

Current forecast update (variation regarding the December forecast):

February, 09 2024

**Total orange crop production forecast: 307.22 million boxes (unchanged)**  
**Hamlin, Westin and Rubi: 58.09 million boxes (unchanged)**  
**Other early season: 18.51 million boxes (unchanged)**  
**Pera Rio: 97.62 million boxes (unchanged)**  
**Valencia and Valencia Folha Murcha: 105.20 million boxes (unchanged)**  
**Natal: 27.80 million boxes (unchanged)**

**Publication Schedule 2023-2024**  
 Final crop forecast: April 10, 2024

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

Month	Forecast components				Crop forecast update 2023-2024			Crop forecast update 2023-2024		
	December/2023 and February/2024 (strike-through values were presented in December/2023, to their left are their respective values updated in February/2024)				December/2023			February/2024		
	Bearing trees	Fruit per tree at stripping	Fruit estimated per box	Estimated drop rate	Per tree	Per hectare	Total	Per tree	Per hectare	Total
Sector and variety group	(1,000 trees)	(number)	(number)	(percentage)	(boxes/tree)	(boxes/hectare)	(1,000,000 boxes)	(boxes/tree)	(boxes/hectare)	(1,000,000 boxes)
<b>CITRUS BELT</b>										
Hamlin, Westin and Rubi....	25,716.04	828	293	10.8	2.26	1,047	58.09	2.26	1,047	58.09
Other early.....	9,866.33	597	251	12.1	1.88	987	18.51	1.88	987	18.51
Pera Rio.....	61,508.67	563	258	19.0	1.59	837	97.62	1.59	837	97.62
Valencia and Folha Murcha	53,648.92	653	233	22.0	1.96	969	105.20	1.96	969	105.20
Natal.....	18,551.19	573	244	28.9	1.50	738	27.80	1.50	738	27.80
<b>Total.....</b>	<b>169,291.15</b>	<b>635</b>	<b>255</b>	<b>19.0</b>	<b>1.81</b>	<b>911</b>	<b>307.22</b>	<b>1.81</b>	<b>911</b>	<b>307.22</b>
<b>NORTH SECTOR</b>										
Hamlin, Westin and Rubi....	6,503.91	1,005	289	7.2	2.89	1,246	18.79	2.89	1,246	18.79
Other early.....	2,191.81	779	246	8.4 <del>8.6</del>	2.60	1,403	5.69	2.60	1,405	5.70
Pera Rio.....	13,535.28	592	254 <del>255</del>	15.6 <del>15.5</del>	1.75	934	23.75	1.76	937	23.83
Valencia and Folha Murcha	12,926.93	798	219 <del>221</del>	19.3 <del>19.0</del>	2.62	1,205	33.83	2.63	1,210	33.98
Natal.....	3,774.50	655	229 <del>223</del>	17.6 <del>18.3</del>	2.05	940	7.75	2.11	964	7.95
<b>Subtotal.....</b>	<b>38,932.43</b>	<b>746</b>	<b>247 <del>248</del></b>	<b>14.8 <del>14.7</del></b>	<b>2.31</b>	<b>1,110</b>	<b>89.81</b>	<b>2.32</b>	<b>1,116</b>	<b>90.25</b>
<b>NORTHWEST SECTOR</b>										
Hamlin, Westin and Rubi....	1,994.68	582	276	6.6	1.76	840	3.52	1.76	840	3.52
Other early.....	1,718.19	414	245	14.9 <del>15.2</del>	1.29	680	2.21	1.29	680	2.21
Pera Rio.....	6,669.81	611	241	11.5	2.01	923	13.39	2.01	924	13.40
Valencia and Folha Murcha	3,058.93	725	222 <del>219</del>	13.9 <del>14.1</del>	2.55	1,264	7.79	2.51	1,248	7.69
Natal.....	1,556.98	508	227 <del>220</del>	22.2 <del>23.8</del>	1.57	756	2.45	1.55	747	2.42
<b>Subtotal.....</b>	<b>14,998.59</b>	<b>597</b>	<b>240 <del>239</del></b>	<b>12.7 <del>12.9</del></b>	<b>1.96</b>	<b>937</b>	<b>29.36</b>	<b>1.95</b>	<b>933</b>	<b>29.24</b>
<b>CENTRAL SECTOR</b>										
Hamlin, Westin and Rubi....	6,606.99	747	290	9.6	2.09	1,036	13.78	2.09	1,036	13.78
Other early.....	3,473.28	677	247	12.0 <del>12.3</del>	2.15	1,123	7.48	2.16	1,126	7.50
Pera Rio.....	17,927.80	570	257	24.3	1.50	819	26.94	1.50	820	26.97
Valencia and Folha Murcha	15,036.66	574	236 <del>237</del>	22.0 <del>21.5</del>	1.70	885	25.57	1.69	882	25.48
Natal.....	4,631.97	567	248	31.6	1.40	684	6.47	1.40	684	6.47
<b>Subtotal.....</b>	<b>47,676.70</b>	<b>603</b>	<b>255</b>	<b>20.7 <del>20.6</del></b>	<b>1.68</b>	<b>880</b>	<b>80.24</b>	<b>1.68</b>	<b>880</b>	<b>80.20</b>
<b>SOUTH SECTOR</b>										
Hamlin, Westin and Rubi....	4,966.73	855	303	17.5	2.09	979	10.36	2.09	979	10.36
Other early.....	542.68	342	274	16.4 <del>16.7</del>	0.94	451	0.51	0.94	451	0.51
Pera Rio.....	11,764.73	530	261 <del>260</del>	21.9	1.42	752	16.76	1.42	750	16.71
Valencia and Folha Murcha	9,592.07	732	239 <del>238</del>	27.1 <del>27.6</del>	1.99	921	19.11	2.00	922	19.14
Natal.....	2,585.87	539	242 <del>244</del>	41.1 <del>40.4</del>	1.18	589	3.04	1.17	587	3.03
<b>Subtotal.....</b>	<b>29,452.08</b>	<b>648</b>	<b>261 <del>260</del></b>	<b>24.2 <del>24.3</del></b>	<b>1.69</b>	<b>831</b>	<b>49.78</b>	<b>1.69</b>	<b>830</b>	<b>49.75</b>
<b>SOUTHWEST SECTOR</b>										
Hamlin, Westin and Rubi....	5,643.73	781	298	12.1	2.06	946	11.64	2.06	946	11.64
Other early.....	1,940.37	481	272	16.0 <del>14.9</del>	1.35	715	2.62	1.33	706	2.59
Pera Rio.....	11,611.05	526	272 <del>271</del>	16.8 <del>16.7</del>	1.45	777	16.78	1.44	774	16.71
Valencia and Folha Murcha	13,034.33	524	247 <del>246</del>	23.5 <del>23.9</del>	1.45	767	18.90	1.45	768	18.91
Natal.....	6,001.87	558	258 <del>255</del>	31.6 <del>31.1</del>	1.35	700	8.09	1.32	686	7.93
<b>Subtotal.....</b>	<b>38,231.35</b>	<b>566</b>	<b>267 <del>266</del></b>	<b>20.2</b>	<b>1.52</b>	<b>787</b>	<b>58.03</b>	<b>1.51</b>	<b>783</b>	<b>57.78</b>

