

Current forecast update (variation regarding the December forecast update):  
 Total orange crop production forecast<sup>1</sup>: 384.87 million boxes (decreased of 0.11%)  
 Hamlin, Westin and Rubi: 76.27 million boxes (unchanged)  
 Other early season<sup>2</sup>: 19.83 million boxes (unchanged)  
 Pera Rio: 118.29 million boxes (unchanged)  
 Valencia and Valencia Folha Murcha: 124.01 million boxes (decreased of 0.35%)  
 Natal: 46.47 million boxes (unchanged)

February, 11 2020

**Publication Schedule 2019-2020**  
 Final crop forecast: April 09, 2020

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

Month	Forecast components				Crop forecast update 2019-2020			Crop forecast update 2019-2020		
	December/2019 and February/2020 (strike-through values were presented in December, to their left are their respective values updated in February)				December/2019			February/2020		
Sector and variety group	Bearing trees	Fruit per tree at stripping <sup>3</sup>	Fruit estimated per box	Estimated drop rate	Per tree	Per hectare	Total	Per tree	Per hectare	Total
	(1,000 trees)	(number)	(number)	(%)	(boxes/tree)	(boxes/hectare)	(1,000,000 boxes)	(boxes/tree)	(boxes/hectare)	(1,000,000 boxes)
<b>CITRUS BELT</b>										
Hamlin, Westin and Rubi.....	25,482	1,114	300	10.50	2.99	1,319	76.27	2.99	1,319	76.27
Other early <sup>2</sup> .....	8,016	834	262	13.20	2.47	1,121	19.83	2.47	1,121	19.83
Pera Rio.....	62,869	665	261	17.50	1.88	943	118.29	1.88	943	118.29
Valencia and Folha Murcha <sup>4</sup> ..	58,269	735	244 <del>242</del>	21.50	2.14	988	124.45	2.13	984	124.01
Natal.....	19,337	853	248	22.00	2.40	1,079	46.47	2.40	1,079	46.47
<b>Total.....</b>	<b>173,973</b>	<b>783</b>	<b>262.3 <del>262</del></b>	<b>17.63</b>	<b>2.21</b>	<b>1,041</b>	<b>385.31</b>	<b>2.20</b>	<b>1,040</b>	<b>384.87</b>
<b>NORTH SECTOR</b>										
Hamlin, Westin and Rubi.....	6,970	1,210	300	10.50	3.25	1,403	22.66	3.25	1,403	22.66
Other early <sup>2</sup> .....	2,029	808	262	13.20	2.40	1,150	4.87	2.40	1,150	4.87
Pera Rio.....	12,987	600	261	17.50	1.70	911	22.06	1.70	911	22.06
Valencia and Folha Murcha <sup>4</sup> ..	14,391	757	244 <del>242</del>	21.50	2.20	998	31.67	2.19	994	31.56
Natal.....	3,920	911	248	22.00	2.57	1,081	10.06	2.57	1,081	10.06
<b>Subtotal.....</b>	<b>40,297</b>	<b>802</b>	<b>262.3 <del>262</del></b>	<b>17.63</b>	<b>2.27</b>	<b>1,066</b>	<b>91.32</b>	<b>2.26</b>	<b>1,065</b>	<b>91.21</b>
<b>NORTHWEST SECTOR</b>										
Hamlin, Westin and Rubi.....	2,565	1,031	300	10.50	2.77	1,223	7.10	2.77	1,223	7.10
Other early <sup>2</sup> .....	1,407	618	262	13.20	1.83	842	2.58	1.83	842	2.58
Pera Rio.....	8,278	655	261	17.50	1.86	827	15.36	1.86	827	15.36
Valencia and Folha Murcha <sup>4</sup> ..	3,600	679	244 <del>242</del>	21.50	1.97	951	7.11	1.96	947	7.08
Natal.....	1,781	711	248	22.00	2.00	930	3.57	2.00	930	3.57
<b>Subtotal.....</b>	<b>17,630</b>	<b>717</b>	<b>262.3 <del>262</del></b>	<b>17.63</b>	<b>2.03</b>	<b>922</b>	<b>35.72</b>	<b>2.02</b>	<b>921</b>	<b>35.69</b>
<b>CENTRAL SECTOR</b>										
Hamlin, Westin and Rubi.....	6,390	989	300	10.50	2.66	1,146	16.98	2.66	1,146	16.98
Other early <sup>2</sup> .....	2,966	922	262	13.20	2.73	1,187	8.11	2.73	1,187	8.11
Pera Rio.....	18,074	671	261	17.50	1.90	959	34.36	1.90	959	34.36
Valencia and Folha Murcha <sup>4</sup> ..	15,835	746	244 <del>242</del>	21.50	2.17	995	34.33	2.16	991	34.20
Natal.....	4,497	921	248	22.00	2.59	1,099	11.67	2.59	1,099	11.67
<b>Subtotal.....</b>	<b>47,762</b>	<b>778</b>	<b>262.3 <del>262</del></b>	<b>17.63</b>	<b>2.21</b>	<b>1,028</b>	<b>105.45</b>	<b>2.20</b>	<b>1,026</b>	<b>105.32</b>
<b>SOUTH SECTOR</b>										
Hamlin, Westin and Rubi.....	4,334	820	300	10.50	2.20	952	9.55	2.20	952	9.55
Other early <sup>2</sup> .....	450	792	262	13.20	2.35	854	1.06	2.35	854	1.06
Pera Rio.....	13,177	681	261	17.50	1.93	942	25.41	1.93	942	25.41
Valencia and Folha Murcha <sup>4</sup> ..	11,846	719	244 <del>242</del>	21.50	2.09	892	24.74	2.08	889	24.66
Natal.....	3,193	836	248	22.00	2.36	1,028	7.52	2.36	1,028	7.52
<b>Subtotal.....</b>	<b>33,000</b>	<b>729</b>	<b>262.3 <del>262</del></b>	<b>17.63</b>	<b>2.07</b>	<b>932</b>	<b>68.28</b>	<b>2.06</b>	<b>931</b>	<b>68.20</b>
<b>SOUTHWEST SECTOR</b>										
Hamlin, Westin and Rubi.....	5,223	1,424	300	10.50	3.83	1,815	19.98	3.83	1,815	19.98
Other early <sup>2</sup> .....	1,164	931	262	13.20	2.76	1,384	3.21	2.76	1,384	3.21
Pera Rio.....	10,353	720	261	17.50	2.04	1,063	21.10	2.04	1,063	21.10
Valencia and Folha Murcha <sup>4</sup> ..	12,596	727	244 <del>242</del>	21.50	2.11	1,084	26.61	2.10	1,081	26.52
Natal.....	5,947	814	248	22.00	2.29	1,137	13.64	2.29	1,137	13.64
<b>Subtotal.....</b>	<b>35,284</b>	<b>850</b>	<b>262.3 <del>262</del></b>	<b>17.63</b>	<b>2.40</b>	<b>1,213</b>	<b>84.54</b>	<b>2.39</b>	<b>1,211</b>	<b>84.45</b>

