727.43**	**6,084.79**	**7,105.85**	**29,338.93**
Total.....	**43,272.67**	**18,052.05**	**57,466.71**	**36,472.67**	**44,046.74**	**199,310.84**
Percentage.....	**21.71**	**9.06**	**28.83**	**18.30**	**22.10**	**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 [2022 inventory]

Planting year[1]	Early varieties							Total
	Hamlin	Westin	Rubi	Valencia Americana	Seleta	Pineapple	Alvorada	
	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)
1979 and previous	296	-	-	-	-	-	-	296
1980.....	-	-	-	-	-	-	-	-
1981.....	2	-	-	-	-	-	-	2
1982.....	-	-	-	-	-	-	-	-
1983.....	-	-	-	-	-	-	-	-
1984.....	-	-	-	-	-	-	-	-
1985.....	98	-	-	-	-	-	-	98
1986.....	72	-	-	75	-	-	-	147
1987.....	99	-	-	27	-	-	-	126
1988.....	20	-	-	3	-	-	-	23
1989.....	7	-	-	-	-	-	-	7
1990.....	9	14	-	2	-	-	-	25
1991.....	182	-	-	-	-	-	-	182
1992.....	315	-	-	-	-	11	-	326
1993.....	255	-	-	11	-	-	-	266
1994.....	544	-	-	-	-	-	-	544
1995.....	97	10	-	-	-	-	-	107
1996.....	265	-	-	5	-	2	-	272
1997.....	168	-	-	4	-	-	-	172
1998.....	303	20	21	134	-	-	-	478
1999.....	750	6	6	197	-	-	-	959
2000.....	958	49	6	12	1	-	-	1,026
2001.....	610	39	38	35	7	26	-	755
2002.....	1,573	64	42	655	-	-	-	2,334
2003.....	2,901	110	26	562	-	-	-	3,599
2004.....	2,544	170	61	548	-	20	-	3,343
2005.....	4,339	249	95	578	-	9	-	5,270
2006.....	4,858	273	215	730	7	95	-	6,178
2007.....	4,988	283	137	1,337	4	34	-	6,783
2008.....	5,593	389	505	1,425	8	27	-	7,947
2009.....	2,914	330	293	1,273	12	53	-	4,875
2010.....	1,816	307	407	535	31	77	-	3,173
2011.....	1,420	282	681	1,100	-	283	-	3,766
2012.....	2,155	230	590	822	-	457	-	4,254
2013.....	810	111	205	640	1	225	-	1,992
2014.....	228	47	142	140	2	176	-	735
2015.....	554	58	146	277	-	7	70	1,112
2016.....	512	105	266	235	-	19	42	1,179
2017.....	1,950	162	393	1,035	12	168	36	3,756
2018.....	1,791	164	262	1,733	-	253	116	4,319
2019.....	1,869	383	567	1,448	-	115	50	4,432
Mature groves....	**47,865**	**3,855**	**5,104**	**15,578**	**85**	**2,057**	**314**	**74,858**
2020.....	2,359	312	459	1,705	-	154	115	5,104
2021.....	2,115	180	473	2,541	8	51	93	5,461
Young groves.....	**4,474**	**492**	**932**	**4,246**	**8**	**205**	**208**	**10,565**
Total.....	**52,339**	**4,347**	**6,036**	**19,824**	**93**	**2,262**	**522**	**85,423**
Percentage.....	**61.27**	**5.09**	**7.07**	**23.21**	**0.11**	**2.65**	**0.61**	**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 [2022 inventory]

Planting year[1]		Early varieties						Total
	Hamlin	Westin	Rubi	Valencia Americana	Seleta	Pineapple	Alvorada	
	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)	(1,000 trees)
1979 and previous years…	67.03	-	-	-	-	-	-	67.03
1980.....	-	-	-	-	-	-	-	-
1981.....	0.92	-	-	-	-	-	-	0.92
1982.....	-	-	-	-	-	-	-	-
1983.....	-	-	-	-	-	-	-	-
1984.....	-	-	-	-	-	-	-	-
1985.....	11.36	-	-	-	-	-	-	11.36
1986.....	8.10	-	-	20.07	-	-	-	28.17
1987.....	27.03	-	-	5.58	-	-	-	32.61
1988.....	7.31	-	-	1.20	-	-	-	8.51
1989.....	2.49	-	-	-	-	-	-	2.49
1990.....	2.12	3.72	-	0.48	-	-	-	6.32
1991.....	43.30	-	-	-	-	-	-	43.30
1992.....	97.40	-	-	-	-	3.15	-	100.55
1993.....	60.06	-	-	4.04	-	-	-	64.10
1994.....	119.80	-	-	-	-	-	-	119.80
1995.....	35.20	4.02	-	-	-	-	-	39.22
1996.....	81.26	-	-	1.60	-	0.05	-	82.91
1997.....	49.18	-	-	1.69	-	-	-	50.87
1998.....	93.92	6.79	5.81	31.02	-	-	-	137.54
1999.....	213.08	1.80	2.71	58.12	-	-	-	275.71
2000.....	287.57	12.96	2.19	2.91	0.40	-	-	306.03
2001.....	210.38	13.96	15.64	14.04	2.27	8.34	-	264.63
2002.....	565.57	17.56	15.82	211.10	-	-	-	810.05
2003.....	1,020.63	40.74	9.12	158.70	-	-	-	1,229.19
2004.....	896.16	60.49	21.05	153.65	-	8.00	-	1,139.35
2005.....	1,554.38	79.66	32.63	200.02	-	4.73	-	1,871.42
2006.....	1,734.31	99.80	101.77	265.41	1.69	37.63	-	2,240.61
2007.....	2,029.84	106.81	58.85	508.02	1.88	10.91	-	2,716.31
2008.....	2,272.65	150.23	234.55	551.02	3.19	13.12	-	3,224.76
2009.....	1,180.95	126.14	124.49	481.38	5.06	17.67	-	1,935.69
2010.....	753.85	132.06	175.50	200.13	15.33	43.16	-	1,320.03
2011.....	596.42	120.06	319.70	485.58	-	168.54	-	1,690.30
2012.....	1,179.24	125.21	329.56	387.22	-	241.96	-	2,263.19
2013.....	465.61	56.06	124.04	293.67	0.68	115.75	-	1,055.81
2014.....	114.13	28.39	85.89	67.55	0.89	91.32	-	388.17
2015.....	329.03	34.27	78.97	147.58	-	3.92	51.10	644.87
2016.....	297.62	63.28	161.78	126.99	-	12.54	32.30	694.51
2017.....	1,261.41	93.27	251.88	709.18	6.66	137.19	24.16	2,483.75
2018.....	949.60	92.70	148.19	1,139.34	-	157.81	98.86	2,586.50
2019.....	1,032.21	230.26	335.19	874.98	-	83.36	41.12	2,597.12
6 to10 years old resets[2].....	1,218.63	80.54	78.77	268.3	1.91	13.05	-	1,661.20
3 to 5 years old resets[2].....	639.92	59.05	86.98	199.21	1.15	13.44	0.08	999.83
Bearing trees.....	**21,509.67**	**1,839.83**	**2,801.08**	**7,569.78**	**41.11**	**1185.64**	**247.62**	**35,194.73**
0 to 2 years old resets[2].....	559.93	131.61	148.42	211.05	1.38	21.09	1.52	1,075.00
2020.....	1233.29	202.31	301.49	1055.47	-	96.78	83.24	2972.58
2021.....	1,180.10	117.75	274.71	1556.66	4.76	29.48	49.62	3,213.08
Non-bearing trees.....	**2,973.32**	**451.67**	**724.62**	**2,823.18**	**6.14**	**147.35**	**134.38**	**7,260.66**
Total.....	**24,482.99**	**2,291.50**	**3,525.70**	**10,392.96**	**47.25**	**1,332.99**	**382.00**	**42,455.39**
Percentage.....	**57.67**	**5.40**	**8.30**	**24.48**	**0.11**	**3.14**	**0.90**	**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 [2022 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...	254	595	11	136	996
1980.....	-	68	-	-	68
1981.....	8	8	24	56	96
1982.....	-	39	-	-	39
1983.....	5	76	-	88	169
1984.....	19	-	-	5	24
1985.....	16	34	-	42	92
1986.....	77	136	-	57	270
1987.....	-	132	-	20	152
1988.....	48	20	-	42	110
1989.....	58	64	12	53	187
1990.....	275	247	35	140	697
1991.....	89	411	6	2	508
1992.....	117	176	28	78	399
1993.....	164	86	29	71	350
1994.....	150	108	139	23	420
1995.....	310	545	37	68	960
1996.....	411	574	144	213	1,342
1997.....	525	1,094	83	43	1,745
1998.....	402	1,038	244	65	1,749
1999.....	540	1,335	193	131	2,199
2000.....	1,078	2,496	254	644	4,472
2001.....	748	3,112	675	836	5,371
2002.....	887	2,814	137	1,407	5,245
2003.....	2,925	5,586	164	1,718	10,393
2004.....	4,319	6,554	447	3,242	14,562
2005.....	5,481	8,193	509	3,625	17,808
2006.....	5,203	7,374	720	3,587	16,884
2007.....	7,343	8,021	851	2,776	18,991
2008.....	9,683	7,811	1,568	3,623	22,685
2009.....	8,365	4,496	790	1,345	14,996
2010.....	8,436	4,876	762	1,160	15,234
2011.....	6,788	4,891	573	1,042	13,294
2012.....	7,764	5,850	651	1,382	15,647
2013.....	7,395	3,744	624	1,916	13,679
2014.....	5,513	2,705	475	1,201	9,894
2015.....	4,730	2,029	741	1,645	9,145
2016.....	5,951	1,982	433	1,291	9,657
2017.....	6,008	2,305	588	1,851	10,752
2018.....	8,571	3,307	1,138	1,556	14,572
2019.....	8,115	2,826	921	1,816	13,678
Mature groves.....	**118,771**	**97,758**	**14,006**	**38,996**	**269,531**
2020.....	9,605	3,536	1,065	1,706	15,912
2021.....	9,487	4,012	1,154	1,554	16,207
Young groves.....	**19,092**	**7,548**	**2,219**	**3,260**	**32,119**
Total.....	**137,863**	**105,306**	**16,225**	**42,256**	**301,650**
Percentage.....	**45.70**	**34.91**	**5.38**	**14.01**	**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 [2022 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...	86.01	138.07	4.83	33.85	262.76
1980.....	-	17.01	-	-	17.01
1981.....	3.58	1.62	7.05	24.33	36.58
1982.....	-	13.19	-	-	13.19
1983.....	2.14	24.31	-	18.07	44.52
1984.....	9.91	-	-	2.24	12.15
1985.....	6.10	9.63	-	8.51	24.24
1986.....	26.11	38.79	-	20.21	85.11
1987.....	-	36.92	-	6.04	42.96
1988.....	17.40	4.49	-	13.09	34.98
1989.....	20.23	16.79	3.07	13.94	54.03
1990.....	83.94	68.38	14.96	46.28	213.56
1991.....	32.09	126.18	1.62	0.78	160.67
1992.....	45.78	66.25	9.77	23.52	145.32
1993.....	55.44	27.61	11.28	30.12	124.45
1994.....	64.19	37.82	57.13	7.00	166.14
1995.....	146.80	197.19	14.41	22.79	381.19
1996.....	170.23	183.27	54.90	68.55	476.95
1997.....	226.19	408.49	25.74	16.74	677.16
1998.....	162.22	388.00	112.16	21.12	683.50
1999.....	213.13	456.93	70.07	51.55	791.68
2000.....	437.56	841.32	87.38	233.63	1,599.89
2001.....	298.21	1,184.95	247.28	309.65	2,040.09
2002.....	319.90	1,063.79	46.21	527.29	1,957.19
2003.....	1,131.70	1,995.21	56.19	619.16	3,802.26
2004.....	1,762.52	2,373.38	164.32	1,126.22	5,426.44
2005.....	2,338.20	3,165.73	192.25	1,420.82	7,117.00
2006.....	2,149.41	2,937.37	314.84	1,348.65	6,750.27
2007.....	3,242.99	3,489.34	390.75	1,243.56	8,366.64
2008.....	4,513.83	3,595.23	774.24	1,622.28	10,505.58
2009.....	3,728.96	2,050.01	380.28	603.11	6,762.36
2010.....	4,038.58	2,159.14	334.91	521.26	7,053.89
2011.....	3,339.51	2,405.45	293.35	516.54	6,554.85
2012.....	4,299.76	3,047.14	362.20	711.53	8,420.63
2013.....	4,174.40	2,099.30	358.78	1,015.54	7,648.02
2014.....	3,171.96	1,540.36	272.83	712.55	5,697.70
2015.....	2,693.05	1,078.14	403.90	959.76	5,134.85
2016.....	3,345.85	1,226.84	255.73	725.65	5554.07
2017.....	3,471.57	1,402.26	322.68	1,199.20	6395.71
2018.....	4,759.66	1,956.70	676.67	1,012.76	8405.79
2019.....	4,439.06	1,581.15	534.56	1,164.09	7718.86
6 to10 years old resets[2].....	1,558.67	1,970.56	229.89	531.29	4,290.41
3 to 5 years old resets[2].....	1,450.33	1,023.33	206.97	445.9	3,126.53
Bearing trees.....	**62,037.17**	**46,447.64**	**7,293.20**	**18,999.17**	**134,777.18**
0 to 2 years old resets[2].....	1,861.43	744.17	235.04	362.19	3,202.83
2020.....	5,453.90	2,223.98	714.84	1103.87	9,496.59
2021.....	5,179.22	2,432.53	782.06	985.04	9,378.85
Non-bearing trees.....	**12,494.55**	**5,400.68**	**1731.94**	**2,451.10**	**22,078.27**
Total.....	**74,531.72**	**51,848.32**	**9,025.14**	**21,450.27**	**156,855.45**
Percentage.....	**47.52**	**33.05**	**5.75**	**13.68**	**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 [2018 and 2022 inventories]

Sector and region	2018 inventory		2022 inventory	
	Young groves[2]	Mature groves[3]	Young groves[2]	Mature groves[3]
	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)
North				
Triângulo Mineiro	545	472	583	474
Bebedouro	573	464	548	487
Altinópolis	689	489	536	489
Average	**579**	**470**	**557**	**483**
Northwest				
Votuporanga	431	446	424	455
São José do Rio Preto	620	475	514	481
Average	**545**	**461**	**462**	**470**
Central				
Matão	803	464	651	525
Duartina	652	479	640	526
Brotas	638	459	653	469
Average	**705**	**470**	**644**	**519**
South				
Porto Ferreira	654	468	629	513
Limeira	586	459	620	492
Average	**623**	**464**	**625**	**503**
Southwest				
Avaré	670	497	523	502
Itapetininga	802	518	637	615
Average	**764**	**502**	**560**	**535**
Average…	**656**	**474**	**587**	**506**

1 Weighted average density per stratum area
2 Groves planted in 2020 and 2021
3 Calculation considers total trees in the plot, that is, bearing and non-bearing trees (resets in 2020 and 2021)

Table 73 – Oranges: Density[1] of young and mature groves by variety [2018 and 2022 inventories]

Variety	2018 inventory		2022 inventory	
	Young groves[2]	Mature groves[3]	Young groves[2]	Mature groves[3]
	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)	(trees/ hectare)
Early				
Hamlin.....	715	443	539	461
Westin.....	502	437	645	511
Rubi.....	659	524	619	577
Valencia Americana.....	735	440	614	499
Seleta.....	(NA)	502	606	503
Pineapple.....	903	560	612	584
Alvorada.....	(NA)	(NA)	639	788
Average.....	**695**	**452**	**585**	**484**
Mid-season				
Pera Rio.....	634	503	557	538
Average.....	**634**	**503**	**557**	**538**
Late				
Valencia.....	683	457	617	483
Valencia Folha Murcha.....	623	519	675	537
Natal.....	658	455	641	496
Average.....	**668**	**462**	**633**	**491**
Average….....	**656**	**474**	**587**	**506**

NA Not available
1 Weighted average density per stratum area
2 Groves planted in 2020 and 2021
3 Calculation considers total trees in the plot, that is, bearing and non-bearing trees (resets in 2020 and 2021)

Table 74 – Oranges: Density[1] of young groves by variety and region [2022 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……..……..	609	472	505	482	618	583	629	668	643	585	437	618	539
Westin……..……..	NA	763	NA	437	632	NA	728	639	652	609	673	627	645
Rubi……..……..	482	536	NA	NA	628	NA	709	631	703	612	496	630	619
Valencia Americana….....	659	598	818	510	444	646	700	614	674	577	556	557	614
Seleta……..……	NA	NA	NA	NA	NA	NA	NA	NA	606	NA	NA	NA	606
Pineapple……..……..	473	588	NA	529	NA	NA	NA	NA	NA	NA	564	634	612
Alvorada.....	NA	NA	NA	NA	781	NA	NA	NA	609	489	802	600	639
Average……...	**632**	**557**	**519**	**500**	**502**	**626**	**672**	**639**	**662**	**586**	**472**	**615**	**585**
Mid-season													
Pera Rio……..……	576	564	526	413	507	608	581	599	610	604	534	626	557
Average……..	**576**	**564**	**526**	**413**	**507**	**608**	**581**	**599**	**610**	**604**	**534**	**626**	**557**
Late													
Valencia……..……	489	499	587	481	522	756	671	709	636	600	536	649	617
VFolha Murcha[14]…...…..	489	528	547	505	NA	856	674	711	584	785	614	655	675
Natal……..……	582	541	637	446	743	697	616	547	657	664	578	674	641
Average……..……...	**525**	**507**	**573**	**451**	**610**	**728**	**669**	**686**	**638**	**682**	**548**	**659**	**633**
Average…..……..……	**583**	**548**	**536**	**424**	**514**	**651**	**640**	**653**	**629**	**620**	**523**	**637**	**587**

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 [2022 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……..	414	435	497	526	429	501	467	463	485	465	450	574	461
Westin……..	518	513	611	490	420	369	537	341	519	495	582	513	511
Rubi……..	558	580	627	540	450	525	592	547	627	541	621	564	577
Valencia Americana…..	473	479	474	437	545	467	516	376	481	432	459	721	499
Seleta……	NA	708	NA	NA	NA	NA	565	NA	471	436	NA	518	503
Pineapple……..	469	465	NA	522	578	554	591	555	554	388	486	651	584
Alvorada.....	NA	NA	NA	NA	874	NA	727	NA	NA	624	816	745	788
Average……....	**424**	**457**	**509**	**504**	**485**	**494**	**498**	**451**	**506**	**473**	**468**	**614**	**484**
Mid-season													
Pera Rio……	529	552	494	450	475	567	561	529	548	538	523	651	538
Average…….…..	**529**	**552**	**494**	**450**	**475**	**567**	**561**	**529**	**548**	**538**	**523**	**651**	**538**
Late													
Valencia……	464	460	471	494	476	493	508	439	460	435	500	606	483
VFolha Murcha[14]……..	591	507	573	504	502	515	568	471	526	498	600	590	537
Natal…….	436	465	458	384	480	560	480	442	538	511	500	577	496
Average……...	**459**	**464**	**477**	**460**	**481**	**508**	**507**	**443**	**487**	**460**	**506**	**593**	**491**
Average…..……	**474**	**487**	**489**	**455**	**481**	**525**	**526**	**469**	**513**	**492**	**502**	**615**	**506**

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 2020 and 2021)