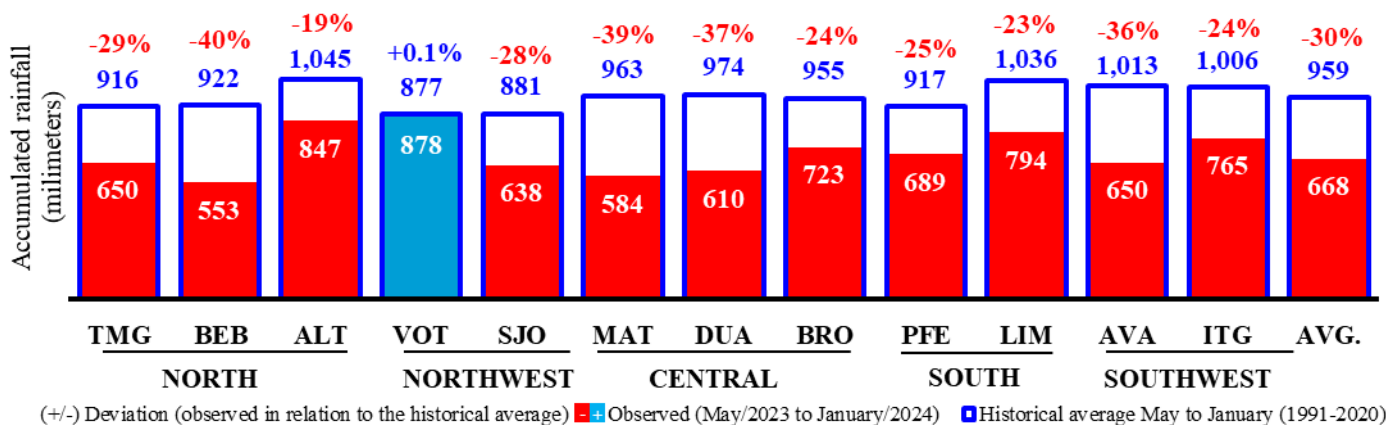
**Total forecast production of oranges<sup>1</sup> remains at 307.22 million boxes**

