United States Department of Agriculture
National Agricultural Statistics Service

CITRUS

DECEMBER FORECAST
MATURITY TEST RESULTS AND FRUIT SIZE

Cooperating with the Florida Department of Agriculture and Consumer Services
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December 8, 2023

Florida All Orange Production Unchanged from the October Forecast
Florida Non-Valencia Orange Production Unchanged
Florida Valencia Orange Production Unchanged
Florida All Grapefruit Production Up 26 Percent
Florida All Tangerine and Tangelo Production Up 10 percent

FORECAST DATES - 2023-2024 SEASON	
January 12, 2024	April 11, 2024
February 8, 2024	May 10, 2024
March 8, 2024	June 12, 2024
July 12, 2024	

Citrus Production by Type – States and United States

Crop and State	Production [1]		2023-2024 Forecasted Production [1]	
	2021-2022	2022-2023	October	December
	(1,000 boxes)	(1,000 boxes)	(1,000 boxes)	(1,000 boxes)
Non-Valencia Oranges [2]				
Florida	**18,250**	**6,150**	**7,500**	**7,500**
California [3]	31,500	36,500	37,000	37,000
Texas [3]	170	570	450	450
United States	49,920	43,220	44,950	44,950
Valencia Oranges				
Florida	**22,950**	**9,650**	**13,000**	**13,000**
California [3]	7.600	6,700	7,500	7,500
Texas [3]	30	560	350	350
United States	30,580	16,910	20,850	20,850
All Oranges				
Florida	**41,200**	**15,800**	**20,500**	**20,500**
California [3]	39,100	43,200	44,500	44,500
Texas [3]	200	1,130	800	800
United States	80,500	60,130	65,800	66,800
Grapefruit				
Florida-All	**3,330**	**1,810**	**1,900**	**2,400**
Red	**2,830**	**1,560**	**1,650**	**2,100**
White	**500**	**250**	**250**	**300**
California [3 4]	4,100	4,000	3,500	3,500
Texas [3]	1,700	2,250	2,200	2,200
United States	9,130	8,060	7,600	8,100
Lemons [3]				
Arizona	1,250	1,400	1,500	1,500
California	25,200	26,500	23,000	23,000
United States	26,450	27,900	24,500	24,500
Tangerines and Mandarins [5]				
Florida	**750**	**480**	**500**	**550**
California [3]	17,500	23,700	23,000	23,000
United States	18,250	24,180	23,500	23,550

[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] Early non-Valencia (including Navel) and midseason non-Valencia varieties in Florida; Navel and miscellaneous varieties in California; Early and mid-season varieties in Texas.
[3] Estimates carried forward from October.
[4] Includes pummelos in California.
[5] Includes tangelos.

All Oranges 20.5 Million Boxes

The 2023-2024 Florida all orange forecast released today by the USDA Agricultural Statistics Board is 20.5 million boxes, unchanged from the October forecast. If realized, this will be 30 percent more than last season's final production. The forecast consists of 7.50 million boxes of non-Valencia oranges (early, mid-season, and Navel varieties) and 13.0 million boxes of Valencia oranges. An 8-year regression was used for comparison purposes. All references to "average", "minimum", and "maximum" refer to the previous 10 seasons, excluding the 2017-2018 season, which was affected by Hurricane Irma, and the 2022-2023 season, which was affected by Hurricanes Ian and Nicole. Average fruit per tree includes both regular bloom and the first late bloom.

Non-Valencia Oranges 7.50 Million Boxes

The forecast of non-Valencia production is 7.50 million boxes, unchanged from the October forecast. Final fruit size is projected to be below the minimum at harvest. Current droppage is above average and projected to be above average at harvest. The Navel forecast, included in the non-Valencia forecast, is 300,000 boxes, comprising 4 percent of the non-Valencia total.

Valencia Oranges 13.0 Million Boxes

The forecast of Valencia production is 13.0 million boxes, unchanged from October. Current fruit size is below average and is projected to be below average at harvest. Current droppage is projected to be above average at harvest.

