



# CITRUS OCTOBER FORECAST

## MATURITY TEST RESULTS AND FRUIT SIZE

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October 12, 2023

**Florida All Orange Production Up 30 Percent from Last Season**  
**Florida Non-Valencia Orange Production Up 22 Percent**  
**Florida Valencia Orange Production Up 35 Percent**  
**Florida All Grapefruit Production Up 5 Percent**  
**Florida All Tangerine and Tangelo Production Up 4 Percent**

FORECAST DATES - 2023-2024 SEASON	
November 9, 2023 (Maturity only)	March 8, 2024
December 8, 2023	April 11, 2024
January 12, 2024	May 10, 2024
February 8, 2024	June 12, 2024
	July 12, 2024

### Citrus Production by Type – States and United States

Crop and State	Production <sup>1</sup>			Forecasted Production <sup>1</sup>
	2020-2021 (1,000 boxes)	2021-2022 (1,000 boxes)	2022-2023 (1,000 boxes)	2023-2024 (1,000 boxes)
<b>Non-Valencia Oranges <sup>2</sup></b>				
<b>Florida</b> .....	<b>22,700</b>	<b>18,250</b>	<b>6,150</b>	<b>7,500</b>
California .....	41,300	31,500	36,500	37,000
Texas.....	1,000	170	570	450
United States.....	65,000	49,920	43,220	44,950
<b>Valencia Oranges</b>				
<b>Florida</b> .....	<b>30,250</b>	<b>22,950</b>	<b>9,650</b>	<b>13,000</b>
California .....	7,700	7,600	6,700	7,500
Texas.....	50	30	560	350
United States.....	38,000	30,580	16,910	20,850
<b>All Oranges</b>				
<b>Florida</b> .....	<b>52,950</b>	<b>41,200</b>	<b>15,800</b>	<b>20,500</b>
California .....	49,000	39,100	43,200	44,500
Texas.....	1,050	200	1,130	800
United States.....	103,000	80,500	60,130	65,800
<b>Grapefruit</b>				
<b>Florida-All</b> .....	<b>4,100</b>	<b>3,330</b>	<b>1,810</b>	<b>1,900</b>
<b>Red</b> .....	<b>3,480</b>	<b>2,830</b>	<b>1,560</b>	<b>1,650</b>
<b>White <sup>3</sup></b> .....	<b>620</b>	<b>500</b>	<b>250</b>	<b>250</b>
California <sup>4</sup> .....	4,200	4,100	4,000	3,500
Texas.....	2,400	1,700	2,250	2,200
United States.....	10,700	9,130	8,060	7,600
<b>Lemons</b>				
Arizona.....	750	1,250	1,400	1,500
California.....	21,400	25,200	26,500	23,000
United States.....	22,150	26,450	27,900	24,500
<b>Tangerines and Mandarins <sup>5</sup></b>				
<b>Florida</b> .....	<b>890</b>	<b>750</b>	<b>480</b>	<b>500</b>
California .....	28,800	17,500	23,700	23,000
United States.....	29,690	18,250	24,180	23,500

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

<sup>2</sup> 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.

<sup>3</sup> Includes seedy grapefruit.

<sup>4</sup> Includes pummelos in California.

<sup>5</sup> 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, up 30 percent from last season's final production. The total includes 7.50 million boxes of non-Valencia oranges (early, mid-season, and Navel varieties) and 13.0 million boxes of Valencia oranges. The Navel orange forecast, at 300,000 boxes, accounts for 4 percent of the non-Valencia total.

The estimated number of bearing trees for all oranges is 38.7 million. Trees planted in 2020 and earlier are considered bearing for this season. Field work for the latest Commercial Citrus Inventory was completed in June 2023. Attrition rates were applied to the results to determine the number of bearing trees used to weigh and expand objective count data in the forecast model.

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 non-Valencia forecast of 7.50 million boxes is 22 percent more than last season's production. The estimated number of bearing trees (without Navels) is 13.3 million, down 9 percent from the previous season. The estimated fruit per tree for early and mid-season (non-Valencia) oranges is 342, a decrease of 144 pieces from last season, and the lowest in a series dating back to the 1964-1965 season. Projected fruit size is below the minimum, requiring an estimated 337 pieces of fruit to fill a 90-pound box. At 40 percent, projected droppage is above average.

