Current forecast update (variation regarding the May forecast): **September, 10 2020**
Total orange crop production forecast: 286.72 million boxes (decreased of 0.36%)
Hamlin, Westin and Rubi: 47.90 million boxes (increased of 5.21%)
Other early season: 13.85 million boxes (increased of 6.13%)
Pera Rio: 84.38 million boxes (decreased of 3.06%)
Valencia and Valencia Folha Murcha: 104.61 million boxes (decreased of 1.46%)
Natal: 35.98 million boxes (unchanged)

Publication Schedule 2020-2021
2nd Crop forecast update: December 10, 2020
3rd Crop forecast update: February 10, 2021
Final crop forecast: April 12, 2021

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

Month	Forecast components				Crop forecast 2020-2021			Crop forecast update 2020-2021		
	May/2020 and September/2020 (strike-through values were presented in May, to their left are their respective values updated in September)				May/2020			September/2020		
Sector and variety group	Bearing trees	Fruit per tree at stripping	Fruit estimated per box	Estimated drop rate	Per tree	Per hectare	Total	Per tree	Per hectare	Total
	(1,000 trees)	(number)	(number)	(percentage)	(boxes/ tree)	(boxes/ hectare)	(1,000,000 boxes)	(boxes/ tree)	(boxes/ hectare)	(1,000,000 boxes)
CITRUS BELT										
Hamlin, Westin and Rubi.....	26,889	620	274 ~~294~~	12.10 ~~10.50~~	1.69	772	45.53	1.78	812	47.90
Other early.....	7,892	565	255 ~~271~~	11.50	1.65	779	13.05	1.75	827	13.85
Pera Rio.....	61,520	506	276 ~~268~~	16.50	1.41	717	87.04	1.37	695	84.38
Valencia and Folha Murcha...	58,166	588	234 ~~231~~	20.00	1.83	853	106.16	1.80	841	104.61
Natal.....	19,786	634	247	21.00	1.82	840	35.98	1.82	840	35.98
Total.....	**174,253**	**568**	**257**	**17.30** ~~**17.00**~~	**1.65**	**790**	**287.76**	**1.65**	**787**	**286.72**
NORTH SECTOR										
Hamlin, Westin and Rubi.....	7,450	557	274 ~~294~~	12.10 ~~10.50~~	1.52	660	11.32	1.60	695	11.92
Other early.....	1,947	622	255 ~~271~~	11.50	1.82	871	3.55	1.94	924	3.77
Pera Rio.....	12,549	414	276 ~~268~~	16.50	1.16	618	14.53	1.12	599	14.08
Valencia and Folha Murcha...	13,951	499	234 ~~231~~	20.00	1.55	705	21.63	1.53	695	21.31
Natal.....	3,891	626	247	21.00	1.80	764	6.99	1.80	764	6.99
