United States Department of Agriculture
National Agricultural Statistics Service

2009-10 California Navel Orange Objective Measurement Report

Cooperating with the California Department of Food and Agriculture
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NAVAL ORANGE PRODUCTION FORECAST UP

The initial 2009-10 Navel orange forecast is 80.0 million cartons, 16 percent above last season. Of the total forecast, 78.0 million cartons are estimated to be in the Central Valley. This forecast is based on the results of the 2009-10 Navel Orange Objective Measurement (O.M.) Survey, which was conducted from July 20 to August 26, 2009. Estimated fruit set per tree, fruit diameter, trees per acre, bearing acreage, and oranges per box were used in the statistical models estimating production.

Conditions and measurements are pointing toward a larger crop than last year. Adverse weather earlier in the year has not appeared to affect the upcoming crop. Mild spring and summer weather have aided the crop's development. Survey data indicated a below-average fruit set per tree of 294, but was significantly improved over last year's record low of 202. Average September 1 diameter measured a normal 2.336 inches, and quality is expected to be good.

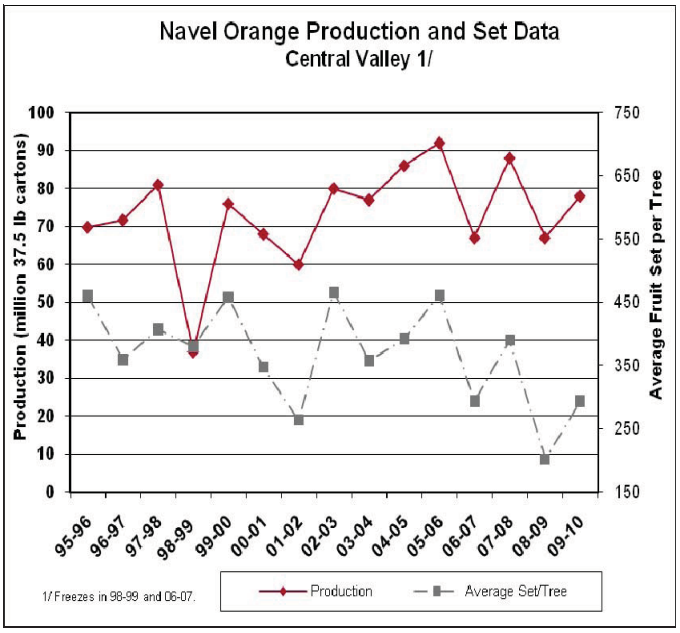
CALIFORNIA NAVEL ORANGE
AVERAGE SET PER TREE BY COUNTY

Year 1/	Fresno	Tulare	Kern	Central Valley 2/
1987-88	236	402	354	361
1988-89	518	585	594	570
1989-90	606	501	614	541
1990-91	476	505	479	498
1991-92	---	---	---	---
1992-93	501	569	654	572
1993-94	433	427	513	452
1994-95	356	450	529	457
1995-96	428	467	479	460
1996-97	280	376	388	359
1997-98	292	424	477	407
1998-99	343	391	377	380
1999-00	390	450	545	458
2000-01	485	293	392	347
2001-02	201	260	299	264
2002-03	289	465	592	466
2003-04	524	305	388	358
2004-05	432	356	465	392
2005-06	571	445	465	461
2006-07	285	280	358	294
2007-08	380	384	429	390
2008-09	179	183	262	202
2009-10	247	286	337	294

1/ Data for 1990-91, 1998-99, and 2006-07 (freeze years) were not used in forecasting the 2009-10 crop. No Objective Measurement Survey was conducted for the 1991-92 season due to a lack of funding.
2/ Includes Madera, Fresno, Tulare, Kings, and Kern 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.



SURVEY SAMPLE

A sample of 575 Navel orange groves was randomly selected proportional to county and variety bearing acreage, and 533 of the groves were utilized in this survey. Once a grove is randomly chosen and grower permission is granted, two trees are randomly selected.

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

This process is repeated until a branch is reached with no significant limbs beyond it. This randomly-selected branch, called the terminal branch, is then closely inspected to count all fruit connected to it, 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 it, a probability-based method is then applied to estimate a fruit count for the entire tree.

In the last week of the survey period, fruit diameter measurements are made on the right quadrant of four trees surrounding the two trees of every third grove. An average fruit growth rate is then applied to the average measured diameter to estimate the March 2010 diameter. Of the 533 utilized groves, 11 were in Madera County, 74 were in Fresno County, 306 were in Tulare County, 1 was in Kings County, and 141 were in Kern County.

CALIFORNIA CENTRAL VALLEY NAVEL ORANGES

Crop Year 1/	Final Utilized Production (37.5-Lb. Cartons)	Bearing Acres	Average Trees Per Acre	Average Set Per Tree	Average September 1 Diameter 2/ (Inches)	Average March 1 Diameter 3/ (Inches)
1987-88	53,588,000	96,110	126	361	2.343	3.195
1988-89	58,326,000	98,766	126	570	2.195	2.761
1989-90	79,242,000	101,525	125	541	2.250	2.820
1990-91	25,514,000	104,560	124	498	2.213	---
1991-92	60,406,000	102,000	124	---	---	---
1992-93	81,034,000	102,612	121	572	2.296	3.021
1993-94	63,800,000	106,381	121	452	2.365	3.090
1994-95	66,358,000	107,049	121	457	2.232	3.063
1995-96	69,750,000	113,000	121	460	2.258	2.994
1996-97	71,700,000	115,000	121	359	2.470	3.208
1997-98	81,000,000	116,500	121	407	2.481	3.195
1998-99	37,000,000	118,000	121	380	2.184	---
1999-00	76,000,000	119,000	122	458	2.224	3.049
2000-01	68,000,000	122,000	122	347	2.311	3.120
2001-02	62,000,000	122,000	122	264	2.483	3.172
2002-03	82,000,000	129,000	122	466	2.200	3.000
2003-04	77,000,000	129,000	124	358	2.410	3.210
2004-05	86,000,000	131,000	125	392	2.495	3.295
2005-06	92,000,000	133,000	127	461	2.230	3.030
2006-07	67,000,000	135,000	129	294	2.268	3.068
2007-08	88,000,000	135,000	130	390	2.245	3.021
2008-09	67,000,000	135,000	131	202	2.276	3.054
2009-10 4/	78,000,000	135,000	132	294	2.336	---

1/ Data for 1990-91, 1998-99, and 2006-07 (freeze years) were not used in forecasting the 2009-10 crop. An objective measurement survey was not conducted for the 1991-92 season due to lack of funding.

2/ Size data for 1984-85 through 1993-94 are from the Navel Orange Administrative Committee, while the data from 1993-94 through 2006-07 are from the orange industry. Size data beginning 2007-08 are from the USDA-NASS, California Field Office objective measurement survey.

3/ This number will no longer be published.

4/ USDA, NASS, California Field Office preliminary forecast for 2009-10.

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