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 [2022 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……..	592	515	589	516	552	665	596	702	617	528	500	701	585
Westin……..	518	583	737	472	589	567	634	566	680	587	722	660	645
Rubi……..	621	631	609	530	519	624	640	584	694	602	626	634	630
Valencia Americana…..	623	570	589	460	602	656	604	553	709	577	634	714	615
Seleta……	NA	708	NA	NA	NA	NA	NA	NA	617	486	NA	NA	585
Pineapple……..	471	552	NA	529	756	554	607	555	598	NA	564	657	609
Alvorada……..	NA	NA	NA	NA	867	NA	727	NA	609	529	808	678	729
Average…….	**605**	**551**	**604**	**498**	**593**	**648**	**608**	**627**	**655**	**555**	**557**	**682**	**607**
Mid-season													
Pera Rio……	551	580	546	436	512	646	622	598	627	612	593	678	588
Average……....	**551**	**580**	**546**	**436**	**512**	**646**	**622**	**598**	**627**	**612**	**593**	**678**	**588**
Late													
Valencia……	542	544	520	362	515	609	638	638	623	575	593	671	594
VFolha Murcha[14]……..	554	554	586	426	490	731	638	578	637	674	689	639	632
Natal…….	533	606	636	448	606	704	557	557	682	633	659	681	630
Average……...	**541**	**559**	**584**	**423**	**546**	**647**	**623**	**609**	**647**	**619**	**625**	**669**	**609**
Average…..……	**554**	**566**	**569**	**439**	**550**	**646**	**620**	**606**	**639**	**605**	**598**	**676**	**599**

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 2020 and 2021)

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 [2022 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……..	388	416	492	526	382	418	428	400	434	452	434	433	423
Westin……..	NA	498	572	482	400	324	453	318	437	449	493	424	446
Rubi……..	443	537	657	567	435	469	544	NA	518	461	569	429	519
Valencia Americana…..	385	451	450	473	419	360	477	325	350	416	415	518	419
Seleta……	NA	NA	NA	NA	NA	NA	565	NA	433	412	NA	518	488
Pineapple……..	NA	438	NA	522	428	NA	438	NA	517	388	486	629	530
Alvorada.....	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Average……...	**389**	**432**	**496**	**510**	**398**	**400**	**448**	**381**	**431**	**449**	**440**	**469**	**430**
Mid-season													
Pera Rio……	507	515	483	456	433	447	504	427	479	483	486	589	487
Average…….	**507**	**515**	**483**	**456**	**433**	**447**	**504**	**427**	**479**	**483**	**486**	**589**	**487**
Late													
Valencia……	425	426	470	528	436	414	438	413	421	404	484	581	448
VFolha Murcha[14]……..	601	481	558	522	509	507	517	444	445	405	525	556	486
Natal…….	421	397	375	326	342	372	445	394	395	445	461	530	434
Average……...	**428**	**423**	**464**	**478**	**419**	**413**	**447**	**413**	**420**	**410**	**480**	**560**	**447**
Average…..……	**433**	**443**	**476**	**463**	**414**	**418**	**468**	**408**	**441**	**442**	**472**	**553**	**455**

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 2020 and 2021)

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 [2022 inventory]

Planting year[2]	Density
	(trees/hectare)
1979 and previous years	343
1980	287
1981	439
1982	411
1983	335
1984	541
1985	327
1986	360
1987	363
1988	372
1989	321
1990	341
1991	356
1992	381
1993	369
1994	374
1995	440
1996	388
1997	411
1998	417
1999	386
2000	385
2001	414
2002	403
2003	396
2004	410
2005	433
2006	435
2007	480
2008	497
2009	486
2010	502
2011	530
2012	568
2013	591
2014	614
2015	607
2016	617
2017	640
2018	613
2019	597
Mature groves	**506**
2020	593
2021	581
Young groves	**587**
Average	**515**

[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 2020 and 2021)

[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 [2018 and 2022 inventories]

Sector and region	2018 inventory		2022 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	21,353	5,128	23,959	3,533
Bebedouro	34,314	16,967	36,751	12,997
Altinópolis	974	10,320	582	10,854
Subtotal	**56,641**	**32,415**	**61,292**	**27,384**
Northwest				
Votuporanga	6,781	13,034	12,337	5,014
São José do Rio Preto	10,150	12,990	11,451	9,685
Subtotal	**16,931**	**26,024**	**23,788**	**14,699**
Central				
Matão	18,132	22,824	20,097	13,585
Duartina	9,304	45,263	10,321	51,325
Brotas	1,296	17,557	2,760	9,329
Subtotal	**28,732**	**85,644**	**33,178**	**74,239**
South				
Porto Ferreira	8,060	32,480	9,646	27,736
Limeira	5,445	35,273	7,396	25,882
Subtotal	**13,505**	**67,753**	**17,042**	**53,618**
Southwest				
Avaré	4,941	49,446	4,891	52,932
Itapetininga	238	19,200	392	23,618
Subtotal	**5,179**	**68,646**	**5,283**	**76,550**
Total	**120,988**	**280,482**	**140,583**	**246,490**
Percentage	**30.14**	**69.86**	**36.32**	**63.68**

Table 80 – Oranges: Area of irrigated and non-irrigated groves and of groves with no information on irrigation, by variety [2018 and 2022 inventories]

Variety	2018 inventory		2022 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	15,635	34,433	18,651	29,478
Westin	1,693	4,746	1,455	4,473
Rubi	2,267	5,398	2,841	5,828
Valencia Americana	5,745	11,562	6,613	13,208
Seleta	33	138	0	93
Pineapple	842	1,086	963	1,302
Alvorada	-	-	130	391
Subtotal	**26,215**	**57,363**	**30,653**	**54,773**
Mid-season				
Pera Rio	41,570	94,625	50,855	87,005
Subtotal	**41,570**	**94,625**	**50,855**	**87,005**
Late				
Valencia	33,872	84,745	38,135	66,007
Valencia Folha Murcha	4,143	12,454	4,731	12,654
Natal	15,188	31,295	16,209	26,051
Subtotal	**53,203**	**128,494**	**59,075**	**104,712**
Total	**120,988**	**280,482**	**140,583**	**246,490**

Table 81– Oranges: Area of irrigated and non-irrigated groves and of groves with no information on irrigation, by age groups [2018 and 2022 inventories]

Grove age	2018 inventory		2022 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	4,854	18,193	6,804	35,880
3 – 5 years	16,362	21,110	17,178	34,331
6 – 10 years	34,704	88,534	34,337	32,962
Over 10 years	65,068	152,645	82,264	143,317
Total	**120,988**	**280,482**	**140,583**	**246,490**

Table 82 – Oranges: Area of irrigated groves by irrigation method [2018 and 2022 inventories]

Irrigation method	2018 inventory		2022 inventory	
	Irrigated area	Percentage	Irrigated area	Percentage
	(hectares)	(%)	(hectares)	(%)
Sprinkling	13,068	10.80	8,546	6.08
Localized	107,920	89.20	132,037	93.92
Total	**120,988**	**100.00**	**140,583**	**100.00**

Table 83 – Oranges: Average age[1] of mature groves by sector and region [2015 to 2022 inventories]

Sector and region	2015 inventory[2] (years)	2016 inventory[3] (years)	2017 inventory[4] (years)	2018 inventory[5] (years)	2019 inventory[6] (years)	2020 inventory[7] (years)	2021 inventory[8] (years)	2022 inventory[9] (years)
North								
Triângulo Mineiro.....	11.1	7.8	8.6	9.3	10.0	10.5	11.1	11.5
Bebedouro.....	9.2	9.5	10.1	10.6	10.9	11.2	11.5	11.7
Altinópolis.....	9.5	10.3	11.0	11.6	12.0	12.8	12.9	14.3
Average.....	**9.6**	**9.1**	**9.8**	**10.3**	**10.8**	**11.2**	**11.5**	**12.0**
Northwest								
Votuporanga.....	7.9	8.3	8.9	9.5	10.1	9.5	9.1	9.0
São José do Rio Preto	8.0	8.0	7.9	8.5	8.3	8.7	9.2	9.1
Average.....	**7.9**	**8.2**	**8.3**	**8.9**	**9.0**	**9.0**	**9.1**	**9.1**
Central								
Matão.....	9.3	8.9	9.4	9.0	9.2	9.8	10.0	8.9
Duartina.....	9.6	9.3	9.8	9.5	10.1	10.3	10.2	9.5
Brotas.....	7.6	10.9	11.5	12.7	13.3	13.8	13.1	11.0
Average.....	**9.0**	**9.4**	**9.9**	**9.8**	**10.3**	**10.6**	**10.5**	**9.5**
South								
Porto Ferreira.....	10.2	9.9	10.6	11.4	11.6	11.8	11.5	10.8
Limeira.....	10.6	11.7	12.5	12.1	12.7	12.9	13.1	11.7
Average.....	**10.3**	**10.8**	**11.6**	**11.8**	**12.1**	**12.3**	**12.3**	**11.2**
Southwest								
Avaré.....	11.7	10.7	11.6	12.2	12.9	13.1	12.7	12.7
Itapetininga.....	11.2	10.6	10.5	9.5	9.3	9.0	8.6	9.1
Average.....	**11.5**	**10.7**	**11.3**	**11.4**	**11.8**	**11.8**	**11.4**	**11.5**
Average.....	**9.8**	**9.8**	**10.3**	**10.5**	**10.9**	**11.2**	**11.1**	**10.8**

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
6 Groves planted in 2016 and previous years
7 Groves planted in 2017 and previous years
8 Groves planted in 2018 and previous years
9 Groves planted in 2019 and previous years

Table 84 – Oranges: Area of eradicated groves, eradication and renovation rates by sector and region [2019 to 2022 inventories]

Sector and region	2019 inventory		2020 inventory		2021 inventory		2022 inventory					
	Estimated eradication from Abril 2018 to March 2019		Estimated eradication from Abril 2019 to March 2020		Estimated eradication from April 2020 to March 2021		Estimated eradication from April 2021 to March 2022		Estimated eradication from April 2018 to March 2022		Accumulated renovation from April 2018 to March 2022	Net loss due to accumulated eradication from April 2018 to March 2022
	Area	Rate	Area	Rate	Area	Rate	Area	Rate	Area	Rate	Area	Area
	(hectares)	(%)	(hectares)	(%)	(hectares)	(%)	(hectares)	(%)	(hectares)	(%)	(hectares)	(hectares)
North												
Triângulo Mineiro	239	0.90	554	2.06	599	2.20	528	1.91	1,920	7.25	1,270	650
Bebedouro.....	1,017	1.98	1,941	3.71	2,920	5.53	3,512	6.71	9,390	18.31	4,917	4,473
Altinópolis.....	303	2.68	118	1.06	105	0.93	1	0.01	527	4.67	208	319
Subtotal.....	**1,559**	**1.75**	**2,613**	**2.89**	**3,624**	**3.97**	**4,041**	**4.40**	**11,837**	**13.29**	**6,395**	**5,442**
Northwest												
Votuporanga.....	1,637	8.26	1,490	8.05	3,545	20.87	1,513	10.22	8,185	41.31	2,382	5,803
S. J. Rio Preto.....	1,448	6.26	4	0.02	779	3.20	3,443	14.05	5,674	24.52	2,660	3,014
Subtotal	**3,085**	**7.18**	**1,494**	**3.55**	**4,324**	**10.46**	**4,956**	**12.61**	**13,859**	**32.26**	**5,042**	**8,817**
Central												
Matão.....	3,409	8.32	1,823	4.74	2,739	7.30	5,371	14.72	13,342	32.58	4,984	8,358
Duartina.....	2,494	4.57	2,651	4.94	1,840	3.40	2,923	5.27	9,908	18.16	4,111	5,797
Brotas.....	233	1.24	6	0.03	2,918	15.78	2,856	17.30	6,013	31.89	1,259	4,754
Subtotal.....	**6,136**	**5.36**	**4,480**	**4.03**	**7,497**	**6.80**	**11,150**	**10.28**	**29,263**	**25.58**	**10,354**	**18,909**
South												
Porto Ferreira.....	2,316	5.71	650	1.64	5,797	14.17	1,283	3.47	10,046	24.78	4,447	5,599
Limeira.....	3,114	7.65	2,415	6.31	3,026	8.18	6,266	17.70	14,821	36.40	4,245	10,576
Subtotal.....	**5,430**	**6.68**	**3,065**	**3.93**	**8,823**	**11.33**	**7,549**	**10.43**	**24,867**	**30.60**	**8,692**	**16,175**
Southwest												
Avaré.....	587	1.08	2,299	4.20	2,469	4.53	1,486	2.72	6,841	12.58	3,935	2,906
Itapetininga.....	1,388	7.14	711	3.67	2,001	9.77	421	2.05	4,521	23.26	3,825	696
Subtotal.....	**1,975**	**2.68**	**3,010**	**4.06**	**4,470**	**5.96**	**1,907**	**2.54**	**11,362**	**15.39**	**7,760**	**3,602**
Total.....	**18,185**	**4.53**	**14,662**	**3.70**	**28,738**	**7.26**	**29,603**	**7.65**	**91,188**	**22.71**	**38,243**	**52,945**

Table 85 – Oranges: Area of eradicated groves, eradication and renovation rates by variety [2019 to 2022 inventories]

Variety	2019 inventory		2020 inventory		2021 inventory		2022 inventory					
	Estimated eradication from Abril 2018 to March 2019		Estimated eradication from Abril 2019 to March 2020		Estimated eradication from April 2020 to March 2021		Estimated eradication from April 2021 to March 2022		Estimated eradication from Abril 2018 to March 2019		Estimated eradication from Abril 2019 to March 2020	Estimated eradication from April 2020 to March 2021
	Area	Rate	Area	Rate	Area	Rate	Area	Rate	Area	Rate	Area	Area
	(hectares)	(%)	(hectares)	(%)	(hectares)	(%)	(hectares)	(%)	(hectares)	(%)	(hectares)	(hectares)
Hamlin, Westin and Rubi.....	3,950	6.16	1,203	1.94	2,924	4.65	2,719	4.32	10,796	16.82	4,084	6,712
Other earlies.....	680	3.50	1,938	9.69	-424	-2.18	1,580	7.22	3,774	19.45	2,084	1,690
Pera Rio.....	4,459	3.27	7,163	5.26	11,174	8.29	8,254	6.22	31,050	22.80	11,019	20,031
Valência and V. Folha Murcha.....	7,077	5.23	2,747	2.09	11,255	8.51	6,852	5.47	27,931	20.66	8,350	19,581
Natal.....	2,019	4.34	1,611	3.50	3,809	8.23	10,198	22.97	17,637	37.94	12,706	4,931
Total.....	**18,185**	**4.53**	**14,662**	**3.70**	**28,738**	**7.26**	**29,603**	**7.65**	**91,188**	**22.71**	**38,243**	**52,945**

Table 86 – Oranges: Area of eradicated groves, eradication and renovation rates by age group [2019 to 2022 inventories]

Grove age	2019 inventory		2020 inventory		2021 inventory		2022 inventory					
	Estimated eradication from Abril 2018 to March 2019		Estimated eradication from Abril 2019 to March 2020		Estimated eradication from April 2020 to March 2021		Estimated eradication from April 2021 to March 2022		Estimated eradication from Abril 2018 to March 2019		Estimated eradication from Abril 2019 to March 2020	Estimated eradication from April 2020 to March 2021
	Area	Rate	Area	Rate	Area	Rate	Area	Rate	Area	Rate	Area	Rate
	(hectares)	(%)	(hectares)	(%)	(hectares)	(%)	(hectares)	(%)	(hectares)	(%)	(hectares)	(%)
1 – 2 years.....	-	-	-	-	-	-	-	-	-	-	-	-
3 – 5 years.....	142	0.38	620	1.98	352	1.03	432	1.19	1,546	4.13	1,350	196
6 – 10 years.....	3,157	2.56	737	0.73	3,816	4.35	3,716	4.92	11,426	9.27	7,458	3,968
Over 10 years.....	14,886	6.84	13,305	5.61	24,570	10.13	25,455	10.86	78,216	35.93	29,435	48,781
Total.....	**18,185**	**4.53**	**14,662**	**3.70**	**28,738**	**7.26**	**29,603**	**7.65**	**91,188**	**22.71**	**38,243**	**52,945**

Table 87 – Oranges: Area of eradicated groves and eradication rate stratified by farm size, considering the number of orange trees on the farm [2019 to 2022 inventories]

Range of the number of orange trees in the farm	2019 inventory		2020 inventory		2021 inventory		2022 inventory					
	Estimated eradication from Abril 2018 to March 2019		Estimated eradication from Abril 2019 to March 2020		Estimated eradication from April 2020 to March 2021		Estimated eradication from April 2021 to March 2022		Estimated eradication from Abril 2018 to March 2019		Estimated eradication from Abril 2019 to March 2020	Estimated eradication from April 2020 to March 2021
	Area	Rate	Area	Rate	Area	Rate	Area	Rate	Area	Rate	Area	Rate
(1,000 trees)	(hectares)	(%)	(hectares)	(%)	(hectares)	(%)	(hectares)	(%)	(hectares)	(%)	(hectares)	(%)
Below 10.....	129	0.42	1,614	5.14	2,823	8.53	10,463	30.13	15,029	47.57	2,553	12,476
10 – 19.....	1,479	6.20	1,005	4.41	2,940	12.78	3,750	16.57	9,174	37.36	2,311	6,863
20 – 29.....	466	2.80	491	3.00	3,837	22.93	1,498	8.22	6,292	36.84	1,722	4,570
30 – 49.....	713	2.84	672	2.68	3,393	12.20	3,761	14.87	8,539	33.15	2,652	5,887
50 – 99.....	2,762	6.10	1,489	3.52	4,976	11.38	3,018	6.97	12,245	26.26	4,252	7,993
100 – 199.....	3,085	6.79	1,205	2.78	4,223	9.48	423	1.01	8,936	17.29	4,262	4,674
Above 200.....	9,551	4.45	8,186	3.82	6,546	3.17	6,690	3.32	30,973	15.17	20,491	10,482
Total.....	**18,185**	**4.53**	**14,662**	**3.70**	**28,738**	**7.26**	**29,603**	**7.65**	**91,188**	**22.71**	**38,243**	**52,945**

Table 88 – Oranges: Dead trees and mortality rate by sector and region [2018 to 2022 inventories]

Sector and region	2018 inventory		2019 inventory		2020 inventory		2021 inventory		2022 inventory	
	Trees	Rate	Trees	Rate	Trees	Rate	Trees	Rate	Trees	Rate
	(1,000 trees)	(%)	(1,000 trees)	(%)	(1,000 trees)	(%)	(1,000 trees)	(%)	(1,000 trees)	(%)
North										
Triângulo Mineiro.....	66.98	0.52	83.17	0.63	107.29	0.81	91.87	0.69	83.76	0.62
Bebedouro.....	249.00	0.99	210.41	0.79	356.64	1.33	156.23	0.60	335.79	1.30
Altinópolis.....	79.60	1.34	136.30	2.28	111.57	1.82	148.42	2.39	159.03	2.61
Subtotal.....	**395.58**	**0.90**	**429.88**	**0.94**	**575.50**	**1.25**	**396.52**	**0.87**	**578.58**	**1.27**
Northwest										
Votuporanga.....	150.03	1.61	271.07	3.15	168.83	2.09	158.17	2.28	254.00	3.04
S. J. do Rio Preto.....	155.17	1.31	133.46	1.06	240.50	1.83	257.88	1.94	231.32	2.11
Subtotal.....	**305.20**	**1.45**	**404.53**	**1.91**	**409.33**	**1.93**	**416.05**	**2.06**	**485.32**	**2.52**
Central										
Matão.....	166.99	0.78	305.46	1.47	611.65	2.95	284.74	1.39	268.75	1.37
Duartina.....	324.49	1.13	342.38	1.20	609.85	2.07	682.31	2.26	580.44	1.62
Brotas.....	204.18	2.14	200.96	2.11	204.00	2.22	162.82	1.97	129.18	2.01
Subtotal.....	**695.66**	**1.17**	**848.80**	**1.44**	**1,425.50**	**2.40**	**1,129.87**	**1.92**	**978.37**	**1.58**
South										
Porto Ferreira.....	312.34	1.49	186.46	0.90	282.42	1.30	301.27	1.47	233.59	1.13
Limeira.....	474.32	2.31	318.00	1.67	493.21	2.56	263.79	1.43	414.62	2.27
Subtotal.....	**786.66**	**1.90**	**504.46**	**1.27**	**775.63**	**1.89**	**565.06**	**1.45**	**648.21**	**1.66**
Southwest										
Avaré.....	574.08	1.95	307.15	1.03	913.55	3.07	527.93	1.77	291.66	0.93
Itapetininga.....	89.30	0.80	156.52	1.27	295.53	2.26	72.05	0.54	91.63	0.60
Subtotal.....	**663.38**	**1.63**	**463.67**	**1.10**	**1,209.08**	**2.83**	599.98	**1.39**	383.29	0.82
Total.....	**2,846.48**	**1.38**	**2,651.34**	**1.28**	**4,395.04**	**2.09**	**3,107.48**	**1.50**	**3,073.77**	**1.45**