Subtotal.....	**39,789**	**502**	**257**	**17.30** ~~**17.00**~~	**1.46**	**686**	**58.02**	**1.46**	**687**	**58.07**
NORTHWEST SECTOR										
Hamlin, Westin and Rubi.....	2,405	572	274 ~~294~~	12.10 ~~10.50~~	1.56	694	3.76	1.64	729	3.95
Other early.....	1,339	320	255 ~~271~~	11.50	0.93	406	1.24	0.99	436	1.33
Pera Rio.....	7,197	367	276 ~~268~~	16.50	1.03	468	7.39	0.99	453	7.16
Valencia and Folha Murcha...	3,982	361	234 ~~231~~	20.00	1.12	546	4.47	1.10	537	4.40
Natal.....	1,866	190	247	21.00	0.55	264	1.02	0.55	264	1.02
Subtotal.....	**16,788**	**372**	**257**	**17.30** ~~**17.00**~~	**1.07**	**492**	**17.88**	**1.06**	**492**	**17.86**
CENTRAL SECTOR										
Hamlin, Westin and Rubi.....	7,121	516	274 ~~294~~	12.10 ~~10.50~~	1.41	670	10.03	1.48	705	10.55
Other early.....	2,922	566	255 ~~271~~	11.50	1.66	789	4.85	1.76	836	5.14
Pera Rio.....	18,640	475	276 ~~268~~	16.50	1.33	683	24.74	1.29	663	24.00
Valencia and Folha Murcha...	16,090	545	234 ~~231~~	20.00	1.69	793	27.25	1.67	781	26.86
Natal.....	4,787	509	247	21.00	1.46	650	7.00	1.46	650	7.00
Subtotal.....	**49,559**	**512**	**257**	**17.30** ~~**17.00**~~	**1.49**	**721**	**73.87**	**1.48**	**718**	**73.55**
SOUTH SECTOR										
Hamlin, Westin and Rubi.....	4,748	589	274 ~~294~~	12.10 ~~10.50~~	1.61	733	7.63	1.69	772	8.03
Other early.....	379	766	255 ~~271~~	11.50	2.24	867	0.85	2.37	918	0.90
Pera Rio.....	12,976	548	276 ~~268~~	16.50	1.53	740	19.89	1.49	717	19.28
Valencia and Folha Murcha...	11,986	608	234 ~~231~~	20.00	1.89	837	22.63	1.86	825	22.30
Natal.....	3,176	594	247	21.00	1.70	781	5.41	1.70	781	5.41
Subtotal.....	**33,265**	**582**	**257**	**17.30** ~~**17.00**~~	**1.70**	**781**	**56.41**	**1.68**	**774**	**55.92**
SOUTHWEST SECTOR										
Hamlin, Westin and Rubi.....	5,166	907	274 ~~294~~	12.10 ~~10.50~~	2.48	1,161	12.79	2.60	1,221	13.45
Other early.....	1,305	669	255 ~~271~~	11.50	1.96	1,031	2.56	2.08	1,091	2.71
Pera Rio.....	10,158	722	276 ~~268~~	16.50	2.02	1,076	20.49	1.96	1,043	19.86
Valencia and Folha Murcha...	12,157	799	234 ~~231~~	20.00	2.48	1,247	30.18	2.45	1,229	29.74
Natal.....	6,065	895	247	21.00	2.57	1,284	15.56	2.57	1,284	15.56
Subtotal.....	**34,852**	**804**	**257**	**17.30** ~~**17.00**~~	**2.34**	**1,185**	**81.58**	**2.33**	**1,181**	**81.32**

