



CITRUS MATURITY TEST RESULTS AND FRUIT SIZE

DECEMBER FORECAST

Cooperating with the Florida Department of Agriculture and Consumer Services

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December 11, 2018

Florida All Orange Production Unchanged from November Forecast

Florida Non-Valencia Orange Production Unchanged

Florida Valencia Orange Production Unchanged

Florida All Grapefruit Production Unchanged

Florida All Tangerine and Tangelo Production Unchanged

FORECAST DATES - 2018-2019 SEASON

January 11, 2019 April 9, 2019

February 8, 2019 May 10, 2019

March 8, 2019 June 11, 2019

July 11, 2019

Citrus Production by Type – States and United States

Crop and State	Production ¹		2018-2019 Forecasted Production ¹	
	2016-2017 (1,000 boxes)	2017-2018 (1,000 boxes)	November (1,000 boxes)	December (1,000 boxes)
Non-Valencia Oranges ²				
Florida	33,000	18,950	32,000	32,000
California ³	39,300	35,900	40,000	40,000
Texas ³	1,090	1,530	1,800	1,800
United States.....	73,390	56,380	73,800	73,800
Valencia Oranges				
Florida	35,850	26,000	45,000	45,000
California ³	9,000	9,500	9,000	9,000
Texas ³	280	350	600	600
United States.....	45,130	35,850	54,600	54,600
All Oranges				
Florida	68,850	44,950	77,000	77,000
California ³	48,300	45,400	49,000	49,000
Texas ³	1,370	1,880	2,400	2,400
United States.....	118,520	92,230	128,400	128,400
Grapefruit				
Florida-All	7,760	3,880	6,400	6,400
Red	6,280	3,180	5,300	5,300
White	1,480	700	1,100	1,100
California ³	4,400	4,000	3,900	3,900
Texas ³	4,800	4,800	6,200	6,200
United States.....	16,960	12,680	16,500	16,500
Lemons ³				
Arizona.....	1,550	1,000	1,400	1,400
California.....	20,500	21,200	20,000	20,000
United States.....	22,050	22,200	21,400	21,400
Tangerines and Tangelos				
Florida-All ⁴	1,620	750	1,200	1,200
Early ⁵	600	(NA)	(NA)	(NA)
Royal	210	(NA)	(NA)	(NA)
Honey	530	(NA)	(NA)	(NA)
Tangelo	280	(NA)	(NA)	(NA)
California ^{3,6}	23,800	19,200	23,000	23,000
United States.....	25,420	19,950	24,200	24,200

NA Not available.

¹ Net pounds per box: oranges in California-80, Florida-90, Texas-85; grapefruit in California and Texas-80, Florida-85; lemons-80; and tangerines and mandarins in California-80, Florida-95.

² Navel and miscellaneous varieties in California. Early non-Valencia (including Navel) and midseason varieties in Florida and Texas.

³ Estimates carried forward from November.

⁴ In 2016-2017, includes Fallglo, Sunburst, Royal, and Honey tangerine varieties and tangelos. Beginning in 2017-2018, includes all certified varieties of tangerines and tangelos.

⁵ Fallglo and Sunburst varieties.

⁶ Includes tangelos and tangors in California.

All Oranges 77.0 Million Boxes

The 2018-2019 Florida all orange forecast released today by the USDA Agricultural Statistics Board is 77.0 million boxes, unchanged from the November forecast. If realized, this forecast will be 71 percent more than last season's final production. The forecast consists of 32.0 million boxes of the non-Valencia oranges (early, midseason, and Navel varieties) and 45.0 million boxes of the Valencia oranges. Regression data used are from the 2008-2009 through 2016-2017 seasons. All references to "average", "minimum", and "maximum" refer to those 9 seasons unless noted. The hurricane affected 2017-2018 season is excluded from the regressions.

Non-Valencia Oranges 32.0 Million Boxes

The forecast of non-Valencia production is unchanged at 32.0 million boxes. Current fruit size is below the minimum and projected to be below the minimum at harvest. Current droppage is above average and is projected to be above average until harvest. The Navel forecast, included in the non-Valencia forecast, is unchanged at 800 thousand boxes, and is 3 percent of the non-Valencia total. Final Navel size is below average and droppage is close to the maximum.

Valencia Oranges 45.0 Million Boxes

The forecast of Valencia production is unchanged at 45.0 million boxes. Current fruit size is below the minimum and is projected to be below the minimum at harvest. Current droppage is above average and projected to be above average at harvest.