The Navel forecast of 300,000 boxes is 25 percent more than last season's production. The estimated number of bearing trees is 570,000, down 10 percent from the previous season. The estimated fruit per tree is 138, an increase of 29 pieces from last season. Projected fruit size is above average, requiring an estimated 138 pieces of fruit to fill a 90-pound box. Projected droppage is above average at 33 percent.

## Valencia Oranges 13.0 Million Boxes

The Valencia forecast of 13.0 million boxes is 35 percent higher than last season's production. The estimated number of bearing trees is 24.9 million, down 5 percent from the previous season. The estimated fruit per tree is 279, a decrease of 47 pieces from last season, and the lowest in a series dating back to the 1964-1965 season. Projected fruit size is below the minimum, requiring an estimated 274 pieces of fruit to fill a 90-pound box. Projected droppage is above average at 40 percent.

## Reliability

To assist users in evaluating the reliability of the October 1 Florida production forecasts, the "Root Mean Square Error," a statistical measure based on past performance, is computed. The deviation between the October 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 October 1 Florida all orange production forecast is 21.0 percent. However, if you exclude the four abnormal production seasons (four hurricane seasons), the "Root Mean Square Error" is 7.7 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 21.0 percent, or 7.7 percent excluding abnormal seasons. Chances are 9 out of 10 (90 percent confidence level) that the difference will not exceed 36.4 percent, or 13.5 percent excluding abnormal seasons.

Changes between the October 1 Florida all orange forecast and the final estimates during the past 20 years have averaged 9.33 million boxes (5.85 million, excluding abnormal seasons), ranging from 0.30 million boxes to 42.3 million boxes including abnormal seasons, (0.30 to 20.4 million boxes excluding abnormal seasons). The October 1 forecast for all oranges has been below the final estimate 2 times, above 17 times, (below 2 times, above 13 times, excluding abnormal seasons). The difference does not imply that the October 1 forecast this year is likely to understate or overstate final production.

## Forecast Components, by Type – Florida: October 2023

[Survey data is considered final in December for Navels, January for 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)
<b>ORANGES</b>				
Non-Valencia (excluding Navels)	13,299	342	40	337
Navel.....	570	138	33	138
Valencia.....	24,868	279	40	274
<b>GRAPEFRUIT</b>				
Red.....	1,418	356	33	127
White.....	194	479	31	122

## All Grapefruit 1.90 Million Boxes

The forecast of all grapefruit production is 1.90 million boxes, 5 percent more last season's utilization of 1.81 million boxes. The total is comprised of 1.65 million boxes of red grapefruit and 250,000 boxes of white grapefruit.

The **red** grapefruit forecast at 1.65 million boxes is 6 percent more than last season's final production. Bearing trees are down 4 percent from last season's revised bearing tree numbers. The average fruit per tree is 31 pieces less than last season. Fruit droppage is projected to be slightly above average. Fruit size at the final month is expected to be slightly below average.

The **white** grapefruit forecast of 250,000 boxes is equal to last season's final production. White grapefruit bearing trees declined by 6 percent from last season's revised bearing tree numbers. The average fruit per tree at 479 pieces is 4 pieces less than last season, but 29 pieces more than the eight-year season average. Current fruit sizes are below average, and at the rate of growth measured in last month's survey, are expected to be below average at harvest. Final drop is expected to be slightly above average.

## Tangerines and Tangelos Total 500,000 Boxes

The forecast for tangerine and tangelos is 500,000 boxes, 4 percent more last season's utilization of 480,000 boxes. This forecast number includes all certified tangerine and tangelo varieties.