Table 89 – Oranges: Dead trees and mortality rate by variety [2018 to 2022 inventories]

Variety	2018 inventory		2019 inventory		2020 inventory		2021 inventory		2022 inventory	
	Trees	Rate	Trees	Rate	Trees	Trees	Rate	Trees	Rate	Trees
	(1,000 trees)	(%)	(1,000 trees)	(%)	(1,000 trees)	(1,000 trees)	(%)	(1,000 trees)	(%)	(1,000 trees)
Early										
Hamlin.....	345.94	1.43	414.30	1.74	738.07	3.02	426.84	1.79	478.29	1.80
Westin.....	52.12	1.70	39.69	1.41	67.67	2.17	44.95	1.47	44.97	1.82
Rubi.....	51.98	1.18	77.06	1.70	132.33	2.86	74.51	1.55	54.74	1.46
Valência Americana..	79.05	0.92	88.18	0.93	256.13	2.73	152.41	1.44	132.12	1.19
Seleta.....	0.70	0.77	0.29	0.33	1.42	1.93	2.86	3.37	0.25	0.50
Pineapple.....	2.14	0.18	15.80	1.10	75.12	5.08	10.61	0.70	12.39	0.87
Alvorada.....	-	-	-	-	-	-	-	-	0.55	0.14
Subtotal.....	**531.93**	**1.28**	**635.32**	**1.50**	**1,270.74**	**2.94**	**712.18**	**1.62**	**723.31**	**1.58**
Mid-season										
Pera Rio.....	1,158.28	1.56	1,121.15	1.48	1,690.11	2.22	1,299.41	1.72	1,201.41	1.52
Subtotal.....	**1,158.28**	**1.56**	**1,121.15**	**1.48**	**1,690.11**	**2.22**	**1,299.41**	**1.72**	**1,201.41**	**1.52**
Late										
Valência.....	713.58	1.22	627.73	1.09	873.03	1.51	719.22	1.30	797.99	1.45
V. Folha Murcha.....	115.50	1.25	97.94	1.10	105.32	1.13	112.09	1.25	120.02	1.26
Natal.....	327.19	1.42	169.20	0.73	455.84	1.90	264.58	1.13	231.04	1.01
Subtotal.....	**1,156.27**	**1.28**	**894.87**	**1.00**	**1,434.19**	**1.57**	**1,095.89**	**1.25**	**1,149.05**	**1.32**
Total.....	**2,846.48**	**1.38**	**2,651.34**	**1.28**	**4,395.04**	**2.09**	**3,107.48**	**1.50**	**3,073.77**	**1.45**

Table 90 – Oranges: Dead trees and mortality rate by age group [2018 to 2022 inventory]

Age groves	2018 inventory		2019 inventory		2020 inventory		2021 inventory		2022 inventory	
	Trees	Rate	Trees	Rate	Trees	Trees	Rate	Trees	Rate	Trees
	(1,000 trees)	(%)	(1,000 trees)	(%)	(1,000 trees)	(1,000 trees)	(%)	(1,000 trees)	(%)	(1,000 trees)
1 – 2 years	25.27	0.17	11.63	0.07	24.19	0.12	30.86	0.13	114.99	0.45
3 – 5 years	42.84	0.18	39.85	0.19	176.36	0.77	29.55	0.12	56.95	0.18
6 – 10 years.....	554.35	0.80	393.97	0.66	682.32	1.28	309.48	0.66	296.05	0.71
Over 10 years.....	2,224.02	2.29	2,205.89	2.00	3,512.17	3.06	2,737.59	2.45	2,605.78	2.32
Total.....	**2,846.48**	**1.38**	**2,651.34**	**1.28**	**4,395.04**	**2.09**	**3,107.48**	**1.50**	**3,073.77**	**1.45**

Table 91 – Oranges: Vacancies by sector and region [2018 to 2022 inventories]

Sector and region	2018 inventory		2019 inventory		2020 inventory		2021 inventory		2022 inventory	
	Vacancies	Rate	Vacancies	Rate	Vacancies	Rate	Vacancies	Rate	Vacancies	Rate
	(1,000 holes)	(%)	(1,000 holes)	(%)	(1,000 holes)	(%)	(1,000 holes)	(%)	(1,000 holes)	(%)
North										
Triângulo Mineiro.....	165.42	1.29	116.91	0.89	234.72	1.78	224.03	1.67	307.26	2.26
Bebedouro.....	783.02	3.12	852.32	3.22	872.17	3.25	741.00	2.82	956.36	3.72
Altinópolis.....	230.29	3.89	161.83	2.71	263.84	4.30	303.63	4.88	326.52	5.35
Subtotal.....	**1,178.73**	**2.69**	**1,131.06**	**2.48**	**1,370.73**	**2.97**	**1,268.66**	**2.77**	**1,590.14**	**3.50**
Northwest										
Votuporanga.....	314.99	3.39	356.90	4.15	364.63	4.52	241.71	3.48	274.2	3.29
S. J. do Rio Preto.....	437.31	3.70	427.31	3.41	533.09	4.06	522.77	3.93	485.15	4.43
Subtotal.....	**752.30**	**3.56**	**784.21**	**3.71**	**897.72**	**4.24**	**764.48**	**3.78**	**759.35**	**3.94**
Central										
Matão.....	1,121.38	5.27	1,333.33	6.41	1,022.83	4.93	1,428.07	6.96	1,077.32	5.50
Duartina.....	1,412.58	4.93	1,508.27	5.27	1,201.20	4.08	1,676.98	5.56	1,813.07	5.07
Brotas.....	545.29	5.72	582.93	6.13	432.25	4.70	497.99	6.03	397.54	6.20
Subtotal.....	**3,079.25**	**5.18**	**3,424.53**	**5.81**	**2,656.28**	**4.47**	**3,603.04**	**6.11**	**3,287.93**	**5.33**
South										
Porto Ferreira.....	1,185.73	5.66	1,117.48	5.40	1,136.22	5.24	1,045.93	5.12	828.73	4.00
Limeira.....	1,045.33	5.10	1,113.70	5.84	931.81	4.83	861.54	4.68	1,004.63	5.51
Subtotal.....	**2,231.06**	**5.38**	**2,231.18**	**5.61**	**2,068.03**	**5.05**	**1,907.47**	**4.91**	**1,833.36**	**4.71**
Southwest										
Avaré.....	1,709.49	5.79	1,737.32	5.84	1,150.69	3.87	1,745.05	5.85	1,857.96	5.93
Itapetininga.....	331.40	2.96	261.77	2.12	248.64	1.91	341.57	2.58	448.3	2.91
Subtotal.....	**2,040.89**	**5.02**	**1,999.09**	**4.75**	**1,399.33**	**3.27**	**2,086.62**	**4.84**	**2,306.26**	**4.93**
Total.....	**9,282.23**	**4.49**	**9,570.07**	**4.61**	**8,392.09**	**3.99**	**9,630.27**	**4.65**	**9,777.04**	**4.61**

Table 92 – Oranges: Vacancies by variety [2018 to 2022 inventories]

Variety	2018 inventory		2019 inventory		2020 inventory		2021 inventory		2022 inventory	
	Vacancies	Rate	Vacancies	Rate	Vacancies	Rate	Vacancies	Rate	Vacancies	Rate
	(1,000 holes)	(%)	(1,000 holes)	(%)	(1,000 holes)	(%)	(1,000 holes)	(%)	(1,000 holes)	(%)
Early										
Hamlin.....	1,176.62	4.85	1,288.55	5.40	1,109.18	4.53	1,499.49	6.30	1,559.97	5.88
Westin.....	176.84	5.76	154.40	5.49	148.63	4.76	184.16	6.01	129.72	5.26
Rubi.....	199.44	4.54	218.92	4.84	207.90	4.49	315.50	6.55	164.57	4.39
Valência Americana..	548.96	6.40	646.45	6.81	382.52	4.07	623.92	5.88	562.72	5.08
Seleta.....	4.77	5.24	4.68	5.33	5.53	7.53	6.51	7.67	2.21	4.45
Pineapple.....	27.24	2.33	21.58	1.50	20.99	1.42	65.51	4.34	86.91	6.07
Alvorada.....	-	-	-	-	-	-	-	-	8.43	2.16
Subtotal.....	**2,133.87**	**5.14**	**2,334.58**	**5.53**	**1,874.75**	**4.34**	**2,695.09**	**6.14**	**2,514.53**	**5.50**
Mid-season										
Pera Rio.....	3,122.28	4.20	3,264.58	4.31	3,249.25	4.26	3,127.90	4.15	3,488.39	4.40
Subtotal.....	**3,122.28**	**4.20**	**3,264.58**	**4.31**	**3,249.25**	**4.26**	**3,127.90**	**4.15**	**3,488.39**	**4.40**
Late										
Valência.....	2,563.32	4.39	2,484.80	4.32	1,919.37	3.32	2,246.68	4.05	2,275.19	4.14
V. Folha Murcha.....	396.72	4.31	412.50	4.62	395.37	4.26	345.16	3.85	393.94	4.13
Natal.....	1,066.04	4.62	1,073.61	4.65	953.35	3.97	1,215.44	5.21	1,104.99	4.85
Subtotal.....	**4,026.08**	**4.44**	**3,970.91**	**4.44**	**3,268.09**	**3.59**	**3,807.28**	**4.34**	**3,774.12**	**4.33**
Total.....	**9,282.23**	**4.49**	**9,570.07**	**4.61**	**8,392.09**	**3.99**	**9,630.27**	**4.65**	**9,777.04**	**4.61**

Table 93 – Oranges: Vacancies by age group [2018 to 2022 inventories]

Groves age	2018 inventory		2019 inventory		2020 inventory		2021 inventory		2022 inventory	
	Vacancies	Rate	Vacancies	Rate	Vacancies	Rate	Vacancies	Rate	Vacancies	Rate
	(1,000 holes)	(%)	(1,000 holes)	(%)	(1,000 holes)	(%)	(1,000 holes)	(%)	(1,000 holes)	(%)
1 – 2 years.....	121.30	0.79	68.33	0.40	9.00	0.05	78.93	0.32	386.03	1.51
3 – 5 years.....	475.06	1.95	469.40	2.26	348.21	1.52	487.67	2.05	773.14	2.38
6 – 10 years.....	2,491.35	3.58	2,084.41	3.50	1,774.43	3.33	1,676.86	3.57	1,555.11	3.71
Over 10 year.....	6,194.52	6.37	6,947.93	6.30	6,260.45	5.45	7,386.81	6.61	7,062.76	6.29
Total.....	**9,282.23**	**4.49**	**9,570.07**	**4.61**	**8,392.09**	**3.99**	**9,630.27**	**4.65**	**9,777.04**	**4.61**

Table 94 – Other oranges: Area and number of trees by region, variety and age [2022 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
		2020	2021	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	20	-	-	0.45	0.09	3.38	1.50	5.42
Charmute de Brotas	-	-	-	-	-	-	-	-
Acidless sweet oranges and sweet lime[1]	7	-	0.62	0.16	0.05	1.67	0.54	3.04
Other	4	-	-	0.15	0.10	0.25	0.69	1.19
Subtotal	**31**	**-**	**0.62**	**0.76**	**0.24**	**5.30**	**2.73**	**9.65**
Bebedouro								
Washington Navel and Baianinha	28	1.58	-	0.82	5.15	0.93	6.42	14.90
Charmute de Brotas	4	-	-	0.16	0.11	0.05	1.63	1.95
Acidless sweet oranges and sweet lime[1]	87	0.96	4.69	2.12	11.13	17.63	6.08	42.61
Other	123	-	0.38	6.27	62.20	0.73	10.94	80.52
Subtotal	**242**	**2.54**	**5.07**	**9.37**	**78.59**	**19.34**	**25.07**	**139.98**
Altinópolis								
Washington Navel and Baianinha	15	-	-	-	0.04	0.72	5.38	6.14
Charmute de Brotas	60	-	-	0.03	3.27	8.81	18.55	30.66
Acidless sweet oranges and sweet lime[1]	87	4.62	-	0.04	4.99	12.40	24.92	46.97
Other	4	-	-	-	0.11	0.25	1.91	2.27
Subtotal	**166**	**4.62**	**-**	**0.07**	**8.41**	**22.18**	**50.76**	**86.04**
Votuporanga								
Washington Navel and Baianinha	18	-	-	-	0.11	0.35	9.47	9.93
Charmute de Brotas	-	-	-	-	-	-	-	-
Acidless sweet oranges and sweet lime[1]	144	0.75	0.12	0.05	2.33	55.49	22.84	81.58
Other	7	-	-	-	0.05	4.01	-	4.06
Subtotal	**169**	**0.75**	**0.12**	**0.05**	**2.49**	**59.85**	**32.31**	**95.57**
São José do Rio Preto								
Washington Navel and Baianinha	20	-	-	0.01	0.32	11.75	-	12.08
Charmute de Brotas	-	-	-	-	-	-	-	-
Acidless sweet oranges and sweet lime[1]	24	-	-	0.13	1.30	2.58	8.01	12.02
Other	71	-	-	2.15	39.05	6.84	0.13	48.17
Subtotal	**115**	**-**	**-**	**2.29**	**40.67**	**21.17**	**8.14**	**72.27**
Matão								
Washington Navel and Baianinha	11	-	-	0.31	0.46	1.20	2.38	4.35
Charmute de Brotas	8	-	-	0.20	0.37	0.69	1.47	2.73
Acidless sweet oranges and sweet lime[1]	365	6.22	2.95	13.17	64.48	49.21	50.25	186.28
Other	111	22.67	25.10	3.10	40.43	0.21	3.08	94.59
Subtotal	**495**	**28.89**	**28.05**	**16.78**	**105.74**	**51.31**	**57.18**	**287.95**

Table 94 – Other oranges: Area and number of trees by region, variety and age [2022 inventory] (continued)

Region and variety	Area	Trees 0 – 2 years			Trees 3 – 5 years	Trees 6 – 10 years	Trees over 10 years	Total
		2020	2021	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	92.00	5.35	-	1.85	29.24	16.75	8.77	61.96
Charmute de Brotas	191.00	11.60	-	1.86	1.13	22.07	42.23	78.89
Acidless sweet oranges and sweet lime[2]	505.00	-	-	10.76	36.33	142.92	105.44	295.45
Other	21.00	-	-	0.46	18.15	-	-	18.61
Subtotal	**809.00**	**16.95**	**-**	**14.93**	**84.85**	**181.74**	**156.44**	**454.91**
Brotas								
Washington Navel and Baianinha	41.00	4.51	-	0.31	11.58	0.76	3.94	21.10
Charmute de Brotas	142.00	-	-	2.50	4.37	10.54	34.62	52.03
Acidless sweet oranges and sweet lime[2]	332.00	8.74	-	6.04	43.53	21.62	66.42	146.35
Other	114.00	-	7.08	3.48	11.25	8.97	7.07	37.85
Subtotal	**629.00**	**13.25**	**7.08**	**12.33**	**70.73**	**41.89**	**112.05**	**257.33**
Porto Ferreira								
Washington Navel and Baianinha	390.00	1.10	28.80	12.65	59.52	84.81	50.43	237.31
Charmute de Brotas	203.00	1.17	0.98	4.29	12.89	33.13	46.15	98.61
Acidless sweet oranges and sweet lime[2]	1,453.00	25.85	5.46	37.19	138.48	242.26	339.11	788.35
Other	28.00	0.72	4.10	1.66	10.86	0.80	1.62	19.76
Subtotal	**2,074.00**	**28.84**	**39.34**	**55.79**	**221.75**	**361.00**	**437.31**	**1,144.03**
Limeira								
Washington Navel and Baianinha	481.00	28.30	18.64	13.65	51.90	83.02	78.71	274.22
Charmute de Brotas	242.00	3.98	3.33	9.23	44.76	50.78	34.07	146.15
Acidless sweet oranges and sweet lime[2]	1,203.00	22.21	54.55	39.70	120.77	251.62	236.27	725.12
Other	400.00	2.05	32.83	10.02	55.30	52.52	71.87	224.59
Subtotal	**2,326.00**	**56.54**	**109.35**	**72.60**	**272.73**	**437.94**	**420.92**	**1,370.08**
Avaré								
Washington Navel and Baianinha	798.00	35.12	1.98	10.40	56.21	45.82	225.18	374.71
Charmute de Brotas	517.00	23.63	-	11.10	162.00	15.28	94.19	306.20
Acidless sweet oranges and sweet lime[2]	863.00	2.44	0.93	18.18	117.41	85.94	228.60	453.50
Other	38.00	-	-	3.23	6.41	0.82	5.06	15.52
Subtotal	**2,216.00**	**61.19**	**2.91**	**42.91**	**342.03**	**147.86**	**553.03**	**1,149.93**
Itapetininga								
Washington Navel and Baianinha	381.00	12.11	11.96	9.51	15.38	58.55	96.87	204.38
Charmute de Brotas	142.00	2.21	7.39	6.23	12.56	24.43	32.24	85.06
Acidless sweet oranges and sweet lime[2]	149.00	-	-	6.39	13.44	30.35	39.12	89.30
Other	512.00	23.06	-	3.30	210.02	179.53	12.59	428.50
Subtotal	**1,184.00**	**37.38**	**19.35**	**25.43**	**251.40**	**292.86**	**180.82**	**807.24**
Total	**10,456.00**	**250.95**	**211.89**	**253.31**	**1,479.63**	**1,642.44**	**2,036.76**	**5,874.98**

- 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 and 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 [2022 inventory]