All Grapefruit 6.40 Million Boxes

The forecast of all grapefruit production is unchanged at 6.40 million boxes. If realized, this forecast will be 65 percent more than last season's final production. The red grapefruit forecast is 5.30 million boxes. Fruit size of red grapefruit at harvest is projected to be below average and droppage is projected to be above average. The white grapefruit forecast is 1.10 million boxes. Projected fruit size of white grapefruit at harvest is below average, while projected droppage is above average.

Tangerines and Tangelos 1.20 Million Boxes

The forecast for tangerine and tangelos is unchanged at 1.20 million boxes, 60 percent more than last season's hurricane affected utilization of 750 thousand boxes. This forecast number includes all certified tangerine and tangelo varieties.

Reliability

To assist users in evaluating the reliability of the December 1 Florida production forecasts, the "Root Mean Square Error," a statistical measure based on past performance, is computed. The deviation between the December 1 production forecast and the final estimate is expressed as a percentage of the final estimate. The average of squared percentage deviations for the latest 20-year period is computed. The square root of the average becomes statistically the "Root Mean Square Error." Probability statements can be made concerning expected differences in the current forecast relative to the final end-of-season estimate, assuming that factors affecting this year's forecast are not different from those influencing recent years.

The "Root Mean Square Error" for the December 1 Florida all orange production forecast is 7.6 percent. However, if you exclude the three abnormal production seasons (three hurricane seasons), the "Root Mean Square Error" is 7.3 percent. This means chances are 2 out of 3 that the current all orange production forecast will not be above or below the final estimates by more than 7.6 percent, or 7.3 percent excluding abnormal seasons. Chances are 9 out of 10 (90 percent confidence level) that the difference will not exceed 13.2 percent, or 12.8 percent excluding abnormal seasons.

Changes between the December 1 Florida all orange forecast and the final estimates during the past 20 years have averaged 7.88 million boxes (7.30 million, excluding abnormal seasons), ranging from 1.00 million boxes to 19.0 million boxes including abnormal seasons, (1.00 to 19.0 million boxes excluding abnormal seasons). The December 1 forecast for all oranges has been below the final estimate 4 times, above 16 times, (below 4 times, above 13 times, excluding abnormal seasons). The difference does not imply that the December 1 forecasts this year are likely to understate or overstate final production.

Forecast Components, by Type – Florida: December 2018

[Survey data is considered final in December for Navels, January for early-midseason (non-Valencia) oranges, February for grapefruit, and April for Valencia oranges]

Type	Bearing trees (1,000 trees)	Fruit per tree (number)	Droppage (percent)	Fruit per box (number)
ORANGES				
Early-midseason (Non-Valencia)	19,718	813	27	340
Navel.....	951	213	26	142
Valencia.....	29,262	609	28	257
GRAPEFRUIT				
Red.....	2,573	369	35	127
White.....	540	362	35	116

Maturity

Regular bloom fruit samples (324 orange and 93 grapefruit) were collected from groves on established routes in Florida's five major citrus producing areas on November 26-27, 2018, and tested by the Florida Department of Agriculture and Consumer Service (FASS), on November 28-30, 2018.

Unadjusted Maturity Tests – Florida: 2017-2018 and 2018-2019

[Averages of regular bloom fruit from sample groves. Juice and solids per box are unadjusted and not comparable to juice processing plant test results. Samples were run through an FMC 091B machine using pneumatic pressure. This machine utilizes a 0.025 short strainer and a 1.00 inch orifice tube for the 3 inch cup and a 1.25 inch orifice tube for the 4 inch and 5 inch cups]

