

Current forecast update (variation regarding the February update):

April 10, 2017

Total orange crop production forecast¹: 245.31 million boxes (increase of 0.45%)

Hamlin, Westin and Rubi: 48.31 million boxes (unchanged)

Other early season²: 13.62 million boxes (unchanged)

Pera Rio: 74.17 million boxes (increase of 0.60%)

Valencia and Valencia Folha Murcha: 80.14 million boxes (increase of 0.62%)

Natal: 29.07 million boxes (increase of 0.62%)

The orange production forecast of the 2017-2018 season will be released at 10:00 a.m. on May 10, 2017.

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

Month	Forecast components				Orange production forecast update 2016-2017					
	February/ April (strike-through values were presented in February, to their left are their respective values updated in April)				February			April		
	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
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)
TOTAL										
Hamlin, Westin and Rubi.....	28,304	523	243	9.4	1.71	744	48.31	1.71	744	48.31
Other early season ²	8,256	475	210	10.3	1.65	744	13.62	1.65	744	13.62
Pera Rio.....	59,668	378	224 225	12.0	1.24	593	73.73	1.24	596	74.17
Valencia and V.Folha Murcha ⁴	60,432	409	211 212	17.0	1.32	593	79.65	1.33	597	80.14
Natal.....	18,888	500	220 221	17.5	1.53	646	28.89	1.54	650	29.07
Average.....	(X)	430	222 223	13.73	1.39	632	(X)	1.40	634	(X)
Total.....	175,548	(X)	(X)	(X)	(X)	(X)	244.20	(X)	(X)	245.31
NORTH SECTOR										
Hamlin, Westin and Rubi.....	7,995	440	243	9.4	1.44	620	11.49	1.44	620	11.49
Other early season ²	2,025	407	210	10.3	1.42	714	2.87	1.42	715	2.87
Pera Rio.....	11,824	235	224 225	12.0	0.77	399	9.08	0.77	402	9.14
Valencia and V.Folha Murcha ⁴	13,975	320	211 212	17.0	1.03	465	14.39	1.04	468	14.48
Natal.....	3,785	372	220 221	17.5	1.14	470	4.32	1.15	473	4.34
Average.....	(X)	(X)	222 223	13.73	1.06	493	(X)	1.07	495	(X)
Subtotal.....	39,604	328	(X)	(X)	(X)	(X)	42.15	(X)	(X)	42.32
NORTHWEST SECTOR										
Hamlin, Westin and Rubi.....	2,811	203	243	9.4	0.66	286	1.86	0.66	286	1.86
Other early season ²	1,384	257	210	10.3	0.89	387	1.23	0.89	387	1.23
Pera Rio.....	8,309	284	224 225	12.0	0.93	393	7.71	0.93	395	7.75
Valencia and V.Folha Murcha ⁴	3,862	219	211 212	17.0	0.71	333	2.73	0.71	335	2.74
Natal.....	1,690	414	220 221	17.5	1.27	491	2.14	1.28	494	2.16
Average.....	(X)	(X)	222 223	13.73	0.87	375	(X)	0.87	377	(X)
Subtotal.....	18,056	268	(X)	(X)	(X)	(X)	15.67	(X)	(X)	15.74
CENTRAL SECTOR										
Hamlin, Westin and Rubi.....	7,447	481	243	9.4	1.57	665	11.68	1.57	665	11.68
Other early season ²	3,215	576	210	10.3	2.00	850	6.43	2.00	850	6.43
Pera Rio.....	17,263	386	224 225	12.0	1.26	611	21.75	1.27	615	21.88
Valencia and V.Folha Murcha ⁴	16,915	388	211 212	17.0	1.25	554	21.12	1.26	557	21.25
Natal.....	4,647	494	220 221	17.5	1.51	584	7.02	1.52	588	7.06
Average.....	(X)	(X)	222 223	13.73	1.37	613	(X)	1.38	616	(X)
Subtotal.....	49,487	423	(X)	(X)	(X)	(X)	68.00	(X)	(X)	68.30
SOUTH SECTOR										
Hamlin, Westin and Rubi.....	5,009	579	243	9.4	1.89	844	9.46	1.89	844	9.46
Other early season ²	547	418	210	10.3	1.44	601	0.79	1.44	601	0.79
Pera Rio.....	12,073	423	224 225	12.0	1.38	644	16.68	1.39	648	16.78
Valencia and V.Folha Murcha ⁴	13,210	454	211 212	17.0	1.46	602	19.32	1.47	606	19.44
Natal.....	2,895	558	220 221	17.5	1.71	706	4.94	1.72	710	4.97
Average.....	(X)	(X)	222 223	13.73	1.52	660	(X)	1.52	664	(X)
Subtotal.....	33,734	470	(X)	(X)	(X)	(X)	51.19	(X)	(X)	51.44
SOUTHWEST SECTOR										
Hamlin, Westin and Rubi.....	5,042	840	243	9.4	2.74	1,240	13.82	2.74	1,240	13.82
Other early season ²	1,085	610	210	10.3	2.12	1,024	2.30	2.12	1,024	2.30
Pera Rio.....	10,199	556	224 225	12.0	1.81	901	18.51	1.83	906	18.62
Valencia and V.Folha Murcha ⁴	12,470	550	211 212	17.0	1.77	885	22.09	1.78	890	22.23
Natal.....	5,871	583	220 221	17.5	1.78	863	10.47	1.80	868	10.54
Average.....	(X)	(X)	222 223	13.73	1.94	946	(X)	1.95	950	(X)
Subtotal.....	34,667	630	(X)	(X)	(X)	(X)	67.19	(X)	(X)	67.51