Region and variety	Area	Plots 0 – 2 years		Plots 3 – 5 years	Plots 6 – 10 years	Plots over 10 years	Total
		2020	2021				
	(hectares)	(1,000 holes)	(1,000 holes)	(1,000 holes)	(1,000 holes)	(1,000 holes)	(1,000 holes)
Triângulo Mineiro							
Tahiti acid lime	343	1.29	1.96	-	53.74	56.09	113.08
Sicilian lemon	-	-	-	-	-	-	-
Other including non-identified ones	1	-	-	0.21	-	0.96	1.17
Subtotal	**344**	**1.29**	**1.96**	**0.21**	**53.74**	**57.05**	**114.25**
Bebedouro							
Tahiti acid lime	19,368	652.38	588.49	2,878.81	1,914.60	721.59	6,755.87
Sicilian lemon	154	5.17	2.06	43.67	14.03	9.99	74.92
Other including non-identified ones	10	4.74	0.04	0.50	0.72	2.35	8.35
Subtotal	**19,532**	**662.29**	**590.59**	**2,922.98**	**1,929.35**	**733.93**	**6,839.14**
Altinópolis							
Tahiti acid lime	52	-	-	7.28	19.65	6.72	33.65
Sicilian lemon	74	-	-	47.73	-	-	47.73
Other including non-identified ones	14	-	-	-	6.21	-	6.21
Subtotal	**140**	**-**	**-**	**55.01**	**25.86**	**6.72**	**87.59**
Votuporanga							
Tahiti acid lime	5,269	337.97	189.02	802.08	811.77	196.18	2,337.02
Sicilian lemon	7	-	-	2.75	-	-	2.75
Other including non-identified ones	9	-	-	0.72	-	2.15	2.87
Subtotal	**5,285**	**337.97**	**189.02**	**805.55**	**811.77**	**198.33**	**2,342.64**
São José do Rio Preto							
Tahiti acid lime	1,579	84.51	43.61	252.98	142.91	91.55	615.56
Sicilian lemon	-	-	-	0.06	-	-	0.06
Other including non-identified ones	3	-	0.22	-	0.86	0.39	1.47
Subtotal	**1,582**	**84.51**	**43.83**	**253.04**	**143.77**	**91.94**	**617.09**
Matão							
Tahiti acid lime	13,871	357.21	648.42	1,622.34	1,775.07	988.47	5,391.51
Sicilian lemon	127	4.49	-	25.50	22.49	-	52.48
Other including non-identified ones	-	-	-	-	0.15	-	0.15
Subtotal	**13,998**	**361.70**	**648.42**	**1,647.84**	**1,797.71**	**988.47**	**5,444.14**
Duartina							
Tahiti acid lime	942	75.32	64.93	153.43	108.44	22.35	424.47
Sicilian lemon	579	1.01	5.85	86.03	8.99	135.56	237.44
Other including non-identified ones	3	-	1.19	-	0.10	-	1.29
Subtotal	**1,524**	**76.33**	**71.97**	**239.46**	**117.53**	**157.91**	**663.20**
Brotas							
Tahiti acid lime	149	0.48	7.64	62.03	15.21	1.42	86.78
Sicilian lemon	750	147.51	1.01	119.00	112.82	1.41	381.75
Other including non-identified ones	137	11.68	10.14	-	0.63	22.10	44.55
Subtotal	**1,036**	**159.67**	**18.79**	**181.03**	**128.66**	**24.93**	**513.08**
Porto Ferreira							
Tahiti acid lime	523	15.17	47.50	42.56	103.16	83.61	292.00
Sicilian lemon	734	46.12	3.39	65.56	102.13	167.75	384.95
Other including non-identified ones	29	0.25	1.47	-	2.77	11.07	15.56
Subtotal	**1,286**	**61.54**	**52.36**	**108.12**	**208.06**	**262.43**	**692.51**
Limeira							
Tahiti acid lime	3,581	116.55	143.81	537.66	637.48	369.28	1,804.78
Sicilian lemon	1,125	55.59	15.58	166.68	289.36	112.59	639.80
Other including non-identified ones	18	-	-	9.38	-	-	9.38
Subtotal	**4,724**	**172.14**	**159.39**	**713.72**	**926.84**	**481.87**	**2,453.96**
Avaré							
Tahiti acid lime	164	14.97	0.16	74.94	13.29	2.92	106.28
Sicilian lemon	1,470	-	51.26	161.72	368.09	133.68	714.75
Other including non-identified ones	206	53.32	-	40.74	-	-	94.06
Subtotal	**1,840**	**68.29**	**51.42**	**277.40**	**381.38**	**136.60**	**915.09**
Itapetininga							
Tahiti acid lime	31	-	-	2.58	13.59	0.35	16.52
Sicilian lemon	454	66.29	-	101.66	20.08	28.13	216.16
Other including non-identified ones	33	9.08	-	-	0.37	4.29	13.74
Subtotal	**518**	**75.37**	**-**	**104.24**	**34.04**	**32.77**	**246.42**
Total	**51,809**	**2,061.10**	**1,827.75**	**7,308.60**	**6,558.71**	**3,172.95**	**20,929.11**

- Represents zero

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 [2022 inventory]

Region and variety	Area	Plots 0 – 2 years		Plots 3 – 5 years	Plots 6 – 10 years	Plots over 10 years	Total
		2020	2021				
	(hectares)	(1,000 holes)	(1,000 holes)	(1,000 holes)	(1,000 holes)	(1,000 holes)	(1,000 holes)
Triângulo Mineiro							
Ponkan	126	2.92	11.83	9.28	18.68	12.51	55.22
Murcott	37	-	20.92	-	-	-	20.92
Other	16	-	-	-	2.86	2.21	5.07
Subtotal	**179**	**2.92**	**32.75**	**9.28**	**21.54**	**14.72**	**81.21**
Bebedouro							
Ponkan	890	33.93	19.77	91.17	234.88	105.74	485.49
Murcott	386	32.15	15.60	94.01	69.93	4.88	216.57
Other	214	8.75	14.03	42.57	39.61	11.88	116.84
Subtotal	**1,490**	**74.83**	**49.40**	**227.75**	**344.42**	**122.50**	**818.90**
Altinópolis							
Ponkan	126	3.73	2.80	3.73	38.01	33.23	81.50
Murcott	129	40.12	7.05	5.83	2.94	21.11	77.05
Other	53	0.43	9.83	15.10	8.36	3.13	36.85
Subtotal	**308**	**44.28**	**19.68**	**24.66**	**49.31**	**57.47**	**195.40**
Votuporanga							
Ponkan	1,280	28.32	120.86	101.62	246.91	152.14	649.85
Murcott	135	3.25	11.42	36.51	19.08	0.44	70.70
Other	114	9.05	9.36	16.76	22.00	2.95	60.12
Subtotal	**1,529**	**40.62**	**141.64**	**154.89**	**287.99**	**155.53**	**780.67**
São José do Rio Preto							
Ponkan	327	12.27	11.09	21.79	92.67	29.62	167.44
Murcott	56	15.83	-	3.43	4.17	4.36	27.79
Other	25	-	0.07	3.42	12.25	0.19	15.93
Subtotal	**408**	**28.10**	**11.16**	**28.64**	**109.09**	**34.17**	**211.16**
Matão							
Ponkan	353	26.25	18.92	57.01	92.29	28.74	223.21
Murcott	593	28.28	17.56	91.94	113.37	71.63	322.78
Other	121	9.56	9.21	25.26	23.66	3.87	71.56
Subtotal	**1,067**	**64.09**	**45.69**	**174.21**	**229.32**	**104.24**	**617.55**
Duartina							
Ponkan	268	4.61	1.62	4.43	148.83	40.30	199.79
Murcott	809	52.00	9.00	17.71	51.88	463.20	593.79
Other	152	1.07	-	2.26	22.62	89.75	115.70
Subtotal	**1,229**	**57.68**	**10.62**	**24.40**	**223.33**	**593.25**	**909.28**
Brotas							
Ponkan	25	-	6.65	4.80	5.74	-	17.19
Murcott	295	4.11	77.01	23.05	110.56	7.74	222.47
Other	96	4.93	14.91	-	28.84	8.01	56.69
Subtotal	**416**	**9.04**	**98.57**	**27.85**	**145.14**	**15.75**	**296.35**
Porto Ferreira							
Ponkan	209	2.17	1.94	28.95	34.60	63.85	131.51
Murcott	1,061	21.76	14.02	141.89	186.09	242.48	606.24
Other	177	18.55	8.85	16.04	36.18	24.09	103.71
Subtotal	**1,447**	**42.48**	**24.81**	**186.88**	**256.87**	**330.42**	**841.46**
Limeira							
Ponkan	501	25.04	23.95	68.75	141.00	60.81	319.55
Murcott	1,219	57.14	47.70	211.18	228.16	191.94	736.12
Other	261	13.30	26.51	61.89	67.99	6.02	175.71
Subtotal	**1,981**	**95.48**	**98.16**	**341.82**	**437.15**	**258.77**	**1,231.38**
Avaré							
Ponkan	123	5.76	0.91	11.07	22.01	30.82	70.57
Murcott	748	41.53	14.68	58.23	191.52	134.83	440.79
Other	170	18.06	7.86	14.49	53.01	14.82	108.24
Subtotal	**1,041**	**65.35**	**23.45**	**83.79**	**266.54**	**180.47**	**619.60**
Itapetininga							
Ponkan	837	22.79	48.26	157.02	123.52	162.49	514.08
Murcott	342	2.63	14.31	36.79	48.17	96.90	198.80
Other	309	18.24	36.63	35.56	58.19	45.88	194.50
Subtotal	**1,488**	**43.66**	**99.20**	**229.37**	**229.88**	**305.27**	**907.38**
Total	**12,583**	**568.53**	**655.13**	**1,513.54**	**2,600.58**	**2,172.56**	**7,510.34**

- 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 [2022 inventory]

Sector	Region	Cities
North 72 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, Embaúba, Guaraci, Ibirá, Irapuã, Itajobi, Jaborandi, Marapoama, Monte Azul Paulista, Novais, Olímpia, Palmares Paulista, Paraíso, Pirangi, Pitangueiras, Sales, Santa Adélia, Severínia, Tabapuã, Taiaçu, Taiuva, Taquaral, Terra Roxa, Uchoa, Urupês, Viradouro, Vista Alegre do Alto
	Altinópolis (ALT) 23 cities	Alterosa, Altinópolis, Batatais, Brodowski, Cajuru, Cassia dos Coqueiros, Cristais Paulista, Delfinópolis, Fortaleza de Minas, Franca, Ibiraci, Igarapava, Jacuí, Jeriquara, Monte Santo de Minas, Nova Resende, Patrocínio Paulista, Pedregulho, Sacramento, Santo Antônio da Alegria, São Pedro da União, São Sebastião do Paraíso, São Tomás de Aquino
Northwest 80 cities	Votuporanga (VOT) 48 cities	Alvares Florence, Américo de Campos, Aparecida d'Oeste, Aspásia, Auriflama, Cardoso, Dirce Reis, Dolcinópolis, Estrela d'Oeste, Fernandópolis, Guaraçaí, Guarani d'Oeste, Guzolândia, Indiaporã, Jales, Macedônia, Marinópolis, Meridiano, Mesópolis, Mira Estrela, Nova Canaã Paulista, Ouroeste, Palmeira d'Oeste, Paranapuã, Parisi, Pedranópolis, Pontalinda, Pontes Gestal, Populina, Riolândia, 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, Urania, Valentim Gentil, Vitória Brasil, Votuporanga
	São José do Rio Preto (SJO) 32 cities	Adolfo, Altair, Bady Bassitt, Bálsamo, Cedral, Cosmorama, Floreal, Guapiaçu, Icem, Ipiguá, Jaci, Jose Bonifácio, Magda, Mendonca, Mirassol, Mirassolândia, Monte Aprazível, Neves Paulista, Nhandeara, Nipoã, Nova Aliança, Nova Granada, Onda Verde, Orindiúva, Palestina, Paulo de Faria, Poloni, Potirendaba, São José do Rio Preto, Tanabi, Ubarana, Zacarias
Central 72 cities	Matão (MAT) 20 cities	Américo Brasiliense, Araraquara, Bariri, Boa Esperança do Sul, Borborema, Candido Rodrigues, Fernando Prestes, Gavião Peixoto, Ibitinga, Itaju, Itápolis, Matão, Monte Alto, Motuca, Nova Europa, Novo Horizonte, Rincão, Santa Lucia, Tabatinga, Taquaritinga
	Duartina (DUA) 39 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, Pongai, Presidente Alves, Quatá, Reginópolis, Sabino, Santa Cruz do Rio Pardo, São Pedro do Turvo, Ubirajara, Uru
	Brotas (BRO) 13 cities	Analândia, Bocaina, Brotas, Corumbataí, Dourado, Ibaté, Itirapina, Ribeirão Bonito, Santa Maria da Serra, São Carlos, São Pedro, Torrinha, Trabiju
South 43 cities	Porto Ferreira (PFE) 17 cities	Aguaí, Casa Branca, Descalvado, Guaranésia, Itobi, Luiz 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	Amparo, Araras, Artur Nogueira, Atibaia, 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 47 cities	Avaré (AVA) 28 cities	Águas de Santa Bárbara, Angatuba, Anhembi, Araçoiaba da Serra, Arandu, Avaré, Bofete, Borebi, Botucatu, Capela do Alto, Cerqueira Cesar, Cesário Lange, Conchas, Iaras, Iperó, Itatinga, Lençóis Paulista, Manduri, Óleo, Pardinho, Piraju, Porangaba, Porto Feliz, Pratânia, Salto de Pirapora, São Manuel, Sorocaba, Tatuí
	Itapetininga (ITG) 19 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
Total 5 sectors	Total 12 regions	Total 314 cities

Table 98 – Other oranges: Cities with groves by sector and region [2022 inventory]

Sector	Region	Cities
North 36 cities	Triângulo Mineiro (TMG) 3 cities	Conceição das Alagoas, Monte Alegre de Minas, Uberaba
	Bebedouro (BEB) 19 cities	Ariranha, Bebedouro, Cajobi, Colômbia, Embaúba, Irapuã, Itajobi, Marapoama, Monte Azul Paulista, Olímpia, Paraíso, Pirangi, Santa Adélia, Severínia, Taiaçu, Taiuva, Uchoa, Urupês, Vista Alegre do Alto
	Altinópolis (ALT) 14 cities	Altinópolis, Batatais, Brodowski, Cajuru, Cassia dos Coqueiros, Ibiraci, Monte Santo de Minas, Nova Resende, Patrocínio Paulista, Pedregulho, Sacramento, Santo Antônio da Alegria, São Pedro da União, São Sebastião do Paraíso
Northwest 28 cities	Votuporanga (VOT) 17 cities	Alvares Florence, Aspásia, Estrela d'Oeste, Fernandópolis, Jales, Palmeira d'Oeste, Paranapuã, Pontalinda, Santa Clara d'Oeste, Santa Fé do Sul, Santa Salete, São João das Duas Pontes, Sud Mennucci, Turmalina, Urania, Vitória Brasil, Votuporanga
	São José do Rio Preto (SJO) 11 cities	Bálsamo, Cedral, Cosmorama, José Bonifácio, Mendonça, Mirassolândia, Monte Aprazível, Nhandeara, Nova Aliança, Potirendaba, São José do Rio Preto
Central 45 cities	Matão (MAT) 12 cities	Américo Brasiliense, Bariri, Boa Esperança do Sul, Borborema, Candido Rodrigues, Fernando Prestes, Ibitinga, Itápolis, Monte Alto, Novo Horizonte, Tabatinga, Taquaritinga
	Duartina (DUA) 21 cities	Agudos, Avaí, Bauru, Cabrália Paulista, Cafelândia, Campos Novos Paulista, Duartina, Echaporã, Espírito Santo do Turvo, Fernão, Iacanga, Lucianópolis, Marília, Paulistânia, Pederneiras, Pirajuí, Piratininga, Presidente Alves, Santa Cruz do Rio Pardo, São Pedro do Turvo, Ubirajara
	Brotas (BRO) 12 cities	Analândia, Bocaina, Brotas, Corumbataí, Dois Córregos, Dourado, Itirapina, Mineiros do Tietê, Ribeirão Bonito, São Carlos, Torrinha, Trabiju.
South 29 cities	Porto Ferreira (PFE) 10 cities	Aguaí, Casa Branca, Descalvado, Mococa, Pirassununga, Santa Cruz das Palmeiras, 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, Paulínia, Piracicaba, Santo Antônio de Posse
Southwest 32 cities	Avaré (AVA) 20 cities	Águas de Santa Bárbara, Angatuba, Anhembi, Araçoiaba da Serra, Arandu, Avaré, Botucatu, Capela do Alto, Cerqueira Cesar, Conchas, Guareí, Iperó, Itatinga, Manduri, Óleo, Porto Feliz, Pratânia, Salto de Pirapora, Sorocaba, Tatuí
	Itapetininga (ITG) 12 cities	Alambari, Buri, Capão Bonito, Coronel Macedo, Itaberá, Itaí, Itapetininga, Itapeva, Itaporanga, Itararé, Paranapanema, São Miguel Arcanjo
Total 5 sectors	Total 12 regions	Total 170 cities

Table 99 – Acid limes and lemons: Cities with groves by sector and region [2022 inventory]

Sector	Region	Cities
North 50 cities	Triângulo Mineiro (TMG) 8 cities	Campina Verde, Frutal, Ituiutaba, Iturama, Monte Alegre de Minas, Prata, Uberaba
	Bebedouro (BEB) 33 cities	Ariranha, Barretos, Bebedouro, Cajobi, Catanduva, Catiguá, Colina, Elisiário, Embaúba, Guaraci, Ibirá, Irapuã, Itajobi, Marapoama, Monte Azul Paulista, Novais, Olímpia, Palmares Paulista, Paraíso, Pindorama, Pirangi, Pitangueiras, Sales, Santa Adélia, Severínia, Tabapuã, Taiaçu, Taiuva, Taquaral, Uchoa, Urupês, Viradouro, Vista Alegre do Alto
	Altinópolis (ALT) 9 cities	Altinópolis, Brodowski, Monte Santo de Minas, Nova Resende, Patrocínio Paulista, Pedregulho, Sacramento, Santo Antônio da Alegria, São Sebastião do Paraíso
Northwest 74 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) 29 cities	Adolfo, Altair, Bady Bassitt, Bálsamo, Cedral, Cosmorama, Floreal, Guapiaçu, Ipiguá, Jaci, Jose Bonifácio, Macaubal, Mendonca, Mirassol, Mirassolândia, Neves Paulista, Nhandeara, Nova Aliança, Nova Granada, Onda Verde, Palestina, Paulo de Faria, Planalto, Potirendaba, São José do Rio Preto, Sebastianópolis Do Sul, Tanabi, Ubarana, Zacarias
Central 53 cities	Matão (MAT) 17 cities	Araraquara, Bariri, Boa Esperança do Sul, Borborema, Candido Rodrigues, Fernando Prestes, Ibitinga, Itaju, Itápolis, Jaboticabal, Matão, Monte Alto, Motuca, Nova Europa, Novo Horizonte, Tabatinga, Taquaritinga
	Duartina (DUA) 25 cities	Arealva, Avaí, Bauru, Boraceia, Cabrália Paulista, Cafelândia, Campos Novos Paulista, Duartina, Echaporã, Espírito Santo do Turvo, Gália, Getulina, Guaiçara, Guaimbê, Guarantã, Iacanga, Lins, Lucianópolis, Marília, Pederneiras, Pirajuí, Piratininga, Presidente Alves, São Pedro do Turvo, Ubirajara
	Brotas (BRO) 11 cities	Analândia, Brotas, Corumbataí, Dois Córregos, Dourado, Ibaté, Itirapina, Ribeirão Bonito, São Carlos, Torrinha, Trabiju
South 37 cities	Porto Ferreira (PFE) 14 cities	Aguaí, Casa Branca, Itobi, Mococa, Pirassununga, Porto Ferreira, Santa Cruz da Conceição, 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) 23 cities	Araras, Artur Nogueira, Charqueada, Conchal, Cordeirópolis, Cosmópolis, Engenheiro Coelho, Espírito Santo do Pinhal, Estiva Gerbi, Holambra, Iracemápolis, Itapira, Jaguariúna, Leme, Limeira, Lindóia, Mogi Guaçu, Mogi Mirim, Monte Alegre do Sul, Paulínia, Piracicaba, Rio Claro, Santo Antônio de Posse
Southwest 22 cities	Avaré (AVA) 11 cities	Águas de Santa Bárbara, Angatuba, Araçoiaba da Serra, Arandu, Avaré, Botucatu, Capela do Alto, Itatinga, Óleo, Porto Feliz, Sorocaba
	Itapetininga (ITG) 11 cities	Buri, Capão Bonito, Coronel Macedo, Itaberá, Itaí, Itapetininga, Itaporanga, Paranapanema, São Miguel Arcanjo, Sarapuí, Taquarivaí
Total 5 sectors	Total 12 regions	Total 236 cities