The third forecast for the 2023/24 orange crop in the São Paulo and West-Southwest of Minas Gerais citrus belt, published on February 09, 2024 by Fundecitrus, in cooperation with Markestrat, FEA-RP/USP and FCAV/Unesp<sup>2</sup>, maintains the projection of 307.22 million boxes of 40.8 kg each, unchanged in total volume from the previous forecast. This represents a reduction of 0.7% when compared to the initial forecast for the season. Of the total estimated production, approximately 27.76 million boxes are expected to come from the Triângulo Mineiro region.

This new update shows that the harvest is nearing its end, confirming the projections made in December last year. While the harvest of early varieties ended with an increase of 2.27 million boxes thanks to abundant rainfall in the first half of 2023, projections for mid-season and late varieties still indicate a drop of 4.39 million boxes. These projections remain unchanged in this latest forecast due to the unfavorable weather conditions that persisted in the two months following the last update, reflecting the continuation of the adverse scenario that marked the second half of last year, with rainfall below the historical average and high temperatures, intensifying evapotranspiration.

Other factors that influenced the decrease in the crop include the worsening of greening and the faster pace of the harvesting this season, shortening the time available for the oranges to develop. The interaction of these factors resulted in smaller-sized fruits than expected from mid-season and late varieties, which led to a reduction in the production of these varieties. Although it affected the growth of the oranges, the faster pace of the harvest helped to reduce fruit loss caused by premature dropping, which in turn mitigated the production reduction. Considering the advance of the harvest and the significant volume already achieved, the figures in this update accurately reflect the current crop situation, with little room for change until it ends.

The average accumulated precipitation in the citrus belt from May 2023 to January 2024 was 668 millimeters, marking a significant reduction of 30% compared to the climatological normal (1991-2020). Except for the Votuporanga region, all other regions of the citrus belt experienced volumes below the historical average. The total volumes reached 553 millimeters in Bebedouro (-40% compared to the historical average); 584 millimeters in Matão (-39%); 610 millimeters in Duartina (-37%); 638 millimeters in São José do Rio Preto (-28%); 650 millimeters in Avaré (-36%); 650 millimeters in the Triângulo Mineiro (-29%); 689 millimeters in Porto Ferreira (-25%); 723 millimeters in Brotas (-24%); 765 millimeters in Itapetininga (-24%); 794 millimeters in Limeira (-23%); 847 millimeters in Altinópolis (-19%); and 878 millimeters in Votuporanga (+0.1%). The rainfall data were obtained from Climatempo Meteorologia and are presented in Graph 1.



**Graph 1 – Accumulated rainfall from May 2023 to January 2024**

Source: Fundecitrus, according to data from Climatempo Meteorologia

Variations in fruit size and fruit drop rate were observed in different sectors, but due to their insignificance and the compensation among them - with increases in some sectors and decreases in others - these changes do not have enough impact to affect the overall number.

Thus, when considering all varieties, the amount of 255 fruits to form a 40.8 kg box remains unchanged in this forecast, representing an increase of eight fruits compared to the scenario predicted in May. These fruits weigh an average of 160 grams (5.64 oz), in contrast to the average weight of 165 grams (5.82 oz) initially projected. In addition, this weight is lower than the average of the last ten years, which is 163 grams (5.75 oz).

The average fruit size for the Hamlin, Westin, and Rubi varieties was 293 fruits per box (139 grams/4.91 oz per fruit). For the other early varieties, the average size was also confirmed at 251 fruits per box (163 grams/5.73 oz per fruit). The Pera Rio variety finished at 258 fruits per box (158 grams/5.58 oz per fruit), while the Valencia and Valencia Folha Murcha varieties remained at 233 fruits per box (175 grams/6.18 oz per fruit). The Natal variety remains at 244 fruits per box (167 grams/5.90 oz per fruit). Details of the sizes by sector and variety are shown in Table 2.

