## Forecast update (variation in the May forecast):                    September, 10 2024

**Total orange crop production forecast: 215.78 million boxes (7.1% decrease)**
**Hamlin, Westin and Rubi: 36.47million boxes (1.8% decrease)**
**Other early season: 14.89 million boxes (5.3% decrease)**
**Pera Rio: 63.42 million boxes (10.6% decrease)**
**Valencia and Valencia Folha Murcha: 74.39 million boxes (8.8% decrease)**
**Natal: 26.61 million boxes (1.4% decrease)**

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**Publication Schedule 2024-2025**

2nd Crop forecast update: December 10, 2024
3rd Crop forecast update: February 10, 2025
Final crop forecast: April 10, 2025

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**Table 1 – Orange crop forecast update by sector and variety group – citrus belt**

| Month | Forecast components | | | | Crop forecast 2024-2025 | | | Crop forecast update 2024-2025 | | |
| | May/2024 and September/2024 (strike-through values were presented in May, to their left are their respective values updated in September) | | | | May/2024 | | | September/2024 | | |
| Sector and variety group | Bearing trees | Fruit per tree at stripping | Fruit estimated per box | Estimated drop rate | Per tree | Per hectare | Total | Per tree | Per hectare | Total |
| | (1,000 trees) | (number) | (number) | (percentage) | (boxes/tree) | (boxes/hectare) | (1,000,000 boxes) | (boxes/tree) | (boxes/hectare) | (1,000,000 boxes) |
| **CITRUS BELT** | | | | | | | | | | |
| Hamlin, Westin and Rubi.... | 26,437.06 | 485 | **282** ~~281~~ | **10.60** ~~9.50~~ | 1.40 | 657 | 37.12 | 1.38 | 645 | 36.47 |
| Other early......................... | 10,834.96 | 450 | **260** ~~249~~ | **11.50** ~~10.70~~ | 1.45 | 755 | 15.72 | 1.37 | 715 | 14.89 |
| Pera Rio............................. | 59,601.12 | 401 | **279** ~~247~~ | **17.50** ~~18.40~~ | 1.19 | 625 | 70.97 | 1.06 | 559 | 63.42 |
| Valencia and Folha Murcha | 53,100.14 | 482 | **247** ~~218~~ | **20.00** ~~22.70~~ | 1.54 | 754 | 81.58 | 1.40 | 688 | 74.39 |
| Natal................................. | 18,569.39 | 493 | **247** ~~232~~ | **20.00** ~~23.90~~ | 1.45 | 724 | 26.99 | 1.43 | 714 | 26.61 |
| **Total**............................... | **168,542.67** | **453** | **264** ~~241~~ | **17.10** ~~18.50~~ | **1.38** | **691** | **232.38** | **1.28** | **642** | **215.78** |
| **NORTH SECTOR** | | | | | | | | | | |
| Hamlin, Westin and Rubi.... | 6,872.89 | 490 | **265** ~~281~~ | 16.20 ~~8.30~~ | 1.44 | 640 | 9.88 | 1.38 | 616 | 9.51 |
| Other early......................... | 2,146.81 | 447 | 239 ~~244~~ | 11.70 ~~8.00~~ | 1.51 | 720 | 3.24 | 1.47 | 703 | 3.16 |
| Pera Rio............................. | 12,164.10 | 333 | 247 ~~239~~ | 14.80 ~~15.50~~ | 1.06 | 563 | 12.89 | 1.03 | 545 | 12.48 |
| Valencia and Folha Murcha | 12,734.31 | 391 | 216 ~~202~~ | 17.80 ~~21.20~~ | 1.37 | 613 | 17.40 | 1.33 | 597 | 16.94 |
| Natal................................. | 3,910.89 | 324 | 210 ~~222~~ | 11.50 ~~12.90~~ | 1.14 | 524 | 4.46 | 1.22 | 559 | 4.76 |
| **Subtotal**............................ | **37,829.00** | **386** | **237** ~~235~~ | **15.70** ~~15.10~~ | **1.27** | **601** | **47.87** | **1.24** | **588** | **46.85** |
| **NORTHWEST SECTOR** | | | | | | | | | | |
