Current forecast update (variation regarding the February update): April 10, 2018

Total orange crop production forecast[1]: 398.35 million boxes (increase of 0.27%)
Hamlin, Westin and Rubi: 77.48 million boxes (unchanged)
Other early season[2]: 18.02 million boxes (unchanged)
Pera Rio: 118.47 million boxes (unchanged)
Valencia and Valencia Folha Murcha: 139.62 million boxes (increase of 0.61%)
Natal: 44.76 million boxes (increase of 0.52%)

> The orange production forecast of the 2018-2019 season will be released at 10:00 a.m. (BRT, GMT -3:00) on May 09, 2018.

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

	Forecast update components				Orange production forecast update 2017-2018					
	February 2018 and April 2018 (strike-through values were presented in February, to their left are their respective values updated in April)				February 2018			April 2018		
Month										
Sector and variety group	Bearing trees	Fruits per tree at stripping[3]	Fruits forecasted by box	Fruit loss from droppage forecast	By tree	By hectare	Total	By tree	By hectare	Total
	(1,000 trees)	(number)	(number)	(percentage)	(boxes/ tree)	(boxes/ hectare)	(1,000,000 boxes)	(boxes/ tree)	(boxes/ hectare)	(1,000,000 boxes)
TOTAL CITRUS BELT										
Hamlin, Westin and Rubi…….	27,308	972	277	10.00	2,84	1,235	77.48	2.84	1,235	77.48
Other early season[2]…………..	7,950	714	251	11,30	2,27	1,008	18.02	2.27	1,008	18.02
Pera Rio…………………………..	60,235	666	253	17,00	1,97	945	118.47	1.97	945	118.47
Valencia and V.Folha Murcha[4]	61,181	729	223 227	21,80 21,50	2,27	1,010	138.77	2.28	1,016	139.62
Natal………………………………	18,105	813	235 238	20.00	2,46	1,057	44.53	2.47	1,063	44.76
Average…………………….	(X)	**753**	**246 247**	**17,31 17,20**	**2,27**	**1,030**	(X)	**2.28**	**1,033**	(X)
Total………………………..	**174,779**	(X)	(X)	(X)	(X)	(X)	**397.27**	(X)	(X)	**398.35**
NORTH SECTOR										
Hamlin, Westin and Rubi…….	7,494	1,147	277	10.00	3.35	1,423	25.11	3.35	1,423	25.11
Other early season[2]…………..	1,910	709	251	11.30	2.25	1,095	4.30	2.25	1,095	4.30
Pera Rio…………………………..	12,398	611	253	17.00	1.80	935	22.35	1.80	935	22.35
Valencia and V.Folha Murcha[4]	14,317	779	223 227	21.80 21.50	2.42	1,068	34.71	2.44	1,075	34.92
Natal………………………………	3,171	878	235 238	20.00	2.65	1,065	8.42	2.67	1,070	8.46
Average…………………….	(X)	**801**	**246 247**	**17.31 17.20**	**2.41**	**1,105**	(X)	**2.42**	**1,108**	(X)
Subtotal…………………….	**39,290**	(X)	(X)	(X)	(X)	(X)	**94.89**	(X)	(X)	**95.14**
NORTHWEST SECTOR										
Hamlin, Westin and Rubi…….	2,656	823	277	10.00	2.40	1,045	6.38	2.40	1,045	6.38
Other early season[2]…………..	1,444	757	251	11.30	2.40	1,066	3.47	2.40	1,066	3.47
Pera Rio…………………………..	8,320	588	253	17.00	1.74	735	14.44	1.74	735	14.44
Valencia and V.Folha Murcha[4]	3,809	667	223 227	21.80 21.50	2.08	986	7.91	2.09	992	7.96
Natal………………………………	1,406	826	235 238	20.00	2.50	912	3.51	2.51	912	3.53
Average…………………….	(X)	**673**	**246 247**	**17.31 17.20**	**2.03**	**880**	(X)	**2.03**	**882**	(X)
Subtotal…………………….	**17,635**	(X)	(X)	(X)	(X)	(X)	**35.71**	(X)	(X)	**35.78**
CENTRAL SECTOR										
Hamlin, Westin and Rubi…….	7,328	905	277	10.00	2.64	1,148	19.37	2.64	1,148	19.37
Other early season[2]…………..	2,870	687	251	11.30	2.18	893	6.26	2.18	893	6.26
Pera Rio…………………………..	17,219	672	253	17.00	1.98	970	34.17	1.98	970	34.17
Valencia and V.Folha Murcha[4]	17,021	683	223 227	21.80 21.50	2.12	833	36.15	2.14	833	36.36
Natal………………………………	4,695	795	235 238	20.00	2.40	968	11.29	2.42	972	11.35
Average…………………….	(X)	**723**	**246 247**	**17.31 17.20**	**2.18**	**981**	(X)	**2.19**	**984**	(X)
Subtotal…………………….	**49,133**	(X)	(X)	(X)	(X)	(X)	**107.24**	(X)	(X)	**107.51**
SOUTH SECTOR										
Hamlin, Westin and Rubi…….	4,954	860	277	10.00	2.51	1,099	12.44	2.51	1,099	12.44
Other early season[2]…………..	0,556	593	251	11.30	1.88	741	1.05	1.88	741	1.05
Pera Rio…………………………..	11,909	699	253	17.00	2.06	963	24.56	2.06	963	24.56
Valencia and V.Folha Murcha[4]	13,926	741	223 227	21.80 21.50	2.30	956	32.09	2.32	962	32.29
Natal………………………………	2,871	828	235 238	20.00	2.50	990	7.19	2.52	990	7.23
Average…………………….	(X)	**748**	**246 247**	**17.31 17.20**	**2.26**	**986**	(X)	**2.27**	**989**	(X)
Subtotal…………………….	**34,216**	(X)	(X)	(X)	(X)	(X)	**77.33**	(X)	(X)	**77.57**
SOUTHWEST SECTOR										
Hamlin, Westin and Rubi…….	4,876	996	277	10.00	2.91	1,310	14.18	2.91	1,310	14.18
Other early season[2]…………..	1,170	793	251	11.30	2.52	1,292	2.94	2.52	1,292	2.94
Pera Rio…………………………..	10,389	749	253	17.00	2.21	1,090	22.95	2.21	1,090	22.95
Valencia and V.Folha Murcha[4]	12,108	741	223 227	21.80 21.50	2.31	995	27.91	2.32	995	28.09
Natal………………………………	5,962	783	235 238	20.00	2.37	1,057	14.12	2.38	1,057	14.19
Average…………………….	(X)	**788**	**246 247**	**17.31 17.20**	**2.38**	**1,151**	(X)	**2.39**	**1,155**	(X)
Subtotal…………………….	**34,505**	(X)	(X)	(X)	(X)	(X)	**82.10**	(X)	(X)	**82.35**

