

# 2015-16 California Valencia Orange Objective Measurement Report



California Department of Food and Agriculture

Cooperating with the USDA, National Agricultural Statistics Service, Pacific Regional Office - California

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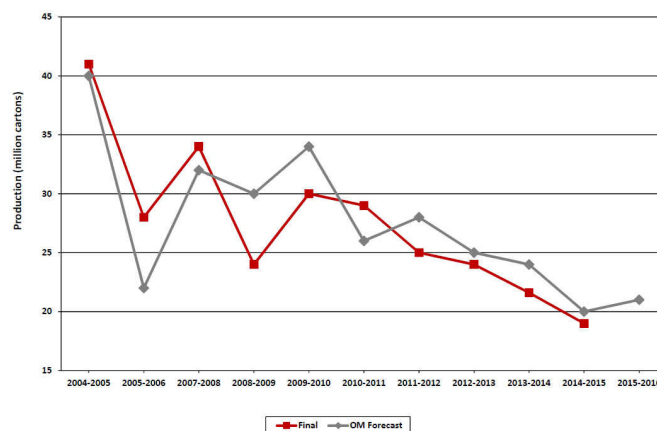
## VALENCIA ORANGE PRODUCTION FORECAST AT 21 MILLION CARTONS

The March 2015-16 Valencia orange forecast is 21 million cartons. This forecast was based on the results of the 2015-16 Valencia Orange Objective Measurement (O.M.) Survey, which was conducted from January 9 to February 19, 2016.

Estimated fruit set per tree, fruit diameter, trees per acre, bearing acreage, and oranges per carton were used in the statistical models to estimate production.

The season has had adequate rainfall after several years of drought in many areas and measurements are indicating an average fruit size but the fruit set has been positively impacted. Survey data indicated an average fruit set per tree of 696, a twenty eight percent increase from the previous year and well above the five-year average of 607. The average March 1 diameter was 2.502 inches, slightly below the five-year average of 2.551.

California Valencia Orange Production OM Prediction vs Final



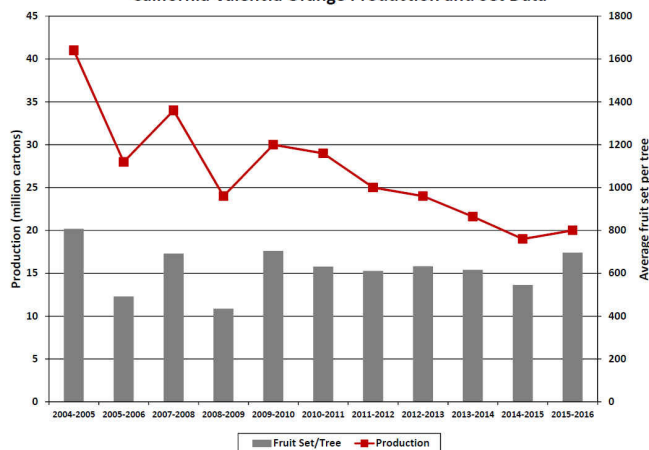
## SURVEY SAMPLE

A sample of 574 Valencia orange groves was randomly selected proportional to acreage, county, and variety representation in the state, with 531 of these groves being utilized in this survey. Once a grove was randomly chosen and grower permission was granted, two trees were randomly selected for each grove. For each randomly selected tree, its 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 it. This randomly-selected branch, called the terminal branch, was 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 was then applied to estimate a fruit count for the entire tree.

In the last week of the survey period, fruit diameter measurements were collected on the right quadrant of four trees surrounding the two trees of every third sampled grove. These measurements were used to estimate an average fruit diameter per tree. The sampled groves were primarily in the top Valencia orange producing counties of Tulare, Kern, Fresno, Ventura, and San Diego.

California Valencia Orange Production and Set Data



## SURVEY HISTORY

A Valencia Orange Objective Measurement Survey was conducted from the 1985-86 to 1993-94 seasons before suspension due to a lack of funding. The survey has been conducted since it was reinstated for the 1999-00 season, with the exception of the 2006-07 season due to a substantial freeze. The data from the first three years after the survey was reinstated were used for research purposes in developing crop-estimating models.

**CALIFORNIA VALENCIA ORANGE STATEWIDE DATA**

| Crop year  | Number of sampled groves | Final utilized production (Cartons) 1/ | Forecast utilized production (Cartons) 1/ 2/ | Bearing acres | Average trees per acre | Average set per tree | Average March 1 diameter (Inches) 3/ |
|------------|--------------------------|--|--|---------------|------------------------|----------------------|--------------------------------------|
| 2002-03    | 780                      | 40,000,000                             | 44,000,000                                   | 64,000        | 126                    | 653                  | 2.584                                |
| 2003-04    | 485                      | 22,000,000                             | 30,000,000                                   | 57,000        | 126                    | 392                  | 2.707                                |
| 2004-05    | 589                      | 41,000,000                             | 40,000,000                                   | 53,000        | 123                    | 807                  | 2.644                                |
| 2005-06    | 650                      | 28,000,000                             | 22,000,000                                   | 50,000        | 123                    | 492                  | 2.640                                |
| 2006-07 4/ | ---                      | 23,000,000                             | ---  | 49,000        | ---                    | ---                  | ---                                  |
| 2007-08    | 656                      | 34,000,000                             | 32,000,000                                   | 47,000        | 123                    | 692                  | 2.523                                |
| 2008-09    | 655                      | 24,000,000                             | 30,000,000                                   | 45,000        | 124                    | 435                  | 2.587                                |
| 2009-10    | 571                      | 30,000,000                             | 34,000,000                                   | 43,000        | 124                    | 704                  | 2.630                                |
| 2010-11    | 534                      | 29,000,000                             | 26,000,000                                   | 41,000        | 124                    | 631                  | 2.546                                |
| 2011-12    | 533                      | 25,000,000                             | 28,000,000                                   | 40,000        | 124                    | 611                  | 2.583                                |
| 2012-13    | 526                      | 24,000,000                             | 25,000,000                                   | 39,000        | 125                    | 632                  | 2.484                                |
| 2013-14    | 500                      | 21,600,000                             | 24,000,000                                   | 36,000        | 124                    | 616                  | 2.570                                |
| 2014-15 5/ | 539                      | 19,000,000                             | 20,000,000                                   | 34,000        | 123                    | 545                  | 2.571                                |
| 2015-16    | 531                      | ---                                    | 21,000,000                                   | 32,000        | 123                    | 696                  | 2.502                                |

1/ 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.

2/ No Objective Measurement forecasts were made in the first three years the survey resumed in order to develop suitable forecast models.

3/ Size data for 2000-01 through 2005-06 came from the orange industry, while size data from 2007-08 to the present came from the USDA-NASS, Pacific Regional Office Objective Measurement Survey.

4/ An objective measurement survey was not conducted for the 2006-07 season due to the extensive freeze that year.

5/ Final production is subject to revision.

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