| Hamlin, Westin and Rubi.... | 2,043.73 | 216 | 244 ~~275~~ | 8.20 ~~12.10~~ | 0.62 | 292 | 1.27 | 0.72 | 341 | 1.48 |
| Other early......................... | 1,906.61 | 281 | 236 ~~240~~ | 9.00 ~~14.90~~ | 0.89 | 487 | 1.70 | 0.97 | 527 | 1.84 |
| Pera Rio............................. | 6,993.74 | 258 | 246 ~~245~~ | 15.30 ~~13.00~~ | 0.83 | 391 | 5.77 | 0.79 | 376 | 5.55 |
| Valencia and Folha Murcha | 2,613.54 | 301 | 243 ~~217~~ | 17.20 ~~24.10~~ | 0.95 | 457 | 2.47 | 0.92 | 444 | 2.40 |
| Natal................................. | 1,125.00 | 196 | 227 ~~241~~ | 36.90 ~~23.30~~ | 0.56 | 289 | 0.63 | 0.49 | 252 | 0.55 |
| **Subtotal**............................ | **14,682.62** | **258** | **243** ~~242~~ | **15.20** ~~16.10~~ | **0.81** | **392** | **11.84** | **0.81** | **392** | **11.82** |
| **CENTRAL SECTOR** | | | | | | | | | | |
| Hamlin, Westin and Rubi.... | 6,775.50 | 444 | 309 ~~277~~ | 9.30 ~~10.40~~ | 1.29 | 633 | 8.75 | 1.16 | 570 | 7.88 |
| Other early......................... | 4,208.31 | 428 | 279 ~~240~~ | 12.00 ~~10.90~~ | 1.42 | 767 | 5.99 | 1.20 | 650 | 5.07 |
| Pera Rio............................. | 18,007.25 | 369 | 287 ~~251~~ | 20.60 ~~22.10~~ | 1.03 | 562 | 18.56 | 0.91 | 497 | 16.42 |
| Valencia and Folha Murcha | 14,350.90 | 419 | 247 ~~224~~ | 19.30 ~~24.20~~ | 1.27 | 666 | 18.23 | 1.22 | 642 | 17.57 |
| Natal................................. | 4,661.85 | 459 | 247 ~~235~~ | 26.60 ~~22.10~~ | 1.37 | 668 | 6.37 | 1.22 | 595 | 5.67 |
| **Subtotal**............................ | **48,003.81** | **409** | **273** ~~244~~ | **18.30** ~~19.90~~ | **1.21** | **632** | **57.90** | **1.10** | **575** | **52.61** |
| **SOUTH SECTOR** | | | | | | | | | | |
| Hamlin, Westin and Rubi.... | 4,586.72 | 471 | 278 ~~288~~ | 8.10 ~~12.10~~ | 1.29 | 613 | 5.93 | 1.39 | 660 | 6.38 |
| Other early......................... | 637.46 | 501 | 283 ~~262~~ | 7.90 ~~17.10~~ | 1.43 | 714 | 0.91 | 1.46 | 729 | 0.93 |
| Pera Rio............................. | 10,649.26 | 440 | 291 ~~255~~ | 22.50 ~~19.80~~ | 1.25 | 646 | 13.26 | 1.05 | 543 | 11.15 |
| Valencia and Folha Murcha | 9,649.05 | 515 | 258 ~~229~~ | 22.20 ~~25.00~~ | 1.51 | 710 | 14.58 | 1.39 | 652 | 13.40 |
| Natal................................. | 2,523.71 | 552 | 246 ~~241~~ | 24.30 ~~27.20~~ | 1.50 | 776 | 3.78 | 1.52 | 786 | 3.83 |
| **Subtotal**............................ | **28,046.20** | **482** | **272** ~~249~~ | **19.90** ~~21.20~~ | **1.37** | **676** | **38.46** | **1.27** | **627** | **35.69** |
| **SOUTHWEST SECTOR** | | | | | | | | | | |
| Hamlin, Westin and Rubi.... | 6,158.22 | 626 | 281 ~~282~~ | 8.40 ~~8.10~~ | 1.83 | 851 | 11.29 | 1.82 | 845 | 11.22 |
| Other early......................... | 1,935.77 | 651 | 253 ~~265~~ | 12.50 ~~8.90~~ | 2.00 | 1,034 | 3.88 | 2.01 | 1,036 | 3.89 |
| Pera Rio............................. | 11,786.77 | 567 | 291 ~~244~~ | 13.10 ~~16.90~~ | 1.74 | 921 | 20.49 | 1.51 | 801 | 17.82 |
| Valencia and Folha Murcha | 13,752.34 | 642 | 260 ~~216~~ | 20.70 ~~21.10~~ | 2.10 | 1,093 | 28.90 | 1.75 | 910 | 24.08 |
| Natal................................. | 6,347.94 | 651 | 260 ~~230~~ | 16.80 ~~27.20~~ | 1.85 | 965 | 11.75 | 1.86 | 969 | 11.80 |
| **Subtotal**............................ | **39,981.04** | **619** | **271** ~~239~~ | **15.70** ~~18.30~~ | **1.91** | **979** | **76.31** | **1.72** | **883** | **68.81** |