Fruit type (number of groves) test date	Acid		Solids (Brix)		Ratio		Unfinished juice per box		Solids per box	
	2017-2018 (percent)	2018-2019 (percent)	2017-2018 (percent)	2018-2019 (percent)	2017-2018	2018-2019	2017-2018 (pounds)	2018-2019 (pounds)	2017-2018 (pounds)	2018-2019 (pounds)
ORANGES										
Early N-V (94-120)										
Sep 1.....	1.18	1.19	9.11	8.84	7.88	7.51	43.35	43.68	3.95	3.86
Oct 1.....	0.88	0.86	9.20	9.22	10.64	10.94	49.45	49.09	4.54	4.52
Nov 1.....	0.70	0.69	9.53	9.75	13.90	14.36	52.56	50.27	5.01	4.90
Dec 1.....	0.61	0.62	9.89	10.05	16.37	16.47	52.26	52.03	5.17	5.23
Midseason N-V (51-54)										
Sep 1.....	1.29	1.32	8.97	8.93	7.13	6.85	44.72	44.58	4.02	3.98
Oct 1.....	0.96	0.94	9.35	9.30	9.94	10.03	51.32	49.83	4.81	4.64
Nov 1.....	0.76	0.80	9.84	10.01	13.12	12.80	54.47	50.94	5.36	5.09
Dec 1.....	0.69	0.72	10.02	10.30	14.75	14.50	53.56	52.41	5.37	5.40
Valencia (150-150)										
Sep 1.....	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
Oct 1.....	1.84	1.90	8.74	8.56	4.83	4.54	48.52	46.30	4.24	3.96
Nov 1.....	1.54	1.52	8.80	9.15	5.82	6.11	51.74	49.87	4.56	4.56
Dec 1.....	1.25	1.26	9.18	9.60	7.43	7.70	53.12	52.15	4.88	5.01
GRAPEFRUIT										
Red Seedless (42-46)										
Sep 1.....	1.44	1.44	9.87	9.72	6.87	6.78	36.99	38.86	3.65	3.78
Oct 1.....	1.29	1.22	9.55	9.48	7.46	7.81	43.96	44.72	4.20	4.24
Nov 1.....	1.15	1.16	9.31	10.00	8.11	8.69	48.53	50.17	4.52	5.01
Dec 1.....	1.09	1.16	9.35	9.95	8.65	8.68	50.62	52.36	4.74	5.21
White Seedless (40-47)										
Sep 1.....	1.54	1.52	9.81	9.83	6.37	6.46	37.09	36.61	3.64	3.60
Oct 1.....	1.34	1.36	9.55	9.64	7.18	7.09	44.39	42.59	4.24	4.11
Nov 1.....	1.25	1.26	9.55	9.78	7.67	7.80	48.81	48.06	4.67	4.70
Dec 1.....	1.20	1.19	9.02	9.82	7.52	8.27	50.62	49.56	4.57	4.87

NA Not available.

Unadjusted Maturity Test Averages, by Areas – Florida: December 2017-2018 and 2018-2019

Fruit type (number of groves) test date	Acid		Solids (Brix)		Ratio		Unfinished juice per box		Solids per box	
	2017-2018 (percent)	2018-2019 (percent)	2017-2018 (percent)	2018-2019 (percent)	2017-2018	2018-2019	2017-2018 (pounds)	2018-2019 (pounds)	2017-2018 (pounds)	2018-2019 (pounds)
ORANGES										
Early N-V										
Indian River (9-9).....	0.62	0.66	10.07	10.15	16.54	15.61	50.89	48.97	5.12	4.98
Other Areas (85-111)....	0.61	0.61	9.88	10.04	16.35	16.54	52.41	52.28	5.18	5.25
Midseason N-V										
Indian River (2-2).....	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Other Areas (49-52).....	0.69	0.72	10.02	10.29	14.74	14.55	53.58	52.50	5.37	5.40
Valencia										
Indian River (29-29).....	1.39	1.39	9.58	9.98	7.02	7.28	53.37	51.75	5.12	5.17
Other Areas (121-121)...	1.22	1.23	9.08	9.51	7.53	7.80	53.07	52.25	4.82	4.97
GRAPEFRUIT										
Red Seedless										
Indian River (35-38).....	1.07	1.14	9.31	9.90	8.71	8.77	50.61	50.15	4.71	4.97
Other Areas (7-8).....	1.16	1.24	9.56	10.16	8.32	8.30	50.69	46.13	4.86	4.69
White Seedless										
Indian River (33-39).....	1.20	1.19	9.05	9.92	7.55	8.37	50.84	49.81	4.61	4.94
Other Areas (7-8).....	1.20	1.21	8.89	9.34	7.40	7.76	49.56	48.38	4.41	4.52

D Withheld to avoid disclosing data for individual operations.

¹ Includes Central, Northern, Southern, and Western areas.

Size Frequency Measurement Distributions, by Type – Florida: November

[Size frequency distributions from the November size survey are shown in the following table. The distributions are by percent of fruit falling within the size range of each 4/5-bushel container. These frequency distributions include fruit from regular bloom and exclude fruit from summer bloom]

