2023-24 California Navel Orange Objective Measurement Report

California Department of Food and Agriculture

Cooperating with the USDA, National Agricultural Statistics Service
Pacific Regional Office · 650 Capitol Mall, Suite 6-100 · Sacramento, CA 95814 · (916) 738-6600 · (855) 270-2722 Fax · www.nass.usda.gov/ca

Released: September 12, 2023, 9:00 am PDT

NAVEL ORANGE PRODUCTION FORECAST

The initial 2023-24 California Navel orange forecast is 74.0 million cartons, up 1% from the previous year. These forecasts are based on the results of the 2023-24 Navel Orange Objective Measurement (O.M.) Survey, which was conducted from June 19 to September 1, 2023. Estimated fruit set per tree, fruit diameter, trees per acre, bearing acreage, and oranges per box were used in the statistical models estimating production.

This forecast includes production of conventional, organic, and specialty Navel oranges (including Cara Cara and Blood orange varieties).

Survey data indicated a fruit set per tree of 335, down 5% from the previous year. The average September 1 diameter was 2.177 inches, up 3% from last year. Bearing acreage is estimated at 110,000, which results in a yield of 673 cartons per acre.

CARA CARA PRODUCTION FORECAST

Cara Cara variety production is forecast at 7.0 million cartons. Survey data indicated a fruit set per tree of 273, down 11% from the previous year and 2% above the five-year average of 267. The average September 1 diameter was 2.188 inches, slightly above the five-year average of 2.169 inches.

SURVEY SAMPLE

A sample of 785 Navel orange groves was randomly selected proportional to county and variety bearing acreage, and 741 of the groves were utilized in this survey. Once a grove was randomly chosen and grower permission was granted, two trees were randomly selected. The Navel orange sample included conventional, organic, Cara Cara, and Blood orange groves.

For each randomly selected tree, the trunk was measured along with all connected branches. A random number table was then used to select a branch, and then all connected branches from the randomly-selected branch were measured.

This process was repeated until a branch was reached with no significant limbs beyond this point. This randomly-selected branch, called the terminal branch, was then closely inspected to count all fruit connected to this branch, as well as all of the fruit along the path from the trunk to the terminal branch. Since each selected path has a probability of selection associated with the path, a probability-based method was then applied to estimate a fruit count for the entire tree.

In the last week of the survey period, fruit diameter measurements were made on the right quadrant of four trees surrounding the two trees of every third grove. These measurements were used to estimate an average fruit diameter per tree. Of the 741 utilized groves, 5 were in Madera County, 115 were in Fresno County, 437 were in Tulare County,and 169 were in Kern County, and 15 were in the remaining counties.

SURVEY HISTORY

A Navel Orange Objective Measurement Survey has been conducted in the Central Valley every year since the 1984-85 crop year, except for the 1991-92 season due to a lack of funding. The data from the first two years were used for research purposes in developing crop-estimating models. The Cara Cara forecast was undertaken at the request of the California Citrus Advisory Committee starting with the 2018-19 crop year.

Beginning in the 2023-24 crop year, only state level forecasts will be published, and the Central Valley forecasts will be discontinued.

CALIFORNIA NAVEL ORANGE

AVERAGE SET PER TREE BY COUNTY

Year	Fresno	Tulare	Kern	Other	State [1]
2014-15	311	308	396	NA	333
2015-16	449	387	460	NA	412
2016-17	296	380	472	NA	384
2017-18	172	266	368	NA	273
2018-19	375	425	483	NA	426
2019-20	214	339	346	NA	319
2020-21	289	332	298	NA	319
2021-22	209	233	274	NA	239
2022-23	245	382	350	NA	351
2023-24 [2]	360	325	342	355	335

NA – Not available

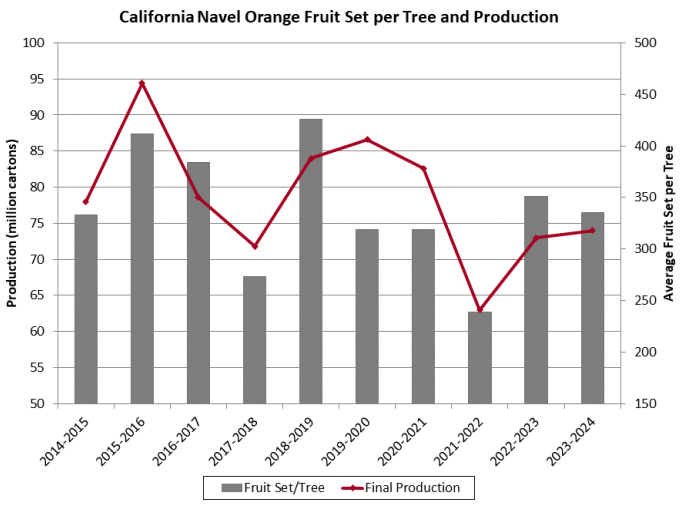
[1] In crop years 2014-15 through 2022-23, samples were drawn from only the Central Valley. Beginning in 2023-24, samples were drawn statewide.