## Total orange production[1] is updated at 215.78 million boxes

The first update of the 2024-2025 orange crop forecast for the São Paulo and West-Southwest Minas Gerais citrus belt, published on September 10, 2024, by Fundecitrus, carried out in cooperation with Markestrat and full professors from FEA-RP/USP and FCAV/Unesp[2], is 215.78 million boxes of 40.8 kg. Of the total, 200.46 million boxes come from the first three blooms, while 15.32 million boxes belong to the fourth bloom. Compared to the initial estimate in May, the projection shows a reduction of 16.60 million boxes, which corresponds to a 7.1% decrease. Analyzing by maturity group, the early-season varieties decrease by approximately 3%, the mid-season (Pera) by 11%, and the late-season varieties by 7%. Compared to the previous crop (307.22 million boxes), the current projection represents a 29.8% drop, with early-season varieties down by roughly 33%, mid-season (Pera) by 35%, and late-season varieties by 24%. It is also estimated that approximately 14.34 million boxes will be harvested in the Triângulo Mineiro region.

The crop reduction is due to the smaller fruit size, which is a direct consequence of the hot and dry weather. The weather conditions forecasted in May for the first four months of the crop season were worse than expected, with rainfall 31% lower, according to Climatempo data. Additionally, high temperatures during the fall and winter intensified evapotranspiration, worsening the severity of the drought. Higher temperatures also accelerated fruit ripening. This led to a faster harvest pace. Consequently, the orange development period is shorter, and more than half of the crop will be harvested under drought conditions. Rainfall is expected to return only in the last week of September, bringing relief from the heat. Graph 1 shows that the maximum average temperatures from May to August 2024 recorded in the citrus belt were 3 °C (37,4 °F) to 4 °C (39,2 °F) above the historical average (1991-2020). In general, temperatures have been higher every year since 2015, when the crop estimate survey began.
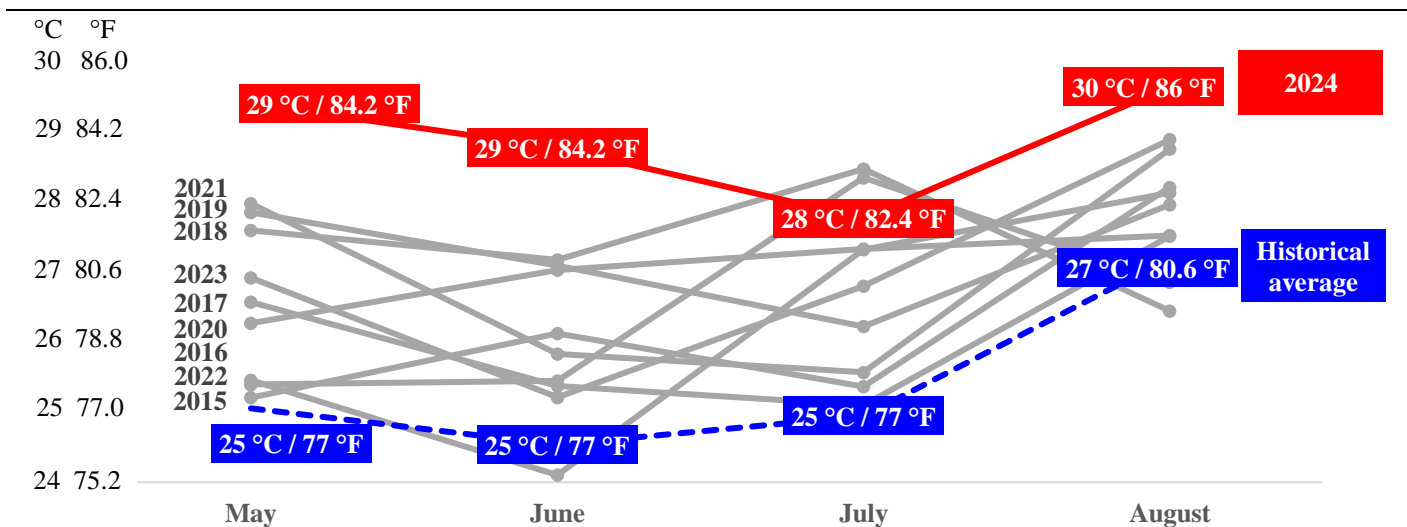


**Graph 1 – Maximum Average Temperatures from May to August (2015 to 2024) in the Citrus Belt**
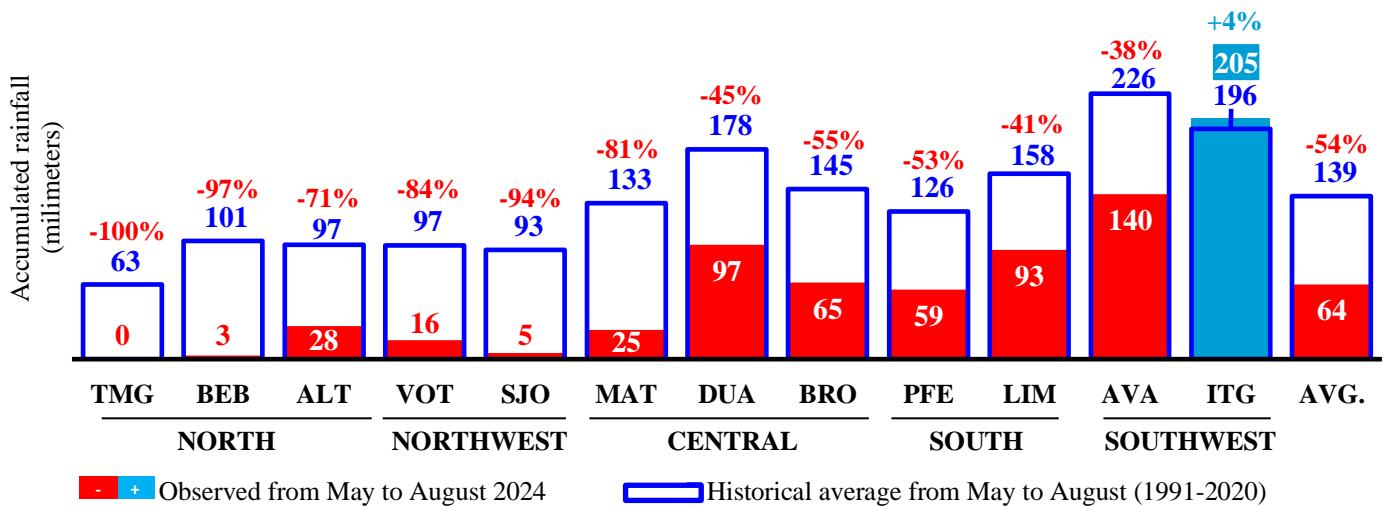Source: Fundecitrus, based on data from Climatempo Meteorologia