Table 100 – Tangerines: Cities with groves by sector and region [2022 inventory]

Sector	Region	Cities
North 50 cities	Triângulo Mineiro (TMG) 6 cities	Campina Verde, Frutal, Itapagipe, Monte Alegre de Minas, Prata, Uberaba
	Bebedouro (BEB) 31 cities	Ariranha, Barretos, Bebedouro, Cajobi, Catiguá, Colina, Colômbia, Embaúba, Guaraci, Ibirá, Irapuã, Itajobi, Jaborandi, Marapoama, Monte Azul Paulista, Novais, Olímpia, Paraíso, Pindorama, Pirangi, Pitangueiras, Sales, Santa Adélia, Severínia, Tabapuã, Taiaçu, Taiuva, Taquaral, Uchoa, Urupês, Vista Alegre do Alto
	Altinópolis (ALT) 13 cities	Altinópolis, Cajuru, Cassia dos Coqueiros, Franca, Ibiraci, Jacuí, Monte Santo de Minas, Nova Resende, Patrocínio Paulista, Sacramento, Santo Antônio da Alegria, São Pedro da União, São Sebastião do Paraíso
Northwest 62 cities	Votuporanga (VOT) 44 cities	Alvares Florence, Américo de Campos, Andradina, Aparecida d'Oeste, Aspásia, Dolcinópolis, Estrela d'Oeste, Fernandópolis, Guaraçaí, Guarani d'Oeste, Indiaporã, Jales, Macedônia, Marinópolis, Meridiano, Mesópolis, Mira Estrela, Murutinga do Sul, Palmeira d'Oeste, Paranapuã, Parisi, Pedranópolis, Pereira Barreto, Pontalinda, Populina, Rubineia, 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, Urania, Valentim Gentil, Vitória Brasil, Votuporanga
	São José do Rio Preto (SJO) 18 cities	Altair, Bálsamo, Cedral, Cosmorama, Floreal, Guapiaçu, Ipiguá, Jaci, José Bonifácio, Mirassolândia, Monte Aprazível, Nhandeara, Nova Aliança, Nova Granada, Palestina, Potirendaba, São José do Rio Preto, Tanabi
Central 42 cities	Matão (MAT) 16 cities	Américo Brasiliense, Bariri, Boa Esperança do Sul, Borborema, Candido Rodrigues, Fernando Prestes, Gavião Peixoto, Ibitinga, Itápolis, Matão, Monte Alto, Motuca, Nova Europa, Novo Horizonte, Tabatinga, Taquaritinga
	Duartina (DUA) 17 cities	Avaí, Cabrália Paulista, Cafelândia, Campos Novos Paulista, Duartina, Fernão, Gália, Garça, Iacanga, Lins, Marília, Paulistânia, Pederneiras, Piratininga, Presidente Alves, São Pedro do Turvo, Ubirajara
	Brotas (BRO) 9 cities	Analândia, Bocaina, Brotas, Corumbataí, Dois Córregos, Itirapina, São Carlos, Torrinha, Trabiju
South 34 cities	Porto Ferreira (PFE) 11 cities	Aguaí, Casa Branca, 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
	Limeira (LIM) 23 cities	Amparo, Araras, Artur Nogueira, Atibaia, Bragança Paulista, Conchal, Cordeirópolis, Engenheiro Coelho, Espírito Santo do Pinhal, Estiva Gerbi, Holambra, Jaguariúna, Jarinu, Leme, Limeira, Mogi Guaçu, Mogi Mirim, Monte Alegre do Sul, Paulínia, Pinhalzinho, Piracicaba, Santo Antônio de Posse, Socorro
Southwest 26 cities	Avaré (AVA) 14 cities	Águas de Santa Bárbara, Anhembi, 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, Pilar Do Sul, São Miguel Arcanjo, Sarapuí
Total 5 sectors	Total 12 regions	Total 214 cities

3.3 – ABANAONED CITRUS GROVES

Abandoned groves are citrus plots in which no signs of management are identified, such as lack of pruning/weeding, unsatisfactory phytosanitary control, with a high degree of pest and disease infestation, often with rotted fruits on the ground and the presence of livestock in the plot. In many cases, the degradation of groves is so intense that it is impossible to enter for data collection, such as spacing, planting year and variety. Due to this restriction, in most of the abandoned groves that were mapped in the first survey (2015) it was not possible to differentiate these areas by citrus species (orange, lemon or tangerine).

In the 2018 and 2022 inventories, most of the groves that were identified as abandoned had previously been mapped as productive, so it was possible to differentiate them by species. The areas of these groves are counted separately and do not make up the inventory of productive and non-productive trees.

Table 101 – All citrus: Area and percentage of abandoned groves in relation to the total area [2015, 2018 and 2022 inventories]

Setor e região	2015 inventory	2018 inventory	2022 inventory					
	Total	Total	Oranges	Other oranges	Acid limes and lemons	Tangerines	Total	Percentage
	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)	(%)
North								
Triângulo Mineiro....	218	72	87	147	-	1	235	0.89
Bebedouro.....	1,091	313	357	79	358	8	802	1.56
Altinópolis.....	144	14	7	3	-	2	12	0.11
Subtotal.....	**1,453**	**399**	**452**	**228**	**358**	**10**	**1,049**	**1.18**
Northwest								
Votuporanga.....	1,051	840	470	34	53	5	562	2.83
S. J. do Rio Preto.....	818	544	778	3	18	10	809	3.50
Subtotal.....	**1,869**	**1,384**	**1,249**	**37**	**71**	**14**	**1,371**	**3.19**
Central								
Matão.....	1,353	389	40	55	66	-	161	0.39
Duartina.....	1,889	1,262	337	-	2	-	340	0.62
Brotas.....	1,399	890	430	33	8	-	472	2.50
Subtotal.....	**4,641**	**2,541**	**808**	**88**	**76**	**-**	**972**	**0.85**
South								
Porto Ferreira.....	427	181	126	59	5	-	190	0.47
Limeira.....	830	1,362	212	9	21	39	281	0.69
Subtotal.....	**1,257**	**1,543**	**338**	**67**	**26**	**39**	**471**	**0.58**
Southwest								
Avaré.....	677	171	22	-	-	-	22	0.04
Itapetininga.....	55	12	26	-	-	38	64	0.33
Subtotal.....	**732**	**183**	**48**	**-**	**-**	**38**	**86**	**0.12**
Total.....	**9,952**	**6,050**	**2,894**	**420**	**531**	**102**	**3,948**	**0.98**

- Represents zero

Table 102 – All citrus: Status in 2022 of areas of abandoned groves in the 2018 inventory [2018 and 2022 inventories]

Sector and region	2018 inventory	Status in 2022				
			Renovated			
	Total	Abandoned	All oranges	Acid limes and lemons	Tangerines	Other crop or bare land
	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)
North						
Triângulo Mineiro...	72	-	34	-	-	38
Bebedouro.....	313	6	77	33	1	196
Altinópolis.....	14	-	-	-	-	14
Subtotal.....	**399**	**6**	**111**	**33**	**1**	**248**
Northwest						
Votuporanga.....	840	24	41	17	2	756
S. J. do Rio Preto.....	544	54	4	-	-	486
Subtotal.....	**1,384**	**78**	**45**	**17**	**2**	**1,242**
Central						
Matão.....	389	15	19	70	-	285
Duartina.....	1,262	8	339	4	39	872
Brotas.....	890	11	10	5	-	864
Subtotal.....	**2,541**	**34**	**368**	**79**	**39**	**2,021**
South						
Porto Ferreira.....	181	3	40	-	10	128
Limeira.....	1,362	20	215	6	21	1,100
Subtotal.....	**1,543**	**23**	**255**	**6**	**31**	**1,228**
Southwest						
Avaré.....	171	2	4	-	-	165
Itapetininga.....	12	-	-	-	-	12
Subtotal.....	**183**	**2**	**4**	**-**	**-**	**177**
Total.....	**6,050**	**143**	**783**	**135**	**73**	**4,916**

- Represents zero

3.4 – NEW CITRUS AREAS IN MUNICIPALITIES NEAR THE CITRUS BELT

In this new mapping, the scan also contemplated municipalities outside the citrus belt, which are close to the bordering areas, in order to monitor the evolution of citrus plantings in these borders. Commercial groves were mapped, but not those whose purpose is still to analyze the behavior of citrus varieties in the regions. The selection of municipalities was based on the volume of nursery plants received in recent years, according to data from the animal and plant health protection agency for the state of São Paulo (CDA-SP), informed by the Brazilian statistics institute (IBGE) and indication by the PES technical committee.

In these new areas, the plant counting step was not performed in 5% of the mapped plots, a technique used to estimate the number of trees in each age category, dead trees and vacancies. The method in these areas contemplated only the registration of the plots, so it is possible to accurately measure the area and estimate the number of planting holes, which results from the total area of the plot and the estimate of the area occupied by each plant, given by the spacing between plants and between rows.

The plantings are distributed in 11 municipalities and cover an area of 6,339 hectares, with an estimated 3.508 million planting holes. Most of the fruits produced in these regions are intended for consumption *in natura*: 47% of the area is occupied with tangerines, 43% with oranges and 10% with acid limes and lemons. The data is presented in the following figure and tables.

Figura 9 – Location of citrus plots in new planting areas in municipalities near the citrus belt

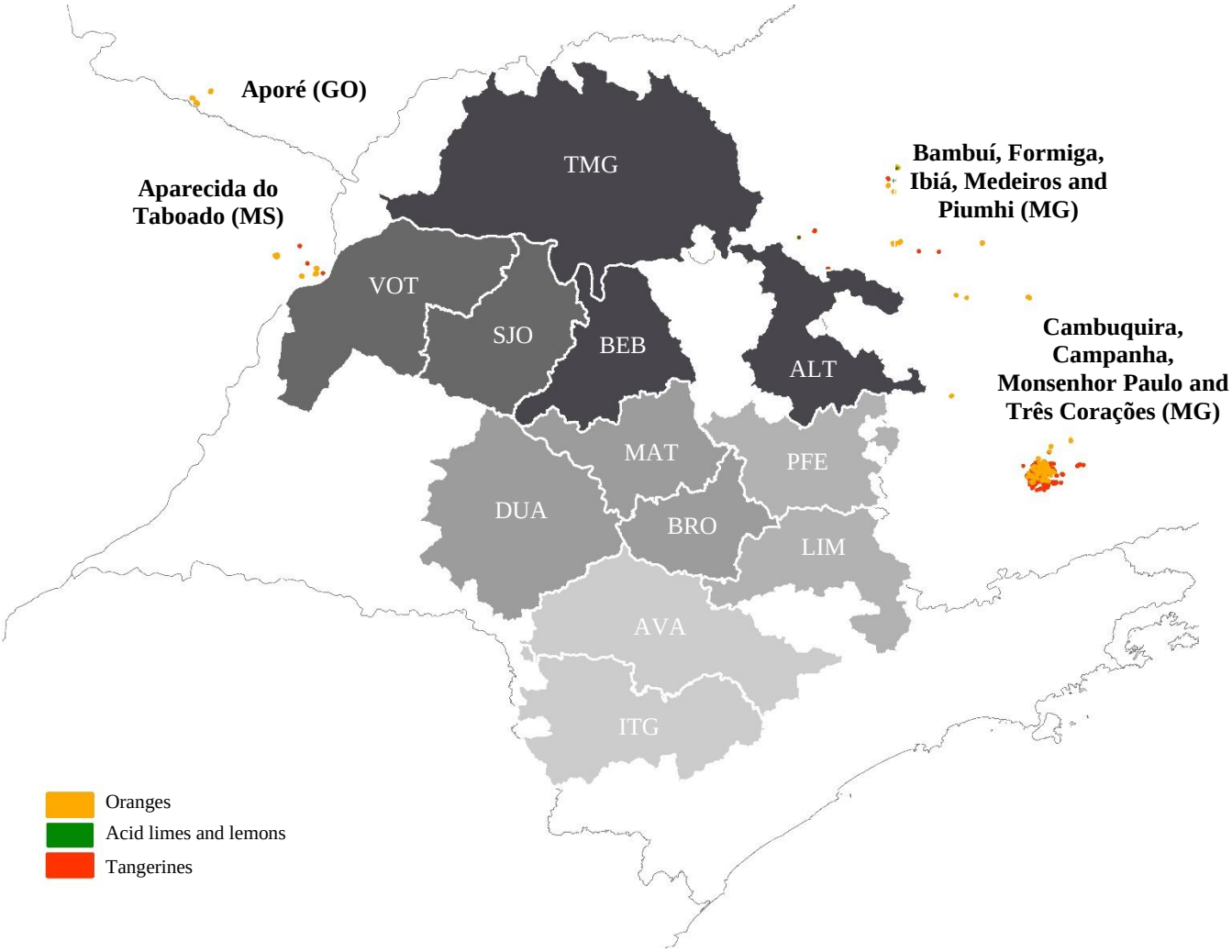


Table 103 – All citrus: Groves area by variety and age in the newly mapped areas [inventory 2022]

Cities and varieties	Plot age				Total
	1 – 2 years	3 – 5 years	6 – 10 years	Over 10 years	
	(hectares)	(hectares)	(hectares)	(hectares)	(hectares)
Aparecida do Taboado (MS) and Aporé					
Hamlin	-	39	-	-	39
Rubi	-	82	-	-	82
Pera Rio	89	208	209	465	971
Natal	-	-	14	49	63
Tahiti acid lime	267	57	232	-	556
Ponkan	9	55	29	7	100
Subtotal	**365**	**441**	**484**	**521**	**1,811**
Cambuquira, Campanha, Monsenhor Paulo and Três Corações (MG)					
Rubi	2	-	-	-	2
Westin	-	-	11	1	12
Pera Rio	101	23	74	50	248
Valencia	9		1	9	19
Valencia Folha Murcha	26	46	51	42	165
Natal	71	114	30	30	245
Washington Navel and Baianinha	12	2	10	42	66
Charmute de Brotas	9	26	11	-	46
Acidless sweet oranges and sweet lime	20	9	25	18	72
Tahiti acid lime	2	12	18	-	32
Other lemons	3	-	-	-	3
Murcott	15	-	17	-	32
Ponkan	358	373	1,006	993	2,730
Other tangerines	14	17	22	17	70
Subtotal	**642**	**622**	**1,276**	**1,202**	**3,742**
Bambuí, Formiga, Ibiá, Medeiros and Piumhi (MG)					
Hamlin	101	-	-	-	101
Rubi	-	-	86	-	86
Pera Rio	21	82	203	53	359
Valencia	-	-	-	35	35
Valencia Folha Murcha	7	17	9	21	54
Natal	-	13	-	-	13
Charmute de Brotas	-	-	-	9	9
Acidless sweet oranges and sweet lime	-	-	12	9	21
Other oranges	-	-	28	3	31
Tahiti acid lime	-	7	-	25	32
Ponkan	-	13	16	16	45
Subtotal	**129**	**132**	**354**	**171**	**786**
Subtotal oranges	**468**	**661**	**774**	**836**	**2,739**
Subtotal acid limes and lemons	**272**	**76**	**250**	**25**	**623**
Subtotal tangerines	**396**	**458**	**1,090**	**1,033**	**2,977**
Total	**1,136**	**1,195**	**2,114**	**1,894**	**6,339**

- Represents zero

Table 104 – All citrus: Planting holes area by variety and age in the newly mapped areas [inventory 2022]

Cities and varieties	Plot age				Total
	1 – 2 years	3 – 5 years	6 – 10 years	Over 10 years	
	(1,000 holes)	(1,000 holes)	(1,000 holes)	(1,000 holes)	(1,000 holes)
Aparecida do Taboado (MS) and Aporé (GO)					
Hamlin	-	20.86	-	-	20.86
Rubi	-	42.67	-	-	42.67
Pera Rio	46.17	103.79	114.23	236.66	500.85
Natal	-	-	7.92	24.23	32.15
Tahiti acid lime	123.3	25.65	83.63	-	232.58
Ponkan	4.3	28.75	18	3.48	54.53
Subtotal	**173.77**	**221.72**	**223.78**	**264.37**	**883.64**
Cambuquira, Campanha, Monsenhor Paulo and Três Corações (MG)					
Rubi	0.92	-	-	-	0.92
Westin	-	-	6.65	0.39	7.04
Pera Rio	59.6	12.56	40.91	24.45	137.52
Valencia	5.82	-	0.38	4.48	10.68
Valencia Folha Murcha	14.21	27.2	26.38	20.11	87.9
Natal	36.11	59.6	20.28	13.44	129.43
Washington Navel and Baianinha	7.86	1.58	5.19	20.62	35.25
Charmute de Brotas	5.97	14.99	7.38	-	28.34
Acidless sweet oranges and sweet lime	13.6	5.37	15.19	8.49	42.65
Tahiti acid lime	0.98	9.56	9.11	-	19.65
Other lemons	1.5	-	-	-	1.5
Murcott	10.53	-	9.78	-	20.31
Ponkan	233.45	238.03	622.38	514.89	1608.75
Other tangerines	8.95	10.73	12.75	9.22	41.65
Subtotal	**399.50**	**379.62**	**776.38**	**616.09**	**2,171.59**
Bambuí, Formiga, Ibiá, Medeiros and Piumhi (MG)					
Hamlin	52.63	-	-	-	52.63
Rubi	-	-	57.85	-	57.85
Pera Rio	11.74	36.09	128.14	28.66	204.63
Valencia	-	-	-	17.66	17.66
Valencia Folha Murcha	4.05	10.82	4.68	10.18	29.73
Natal	-	8.70	-	-	8.70
Charmute de Brotas	-	-	-	4.56	4.56
Acidless sweet oranges and sweet lime	-	-	6.09	4.30	10.39
Other oranges	-	-	14.68	1.34	16.02
Tahiti acid lime	-	2.89	-	15.41	18.30
Ponkan	-	10.28	11.80	11.12	33.20
Subtotal	**68.42**	**68.78**	**223.24**	**93.23**	**453.67**
Subtotal oranges		**344.23**	**455.95**	**419.57**	**1,478.43**
Subtotal acid limes and lemons		**38.10**	**92.74**	**15.41**	**272.03**
Subtotal tangerines		**287.79**	**674.71**	**538.71**	**1,758.44**
Total	**641.69**	**670.12**	**1,223.40**	**973.69**	**3,508.90**

