United States Department of Agriculture
National Agricultural Statistics Service

2014 California Almond Objective Measurement Report

Cooperating with the California Department of Food and Agriculture
Pacific Regional Office · P.O. Box 1258 · Sacramento, CA 95812 · (916) 498-5161 · www.nass.usda.gov/ca

Released: June 30, 2014 - 12:00 p.m. PDT

2014 CALIFORNIA ALMOND FORECAST UP

California's 2014 almond production is forecast at 2.10 billion meat pounds, up 7.7 percent from May's subjective forecast and up 4.5 percent from last year's crop. The forecast is based on 860 thousand bearing acres. Production for the Nonpareil variety is forecast at 800 million meat pounds, down 1 percent from last year's deliveries. The Nonpareil variety represents 38 percent of California's total almond production.

After the warmest winter on record for California, the almond bloom began in early February. The 2014 bloom was one of the earliest almond blooms in memory. Orchards required irrigation in the winter months due to the lack of precipitation, but rain early in the season offered some temporary relief. Pest and disease pressure has been lower than last year. Overall, the 2014 crop developed faster than last year and harvest is expected to start early.

The average nut set per tree is 6,646, down 0.6 percent from 2013. The Nonpareil average nut set of 6,121 is nearly the same as last year's set of 6,141. The average kernel weight for all varieties sampled was 1.45 grams, up 6.6 percent from the 2013 record low average weight of 1.36. The Nonpareil average kernel weight was 1.60, up 8.1 percent from last year. A total of 98.7 percent of all nuts sized were sound.

SAMPLING PROCEDURES

To determine tree set, nuts are counted along a path within a randomly selected tree. Work begins at the trunk and progresses to the end of the terminal branch. Using a random number table, one branch is selected at each forking to continue the path. A branch's probability of selection is directly proportional to its cross-sectional area. This methodology is used because of its statistical efficiency. The method also makes it possible to end up at any one of the tree's numerous terminal branches.

Since the selected path has a probability of selection associated with it, this probability is used to expand nut counts arriving at an estimated set for the entire tree.

Along intermediate stages (i.e., the bearing surface between forkings), every fifth nut is picked. All nuts on the terminal branch are picked. These nuts are used to determine size and weight measurements.

FIELD SAMPLING ACTIVITIES

The survey began May 24 and sampling was completed by June 18. There were 1,779 trees sampled for the 2014 survey in 890 orchards. Additional orchards were not sampled for one of the following reasons:

1) Orchard had been sprayed.
2) Orchard had been recently irrigated and was wet.
3) Orchard had been pulled.
4) Grower would not grant permission or could not be contacted.

The Objective Measurement Survey is funded by the Almond Board of California.

DATA RELIABILITY

The 80 percent confidence interval is from 1,940 million meat pounds to 2,260 million meat pounds. This means that the results of our sampling procedures will encompass the true mean 80 percent of the time.

TABLE 1: COMPARISON OF NUT ESTIMATES AND ORCHARDS SAMPLED BY DISTRICT AND VARIETY, JUNE OBJECTIVE MEASUREMENT SURVEY COUNTS, 2009-2014

District and Variety	2009		2010		2011		2012		2013		2014	
	Nuts Per Tree	Orchards Sampled	Nuts Per Tree	Orchards Sampled	Nuts Per Tree	Orchards Sampled	Nuts Per Tree	Orchards Sampled	Nuts Per Tree	Orchards Sampled	Nuts Per Tree	Orchards Sampled
ALL DISTRICTS												
(All Varieties)	5,589	852	5,956	816	7,353	857	7,048	873	6,686	883	6,646	890
BY DISTRICTS												
District I												
Sacramento Valley	6,737	120	6,783	122	7,561	111	7,100	110	7,651	117	5,536	113
District II												
San Joaquin Valley	5,400	732	5,810	694	7,322	746	7,041	763	6,538	766	6,802	777
BY VARIETIES												
Butte	7,505	108	6,562	114	8,666	121	7,532	126	7,535	124	7,443	114
California Types 1/	5,302	284	6,023	263	6,535	283	6,845	286	6,744	291	6,718	291
Carmel 2/	5,129	141	5,442	134	6,256	132	6,583	125	6,571	121	6,962	114
Monterey 2/	4,618	80	6,090	76	5,925	96	6,222	105	6,311	112	5,910	114
Nonpareil	5,136	360	5,583	346	7,482	353	6,571	358	6,141	368	6,121	382
Padre	6,791	63	6,476	65	8,521	72	9,398	74	8,119	74	7,989	72

1/ For survey purposes, the California classification includes the following varieties: Aldrich, Ballico, Carmel, Davey, Fritz, Harvey, Le Grand, Mono, Monterey, Norman, Price Cluster, Ruby, Sonora, Tokyo and Yosemite.