All Grapefruit 2.40 Million Boxes

The forecast of all grapefruit production is 2.40 million boxes, up 500,000 boxes from the October forecast. If realized, this will be 33 percent more than last season's final production. The red grapefruit, now at 2.10 million boxes, is increased 450,000 boxes from the October forecast. Fruit size of red grapefruit at harvest is projected to be above average, and droppage is projected to be average. The white grapefruit forecast is raised 50,000 boxes and is now 300,000 boxes. Projected fruit size of white grapefruit at harvest is slightly above average while projected droppage is below average.

Tangerines and Tangelos 550,000 Boxes

The forecast of tangerines and tangelos is 550,000 boxes, up 50,000 boxes from the October forecast. 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 10.2 percent. However, if you exclude the four abnormal production seasons (four hurricane seasons), the "Root Mean Square Error" is 8.4 percent. This means chances are 2 out of 3 that the current all orange production forecast will not be above or below the final estimate by more than 10.2 percent, or 8.4 percent excluding abnormal seasons. Chances are 9 out of 10 (90 percent confidence level) that the difference will not exceed 17.7 percent, or 14.7 percent excluding abnormal seasons.

Changes between the December 1 Florida all orange forecast and the final estimates during the past 20 years have averaged 7.28 million boxes (6.75 million, excluding abnormal seasons), ranging from 0.95 million boxes to 18.2 million boxes including abnormal seasons, (1.30 to 16.3 million boxes excluding abnormal seasons). The December 1 forecast for all oranges has been below the final estimate 2 times, above 18 times, (below 2 times, above 14 times, excluding abnormal seasons). The difference does not imply that the December 1 forecast this year is likely to understate or overstate final production.

Forecast Components, by Type – Florida: December 2023

[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	Fruit per tree	Droppage	Fruit per box
	(1,000 trees)	(number)	(percent)	(number)
ORANGES				
Early-midseason (non-Valencia) [1]	13,299	342	42	337
Navel	570	138	37	138
Valencia	24,868	279	40	265
GRAPEFRUIT				
Red	1,418	356	31	119
White	194	479	26	119

[1] Excludes Navels.

Maturity

Regular bloom fruit samples (318 orange and 88 grapefruit) were collected from groves on established routes in Florida's five major citrus producing areas on November 27-28, 2023, and tested by the USDA, NASS, Florida Field Office on November 29-December 1, 2023.

Unadjusted Maturity Tests – Florida: 2022-2023 and 2023-2024

[Averages of regular bloom fruit from sample groves. Samples were run through an FMC 091B machine using pneumatic pressure. This machine utilizes a 0.025 short strainer with a 1-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	
	2022-2023	2023-2024	2022-2023	2023-2024	2022-2023	2023-2024	2022-2023	2023-2024	2022-2023	2023-2024
	(percent)	(percent)	(percent)	(percent)			(pounds)	(pounds)	(pounds)	(pounds)
ORANGES										
Early N-V (113-115)										
Sep 1	1.25	1.06	9.14	9.63	7.37	9.15	43.21	45.59	3.95	4.39
Oct 1	0.90	0.82	9.15	9.05	10.32	11.19	46.69	45.89	4.27	4.16
Nov 1	0.76	0.67	9.15	9.09	12.18	13.67	49.61	48.82	4.54	4.44
Dec 1	0.64	0.62	9.21	9.27	14.63	14.98	51.33	50.80	4.73	4.71
Midseason N-V (50-54)										
Sep 1	1.37	1.20	8.89	9.18	6.54	7.73	43.21	43.61	3.84	4.00
Oct 1	0.99	0.98	8.95	9.26	9.13	9.56	47.60	46.74	4.26	4.33
Nov 1	0.83	0.78	8.91	9.02	10.85	11.70	50.32	49.49	4.48	4.47
Dec 1	0.72	0.72	8.96	9.26	12.62	13.03	51.94	51.67	4.66	4.79
Valencia (149-149)										
Sep 1	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
Oct 1	1.94	1.76	8.95	9.14	4.66	5.31	46.77	45.58	4.19	4.17
Nov 1	1.61	1.46	8.89	9.20	5.58	6.41	49.63	49.08	4.42	4.52
Dec 1	1.27	1.22	9.00	9.53	7.21	7.92	52.20	51.41	4.70	4.90
GRAPEFRUIT										
Red Seedless (43-42)										
Sep 1	1.54	1.49	10.44	10.92	6.81	7.37	38.90	40.09	4.06	4.38
Oct 1	1.38	1.26	10.01	10.29	7.26	8.16	46.02	43.87	4.61	4.52
Nov 1	1.27	1.23	9.85	10.03	7.79	8.21	49.48	48.85	4.87	4.91
Dec 1	1.15	1.22	9.73	9.72	8.50	7.97	52.54	50.77	5.11	4.94
White Seedless (50-46)										
Sep 1	1.64	1.64	10.57	10.90	6.49	6.66	40.41	39.14	4.27	4.26
Oct 1	1.50	1.41	10.19	10.49	6.83	7.47	46.82	42.94	4.76	4.51
Nov 1	1.32	1.34	9.95	10.18	7.59	7.62	50.78	48.83	5.05	4.97
Dec 1	1.23	1.35	9.71	10.13	7.93	7.56	53.92	50.20	5.24	5.08