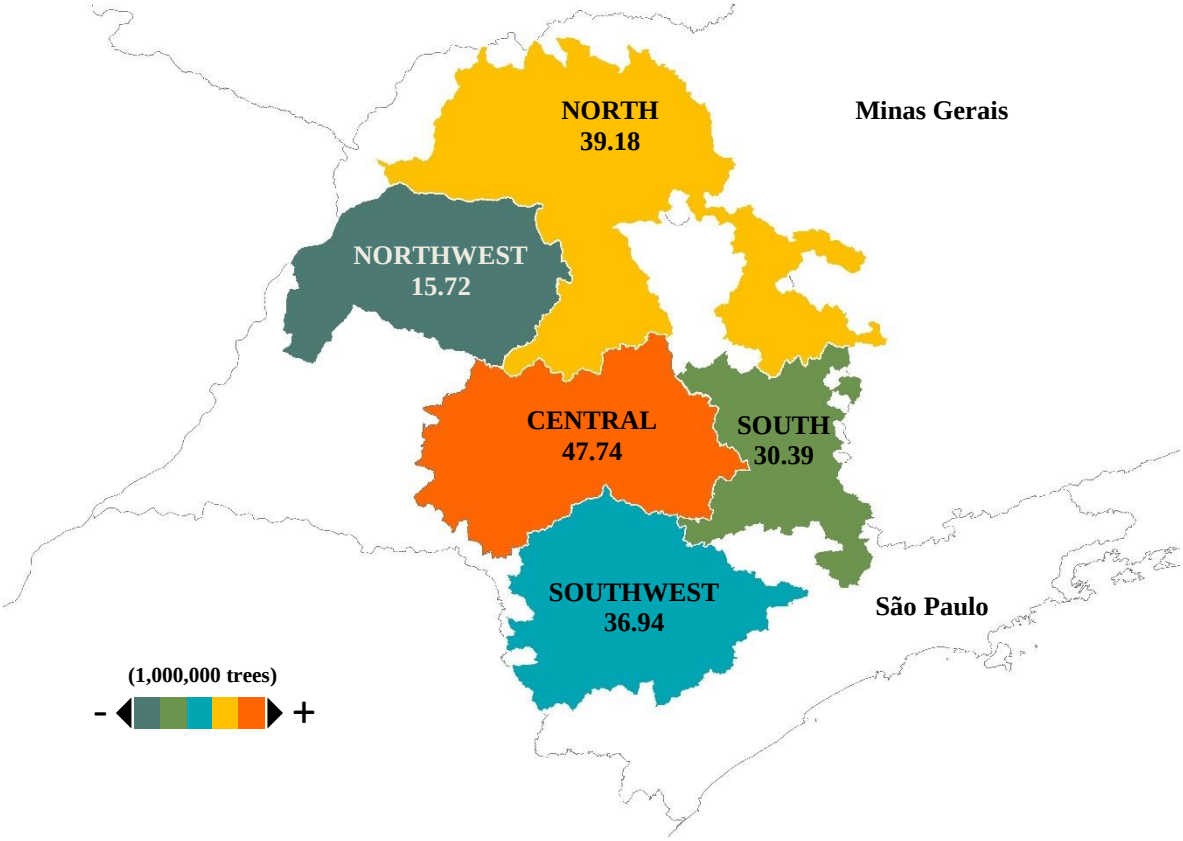
\- Represents zero

[1] For the new mapped areas, the tree count of 5% of the plots was not performed

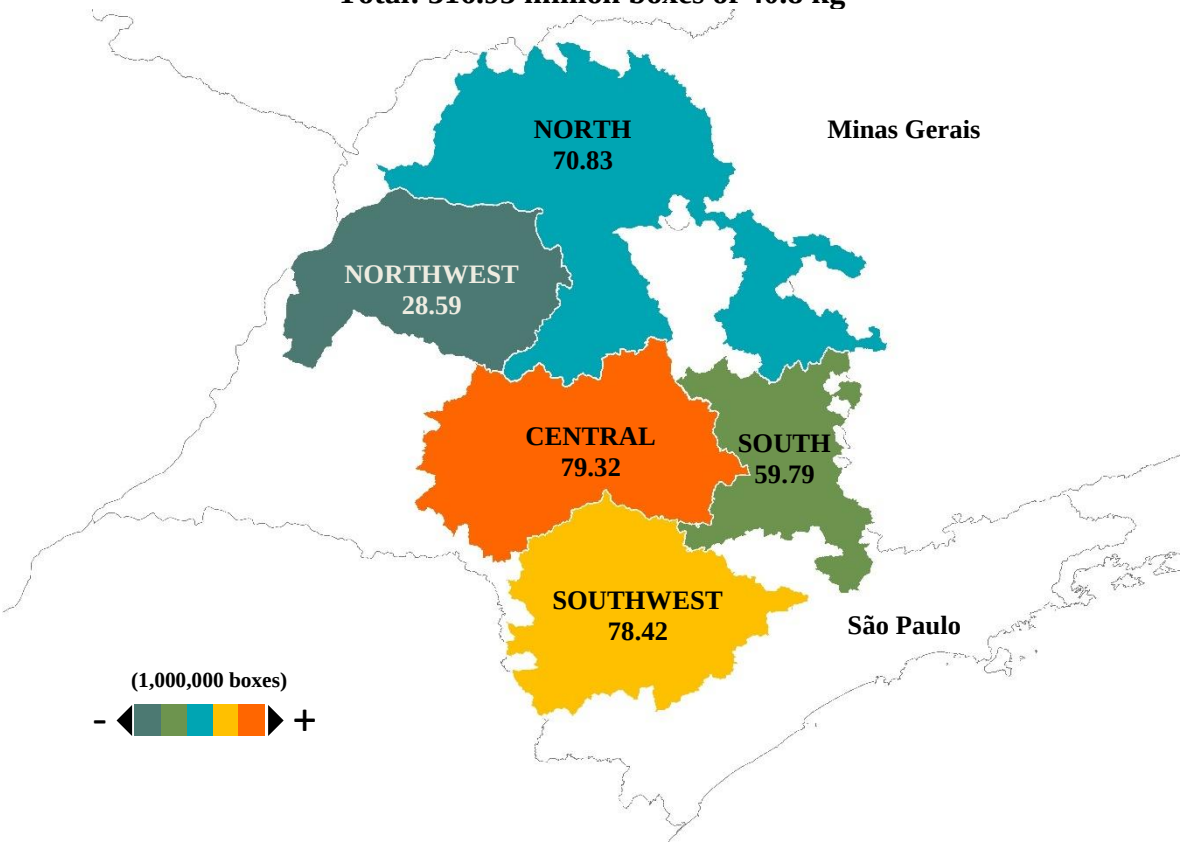
2022-2023 ORANGE CROP FORECAST FOR THE SÃO PAULO AND WEST-SOUTHWEST MINAS GERAIS CITRUS BELT

MAY FORECAST

ORANGE[1] BEARING TREES BY SECTOR
Total: 169.97 million trees



2022-2023 ORANGE CROP FORECAST BY SECTOR[2]
Total: 316.95 million boxes of 40.8 kg



[1] Snapshot in March 2022. Varieties: Hamlin, Westin, Rubi, Valencia Americana, Seleta, Pineapple, Alvorada, Pera Rio, Valencia, Valencia Folha Murcha and Natal

[2] Status in May 2022

2022-2023 ORANGE CROP FORECAST FOR THE SÃO PAULO ANA WEST-SOUTHWEST MINAS GERAIS CITRUS BELT – MAY FORECAST

Published on June 30, 2022[1]

Publication Schedule

2022-2023 Crop Year
Executive summary of the 2022-2023 orange crop forecast: May 26, 2022
March 2022 tree inventory: June 30, 2022
Crop forecast: May 26, 2022
1st Crop forecast update: September 12, 2022
2nd Crop forecast update: December 12, 2022
3rd Crop forecast update: February 10, 2023
Final crop forecast: April 10, 2023

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 8 – Nº 1 – June 30, 2022 (Portuguese version only)
Year 8 – Nº 2 – July 01, 2022 (correction of the map containing the productive trees and estimate in Portuguese and English versions)

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

2022-2023 ORANGE CROP FORECAST FOR THE SÃO PAULO AND WEST-SOUTHWEST MINAS GERAIS CITRUS BELT

MAY FORECAST

Fundecitrus
Araraquara, São Paulo
2022

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SUMMARY

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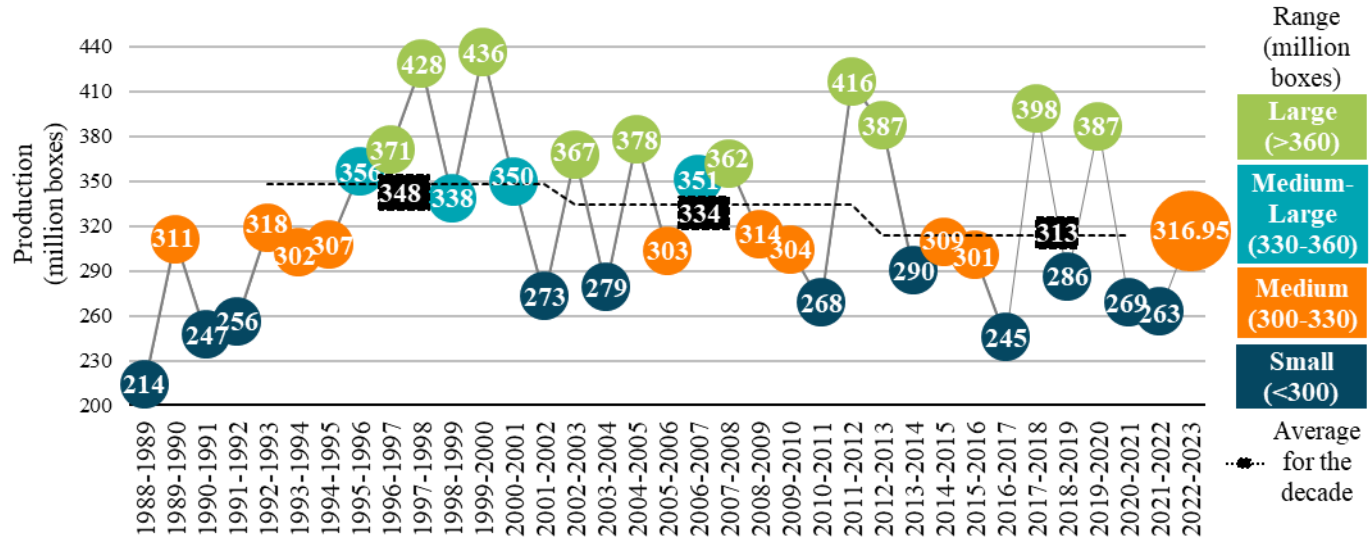
1 – 2022-2023 ORANGE CROP FORECAST

The 2022-2023 orange crop forecast for the São Paulo and West-Southwest Minas Gerais citrus belt, published on May 26, 2022 by Fundecitrus in cooperation with Markestrat, FEA-RP/USP and FCAV/Unesp, is 316.95 million boxes (40.8 kg). Total orange production includes:

- 59.48 million boxes of the Hamlin, Westin and Rubi varieties;
- 17.52 million boxes of the Valencia Americana, Seleta, Pineapple and BRS Alvorada;
- 93.95 million boxes of the Pera Rio variety;
- 106.78 million boxes of the Valencia and Valencia Folha Murcha varieties;
- 39.22 million boxes of the Natal variety.

Approximately 22.99 million boxes are expected to be produced in the Triângulo Mineiro.

The projected volume is 20.53% higher than the previous crop that totaled 262.97 million boxes and represents an increase of 1.11% in relation to last ten years' average, as presented in Graph 1.



Graph 1 – Orange production from 1988-1989 to 2021-2022 and 2022-2023 crop forecast
Sources: CitrusBR (1988-1989 to 2014-2015) and Fundecitrus (2015-2016 to 2022-2023)

The prospect of a better crop indicates that, in general, groves could recover from adverse weather including the drought and frost that took place in 2020 and 2021 and caused two consecutive small crops, resulting in a discontinued biennial bearing cycle characterized by the yearly alternation of large and small crops. If the new production expectation holds, a change from negative to positive biennial production will eventually be observed.

Rains that resumed in early October 2021 and the still well-distributed rainfall since then with no occurrence of second summers and with air temperatures below historical average contributed to regularizing the soil moisture level. From October 2021 to April 2022, the accumulated average rainfall in the citrus belt was 923 millimeters, a volume that is 22% below the climatological normal but 16% higher than the accumulated rainfall in the same period the previous year.

That situation enabled plants in rainfed areas, that is, 61% of the production area, to flower in October, producing the "second bloom", as it is called due to its flowering time. Favorable weather allowed for high fruit setting after that bloom, which decreased the production of subsequent blooms, leading to a high concentration of fruit from the second bloom in this crop, as well as from the first bloom in irrigated groves. This higher crop homogeneity, in addition to optimizing harvest, also tends to produce better quality fruit.

Overall, the first bloom accounts for 27.5% of the crop, the second bloom for 58.3%, the third bloom for 12.4%, and the fourth bloom for 1.8%.

Therefore, owing to better climate conditions, most orange trees in the citrus planted area show good fruit load and heavier oranges than those in the last crop, at the same development stage. This positive scenario as compared to the previous crop season should remain until this crop season ends. For that reason, the projected orange weight at harvest is 158 grams, which is 10.49% above the average weight of 143 grams observed last crop season, despite being 3.66% below the average weight in the last seven crops (164 grams). The increase in the irrigated area of mature groves, from de 31% in the 2018 inventory to 39% in the 2022 inventory, favored the growth of oranges. On the other hand, oranges produced in rainfed areas may suffer due to rainfall below historical average, should the La Niña phenomenon continue as expected until summer 2023, according to the weather forecast by Somar Meteorologia/Climatempo.

Average yield this crop season is estimated at 920 boxes per hectare and 1.86 boxes per tree as compared to the 760 boxes per hectare and 1.58 boxes per tree harvested in the 2021-2022 crop. The yield increase that stands out refers to groves planted with the Natal variety, expected to be 37% above that in the last crop season and the highest among all varieties. Tables 1 and 2 present yields by variety and variations in relation to the previous crop season.

Table 1 – Yield per hectare and variety for the 2017-2018 crop to the 2022-2023 crop

Group of varieties	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	2022-2023[e]
	(boxes/ hectare)	(boxes/ hectare)	(boxes/ hectare)	(boxes/ hectare)	(boxes/ hectare)	(boxes/ hectare)
Hamlin, Westin and Rubi…	1,235	833	1,319	797	819	1,047
Other earlies.....	1,008	810	1,121	827	804	971
Subtotal for earlies.....	1,184	828	1,273	804	815	1,029
Pera Rio.....	945	633	943	671	653	791
Valencia and V.Folha Murcha.	1,016	826	998	739	838	955
Natal.....	1,063	765	1,082	803	734	1,006
Total.....	**1,033**	**756**	**1,045**	**737**	**760**	**920**

[e] Estimate

Table 2 – Variation in yield per hectare for varieties as compared to previous season's

Group of varieties	2018-2019 in comparison to 2017-2018		2019-2020 in comparison to 2018-2019		2020-2021 in comparison to 2019-2020		2021-2022 in comparison to 2020-2021		2022-2023 in comparison to 2021-2022	
	(boxes/ hectare)	%	(boxes/ hectare)	%	(boxes/ hectare)	%	(boxes/ hectare)	%	(boxes/ hectare)	%
Hamlin, Westin and Rubi…	-402	-32.5%	486	58.4%	-522	-39.6%	22	2.8%	228	27.8%
Other earlies.....	-198	-19.6%	311	38.4%	-294	-26.2%	-23	-2.8%	167	20.8%
Subtotal for earlies.....	-357	-30.1%	445	53.8%	-469	-36.9%	11	1.4%	213	26.2%
Pera Rio.....	-312	-33.0%	310	48.9%	-272	-28.8%	-18	-2.7%	138	21.2%
Valencia and V.Folha Murcha.	-190	-18.7%	172	20.9%	-259	-26.0%	99	13.4%	117	14.0%
Natal.....	-298	-28.0%	316	41.3%	-279	-25.8%	-69	-8.6%	272	37.0%
Total.....	**-278**	**-26.9%**	**290**	**38.3%**	**-308**	**-29.5%**	**23**	**3.1%**	**160**	**21.1%**

[e] Estimate

Regarding yield per sector, the Southwest, which includes the regions of Avaré and Itapetininga, should present the highest rate, at 1,107 boxes per hectare, having recovered from the drop of 21.4% that took place last crop season. Encompassing the regions of Porto Ferreira and Limeira, the South sector ranks second at 948 boxes per hectare, which is a significant improvement after two years of low yields and

negative deviations. Following that are the sectors that had an increase in yield last crop season and keep a positive bias in this new cycle. In that situation are the Central sector, comprising the regions of Matão, Duartina and Brotas, at 844 boxes per hectare, the Northwest sector, comprising the regions of Votuporanga and São José do Rio Preto, at 845, and lastly the North sector, where the regions of Triângulo Mineiro, Bebedouro and Altinópolis are, at 856 boxes per hectare. Tables 3 and 4 present yields by sector and variations in relation to the previous crop season.

Table 3 – Yield per hectare of sectors for the 2017-2018 crop to the 2022-2023 crop

Sector	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	2022-2023[e]
	(boxes/ hectare)	(boxes/ hectare)	(boxes/ hectare)	(boxes/ hectare)	(boxes/ hectare)	(boxes/ hectare)
North.....	1,108	606	1,070	648	804	856
Northwest.....	882	404	924	468	646	845
Central.....	984	707	1,032	667	729	844
South.....	989	770	936	725	699	948
Southeast.....	1,154	1,195	1,217	1,106	869	1,107
Total.....	**1,033**	**756**	**1,045**	**737**	**760**	**920**

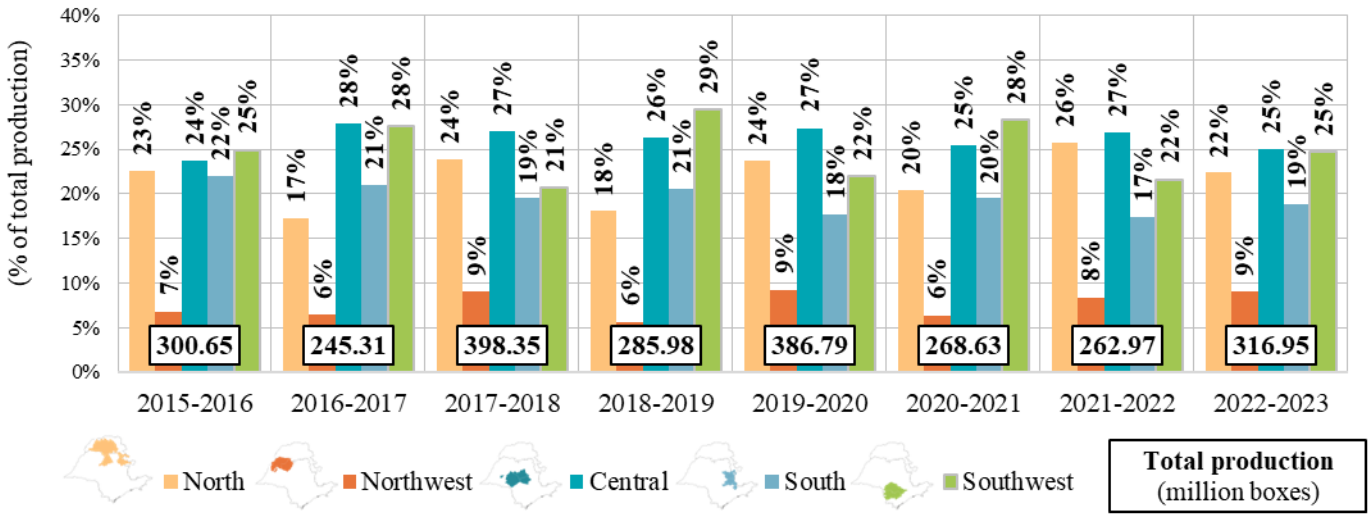
[e] Estimate

Table 4 – Variation in yield per hectare of sectors in relation to the previous crop season's

Sector	2018-2019 in comparison to 2017-2018		2019-2020 in comparison to 2018-2019		2020-2021 in comparison to 2019-2020		2021-2022 in comparison to 2020-2021		2022-2023[e] in comparison to 2021-2022	
	(boxes/ hectare)	%	(boxes/ hectare)	%	(boxes/ hectare)	%	(boxes/ hectare)	%	(boxes/ hectare)	%
North.....	-502	-45.3%	464	76.6%	-422	-39.4%	156	24.1%	52	6.5%
Northwest.....	-478	-54.2%	520	128.7%	-456	-49.4%	178	38.0%	199	30.8%
Central.....	-277	-28.1%	325	46.0%	-365	-35.4%	62	9.3%	115	15.8%
South.....	-218	-22.1%	166	21.6%	-211	-22.5%	-26	-3.6%	249	35.6%
Southwest.....	41	3.5%	22	1.8%	-111	-9.1%	-237	-21.4%	238	27.4%
Total.....	**-277**	**-26.9%**	**289**	**38.2%**	**-308**	**-29.5%**	**23**	**3.1%**	**160**	**21.1%**

[e] Estimate

As presented in Graph 2, the Central sector accounts for 25% of the production, the Southwest for 25%, the North for 22%, the South for 19% and the Northwest for 9%.