## Distribution of Estimated Fruit Population, by Type, and Age Groups – Florida: September

[Distribution of fruit population in September as determined by multiplying average fruit per tree from the Limb Count Survey by bearing age trees]

Age groups	Oranges				Grapefruit			
	Non-Valencia		Valencia		Red		White	
	2022-2023	2023-2024	2022-2023	2023-2024	2022-2023	2023-2024	2022-2023	2023-2024
	(percent)	(percent)	(percent)	(percent)	(percent)	(percent)	(percent)	(percent)
3 - 5 years .....	3	3	7	6	3	7	2	2
6 - 8 years .....	7	6	10	15	5	3	1	1
9 - 13 years .....	16	18	12	15	22	22	1	1
14 - 23 years .....	28	29	25	22	10	12	2	1
24 yrs & over.....	46	44	46	42	60	56	94	95

## Forecast Procedures

All citrus forecasts are based on actual fruit counts and measurements. The objective count method uses four components:

- (1) bearing age trees provided from the latest Commercial Citrus Inventory;
- (2) average fruit per tree obtained from the Limb Count survey using randomly selected trees and limbs;
- (3) fruit size from the fruit measurement survey;
- (4) fruit loss from the drop survey.

These measurements are used in the forecast models; regression data are from the 2013-2014 through 2022-2023 seasons.

The latest Tree Inventory is used to determine estimated tree numbers. All trees planted in 2020 and earlier are included for the current season. An attrition factor was applied to these tree numbers (by age and area) to account for losses since the inventory period.

Statistically valid procedures are used to provide unbiased estimates of fruit count. Samples are drawn with known probabilities from the Commercial Citrus Inventory, taking into account the variability in fruit per tree. Limbs are randomly selected from sample trees. Fruit on these limbs is counted in the mid-July to mid-September period.

## Estimated Non-Certified Usage, by Type – Florida: 2023-2024

Type	1,000 boxes
Navel Oranges .....	20
Non-Valencia Oranges (excluding Navels) .....	40
Valencia Oranges .....	50
Red Grapefruit .....	30
White Grapefruit.....	10
Tangerines and Tangelos .....	40

## Maturity

Regular bloom fruit samples (324 orange and 100 grapefruit) were collected from groves on established routes in Florida's five major citrus producing areas and tested by the Florida Agricultural Statistics Service (FASS) from September 27-29, 2023.

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

[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 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)
<b>ORANGES</b>										
Early N-V (120-120)										
Sep 1.....	1.25	1.07	9.13	9.64	7.37	9.15	43.31	45.60	3.95	4.40
Oct 1.....	0.91	0.82	9.15	9.05	10.25	11.22	46.80	45.91	4.28	4.16
Midseason N-V (55-54)										
Sep 1.....	1.36	1.20	8.88	9.18	6.57	7.73	43.36	43.61	3.85	4.00
Oct 1.....	0.99	0.98	8.94	9.26	9.15	9.56	47.63	46.74	4.26	4.33
Valencia (150-150)										
Sep 1.....	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)	(NA)
Oct 1.....	1.94	1.76	8.95	9.15	4.66	5.30	46.80	45.61	4.19	4.18
<b>GRAPEFRUIT</b>										
Red Seedless (50-50)										
Sep 1.....	1.53	1.49	10.44	10.86	6.86	7.33	39.09	40.08	4.08	4.35
Oct 1.....	1.38	1.26	10.05	10.24	7.33	8.18	46.03	44.11	4.63	4.52
White Seedless (50-50)										
Sep 1.....	1.64	1.65	10.57	10.93	6.49	6.67	40.41	39.25	4.27	4.28
Oct 1.....	1.50	1.41	10.19	10.50	6.83	7.47	46.82	42.98	4.76	4.51

NA Not available.

## Weather and Crop Progress

The citrus growing region experienced moderate to severe drought throughout much of the bloom period. Temperatures on most accounts were above average, consistently reaching the high 70s to low 80s on several days of each week.

In June, the citrus belt received widespread rainfall. By the end of June, continued improvement in soil moisture profiles eliminated all moderate drought, which left abnormally dry conditions only along the west coast of the peninsula, and in the western portion of the citrus belt. The remainder of the citrus growing region was drought free. Grove operations included spraying pesticides and nutritionals, fertilizing, herbiciding, mowing, discing, removal of dead trees, replanting young trees, and general grove maintenance. Irrigation was being run as needed, while water levels in canals and ditches were rising.