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

<sup>2</sup> Valencia Americana, Seleta and Pineapple.

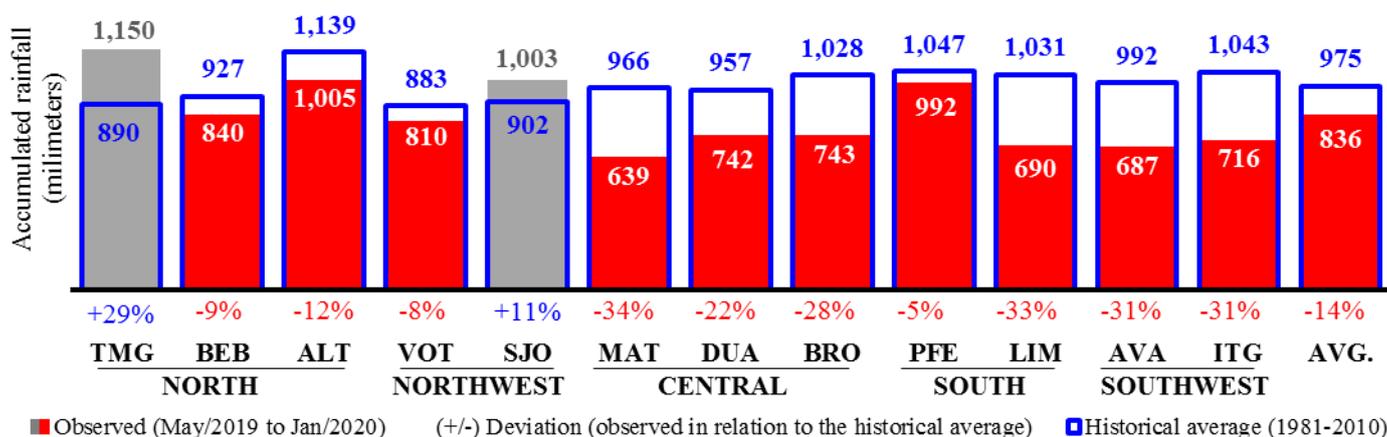
<sup>3</sup> Weighted average per stratum bearing trees.

