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

Current forecast update (variation regarding the September forecast):   **December 10, 2018**

Total orange crop production forecast[1]: 275.75 million boxes (increase of 0.88%)

Hamlin, Westin and Rubi: 50.70 million boxes (unchanged)

Other early season[2]: 14.66 million boxes (decreased of 1.54%)

Pera Rio: 76.51 million boxes (increase of 0.25%)

Valencia and Valencia Folha Murcha: 99.24 million boxes (increase of 1.96%)

Natal: 34.64 million boxes (increase of 1.58%)

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

Sector and variety group	Forecast components — Bearing trees (1,000 trees)	Fruit per tree at stripping[3] (number)	Fruit estimated per box (number)	Estimated drop rate (percentage)	Crop forecast update 2018-2019 September/2018 — Per tree (boxes/tree)	Per hectare (boxes/hectare)	Total (1,000,000 boxes)	Crop forecast update 2018-2019 December/2018 — Per tree (boxes/tree)	Per hectare (boxes/hectare)	Total (1,000,000 boxes)
CITRUS BELT										
Hamlin, Westin and Rubi.......	26,649	766	320	11.00	1.90	833	50.70	1.90	833	50.70
Other early[2]...........................	7,959	664	282	12.30 ~~11.00~~	1.87	823	14.89	1.84	810	14.66
Pera Rio.................................	61,575	454	268 ~~270~~	17.80 ~~17.50~~	1.24	611	76.32	1.24	612	76.51
Valencia and Folha Murcha[4]..	59,583	560	240 ~~245~~	20.00	1.63	745	97.33	1.67	760	99.24
Natal.....................................	19,503	603	240 ~~245~~	20.80 ~~20.50~~	1.75	777	34.10	1.78	789	34.64
Total......................................	**175,269**	**564**	**267 ~~270~~**	**17.20 ~~17.00~~**	**1.56**	**722**	**273.34**	**1.57**	**729**	**275.75**
NORTH SECTOR										
Hamlin, Westin and Rubi.......	7,302	625	320	11.00	1.55	655	11.33	1.55	655	11.33
Other early[2]...........................	2,014	525	282	12.30 ~~11.00~~	1.48	682	2.98	1.46	672	2.93
Pera Rio.................................	12,120	305	268 ~~270~~	17.80 ~~17.50~~	0.83	438	10.10	0.84	439	10.13
Valencia and Folha Murcha[4]..	14,055	449	240 ~~245~~	20.00	1.31	583	18.42	1.34	594	18.78
Natal.....................................	3,832	595	240 ~~245~~	20.80 ~~20.50~~	1.72	741	6.61	1.75	753	6.71
Subtotal................................	**39,323**	**456**	**267 ~~270~~**	**17.20 ~~17.00~~**	**1.26**	**580**	**49.44**	**1.27**	**585**	**49.88**
NORTHWEST SECTOR										
Hamlin, Westin and Rubi.......	2,658	487	320	11.00	1.21	540	3.21	1.21	540	3.21
Other early[2]...........................	1,303	596	282	12.30 ~~11.00~~	1.68	719	2.19	1.65	707	2.16
Pera Rio.................................	8,814	262	268 ~~270~~	17.80 ~~17.50~~	0.71	326	6.30	0.72	327	6.32
Valencia and Folha Murcha[4]..	3,864	235	240 ~~245~~	20.00	0.68	328	2.65	0.70	334	2.70
Natal.....................................	1,711	283	240 ~~245~~	20.80 ~~20.50~~	0.82	372	1.40	0.83	378	1.42
Subtotal................................	**18,350**	**314**	**267 ~~270~~**	**17.20 ~~17.00~~**	**0.86**	**392**	**15.75**	**0.86**	**394**	**15.81**
CENTRAL SECTOR										
Hamlin, Westin and Rubi.......	6,782	685	320	11.00	1.70	730	11.54	1.70	730	11.54
Other early[2]...........................	2,938	637	282	12.30 ~~11.00~~	1.79	739	5.27	1.77	728	5.19
Pera Rio.................................	17,777	465	268 ~~270~~	17.80 ~~17.50~~	1.27	635	22.54	1.27	636	22.59
Valencia and Folha Murcha[4]..	16,511	511	240 ~~245~~	20.00	1.49	671	24.61	1.52	684	25.09
Natal.....................................	4,585	587	240 ~~245~~	20.80 ~~20.50~~	1.70	707	7.79	1.73	719	7.92
Subtotal................................	**48,593**	**533**	**267 ~~270~~**	**17.20 ~~17.00~~**	**1.48**	**676**	**71.75**	**1.49**	**681**	**72.33**
SOUTH SECTOR										
Hamlin, Westin and Rubi.......	4,923	833	320	11.00	2.07	940	10.19	2.07	940	10.19
Other early[2]...........................	550	636	282	12.30 ~~11.00~~	1.79	762	0.99	1.76	750	0.97
Pera Rio.................................	12,628	554	268 ~~270~~	17.80 ~~17.50~~	1.51	705	19.08	1.51	707	19.13
Valencia and Folha Murcha[4]..	12,911	537	240 ~~245~~	20.00	1.57	682	20.21	1.60	695	20.62
Natal.....................................	3,323	583	240 ~~245~~	20.80 ~~20.50~~	1.69	738	5.61	1.72	749	5.70
Subtotal................................	**34,335**	**592**	**267 ~~270~~**	**17.20 ~~17.00~~**	**1.63**	**734**	**56.08**	**1.65**	**740**	**56.61**
SOUTHWEST SECTOR										
Hamlin, Westin and Rubi.......	4,984	1,165	320	11.00	2.89	1,312	14.43	2.89	1,312	14.43
Other early[2]...........................	1,154	1,066	282	12.30 ~~11.00~~	3.01	1,530	3.46	2.96	1,506	3.41
Pera Rio.................................	10,236	655	268 ~~270~~	17.80 ~~17.50~~	1.79	916	18.30	1.79	918	18.34
Valencia and Folha Murcha[4]..	12,242	880	240 ~~245~~	20.00	2.57	1,278	31.44	2.62	1,303	32.05
Natal.....................................	6,052	723	240 ~~245~~	20.80 ~~20.50~~	2.10	1,009	12.69	2.13	1,025	12.89
Subtotal................................	**34,668**	**834**	**267 ~~270~~**	**17.20 ~~17.00~~**	**2.32**	**1,141**	**80.32**	**2.34**	**1,152**	**81.12**