Updated orange[1] crop forecast totals 286.72 million boxes

The 2020-2021 orange crop forecast update for the São Paulo and West-Southwest Minas Gerais citrus belt, published on September 10, 2020 by Fundecitrus – performed in cooperation with Markestrat, FEA-RP/USP and FCAV/Unesp2 – is 286.72 million boxes of 40.8 kg each. This figure corresponds to a decrease of 0.36% in relation to the estimate published in May and 25.87% as compared to the previous crop, representing one of the most severe crop losses in the last ten years. Approximately 20.54 million boxes of the total crop should be produced in West Minas Gerais.

This year's harvest started later due to a larger amount of fruit from the second bloom and did not pick up until mid-June. Field survey data shows that harvest in August reached 25% of the production, which is a slower pace than the 35% recorded for the same time last year. Harvest reached 97% for the early varieties Hamlin, Westin and Rubi; 66% for the other earlies Valencia Americana, Seleta and Pineapple; 13% for Pera Rio; 3% for Valencia and Valencia Folha Murcha; and 2% for Natal.

The average orange weight for the early varieties was higher than initially estimated, thanks to the rain that fell in May and June, right before harvest. According to data from Somar Meteorologia, the accumulated rainfall for those months was 150 to 200 millimeters in the regions of Itapetininga, Avaré and Duartina; 55 to 80 millimeters in Porto Ferreira, Limeira, Brotas, São José do Rio Preto and Matão; 30 to 50 millimeters in Votuporanga, Bebedouro and Altinópolis; and slightly more than 20 millimeters in West Minas Gerais. In the Minas Gerais part of the citrus belt, irrigation helped counteract the lower rainfall. The marked climatic seasonality with a significant water shortage this time of the year explains why irrigation is present in 80% of the orange planted area in West Minas Gerais, well above the average 30% of irrigated area for the other regions.

The weather changed in July and rain was replaced by drought conditions all over the citrus belt: the accumulated rainfall throughout the month was below an average 10 millimeters for the regions. Days remained hot and dry in August, except for three regions where rainfall was considerable: Itapetininga (140 millimeters), Duartina (108 millimeters) and Avaré (93 millimeters). Heavier rainfalls in the Southwest could have caused an even greater fruit growth, but that effect was softened because of the larger number of fruits per tree in the sector that limited fruit growth due to increased competition for reserves in plants. Well-distributed rainfall during the year in those regions contrasts with rainfall in other locations in the citrus belt. In general, rainfall accumulated for the four months since the beginning of the crop season, that is, from May to August, is only 139 millimeters, which is 14% lower in comparison to the climatological normal (1981-2010).

In addition to scarcer rainfall in July and August, the forecast, until the publication of this update, points to no significant rains for the next 15 days. This water shortage in most of the citrus belt should inhibit the growth of oranges, which are expected to be lighter at harvest than the projected weight. Therefore, the sizes of oranges of the mid-season variety Pera Rio and of the late varieties Valencia and Valencia Folha Murcha are also being revised and may be changed in future updates, depending on their average weight when harvest ends.

Considering all varieties, the average size projected in May of 257 fruits to fill a 40.8 kg or 90 pound-box, which equivalent to oranges with an average weight of 159 grams each (5.61 oz), remained the same in this forecast update, since the increased fruit weight for the early varieties should be offset by the reduced weight for the other varieties. Should this weight be confirmed as harvest progresses, oranges will be approximately 6% smaller than those in the last five crop seasons (169 grams or 5.96 oz average weight).

Fruit of the early varieties Hamlin, Westin and Rubi harvested until the month of August weighed an average of 149 grams (5.26 oz), which is heavier than the 139 grams (4.90 oz) projected in May. Consequently, the fruit size for those varieties in this forecast is updated to 274 fruits per box, whereas in May that size had been projected to be 294 fruits per box. Fruit weight of the other early varieties Valencia Americana, Seleta and Pineapple is revised to 160 grams (5.64 oz), as compared to the 151 grams (5.33 oz) projected in May, therefore changing the fruit size to 255 fruits per box, as compared to 271 fruits per box in the original projection. The revised weight for the mid-season variety Pera Rio is 148 grams (5.22 oz) per fruit, which is equivalent to 276 fruits per box, as compared to 268 estimated in May. The average fruit weight for the late varieties Valencia and Valencia Folha Murcha decreased from 177 to 174 grams per fruit, which corresponds to 234 fruits per box. The fruit size for the late variety Natal remained the same because its peak harvesting time is still far away and coincides with the rainiest season of the year.

The projected fruit drop rate rose from 17% to 17.30% average, all varieties considered. This slight adjustment is due to the increased fruit drop observed for the varieties Hamlin, Westin and Rubi, which was revised to 12.10%, 1.60 percentage point above the projection of May. Fruit drop increased with the returning rains associated to high winds in June, following two drier months that triggered water shortage and fruit wilting, rendering fruit more vulnerable to drop especially in orange trees grafted on rootstock (root system) with lower resistance to drought and in trees affected by greening.

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. 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.

[1] Hamlin, Westin, Rubi, Valencia Americana, Seleta, Pineapple, Pera Rio, Valencia, Valencia Folha Murcha and Natal.
[2] Department of math and science, FCAV/Unesp Jaboticabal Campus.