The accumulated precipitation from May to August 2024, averaged across the regions of the citrus belt, reached only 64 millimeters, representing a 54% drop compared to the historical average. As shown in Graph 2, this volume was the second-lowest in the past decade. CEMADEN/MCTI (National Center for Monitoring and Alerts of Natural Disasters, under the Ministry of Science, Technology, and Innovation) reported that, under the influence of the El Niño phenomenon, this season's dry period began earlier than usual, in April, and is being more severe than normal, because the previous rainy season did not sufficiently restore soil moisture and river levels. In August, data released by the agency indicates that 6% of municipalities in the citrus belt were in severe drought conditions, 76% faced moderate drought, and 18% recorded mild drought. This scenario is particularly critical for fruit development, as nearly 60% of the area of mature groves is rainfed.
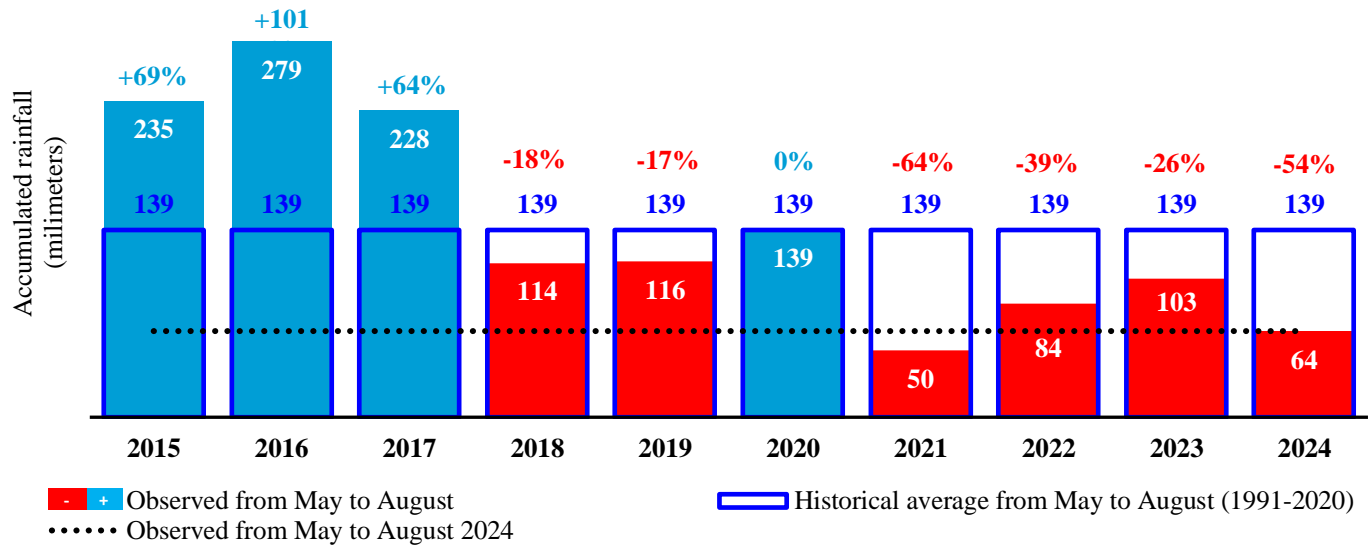
**Graph 2 – Accumulated rainfall from May to August (2015 to 2024) in the Citrus Belt**
Source: Fundecitrus, based on data from Climatempo Meteorologia