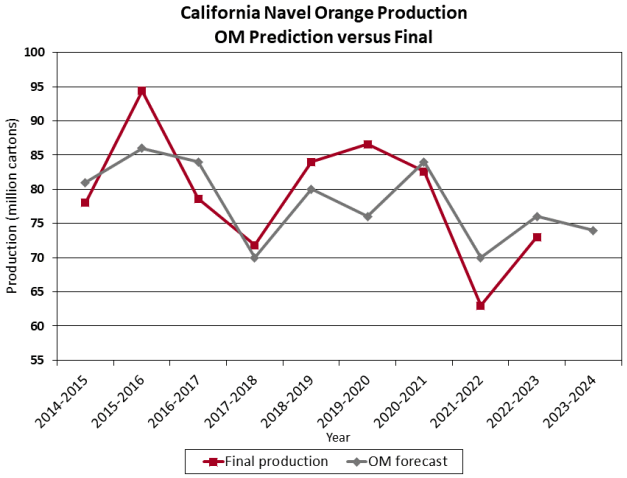
[2] Other includes: Glenn, Kings, Madera, Riverside, San Bernardino, and Ventura.

CARA CARA ORANGE

AVERAGE SET PER TREE AND DIAMETER

Year	Set	Average Diameter
2018-19	299	2.136
2019-20	268	2.185
2020-21	251	2.232
2021-22	211	2.146
2022-23	307	2.147
2023-24	273	2.188





CALIFORNIA NAVEL ORANGE DATA

	Number of sampled groves	Final utilized production (Cartons) [2]	Forecast utilized production (Cartons) [2]	Bearing acres	Average trees per acre	Average set per tree	Average September 1 diameter [3] (Inches)
2004-05	526	88,000,000	92,000,000	138,000	125	392	2.495
2005-06	569	94,000,000	84,000,000	140,000	127	461	2.230
2006-07	539	69,000,000	66,000,000	141,000	129	294	2.268
2007-08	543	90,000,000	86,000,000	141,000	130	390	2.245
2008-09	527	69,000,000	64,000,000	141,000	131	202	2.276
2009-10	533	85,000,000	80,000,000	140,000	132	294	2.336
2010-11	519	96,000,000	93,000,000	139,000	133	418	2.143
2011-12	535	91,000,000	88,000,000	137,000	133	318	2.270
2012-13	539	85,000,000	93,000,000	132,000	134	344	2.195
2013-14	542	77,400,000	88,000,000	130,000	134	265	2.338
2014-15	534	78,000,000	81,000,000	129,000	134	333	2.205
2015-16	520	94,400,000	86,000,000	125,000	135	412	2.248
2016-17	537	78,600,000	84,000,000	122,000	135	384	2.213
2017-18	540	71,800,000	70,000,000	118,000	135	273	2.341
2018-19	703	84,000,000	80,000,000	118,000	135	426	2.117
2019-20	737	86,600,000	76,000,000	117,000	137	319	2.169
2020-21	733	82,600,000	84,000,000	115,000	138	319	2.198
2021-22	707	63,000,000	70,000,000	112,000	137	239	2.143
2022-23	717	73,000,000	76,000,000	111,000	138	351	2.106
2023-24 [4]	741		74,000,000	110,000	138	335	2.177

[1] Data for 2006-07 (freeze year) was not used in forecasting the 2023-24 crop.
[2] Prior to the 2010-11 season, cartons had a standard equivalent weight of 37.5 lbs. Beginning in the 2010-11 season, cartons have a standard equivalent weight of 40 lbs.
[3] Size data before the 2006-07 season are from the orange industry. Size data beginning 2007-08 are from the USDA-NASS, Pacific Regional Office objective measurement survey.
[4] USDA, NASS, Pacific Regional Office preliminary forecast for 2023-24.

The California Citrus Industry has been very supportive. We appreciate your continued cooperation!

For more California agricultural statistics: **www.nass.usda.gov/ca**