(NA) Not available.

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.]

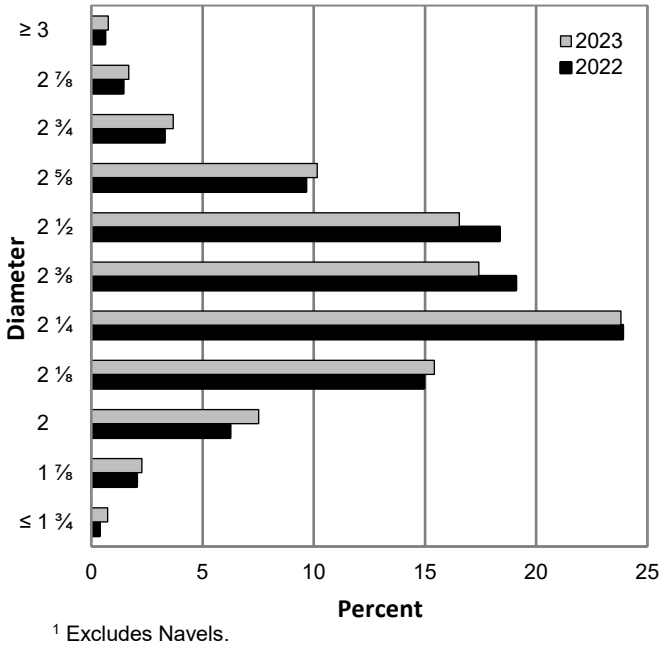
Type and number of fruit per 4/5–bushel containers	2021	2022	2023
	(percent)	(percent)	(percent)
NON-VALENCIA ORANGES [1]			
64 or less	0.0	0.1	0.1
80	1.1	1.1	1.4
100	10.1	7.2	7.8
125	27.6	25.0	23.5
163 or more	61.2	66.6	67.2
NAVEL ORANGES			
64 or less	48.8	48.7	42.4
80	26.6	29.0	30.3
100	17.6	16.7	19.0
125	5.4	5.0	6.0
163 or more	1.6	0.6	2.3
VALENCIA ORANGES			
64 or less	0.4	0.0	0.3
80	3.0	1.5	2.6
100	15.8	11.1	13.2
125	30.4	30.7	31.2
163 or more	50.4	56.7	52.7

Type and number of fruit per 4/5–bushel containers	2021	2022	2023
	(percent)	(percent)	(percent)
RED GRAPEFRUIT			
32 or less	1.0	0.2	1.4
36	5.8	2.3	5.3
40	11.1	6.1	9.2
48	18.1	9.1	14.5
56	17.4	13.2	16.4
63 or more	46.6	69.1	53.2
WHITE GRAPEFRUIT [2]			
32 or less	5.0	1.2	0.6
36	16.7	5.2	4.8
40	20.9	7.7	9.0
48	24.7	13.3	17.9
56	13.3	17.3	19.0
63 or more	19.4	55.3	48.7

[1] Excludes Navels.
[2] Excludes seedy.

The charts below show the distribution of fruit sizes in 2023 compared to 2022. 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



[1] Excludes Navels.

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