[1]   Hamlin, Westin, Rubi, Valencia Americana, Seleta, Pineapple, Pera Rio, Valencia, Valencia Folha Murcha and Natal.

[2]   Valencia Americana, Seleta and Pineapple.

[3]   Weighted average per stratum bearing trees.

[4]   Folha Murcha – Valencia Folha Murcha.

Note: The column header "September/2018 and December/2018" indicates that strike-through values were presented in September, to their left are their respective values updated in December.

Updated orange[1] crop forecast totals 275.75 million boxes

The 2018-2019 orange crop forecast update for São Paulo and West-Southwest Minas Gerais citrus belt, published on December 10, 2018 by Fundecitrus – performed in cooperation with Markestrat, FEA-RP/USP and FCAV/Unesp[2] – is of 275.75 million boxes of 40.8 kg each, which corresponds to an increase of 0.88% in relation to the previous estimate update published in September 2018. The current projection is still lower than the first estimate carried out in May 2018 and represents a decrease of 4.35% percent in relation to the 288.29 million boxes. Approximately 15.52 million boxes out of the total crop should be produced in the Triângulo Mineiro region[3].

The main reason for this slight increase in production is a change in the rainfall regime. After the drought that affected the entire citrus region from May to July 2018, with a dry spell over a period of 45 to 70 days depending on the region, except for Triângulo Mineiro, where this phenomenon lasted even longer, rain fell again in August, continued regularly within average levels through September and then picked up in October and November. Accumulated average rainfall in the citrus region since May reached 610 millimeters, which is 23% above the historical average (1981-2010), according to data from Somar Meteorologia. Greater water availability contributed to recovered fruit growth for Pera Rio and late varieties that had not yet been harvested before rainfall.

Therefore, Pera Rio fruit size is now updated to 268 fruit per box, whereas in September it was projected at 270 fruit per box. Fruit size for the late varieties Valencia, Valencia Folha Murcha and Natal went back to the figure projected in May this year, that is, 240 fruit per box as compared to the 245 fruit per box revised in September. Fruit size for the varieties Hamlin, Westin and Rubi, and also for other earlies were not revised in this update because at the end of harvest in November 2018, they corresponded to the September 2018 projection of 320 and 282 fruit per box, respectively. Considering all varieties, the average fruit size is updated to 267 fruit per box (153 grams per fruit), as compared to the 270 fruit per box (151 grams per fruit) projected in September 2018 and 256 fruit per box (159 grams per fruit) estimated in May 2018.

The water deficit caused by the long draught at the beginning of harvest, in addition to inhibiting the orange, also negatively interfered in plant vigor and made fruit more susceptible to droppage and to the effects of pests and diseases. Data monitored on plots shows that fruit drop accumulated until November is already higher than what was expected for the period, and when the crop season ends it should be above the figure projected in May and maintained in September 2018. In this new projection, the average fruit drop rate for the citrus belt moves from 17.00 % to 17.20%. Fruit drop rates were updated for the group of varieties other earlies – including Valencia Americana, Seleta and Pineapple (from 11.00% to 12.30%); Pera Rio (from 17.50% to 17.80%) and Natal (from 20.50% to 20.80%).

Harvest of earlies is about finished. Harvest of Pera Rio is 83% complete. Varieties Valencia, Valencia Folha Murcha and Natal are 66% harvested. In total, approximately 78% of the 2018-2019 crop has been harvested. At this same time last crop year, harvest was 75% complete.

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. Details on the methodology are provided in the document "Methodology for Updating the Orange Crop Estimate" available at www.fundecitrus.com.br. 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 calculation of the average size of processed fruit.

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[1] Hamlin, Westin, Rubi, Valencia Americana, Seleta, Pineapple, Pera Rio, Valencia, Valencia Folha Murcha and Natal.
[2] Departament of Math and Science at FCAV/Unesp Campus Jaboticabal.
[3] Errata: The production forecast for the Triângulo Mineiro region is 15.52 million boxes, and not 17.86 million boxes, as stated in the report published at 10:00 a.m. on December 10, 2018. This error in transcribing data from the system to the report had no interference in the calculations.