The analysis of rainfall in different regions of the citrus belt shows that the precipitation deficit affected almost all areas, except the Itapetininga region. According to the indexes presented in Graph 3, the further north in the belt, the greater the anomaly relative to the historical average. The most affected regions are Triângulo Mineiro and Bebedouro, where most municipalities have not had any rain for over four months. In Votuporanga, São José do Rio Preto, Altinópolis, and Matão, although there has been some precipitation, it was insufficient to improve the situation.



**Graph 3 – Accumulated rainfall from May to August (2024) in the Citrus Belt regions**
Source: Fundecitrus, based on data from Climatempo Meteorologia

Although it would be ideal to wait for the rain before harvest is intensified, a combination of factors made its anticipation inevitable. The heat accelerated orange ripening, and this season's production shows a high concentration of fruits from the first and second blooms, which ripen earlier. Additionally, the need to minimize losses caused by greening also contributed to harvest anticipation. As a result, by mid-August, about 45% of the crop had already been harvested, a significantly faster pace than in previous years when this percentage was around 30%. The harvest of early-season varieties like Hamlin, Westin, and Rubi reached 93%, while other early-season varieties reached 90%. Currently, 48% of the Pera variety is harvested. Among late-season varieties, the harvest of Valencia and Valencia Folha Murcha reached 19%, and the Natal variety,13%. In previous years, the harvest of these late-season varieties did not exceed 5% during the same period.

Given the current conditions, the average size of the harvested oranges will be smaller than originally estimated. In this current projection, 264 pieces of fruit will be required to fill a 40.8 kg box (90-pound box), 23 more pieces than estimated in May. This means the oranges are expected to weigh an average of 155 grams (5.47 oz), which is below the initial projection of 169 grams (5.96 oz). If confirmed, the average fruit weight will be lower than the last season (160 grams/5.64 oz) and the last 10-year average (163 grams/5.75 oz).

The pieces of fruit needed to fill a 40.8 kg box for Hamlin, Westin, and Rubi varieties changed from 281 pieces per box (145.2 grams/5.11 oz per fruit) to 282 pieces per box (144.7 grams/5.11 oz per fruit). The other early-season varieties changed from 249 pieces per box (164 grams/5.78 oz per fruit) to 260 pieces per box (157 grams/5.54 oz per fruit). Pera orange was initially projected at 247 pieces per box (165 grams/5.82 oz per fruit), and now has changed to 279 pieces per box (146 grams/5.15 oz per fruit). Valencia and Valencia Folha Murcha varieties changed from 218 pieces per box (187 grams/6.60 oz per fruit) to 247 pieces per box (165 grams/5.82 oz per fruit). The Natal variety changed from 232 pieces per box (176 grams/6.21 oz per fruit) to 247 pieces per box (165 grams/5.82 oz per fruit). The sizes by sector and variety are presented in Table 2.

**Table 2 – Average fruit size, as pieces of fruit per box, by sector and variety[3]**

| Group of varieties | Sector (hatched values were presented in May and their respective values updated in September are on the left) | | | | | |
|---|---|---|---|---|---|---|
| | North | Northwest | Central | South | Southwest | Total |
| | (Fruits per box) | (Fruits per box) | (Fruits per box) | (Fruits per box) | (Fruits per box) | (Fruits per box) |
| Hamlin, Westin and Rubi……….. | 265 281 | 244 275 | 309 277 | 278 288 | 281 282 | **282 281** |
| Other earlies................................ | 239 244 | 236 240 | 279 240 | 283 262 | 253 265 | **260 249** |
| Pera Rio...................................... | 247 239 | 246 245 | 287 251 | 291 255 | 291 244 | **279 247** |
| Valencia and V. Folha Murcha... | 216 202 | 243 217 | 247 224 | 258 229 | 260 216 | **247 218** |
| Natal........................................... | 210 222 | 227 241 | 247 235 | 246 241 | 260 230 | **247 232** |
| **Total....................................** | **237 235** | **243 242** | **273 244** | **272 249** | **271 239** | **264 241** |

[3] The precision of the overall average of the citrus belt is higher than that of the sectors, ages or variety groups, due to the larger sample size.