**Table 2 – Average fruit sizes by sector and variety<sup>3</sup>**

Group of varieties	Sector					
	(hatched values were presented in December and their respective values updated in February 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.....	289	276	290	303	298	<b>293</b>
Other earlies.....	246	245	247	274	272	<b>251</b>
Pera Rio.....	254 <del>255</del>	241	257	261 <del>260</del>	272 <del>271</del>	<b>258</b>
Valencia and V. Folha Murcha...	219 <del>221</del>	222 <del>219</del>	236 <del>237</del>	239 <del>238</del>	247 <del>246</del>	<b>233</b>
Natal.....	229 <del>233</del>	227 <del>220</del>	248	242 <del>244</del>	258 <del>255</del>	<b>244</b>
<b>Total.....</b>	<b>247 <del>248</del></b>	<b>240 <del>239</del></b>	<b>255</b>	<b>261 <del>260</del></b>	<b>267 <del>266</del></b>	<b>255</b>

<sup>3</sup> 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

The projected fruit drop rate remains at 19.0% on average, considering all varieties. In the distribution of the drop rate among the varieties, the early Hamlin, Westin, and Rubi ended up at 10.8%, while the other early varieties at 12.1%. Pera Rio recorded 19.0%, while Valencia and Valencia Folha Murcha remained at 22.0%, and the Natal variety at 28.9%. The drop rates by sector and variety are detailed in Table 3.

**Table 3 – Average drop rates by sector and variety<sup>3</sup>**

Group of varieties	Sector					
	(hatched values were presented in December and their respective values updated in February are on the left)					
	North	Northwest	Central	South	Southwest	Total
	(percentual)	(percentual)	(percentual)	(percentual)	(percentual)	(percentual)
Hamlin, Westin and Rubi.....	7.2	6.6	9.6	17.5	12.1	<b>10.8</b>
Other earlies.....	8.4 <del>8.6</del>	14.9 <del>15.2</del>	12.0 <del>12.3</del>	16.4 <del>16.7</del>	16.0 <del>14.9</del>	<b>12.1</b>
Pera Rio.....	15.6 <del>15.5</del>	11.5	24.3	21.9	16.8 <del>16.7</del>	<b>19.0</b>
Valencia and V. Folha Murcha....	19.3 <del>19.0</del>	13.9 <del>14.1</del>	22.0 <del>21.5</del>	27.1 <del>27.6</del>	23.5 <del>23.9</del>	<b>22.0</b>
Natal.....	17.6 <del>18.3</del>	22.2 <del>23.8</del>	31.6	41.1 <del>40.4</del>	31.6 <del>31.1</del>	<b>28.9</b>
<b>Total.....</b>	<b>14.8 <del>14.7</del></b>	<b>12.7 <del>12.9</del></b>	<b>20.7 <del>20.6</del></b>	<b>24.2 <del>24.3</del></b>	<b>20.2</b>	<b>19.0</b>

<sup>3</sup> 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 reached 95% of production by mid-January, indicating a faster pace compared to previous years when it was around 88% at the same time. The harvest of early varieties, including Hamlin, Westin, Rubi, Valencia Americana, Seleta, Pineapple, and Alvorada, has already been completed. Pera Rio's harvest is at 98%, while Valencia and Valencia Folha Murcha are at 90%, and Natal is at 88%. At the time of publishing this report, the harvested percentages already exceed the figures presented, as they represent the harvest accumulated until mid-January.

The method used for the update is the same as that adopted for the previous crop season. The information was collected based on the monitoring survey carried out on 1,200 plots from May onwards, which are no longer visited as the harvest is completed. Another source included in this study is the size of the fruit received throughout the harvest by the orange juice companies associated with Fundecitrus - Citrosuco, Cutrale, and Louis Dreyfus - for industrial processing. Each processing company provides confidential individual data to the independent consultancy firm that calculates the average size of the fruit processed.

<sup>1</sup> Hamlin, Westin, Rubi, Valencia Americana, Seleta, Pineapple, Alvorada, Pera Rio, Valencia, Valencia Folha Murcha, and, Natal.

<sup>2</sup> Department of math and science, FCAV/Unesp Jaboticabal Campus.