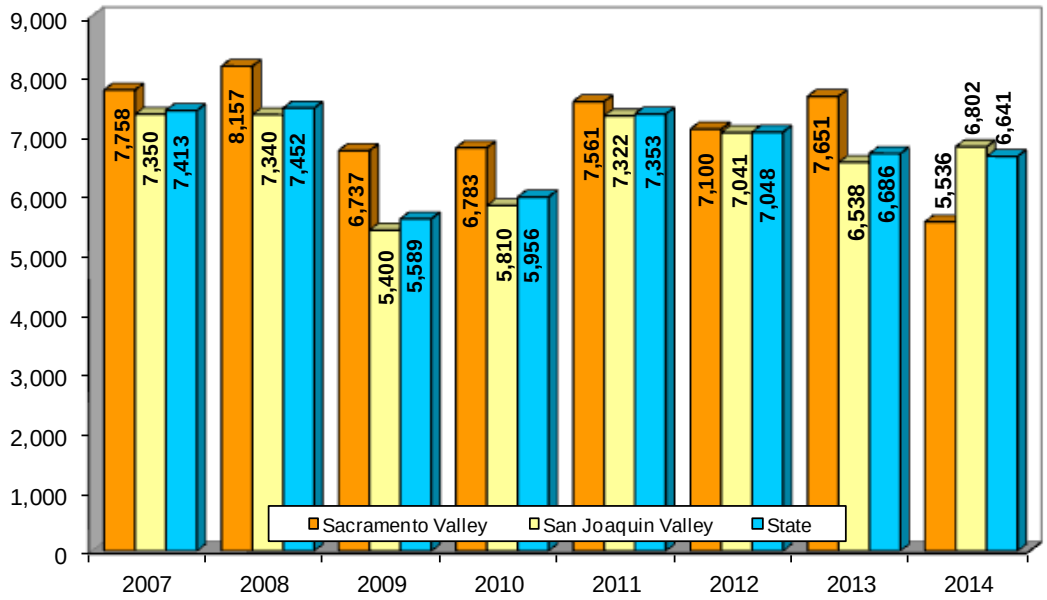
2/ Carmel and Monterey varieties are also included in California Types.