(X) Not applicable.
[1] Hamlin, Westin, Rubi, Valencia Americana, Valencia Argentina, Seleta, Pineapple, Pera Rio, Valencia, Valencia Folha Murcha and Natal.
[2] Valencia Americana, Valencia Argentina, Seleta and Pineapple.
[3] Weighted average per stratum bearing trees.
[4] V. Folha Murcha – Valencia Folha Murcha.

Orange production final[1] estimate totals 398.35 million boxes

The 2017-2018 orange production final estimate for the São Paulo and West-Southwest of Minas Gerais Citrus Belt, published on April 10, 2018 by Fundecitrus – Fund for Citrus Protection, carried out in cooperation with Markestrat, FEA-RP/USP and FCAV/Unesp[2] – is of 398.35 million boxes of 40.8 kg each, 62% higher in comparison to that of the previous crop (2016-2017) with a final figure of 245.31 million boxes, and 25% above the average of the seasons of the last ten years[3]. All crop estimate updates published along the season showed positive change as compared to the previous expectation. The final figure represents an increase of 0.27% in relation to the update published in February 2018 and 9.30% in relation to the initial May 2017 forecast. The closing figure for total production includes:

- 77.48 million boxes of the Hamlin, Westin and Rubi varieties;
- 18.02 million boxes of the Valencia Americana, Valencia Argentina, Seleta and Pineapple varieties;
- 118.47 million boxes of the Pera Rio variety;
- 139.62 million boxes of the Valencia and Valencia Folha Murcha varieties;
- 44.76 million boxes of the Natal variety.