<sup>4</sup> Folha Murcha – Valencia Folha Murcha.

Updated orange<sup>1</sup> crop forecast totals 384.87 million boxes

The 2019/2020 orange crop forecast update for São Paulo and Triângulo Mineiro/Southwest Minas Gerais citrus belt, published on February 11, 2020 by Fundecitrus – performed in cooperation with Markestrat, FEA-RP/USP and FCAV/Unesp<sup>2</sup> – is 384.87 million boxes of 40.8 kg each. This figure corresponds to a decrease of 0.11% in relation to the previous forecast update published in December 2019 and is 1.03% smaller as compared to the first crop forecast announced in May 2019. Approximately 26.85 million boxes of the total crop should be produced in the Triângulo Mineiro region.

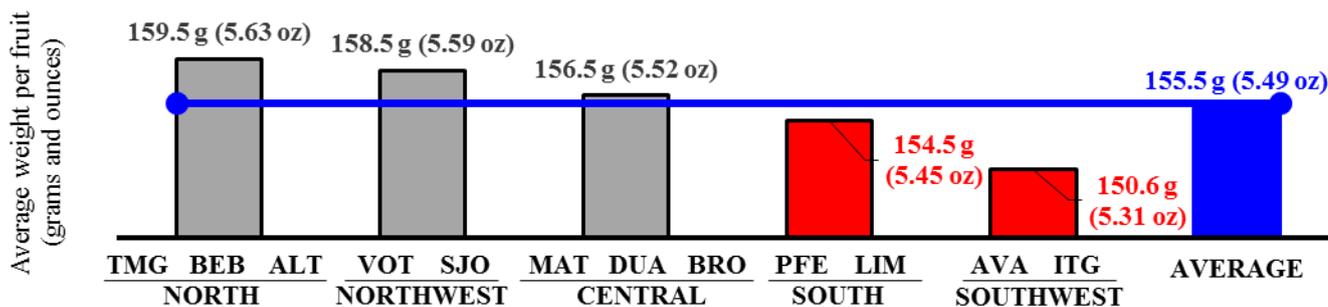
Rainfall remained below normal for most of the citrus belt from May 2019 to January 2020, according to data from Somar Meteorologia. Accumulated rainfall in this period averaged 836 millimeters for all regions, which is 14% or 139 millimeters below the historical average of 975 millimeters (1981-2010). Rainfall shortage was more pronounced in the Central, South and Southwest sectors, including regions such as Limeira, where the accumulated amount was only 690 millimeters, that is, 33% or 341 millimeters below normal. In the North and Northwest, rainfall reached larger volumes especially in the Triângulo Mineiro region (1,150 millimeters) and São José do Rio Preto (1,003 millimeters). Except for these locations, all other regions of the citrus belt presented accumulated rainfall below historical average, as shown in Graph 1.



Graph 1: Rainfall accumulated from May 2019 to January 2020 in the citrus belt regions. Source: Fundecitrus, from data provided by Somar Meteorologia.

The rainfall volume reduction until late January stunted the growth of oranges. Fruits were already expected to be small this crop season – approximately 5% below their average weight observed in the previous eleven crop seasons – due, among other factors, to the large number of fruits per tree. Harvested fruits of the Hamlin, Westin, Rubi, Valencia, Valencia Folha Murcha and Natal varieties grew even less than their projections. The field survey data showed that 96% of the crop had been harvested by January 31, 2020 and that the average orange weight was 155.5 grams (5.49 oz). Considering this average weight, 262.3 fruits became necessary to fill a 40.8 kg box (90 pounds); 0.88% smaller than the 260 fruits per box initially projected (157 grams or 5.54 oz per fruit).