Graph 2 – Share of sectors in total orange production in the 2015-2016 to 2022-2023 crops

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.

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

where CF is the correction factor

Results from the inventory and fruit 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 (technical supervisor); Roseli Reina (specialist); 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, finalized the crop forecast on May 26, 2022, at 9:30 a.m., in a closed meeting at Fundecitrus, 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, broadcast live at the Fundecitrus channel on YouTube (www.youtube.com/fundecitrus). Next, Fundecitrus general manager Antonio Juliano Ayres presented the detailed data. After the crop forecast announcement, the Executive Summary of the 2022-2023 orange crop forecast was made available on the Fundecitrus website. The complete report including the 2022 tree inventory and the 2022-2023 orange crop forecast were made available on June 30, 2022, at www.fundecitrus.com.br.

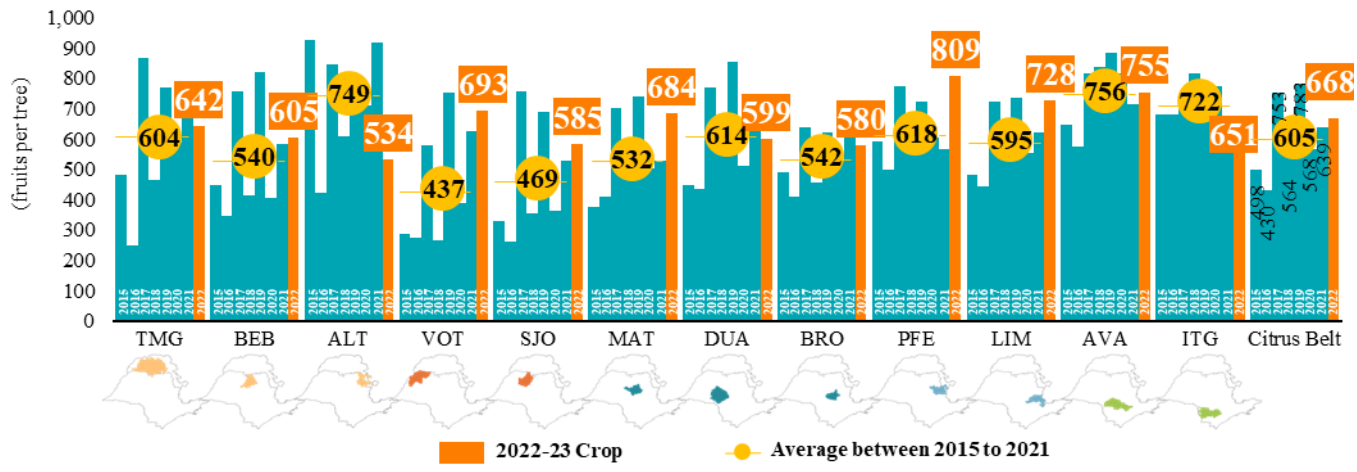
2.1 – BEARING TREES

Bearing trees total 169.97 million and occupy an area of 344,389 hectares in this crop season. These figures represent an increase of 3.41 million trees, equivalent to 2% above the 2021 inventory and a decrease in the production area of 0.50%, evidencing the effect of the higher planting density in the last years. Varieties included in this forecast are present in 97% of the area of orange groves in the citrus belt. Orange trees of the Alvorada variety were included in this crop in the category “Other earlies” that encompasses 300 hectares of mature groves and 248 thousand bearing trees. Information on bearing trees was obtained from the “Tree inventory of the São Paulo and West-Southwest Minas Gerais citrus belt: Snapshot in March 2022”, taken from the 2022 primary base – created by mapping groves from August 16, 2021 to January 28, 2022 – and from counting existing trees in approximately 5% of orange plots from January 31 to March 29, 2022.

2.2 – FRUIT PER TREE

The average number of fruits per tree in May 2022, without considering the drop that occurs throughout the season, is 668, which represents an increase of 4,5% in relation to the previous crop. The average number of fruits per tree may have a variation of plus or minus 19 units, which is equivalent to ± 2.82% of the average number of fruits per tree at stripping. This figure is within the expected error of 2% to 3% used in sizing the sample.

Graph 3 shows the number of fruits per tree at stripping from 2015 to 2022, separately for the 12 regions. Data precision for regions is smaller than that of the general average due to a lower number of samples per stratum. The error in the average number of fruits per tree is ± 9.2% in the Triângulo Mineiro, ± 10.1% in Bebedouro, ± 12.5% in Altinópolis, ± 9.4% in Votuporanga, ±11.2%; in São José do Rio Preto, ± 9.5% in Matão, ± 9.3% in Duartina, ± 7.8% in Brotas, ± 9.0% in Porto Ferreira, ± 9.7% in Limeira, ± 9.2% in Avaré, and ± 7.9% in Itapetininga.



Graph 3 – **Number of fruits per fruit-stripped tree by region from 2015 to 2022**

For the forecast calculation, fruits from the first, second and third blooms were considered in full. A setting rate of 65% was applied to fourth bloom fruits because of their rather small amount and the favorable climate conditions at present that should help in fruit retention. In the separation of fruits per bloom, off-season fruits were also identified and resulted from late and sporadic flowers from the previous crop season, not accounted for in the current crop forecast.

Three to five-year-old plots present yield of 300 fruits per tree this crop season. For six to 10-year-old plots, an average of 534 fruits per tree is estimated, with 548 fruits per tree for original plantings and 193 fruits per tree for three to five-year-old resets. Plots over 10 years old have an average of 830 fruits per tree and a yield of 880 fruits per tree for original plantings, 356 fruits per tree for six to 10-year-old resets and 150 fruits per tree for three to five-year-old resets. Yield rates are presented in Graph 4.

Ages and planting years: 3 – 5 years (2017 to 2019), 6 – 10 years (2012 to 2016) and over 10 years (2011 and previous years)

Graph 4 – **Age-stratified number of fruits per tree in the plot**

An average of 859 fruits per tree were counted for the group of earlies Hamlin, Westin and Rubi, 722 fruits per tree for the late season Natal variety, 686 fruits per tree for the late Valencia and Valencia Folha Murcha varieties, 638 fruits per tree for other earlies, and 560 for the mid-season Pera Rio variety.

The method used consists in fruit stripping, that is, the advanced harvest of all fruits in the tree, regardless of the bloom they are from. In this crop season, fruits were stripped from trees from March 28 to May 11, 2022. Fruits harvested were taken to a fruit stripping laboratory in Araraquara, where each sample was separated into the different blooms it was from. Fruits were quantified by automatic counting equipment and then weighed.

Sample size was 1,560 trees selected by a drawing. An initial drawing by the method of stratified random sampling included 1,200 trees distributed proportionally amongst all orange trees in the citrus belt and stratified according to their region, variety and age. An additional drawing included 360 resets of ages lower than the age groups of their groves. These resets correspond to replacements made mainly to offset tree losses caused by citrus greening, citrus blight, gomosis and other diseases. The tree population in this last drawing comprises 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 – Regions of the citrus belt included in the drawing, by sector

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 – Variety groups included in the drawing, by maturity time

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

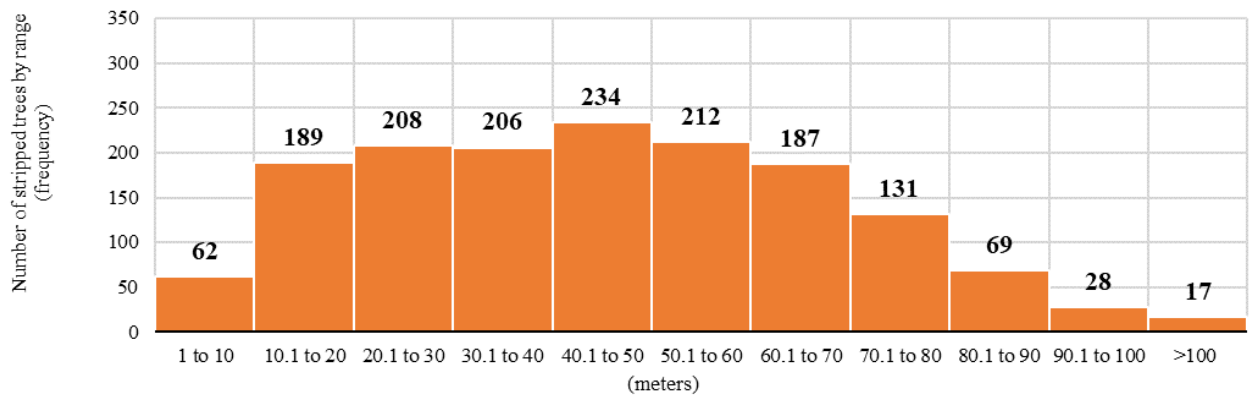
Chart 3 – Age groups from the combined age of plots and age of trees

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

[1] Ages and planting years: 3 to 5 years (2017 to 2019), 6 to 10 years (2012 to 2016) and over 10 years (2011 and previous years).

For the 1,200 trees in the first drawing, the location in the plot of the tree to have fruit stripped from is predetermined and varies every crop season. This makes the selection of the tree 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 2022-2023 crop, the tree in the drawn plot was the one located in the 23rd planting hole in the 14th row. If there was 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 was selected. Should that situation repeat itself, three more plants down were counted, until a tree of the drawn age was found. If the plot did not have 14 or more planting rows, the counting restarted in the existing rows until number 14 was reached. For the second drawing of 360 resets, the tree was found in the plot after visual aspects were considered, such as trunk circumference and size of canopy.

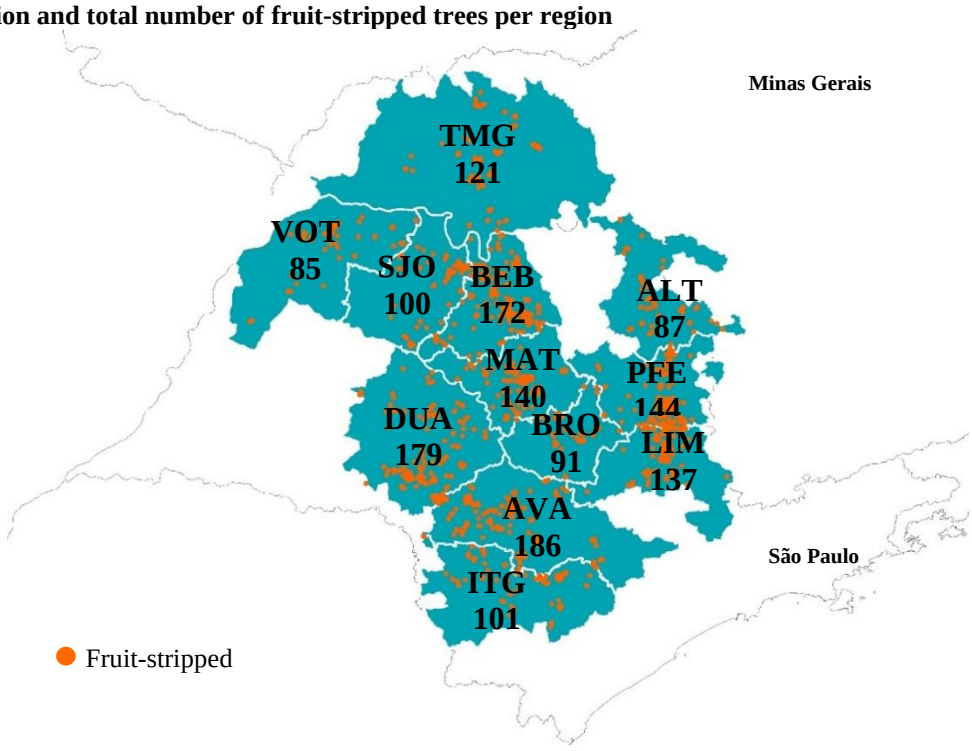
Graph 5 presents the distance (in meters) from the fruit-stripped tree to the nearest border of the plot, which shows the majority of classes with similar frequencies, with a central figure between 40 and 50 meters of distance from the fruit-stripped tree to the nearest border.



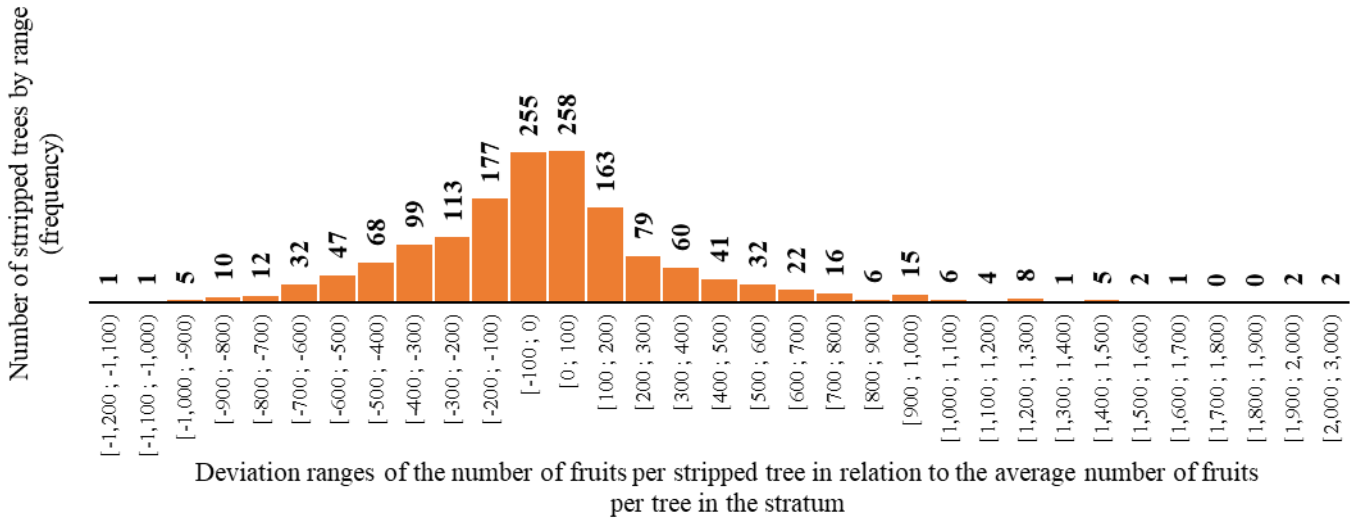
Graph 5 – Histogram of distances from the fruit-stripped tree to the nearest border of the plot

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

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



The yield deviation distribution analysis for each fruit-stripped tree in relation to the stratum average shows that sample data are randomly distributed according to a normal distribution, as presented in Graph 6. Out of the total samples, 17 were discarded upon showing great discrepancy in relation to the others.



Graph 6 – Histogram of deviations of fruits per tree at stripping

Graph 7 shows the dispersion of deviations of each fruit-stripped tree in relation to the stratum average. It is observed that 95% of samples fall within the average (639 fruits) ± 2 standard deviations.

Graph 7 – Deviation on the number of fruits at each stripping in relation to the stratum average

The tree harvested upon permit from citrus growers is indemnified at R$ 46.00 through an online payment system where citrus growers can register and redeem the amount due.

2.3 – 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 20.00%, distributed as follows: 11.50% for the early Hamlin, Westin and Rubi varieties, 12.00% for other early varieties, 21.70% for the mid-season Pera Rio variety, 23.50% for the late Valencia and Valencia Folha Murcha varieties, and 23.50% for the late Natal variety. This rate is applied to the number of fruits in the tree in May 2022, when fruits were stripped. The result of this calculation is the estimate of the number of fruits 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 due to physiological drop, damage caused

by machines, pests and diseases, and adverse climatic conditions. As shown in Chart 5, the South sector has the highest drop rate at an average 24.80%, whereas the Southwest sector has the lowest one at 16.90%.

Table 5 – Projected fruit drop rates by sector and variety

Group of varieties	Sector					
	North	Northwest	Central	South	Southwest	Total
	(percentual)	(percentual)	(percentual)	(percentual)	(percentual)	(percentual)
Hamlin, Westin and Rubi……..	10.70	13.00	12.50	13.60	8.90	**11.50**
Other earlies.....	9.40	17.00	13.80	20.00	6.00	**12.00**
Pera Rio.....	18.10	16.80	23.80	26.40	19.70	**21.70**
Valencia and V. Folha Murcha..	21.80	27.00	25.40	27.90	18.70	**23.50**
Natal.....	21.00	24.70	22.50	29.80	21.50	**23.50**
Total.....	**17.70**	**19.20**	**21.10**	**24.80**	**16.90**	**20.00**

Should this fruit drop rate hold, it will be below only the ones observed in the last two crops, when climate conditions were severe. The main reason for this projection is the intensified phytosanitary problems such as the increased incidence of orange trees with greening symptoms in the citrus belt, which rose from 20.87% in 2020 to 22.37% in 2021, associated to serious problems with fruit borer, fruit fly, black spot and leprosis. The projected drop rate is smaller than those observed in 2020 and 2021 due to the blooming homogeneity in this crop season, in addition to the higher rainfall volume and its better distribution. Last two years were extremely dry in comparison to history, which contributed to much greater fruit drop levels. Monthly and continuous monitoring carried out by Fundecitrus as of June 2022 in 1,200 orange plots visited up to their complete harvest serves as basis to correct the drop rate projected at the time of this publication and consequently to correct the production estimate as well.

2.4 – 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 258 fruits per 40.8 kg box, namely 300 fruits per box for the group of early varieties comprising Hamlin, Westin and Rubi, 260 fruits per box for the group of other early varieties, 260 fruits per box for the mid-season Pera Rio variety, 237 fruits per box for the late Valencia and Valencia Folha Murcha varieties, and 240 fruits per box for the late Natal variety. Table 6 presents projected fruit sizes by variety and sector.

Table 6 – Projected fruit sizes by sector and variety

Group of varieties	Sector					
	North	Northwest	Central	South	Southwest	Total
	(Fruits estimated per box)	(Fruits estimated per box)	(Fruits estimated per box)	(Fruits estimated per box)	(Fruits estimated per box)	(Fruits estimated per box)
Hamlin, Westin and Rubi……..	304	291	294	304	302	**300**
Other earlies.....	253	257	257	265	276	**260**
Pera Rio.....	249	244	274	265	255	**260**
Valencia and V. Folha Murcha..	224	236	249	247	232	**237**
Natal.....	229	255	239	253	239	**240**
Total.....	**247**	**250**	**265**	**263**	**252**	**258**

The average size of 258 fruits per box is equivalent to oranges weighing approximately 158 grams (5.57 oz) at harvest. The final fruit size was estimated by a regression model that considered the final fruit size (fruits per box at harvest) as the dependent variable, and the number of fruits per tree counted at stripping, the initial fruit size (fruits per box at stripping), the sum of the production percentages of the first and second blooms in relation to the total production and the rainfall accumulated from May to July as independent variables. Data from eleven crops, 2010-2011 to 2020-2021, were used in the regression and are presented

in Table 6. Data from the 2021-2022 crop were not used because that was a period of totally atypical climate conditions, with the worst drought in almost a century and high-intensity frosts. The result obtained shows an adjusted R^2 of 0.93. This means that the four independent variables together explain 93% of the variation in the final fruit size (fruits per box at harvest), 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 these eleven crops presents an average absolute error of 2.5%.