Approximately 30.51 million boxes of the final estimated crop were produced in the West of Minas Gerais.

Regarding the productivity index, the crop 2017-2018 showed a remarkable performance: 1,033 boxes were harvested per hectare, against 634 boxes per hectare in 2016-2017. The significant variation between the two crops was triggered by a favorable conjunction of factors. Suitable weather for citrus growing and improved cultural practices in groves in 2016, evidenced by the increased demand of inputs for crop nutritional and phytosanitary management, influenced positive results.

Orange trees that had been less stressed in a previous low production cycle benefited from ideal climate for blooming as of August 2016, resulting in a high fruit load per tree this season. Favorable climate continued throughout fruit development and harvest, from May 2017 to March 2018. According to data from Somar Meteorologia, rainfall remained above historical average most of the time. Rainfall along the crop season reached an average 1,373 millimeters in producing areas. From April to June 2017, atypical and positive rainfall events totaled 306 millimeters, guaranteeing good soil moisture levels during the main harvest of early varieties and incurring an increased production of 11% in comparison with the estimate announced in May of last year. With lower rainfall from July to September 2017, the increased production for the mid-season variety Pera Rio was lower than that for other varieties or more precisely 3%. Heavy rainfall above average from October 2017 to January 2018 were especially beneficial to the production of late varieties, which increased 12%.

The correlation between increased production and rainfall derives from the direct effect the latter has on fruit development, resulting in increased orange weight. Each harvested fruit weighed an average of 166 grams, surpassing the initial expectation of 154 grams. Despite the heavier fruit, its weight fell short of reaching last crop's figures, when each orange weighed an average of 184 grams, which confirmed the assumption used in the estimate, stating that orange growth is inversely proportional to the tree fruit production, due to the competition for nutrient reserves in the plant.

Fruit weight gain resulted in increased production, though not being its only cause. Another factor influencing the positive result was a decreased fruit drop in comparison to the projection for the crop. More oranges were harvested as a consequence of improved fruit retention in trees, probably due to intensified cultural practices in groves. Average fruit drop rate for the citrus belt, accrued from early season to harvest was 1.19 percentage point below estimate, and closed at 17.31%. Margin of error is of plus or minus 0.29 percentage point with 95% confidence. Hamlin, Westin and Rubi had the lowest fruit drop rate among all varieties, closing at 10.00% with a margin of error of plus or minus 0.63 percentage point. Fruit drop rate was 11.30% with a margin of error of plus or minus 0.99 percentage point for other early varieties, 17.00% with a margin of error of plus or minus 0.36 percentage point for Pera Rio, 21.80% with a margin of error of plus or minus 0.52 percentage point for Valencia and Valencia Folha Murcha and 20.00% with a margin of error of plus or minus 1.33 percentage point for Natal. The citrus belt average fruit drop rate of 17.31% breaks down into different causes for the fruit drop, namely 7.45% physiological drop, mechanization or adverse climate, 4.06% HLB (huanglongbing/greening), 2.70% fruit borer and fruit flies, 2.16% black spot, 0.62% leprosis and 0.31% citrus canker.

Crop estimate and updates were performed by employing the objective method, based on quantitative data – field measurements, fruit counting and weighing. The four main components of the model are: (1) bearing trees, (2) fruit per tree, (3) drop rate, and (4) fruit per box (fruit size). The first two remained unchanged from May 2017 to April 2018 and were obtained respectively from the tree inventory and fruit stripping from 2,560 trees. The components 'drop rate' and 'fruit per box' were updated according to continuous field follow-up done by Fundecitrus. Other data used was the average size of fruit received throughout the crop 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, Valencia Argentina, Seleta, Pineapple Pera Rio, Valencia, Valencia Folha Murcha and Natal.

[2] Department of math and science.

[3] Data for the 2007-2008 and 2014-2015 crops supplied by orange juice companies associated to Fundecitrus – Citrosuco, Cutrale and Louis Dreyfus, which, individually, have estimated their crop for the citrus planted area since 1988, through objective methodology. Data for the 2015-2016 and 2016-2017 crops supplied by Fundecitrus.