(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.

Final estimate of total orange production¹ is 245.31 million boxes

The 2016/2017 orange production final estimate for the São Paulo and West-Southwest Minas Gerais Citrus Belt as published on Monday, April 10, 2017 by Fundecitrus – Fund for Citrus Protection, carried out in cooperation with Markestrat, FEA-RP/USP and FCAV/Unesp², is estimated at 245.31 million boxes of 40.8 kg each, 18% lower than the previous crop (2015/2016), with a closing figure of 300.65 million boxes. Variations of the forecast updates along the season were virtually negligible. The final value represents an increase of 0.45% in relation to the update published in February/2017 and a reduction of 0.17% in relation to the initial May/2016 forecast. The closing figure for total production includes:

- 48.31 million boxes of the Hamlin, Westin, and Rubi varieties;
- 13.62 million boxes of the Valencia Americana, Valencia Argentina, Seleta, and Pineapple varieties;
- 74.17 million boxes of the Pera Rio variety;
- 80.14 million boxes of the Valencia and Valencia Folha Murcha varieties;
- 29.07 million boxes of the Natal variety.

Approximately 9.56 million boxes of the forecasted production were produced in the West of Minas Gerais.

The fruit droppage rate was lower than expected, mainly as a consequence of the shorter harvesting period occurred in this season. The lower difference was 1.27 percentage points (13.73% in April/2017 against 15.00% in May/2016). The most significant variation was observed in the Pera Rio variety, which decreased by 4 percentage points. In November, the harvesting of that variety had already exceeded 90% of the total, whereas in the previous harvest such level was only reached by late January.

The fruit size, i.e., the required amount of oranges to achieve the weight of 40.8 kg (box) at the ideal harvesting period, was altered due to the higher growth of the fruit, triggered mainly by the low number of oranges on the tree. Due to this weight gain, a box was then made up of 26 oranges fewer than in the initial projection (222 fruits/box in April/2017 against 248 fruits/box in May/2016).

Rainfall during the season has reached 1,376 millimeters on average in producing regions, from May/2016 to March/2017, exceeding the expected 1,330 millimeters for the accumulated figure until April/2017. Although the volume variation was small, the rainfall distribution was different from the forecast one. The most significant deviation, which contributed to fruit growth, was observed in the months from May to August, when it rained nearly twice as much as the forecast for the period, specifically 279 mm.

The correction factor was altered due to the change in the configuration of the groves that has been observed in recent years, triggered primarily by the HLB (Huanglongbing or Greening) control management, with the elimination of diseased trees and their replacement with healthy seedlings, resulting in the formation of subsets of younger plants with lower productivity than the trees originally planted in the same block. The impact of these subsets was significant in this season because of more marked differences in yield deviations between trees of different ages, since younger trees had a greater loss in terms of fruit set.

The production forecast and the forecast updates were performed using the objective method, which is based on quantitative data - field measurements, counting and weighing of fruits - which have been applied in the direct expansion model, whose formula is represented below. The four major components of the model are: (1) bearing trees, (2) fruits per tree, (3) droppage rate and (4) fruits per box (size of fruits). The first two have remained unchanged from May/2016 to April/2017 and were obtained from the inventory of trees and the stripping of 2,200 trees. The “droppage rate” and “fruits per box” components have been updated, according to Fundecitrus’ continuous field monitoring. Another source included in this study is the size of fruits received throughout the season by the orange juice companies that are members of Fundecitrus – Citrusuco, Cutrale and Louis Dreyfus – for the purpose of industrial processing. Each processing company provides, under confidentiality, the individual data to an independent consulting firm to ascertain the average size of the fruits processed.

$$\text{Production forecast} = \frac{\text{Bearing trees} \times \text{Fruit per tree} \times (1 - \text{Fruit loss from droppage})}{\text{Fruit size}}$$

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

² Exact Sciences Department.