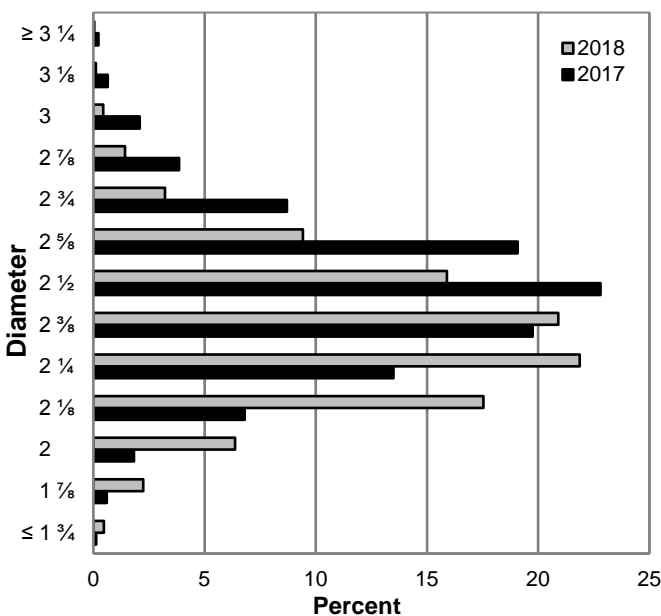
Type and number of fruit per 4/5-bushel containers	2016	2017	2018	Type and number of fruit per 4/5-bushel containers	2016	2017	2018
	(percent)	(percent)	(percent)		(percent)	(percent)	(percent)
NON-VALENCIA ORANGES ¹				RED GRAPEFRUIT ²			
64 or less	0.3	0.5	0.1	32 or less.....	0.6	4.1	0.8
80	2.5	4.0	1.1	36	4.5	11.9	2.5
100	12.3	18.0	7.0	40	7.5	14.2	6.8
125	26.1	34.9	22.4	48	13.4	16.2	11.4
163 or more	58.8	42.6	69.4	56	12.9	12.5	13.6
				63 or more.....	61.1	41.1	64.9
NAVEL ORANGES				WHITE GRAPEFRUIT ²			
64 or less	34.5	43.7	45.2	32 or less.....	1.1	4.0	2.4
80	25.6	32.2	25.6	36	3.9	11.7	7.6
100	21.0	15.3	18.4	40	8.5	12.4	12.1
125	13.7	7.0	7.5	48	10.3	16.6	16.2
163 or more	5.2	1.8	3.3	56	12.0	14.2	13.1
				63 or more.....	64.2	41.1	48.6
VALENCIA ORANGES				SUNBURST TANGERINES			
64 or less	1.8	1.2	0.2	100 or less	8.8	23.6	7.1
80	7.2	6.8	1.7	120	11.7	20.4	17.1
100	21.6	23.7	13.5	176	19.0	14.6	14.6
125	31.7	34.5	30.3	210 or more	60.5	41.4	61.2
163 or more	37.7	33.8	54.3				
TANGELOS				HONEY TANGERINES			
80 or less	20.3	27.7	9.6	80 or less	0.7	0.9	0.5
100	18.8	21.5	20.4	100	8.7	4.8	2.3
120	24.1	20.8	29.2	120	19.6	15.7	10.8
156 or more	36.8	30.0	40.8	176	16.9	19.3	16.9
				210 or more	54.1	59.3	69.5

¹ Excludes Navels.

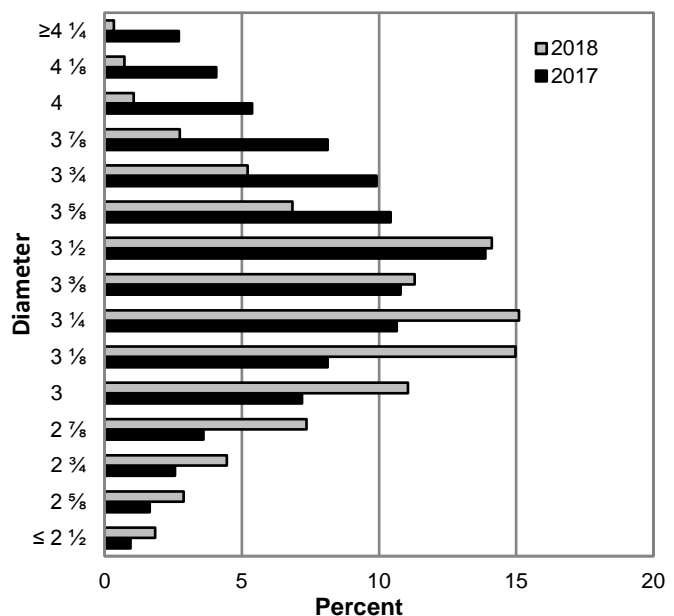
² Excludes seedy.

The charts below show the distribution of fruit sizes in 2017 compared to 2018. The diameter measurements shown are the minimum values of each eighth inch range, except for the smallest values.

Fruit Size Frequency Measurements, Non-Valencia Oranges ¹, by Diameter - Florida: November



Fruit Size Frequency Measurements, Red Grapefruit, by Diameter - Florida: November



¹ Excludes Navels.