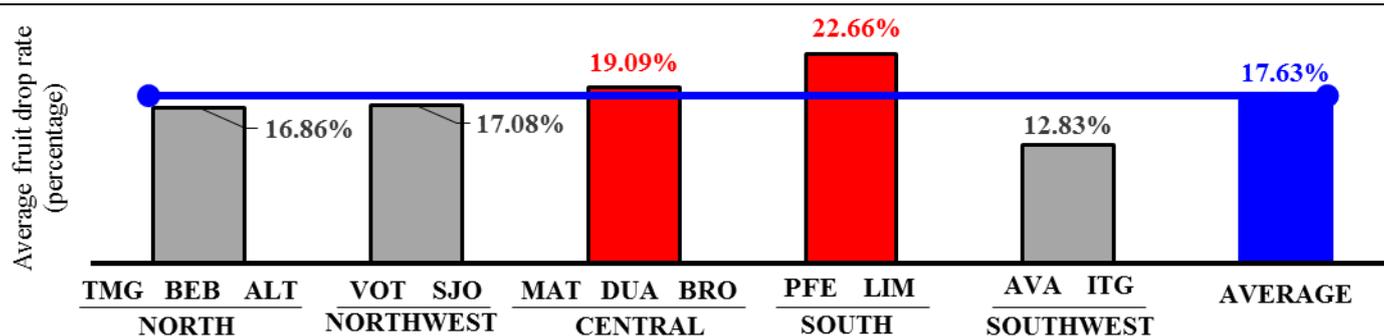
In average for all varieties, fruits reached different sizes throughout the sectors of the citrus belt. Variation in the rainfall volume may have been one of the main factors influencing such result. In the South and Southwest sectors, oranges were smaller than average for the citrus belt. As shown in Graph 2, harvested fruits weighed approximately 154.5 grams (5.45 oz) each in the South and were even smaller in the Southwest, with a weight of 150.6 grams (5.31 oz) each. These sectors comprise the regions of Avaré, Itapetininga and Limeira, where negative deviations in rainfall varied from 31% to 33% in relation to normal, indicating the worst rainfall indexes observed for these regions in the last five crop seasons.



Graph 2: Average fruit weight per sector. Source: Fundecitrus.

In the December forecast update, harvest of early varieties was already complete, with a size of 300 fruits per box (136 grams or 4.80 oz per fruit) for Hamlin, Westin and Rubi, and 262 fruits per box (156 grams or 5.50 oz per fruit) for Valencia Americana, Seleta and Pineapple. Recent data showed that harvest for the mid-season Pera Rio was 97% completed and the projected size of 261 fruits per box (156 grams or 5.50 oz per fruit) was reached. Harvest of Valencia and Valencia Folha Murcha was 95% completed, with a revised size of 244 fruits per box (167 grams or 5.89 oz per fruit), since the projected size of 169 grams (5.96 oz) per orange projected for these varieties was not reached. Harvest of Natal was close to 93%, with an average size of 248 fruits per box (165 grams or 5.82 oz per fruit), confirming the projection of December 2019.

Average fruit drop rate held at 17.63% in this forecast update. For comparison, average fruit drop rates for the five sectors were calculated and are shown in Graph 3. The South sector comprises the regions of Porto Ferreira and Limeira presented the worst rate of 22.66%. Fruit drop rate above general average was also seen in the Central sector (19.09%), which includes the regions of Matão, Duartina and Brotas. The most likely cause for these sectors to present the largest drop rates relates to the high incidence of orange trees with symptoms of greening and also to the great amount of trees with high disease severity. The survey of diseases carried out by Fundecitrus in 2019 showed that 36.96% of trees in the South sector and 30.76% of trees in the Central sector were contaminated by greening, whereas that level was significantly lower in the other sectors.



Graph 3: Average fruit drop rate per sector.

Source: Fundecitrus.

Average fruit weight and drop rate shown per sector are useful only for comparison among different locations. Data collected in the field survey and used in the forecast update is obtained from a sample stratified by region, variety and age. Survey begins in May for 1,200 plots visited and sampled on a monthly basis until their harvest is complete. Other data used in this study was 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 average size of processed fruits to be ascertained.

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

<sup>2</sup> Department of Math and Science at FCAV/Unesp Campus Jaboticabal.