Fruit set on oranges during the summer months appeared to be less than most seasons. Size surveys showed fruit sizes were about average on grapefruit yet were average to smaller than average on oranges. During the September survey, oranges measured close to the minimum of the previous ten seasons. Ratios were improved from the previous season on oranges and grapefruit. Harvest of early tangerines (Fallglo) and early oranges for the fresh market began in late September.

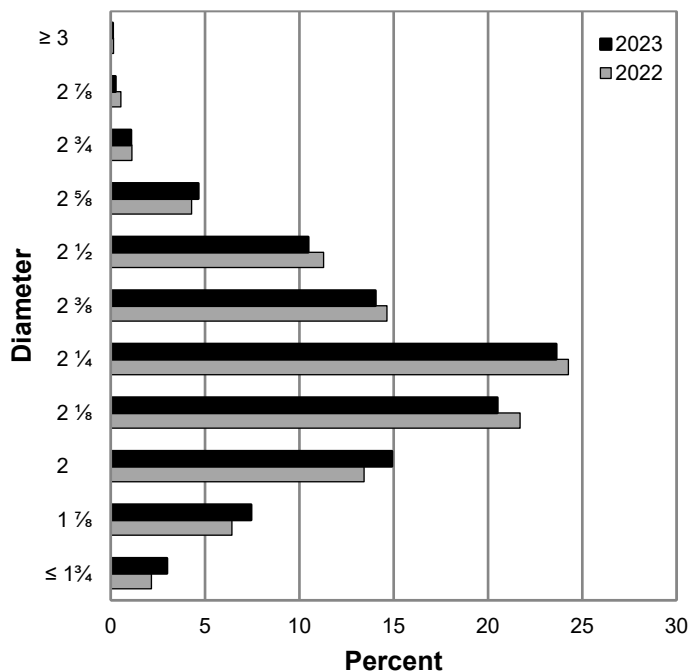
### Citrus Size Frequency Measurement Distributions, by Type – Florida: September 2023

Type and number of fruit per 4/5 – bushel containers	2021	2022	2023	Type and number of fruit per 4/5 – bushel containers	2021	2022	2023
	(percent)	(percent)	(percent)		(percent)	(percent)	(percent)
<b>NON-VALENCIA ORANGES <sup>1</sup></b>				<b>RED GRAPEFRUIT</b>			
64 or less .....	0.0	0.0	0.0	32 or less.....	0.4	0.2	0.1
80 .....	0.3	0.3	0.2	36 .....	2.1	0.8	1.3
100 .....	4.2	2.7	2.5	40 .....	5.5	1.7	3.7
125 .....	18.0	14.4	13.8	48 .....	9.7	5.5	7.3
163 or more .....	77.5	82.6	83.5	56 .....	14.9	11.1	13.6
<b>NAVEL ORANGES</b>				<b>WHITE GRAPEFRUIT <sup>2</sup></b>			
64 or less .....	27.1	26.6	23.7	32 or less.....	0.2	0.2	0.2
80 .....	30.8	32.7	30.9	36 .....	2.6	0.5	1.6
100 .....	27.5	27.1	27.6	40 .....	8.7	3.2	3.2
125 .....	10.7	10.2	13.0	48 .....	14.1	6.3	8.9
163 or more .....	3.9	3.4	4.8	56 .....	20.0	15.5	18.2
<b>VALENCIA ORANGES</b>				<b>63 or more .....</b>			
64 or less .....	0.0	0.0	0.0		67.4	80.7	74.0
80 .....	0.4	0.2	0.3				
100 .....	4.7	2.7	2.7				
125 .....	17.9	15.2	14.5				
163 or more .....	77.0	81.9	82.5				

<sup>1</sup> Excludes Navels.

<sup>2</sup> Excludes seedy variety.

**Fruit Size Frequency Measurements, Non-Valencia Oranges <sup>1</sup>, by Diameter - Florida: September**



<sup>1</sup> Excludes Navel variety.

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