Data relative to final fruit size (fruits per box at harvest), number of fruits per tree counted at stripping, initial fruit size (fruits per box at stripping), the sum of the production percentages from the first and second blooms in relation to the total production for the series from 2009-2010 to 2014-2015 were provided by 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 were 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 were kept confidential. Data relative to the 2015-2016 to 2020-2021 crops come from results of estimates developed by Fundecitrus. Data on rainfall accumulated from May to July were supplied by Somar Meteorologia/Climatempo.

Data used in the model to estimate the final fruit size in this crop comprise figures from the 2022 stripping and the rainfall from May to July 2022 in a volume equivalent to 80% of the climatological average (1981-2010), disregarding the rainfall observed in May. This size (261) was corrected by the regression that used the observed size as the dependent variable and the estimated size as the independent variable.

Table 7 – Data for the 2010-2011 crop to the 2020-2021 crop used to estimate the final fruit size in the 2022-2023 crop

Crop	Fruits per tree at stripping	Initial fruit size at stripping	Sum of productions from first and second blooms	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)	(%)	(%)
2010-2011....	532	457	97%	64	271	257	-5%	5%
2011-2012....	859	401	96%	116	269	268	-1%	1%
2012-2013....	764	439	95%	268	250	239	-4%	4%
2013-2014....	515	338	87%	247	224	215	-4%	4%
2014-2015....	646	373	92%	102	256	252	-2%	2%
2015-2016....	498	391	90%	204	226	234	4%	4%
2016-2017....	430	358	90%	214	222	225	2%	2%
2017-2018....	753	393	91%	184	246	248	1%	1%
2018-2019....	564	446	82%	36	259	253	-2%	2%
2019-2020....	783	411	94%	95	261	269	3%	3%
2020-2021....	568	511	85%	96	258	261	1%	1%
2022-2023....	668	462	86%	80[ha]	(X)	261	(X)	(X)

Sources: Fundecitrus (2015-2016 crop to 2022-2023 crop), CitrusBr (2008-2009 crop to 2014-2015 crop), Somar Meteorologia/Climatempo
(X) Not applicable
[mh] 80% of the historical average for May to July (disregarding rainfall observed by May 20, 2022)

The result of the equation used in the crop estimate is corrected by the application of a correction factor. That is necessary because of variables not accounted for in the calculations, such as harvested fruits that wind up not being used, diverse planting densities that are not considered in the stratification of groves, and 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 since the 2017-2018 crop, which represents the average of the indexes for the 2015-2016 and 2016-2017 crops estimated by Fundecitrus.

3 – TABLES OF DATA

The following tables present the 2022-2023 orange crop forecast per sector, age, bloom and variety. The margin of error of the production estimate in the strata is higher than that of the production estimate in the citrus belt as a whole. Possible subsequent variations in fruit size and fruit drop rate may change the forecast and will be accounted for throughout the crop season by ongoing field monitoring for production estimate updates.

Table 8 – 2022-2023 Orange crop forecast by sector

Sector	Mature groves area	Average density[1] of mature groves	Bearing trees	Fruit per tree at stripping[2]	2022-2023 Orange crop forecast		
					Per tree	Per hectare	Total
	(hectares)	(trees/ hectare)	(1,000 trees)	(number)	(boxes/ tree)	(boxes/ hectare)	(1,000,000 boxes)
North.....	82,706	483	39,183	607	1.81	856	70.83
Northwest.....	33,846	470	15,721	630	1.82	845	28.59
Central.....	93,931	519	47,739	624	1.66	844	79.32
South.....	63,095	503	30,388	772	1.97	948	59.79
Southwest.....	70,811	535	36,942	721	2.12	1,107	78.42
Total.....	**344,389**	**506**	**169,973**	**668**	**1.86**	**920**	**316.95**

[1] Calculation considers the total number of trees in the plot, that is, bearing and non-bearing trees (2020 and 2021 resets)
[2] Weighted average per total stratum fruit

Table 9 – 2022-2023 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.....	51,509	615	30,188	-	-	30,188	**300**	-	-	300
6 – 10 years.....	67,294	594	1,540	37,502	-	39,042	193	**548**	-	534
Over 10 years…...	225,586	455	2,586	5,952	92,204	100,742	150	356	**880**	830
Total.....	**344,389**	**506**	**34,314**	**43,454**	**92,204**	**169,972**	**284**	**522**	**880**	**668**

[1] Calculation considers the total number of trees in the plot, that is, bearing and non-bearing trees (2020 and 2021 resets)
[2] Weighted average per total stratum fruit

Table 9 – 2022-2023 Orange crop forecast by tree age group (continued)

Plots age	2021-2022 Orange crop forecast by tree age group				2021-2022 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.....	0.84	-	-	0.84	**25.34**	-	-	**25.34**
6 – 10 years.....	0.53	1.53	-	1.49	0.82	**57.26**	-	**58.08**
Over 10 years…...	0.42	0.99	2.46	2.32	1.08	5.90	**226.55**	**233.53**
Total.....	**0.79**	**1.45**	**2.46**	**1.86**	**27.24**	**63.16**	**226.55**	**316.95**

[1] Calculation considers the total number of trees in the plot, that is, bearing and non-bearing trees (2020 and 2021 resets)

Table 10 – 2022-2023 Orange crop forecast by bloom

Bloom	2022-2023 Orange crop forecast	Percentage of the orange crop forecast by bloom
	(1,000,000 boxes)	(percentage)
1st.....	87.31	27.5%
2nd	184.77	58.3%
3rd.....	39.15	12.4%
4th	5.72	1.8%
Total.....	**316.95**	**100.00%**

Table 11 – 2022-2023 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.....	12.4	25.1	41.1	**29.5**	27.2	36.5	**31.5**	27.2	41.7	35.3	**37.9**	22.3	37.1	**26.8**	16.1	13.1	14.4	**27.7**
2nd.....	60.2	60.6	51.2	**57.3**	64.5	45.0	**55.6**	61.9	47.9	56.9	**52.5**	62.3	51.5	**59.1**	58.2	69.7	64.7	**58.3**
3rd.....	26.4	9.8	6.2	**10.1**	8.1	18.1	**12.7**	9.4	9.6	4.9	**8.0**	14.3	11.1	**13.4**	22.4	15.8	18.7	**12.4**
4th.....	1.0	4.4	1.5	**3.1**	0.2	0.4	**0.3**	1.5	0.8	2.9	**1.6**	1.0	0.3	**0.8**	3.3	1.3	2.2	**1.8**

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

Table 12 – 2022-2023 Orange crop forecast and its components by variety group

Variety group	Mature groves area	Average density[1] of mature groves	Components of May/2022 forecast				2022-2023 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.....	56,824	475	26,151	859	300	11.50	2.27	1,047	59.48
Other early:									
Valencia Americana, Seleta, Pineapple and BRS Alvorada……	18,034	514	9,044	638	260	12.00	2.88	971	17.52
Mid-season:									
Pera Rio.....	118,771	538	62,037	560	260	21.70	1.51	791	93.95
Late:									
Valencia and VFolha Murcha[3]	111,764	490	53,741	686	237	23.50	1.99	955	106.78
Natal.....	38,996	496	18,999	722	240	23.50	2.06	1,006	39.22
Total.....	**344,389**	**506**	**169,972**	**668**	**258**	**20.00**	**1.86**	**920**	**316.95**

(X) Not applicable
1 Calculation considers the total number of trees in the plot, that is, bearing and non-bearing trees (2020 and 2021 resets)
2 Weighted average per total stratum fruit
3 V.Folha Murcha – Valencia Folha Murcha

Table 13 – 2022-2023 Orange crop forecast by variety group and sector

Variety group	2022-2023 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.....	13.50	3.76	16.44	11.41	14.37	59.48
Other early:						
Valencia Americana, Seleta, Pineapple and Alvorada	4.28	2.72	6.15	0.79	3.58	17.52
Mid-season:						
Pera Rio.....	18.26	13.72	24.46	19.46	18.05	93.95
Late:						
Valencia and V.Folha Murcha[3]	25.64	5.51	24.11	21.54	29.98	106.78
Natal.....	9.15	2.88	8.16	6.59	12.44	39.22
Average.....	**70.83**	**28.59**	**79.32**	**59.79**	**78.42**	**316.95**

Table 14 – 2022-2023 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]	2022-2023 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.....	15,840	447	6,891	744	1.96	852	13.5
Other early:							
Valencia Americana, Seleta, Pineapple and Alvorada	4,188	478	1,887	726	2.27	1,022	4.28
Mid-season:							
Pera Rio.....	24,626	535	12,908	705	1.41	741	18.26
Late:							
Valencia and V.Folha Murcha[3]	28,919	468	13,428	481	1.91	887	25.64
Natal.....	9,133	454	4,069	609	2.25	1,002	9.15
Average.....	**(X)**	**483**	**(X)**	**607**	**1.81**	**856**	**(X)**
Total.....	**82,706**	**(X)**	**39,183**	**(X)**	**(X)**	**(X)**	**70.83**

Table 15 – 2022-2023 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]	2022-2023 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.....	4,638	446	2,060	680	1.83	811	3.76
Other early:							
Valencia Americana, Seleta, Pineapple and Alvorada	3,178	548	1,733	725	1.57	856	2.72
Mid-season:							
Pera Rio.....	16,226	458	7,289	540	1.88	846	13.72
Late:							
Valencia and V.Folha Murcha[3]	6,518	485	3,142	617	1.75	845	5.51
Natal.....	3,286	460	1,497	631	1.92	876	2.88
Average.....	**(X)**	**470**	**(X)**	**630**	**1.82**	**845**	**(X)**
Total.....	**33,846**	**(X)**	**15,721**	**(X)**	**(X)**	**(X)**	**28.59**

(X) Not applicable
[1] Calculation considers the total number of trees in the plot, that is, bearing and non-bearing trees (2020 and 2021 resets)
[2] Weighted average per total stratum fruit
[3] V.Folha Murcha – Valencia Folha Murcha

Table 16 – 2022-2023 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]	2022-2023 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.....	14,473	490	6,951	886	2.37	1,136	16.44
Other early:							
Valencia Americana, Seleta, Pineapple and Alvorada	6,275	495	3,046	625	2.02	980	6.15
Mid-season:							
Pera Rio.....	34,295	560	18,673	670	1.31	713	24.46
Late:							
Valencia and V.Folha Murcha[3]	29,625	499	14,585	526	1.65	814	24.11
Natal.....	9,263	495	4,484	614	1.82	881	8.16
Average.....	**(X)**	**519**	**(X)**	**624**	**1.66**	**844**	**(X)**
Total.....	**93,931**	**(X)**	**47,739**	**(X)**	**(X)**	**(X)**	**79.32**

Table 17 – 2022-2023 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]	2022-2023 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.....	10,233	493	4,802	932	2.38	1,115	11.41
Other early:							
Valencia Americana, Seleta, Pineapple and Alvorada	1,066	464	477	895	1.66	741	0.79
Mid-season:							
Pera Rio.....	23,717	543	12,219	611	1.59	821	19.46
Late:							
Valencia and V.Folha Murcha[3]	22,358	461	9,934	641	2.17	963	21.54
Natal.....	5,721	527	2,956	827	2.23	1,152	6.59
Average.....	**(X)**	**503**	**(X)**	**772**	**1.97**	**948**	**(X)**
Total.....	**63,095**	**(X)**	**30,388**	**(X)**	**(X)**	**(X)**	**59.79**

Table 18 – 2022-2023 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]	2022-2023 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.....	11,640	490	5,447	975	2.64	1,235	14.37
Other early:							
Valencia Americana, Seleta, Pineapple and Alvorada	3,327	579	1,901	705	1.88	1,076	3.58
Mid-season:							
Pera Rio.....	19,907	563	10,949	614	1.65	907	18.05
Late:							
Valencia and V.Folha Murcha[3]	24,344	531	12,652	585	2.37	1,232	29.98
Natal.....	11,593	526	5,992	753	2.08	1,073	12.44
Average.....	**(X)**	**535**	**(X)**	**721**	**2.12**	**1,107**	**(X)**
Total.....	**70,811**	**(X)**	**36,941**	**(X)**	**(X)**	**(X)**	**78.42**

(X) Not applicable
[1] Calculation considers the total number of trees in the plot, that is, bearing and non-bearing trees (2020 or 2021 resets)
[2] Weighted average per total stratum fruit
[3] V.Folha Murcha – Valencia Folha Murcha

Table 19 – Fruit per tree at stripping[1] by age group, region and variety – North Sector [April 2022 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)
TMG[2]									
Early:									
Hamlin, Westin and Rubi.....	866	319	482	481	104	234	1,279	1,245	1,100
Other early varieties[3].....	689	39	198	198	246	195	964	903	705
Mid-season:									
Pera Rio.....	85	228	388	387	126	261	556	549	407
Late:									
Valencia and V.Folha Murcha[4]....	586	255	539	538	110	391	1,001	985	907
Natal.....	184	40	399	398	112	57	659	650	550
Average[1].....	**235**	**178**	**407**	**406**	**113**	**227**	**841**	**827**	**642**
BEB[5]									
Early:									
Hamlin, Westin and Rubi.....	216	276	479	470	167	291	768	704	624
Other early varieties[3].....	180	75	816	752	217	293	1,023	872	720
Mid-season:									
Pera Rio.....	252	375	593	581	269	259	556	526	501
Late:									
Valencia and V.Folha Murcha[4]....	232	363	367	367	246	507	927	862	630
Natal.....	106	243	593	587	138	337	820	765	660
Average[1].....	**202**	**323**	**573**	**562**	**195**	**326**	**773**	**716**	**605**
ALT[6]									
Early:									
Hamlin, Westin and Rubi.....	141	129	298	292	97	233	477	431	409
Other early varieties[3].....	289	129	427	402	133	371	514	489	467
Mid-season:									
Pera Rio.....	14	134	527	492	81	170	674	619	580
Late:									
Valencia and V.Folha Murcha[4]....	388	179	1,138	1,094	241	358	657	619	561
Natal.....	370	211	438	425	186	235	598	559	546
Average[1].....	**287**	**142**	**502**	**476**	**132**	**224**	**605**	**558**	**534**
Average sector.....	**216**	**297**	**502**	**496**	**178**	**293**	**765**	**720**	**607**

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

Table 20 – Fruit per tree at stripping[1] by age group, region and variety – Northwest Sector [April 2022 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.....	63	23	789	774	47	667	811	790	713
Other early varieties[3].....	233	216	700	684	47	414	983	943	536
Mid-season:									
Pera Rio.....	146	124	484	481	169	178	391	371	364
Late:									
Valencia and V.Folha Murcha[4]....	395	36	631	625	50	212	1,265	1,252	815
Natal.....	204	59	452	447	75	370	838	798	606
Average[1].....	**200**	**85**	**560**	**554**	**106**	**393**	**798**	**764**	**585**
SJO[5]									
Early:									
Hamlin, Westin and Rubi.....	427	194	993	985	40	306	366	361	530
Other early varieties[3].....	233	99	675	628	146	233	754	685	598
Mid-season:									
Pera Rio.....	289	124	540	534	39	285	1,036	1,013	723
Late:									
Valencia and V.Folha Murcha[4]....	16	24	541	537	73	397	349	347	305
Natal.....	91	NA	1,444	1,444	NA	NA	765	765	729
Average[1].....	**276**	**123**	**587**	**581**	**44**	**284**	**931**	**912**	**694**
Average sector.....	**236**	**97**	**568**	**562**	**95**	**356**	**861**	**833**	**630**

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

Table 21 – Fruit per tree at stripping[1] by age group, region and variety – Central Sector [April 2022 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.....	491	147	1,036	914	81	209	1,231	1,163	922
Other early varieties[3].....	373	117	322	320	242	223	1,194	1,152	672
Mid-season:									
Pera Rio.....	348	208	436	430	206	335	884	851	558
Late:									
Valencia and V.Folha Murcha[4]....	682	445	380	382	292	153	1,231	1,137	728
Natal.....	419	189	722	706	361	604	810	793	709
Average[1].....	**446**	**208**	**529**	**519**	**222**	**371**	**987**	**947**	**684**
DUA[6]									
Early:									
Hamlin, Westin and Rubi.....	136	150	757	716	132	404	1,319	1,153	849
Other early varieties[3].....	631	155	626	592	230	203	808	749	669
Mid-season:									
Pera Rio.....	211	233	576	554	118	264	677	640	515
Late:									
Valencia and V.Folha Murcha[4]....	332	110	334	316	61	195	819	771	606
Natal.....	369	99	441	425	136	175	859	764	587
Average[1].....	**292**	**173**	**530**	**508**	**127**	**255**	**844**	**775**	**599**
BRO[7]									
Early:									
Hamlin, Westin and Rubi.....	329	168	752	737	138	397	1,228	1,098	946
Other early varieties[3].....	169	50	884	862	390	537	569	566	662
Mid-season:									
Pera Rio.....	366	130	378	373	249	393	769	699	484
Late:									
Valencia and V.Folha Murcha[4]....	279	85	319	316	183	389	609	548	455
Natal.....	260	332	381	379	151	192	661	596	534
Average[1].....	**313**	**197**	**458**	**452**	**178**	**300**	**772**	**696**	**580**
Average sector.....	**342**	**185**	**521**	**506**	**141**	**287**	**876**	**811**	**624**

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

Table 22 – Fruit per tree at stripping[1] by age group, region and variety – South Sector [April 2022 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)
PFE[2]									
Early:									
Hamlin, Westin and Rubi.....	588	54	528	512	201	154	1,300	1,119	889
Other early varieties[3].....	132	132	634	624	37	445	1,047	923	552
Mid-season:									
Pera Rio.....	287	197	595	572	162	410	968	894	673
Late:									
Valencia and V.Folha Murcha[4]....	471	167	737	671	98	212	1,275	1,194	826
Natal.....	200	112	753	710	120	323	1,224	1,143	942
Average[1].....	**343**	**161**	**646**	**614**	**154**	**305**	**1,151**	**1,055**	**809**
LIM[5]									
Early:									
Hamlin, Westin and Rubi.....	248	226	647	620	458	1,480	1,210	1,210	979
Other early varieties[3].....	113	232	539	530	82	309	817	790	714
Mid-season:									
Pera Rio.....	320	230	454	435	94	305	853	806	605
Late:									
Valencia and V.Folha Murcha[4]....	199	156	1,011	957	133	392	1,336	1,271	994
Natal.....	119	44	559	512	121	448	887	827	690
Average[1].....	**259**	**161**	**576**	**542**	**208**	**658**	**966**	**923**	**728**
Average sector.....	**305**	**161**	**618**	**585**	**178**	**477**	**1,060**	**990**	**772**

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

Table 23 – Fruit per tree at stripping[1] by age group, region and variety – Southwest Sector [April 2022 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)
AVA[2]									
Early:									
Hamlin, Westin and Rubi.....	464	313	830	821	155	466	1,124	1,038	983
Other early varieties[3].....	377	172	680	635	57	509	779	751	661
Mid-season:									
Pera Rio.....	443	193	458	447	57	236	684	655	600
Late:									
Valencia and V.Folha Murcha[4]....	132	77	772	755	201	284	776	742	675
Natal.....	191	73	556	539	113	524	920	884	814
Average[1].....	**330**	**138**	**587**	**571**	**122**	**424**	**868**	**828**	**755**
ITG[5]									
Early:									
Hamlin, Westin and Rubi.....	302	499	961	960	346	618	1,726	1,723	951
Other early varieties[3].....	513	454	398	399	217	518	1,044	1,027	582
Mid-season:									
Pera Rio.....	269	126	647	641	165	300	833	816	559
Late:									
Valencia and V.Folha Murcha[4]....	240	146	731	721	123	603	978	961	754
Natal.....	240	346	407	407	140	104	734	719	595
Average[1].....	**304**	**229**	**613**	**608**	**146**	**252**	**909**	**892**	**651**
Average sector.....	**314**	**158**	**599**	**589**	**125**	**415**	**878**	**843**	**721**

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

Fundecitrus

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