Harvest anticipation has a positive effect on reducing the fruit drop rate, mainly due to a reduction in the drop caused by greening. Initially projected at 18.50% in May, this rate is now revised to 17.10%. The drop rate for Hamlin, Westin, and Rubi oranges increased to 10.60%, an amendment of 1.10 percentage point compared to the previous projection. For other early-season varieties, the rate was adjusted to 11.50%, an increase of 0.80 percentage point. Meanwhile, Pera Rio showed a reduction to 17.50%, a decrease of 0.90 percentage point. The Valencia and Valencia Folha Murcha varieties show a more significant decrease, with the drop rate reaching 20.00%, a reduction of 2.70 percentage points. The Natal variety also shows a substantial reduction, with the rate adjusted to 20.00%, representing a decrease of 3.90 percentage points. The drop rates by sector and variety are detailed in Table 3.

**Table 3 – Average drop rates by sector and variety[4]**

| Group of varieties | Sector (hatched values were presented in May and their respective values updated in September are on the left) | | | | | |
|---|---|---|---|---|---|---|
| | North | Northwest | Central | South | Southwest | Total |
| | (percentual) | (percentual) | (percentual) | (percentual) | (percentual) | (percentual) |
| Hamlin, Westin and Rubi……….. | 16.20 8.30 | 8.20 12.10 | 9.30 10.40 | 8.10 12.10 | 8.40 8.10 | **10.60 9.50** |
| Other earlies................................ | 11.70 8.00 | 9.00 14.90 | 12.00 10.90 | 7.90 17.10 | 12.50 8.90 | **11.50 10.70** |
| Pera Rio...................................... | 14.80 15.50 | 15.30 13.00 | 20.60 22.10 | 22.50 19.80 | 13.10 16.90 | **17.50 18.40** |
| Valencia and V. Folha | 17.80 21.20 | 17.20 24.10 | 19.30 24.20 | 22.20 25.00 | 20.70 21.10 | **20.00 22.70** |
| Natal........................................... | 11.50 12.90 | 36.90 23.30 | 26.60 22.10 | 24.30 27.20 | 16.80 27.20 | **20.00 23.90** |
| **Total..........................................** | **15.70 15.10** | **15.20 16.10** | **18.30 19.90** | **19.90 21.20** | **15.70 18.30** | **17.10 18.50** |

[4] The precision of the overall average of the citrus belt is higher than that of the sectors, ages or variety groups, due to the larger sample size.

This estimate was projected based on the available data and will continue to be updated as the harvest progresses. The next update is set to be released on December 10th and will provide more detailed information about the fourth bloom.

The method used for the update is the same adopted in the previous crop season. Information was obtained from the monitoring survey started in May on 1,200 plots that are no longer visited when fruit harvest is complete. Other data used in this study is size of fruit received throughout the crop season by orange juice companies associated to Fundecitrus – Citrosuco, Cutrale and Louis Dreyfus – for industrial processing. Each processing company supplies individual data under confidentiality to the independent consulting firm for the calculation of the average size of processed fruit.

[1]   Hamlin, Westin, Rubi, Valencia Americana, Seleta, Pineapple, Alvorada, Pera Rio, Valencia, Valencia Folha Murcha and Natal.
[2]   Department of Exact Sciences, FCAV/Unesp Jaboticabal Campus.