TABLE 2: WEIGHT, SIZE AND GRADE OF AVERAGE ALMOND SAMPLE, 2009-2014

District and Variety	Kernel Weight (Grams)	Kernel Size (Millimeters)			Grade (Percent of Nuts) 1/						
					Edible Nuts		Insect Damage	Shrivel	Natural Gum	Blank	Other
		Length	Width	Thickness	Singles	Doubles					
ALL DISTRICTS											
2009	1.58	22.96	13.10	9.93	97.1	1.8	2/	0.7	0.2	0.1	0.1
2010	1.72	23.38	13.20	10.30	94.7	4.0	2/	1.0	2/	0.1	0.1
2011	1.49	21.84	12.52	9.92	94.6	4.1	2/	0.8	0.1	0.2	0.2
2012	1.48	21.40	12.51	9.94	93.4	5.7	2/	0.7	2/	0.1	2/
2013	1.36	21.35	12.11	9.76	95.2	3.7	2/	1.1	2/	2/	2/
2014	1.45	21.42	12.69	10.06	96.3	2.4	2/	1.3	2/	2/	2/
BY DISTRICT											
Sacramento Valley 3/											
2009	1.65	22.90	13.63	10.16	97.4	1.2	2/	0.5	0.1	2/	0.8
2010	1.75	23.86	13.44	10.23	93.7	4.5	2/	1.1	2/	2/	0.7
2011	1.60	22.73	13.33	10.02	92.1	6.2	2/	0.6	2/	2/	1.1
2012	1.54	22.32	13.22	10.07	94.1	3.9	2/	1.3	2/	0.3	0.3
2013	1.44	21.95	12.62	9.90	93.0	5.3	2/	1.1	0.2	2/	0.5
2014	1.60	22.35	13.38	10.43	95.1	2.4	2/	2.0	2/	2/	0.4
San Joaquin Valley 4/											
2009	1.57	22.98	13.00	9.89	97.0	1.9	2/	0.7	0.2	0.1	2/
2010	1.71	23.28	13.15	10.31	94.9	3.9	2/	1.0	2/	0.2	2/
2011	1.48	21.70	12.40	9.90	95.0	3.8	2/	0.8	0.1	0.2	0.1
2012	1.48	21.26	12.40	9.93	93.3	6.0	2/	0.6	2/	0.1	2/
2013	1.34	21.25	12.02	9.74	95.5	3.4	2/	1.0	2/	2/	2/
2014	1.43	21.31	12.61	10.01	96.4	2.4	2/	1.2	2/	2/	2/
BY VARIETY											
Butte											
2009	1.26	19.86	12.19	9.78	96.9	2.3	2/	0.6	0.1	2/	0.1
2010	1.43	20.54	12.39	10.15	94.2	4.3	2/	1.1	2/	0.1	0.1
2011	1.24	19.33	11.84	9.78	94.5	4.5	2/	0.7	2/	0.1	0.2
2012	1.20	18.54	11.77	9.83	92.5	6.4	2/	0.9	0.1	0.1	2/
2013	1.11	18.51	11.48	9.58	94.8	3.9	2/	1.1	2/	2/	0.1
2014	1.20	18.46	12.04	10.01	96.7	1.8	2/	1.3	2/	2/	0.1
California Types 5/											
2009	1.62	24.12	12.77	9.85	96.7	2.4	2/	0.6	0.2	0.1	0.1
2010	1.71	24.08	12.73	10.34	93.2	5.9	2/	0.7	0.1	2/	0.1
2011	1.55	22.94	12.27	9.94	92.1	6.8	2/	0.6	0.1	0.2	0.2
2012	1.53	22.45	12.23	10.00	90.7	8.7	2/	0.5	2/	2/	2/
2013	1.41	22.49	11.79	9.79	93.2	5.6	2/	1.1	2/	2/	2/
2014	1.45	22.14	12.20	10.00	95.5	3.2	2/	1.2	2/	2/	2/
Carmel 6/											
2009	1.64	24.62	12.62	9.79	97.1	1.8	2/	0.7	0.1	0.1	2/
2010	1.70	24.56	12.57	10.20	94.8	4.2	2/	0.8	0.1	2/	0.1
2011	1.50	22.81	12.08	9.79	94.6	4.5	2/	0.7	2/	2/	2/
2012	1.51	22.41	12.20	9.90	91.9	7.5	2/	0.6	2/	2/	2/
2013	1.38	22.19	11.47	9.69	92.8	6.0	2/	1.1	0.1	2/	2/
2014	1.48	22.21	12.15	10.04	95.5	3.2	2/	1.3	2/	2/	2/
Monterey 6/											
2009	1.82	25.64	13.48	9.98	95.4	3.8	2/	0.5	0.3	2/	2/
2010	1.89	25.26	13.23	10.66	88.9	10.6	2/	0.5	2/	2/	2/
2011	1.76	24.65	12.83	10.21	86.7	12.3	2/	0.5	0.3	2/	0.1
2012	1.71	24.06	12.76	10.25	86.8	12.6	2/	0.4	0.1	0.1	2/
2013	1.56	24.29	12.27	9.84	92.1	6.9	2/	0.8	2/	2/	0.1
2014	1.54	23.26	12.51	10.01	94.8	3.9	2/	1.1	2/	2/	0.1
Nonpareil											
2009	1.74	23.97	13.93	10.03	97.5	1.3	2/	0.7	0.2	0.1	0.2
2010	1.89	24.49	14.02	10.29	95.8	2.5	2/	1.3	2/	0.2	0.2
2011	1.60	22.75	13.12	9.95	96.1	2.4	2/	1.0	0.1	0.2	0.3
2012	1.64	22.55	13.33	9.97	94.8	4.0	2/	0.9	2/	0.2	0.1
2013	1.48	22.36	12.84	9.79	96.2	2.6	2/	1.0	2/	2/	0.1
2014	1.60	22.57	13.51	10.07	96.8	2.0	2/	1.1	2/	2/	2/
Padre											
2009	1.32	20.09	12.24	10.08	96.6	1.6	2/	1.4	0.2	2/	0.2
2010	1.49	20.65	12.73	10.55	96.3	2.1	2/	1.2	2/	0.4	2/
2011	1.25	18.94	11.85	9.90	97.3	1.9	2/	0.7	2/	2/	2/
2012	1.20	18.15	11.57	9.92	96.8	2.3	2/	0.5	2/	0.3	2/
2013	1.10	18.23	11.35	9.79	98.1	1.0	2/	0.8	2/	0.1	2/
2014	1.22	18.48	11.96	10.17	97.0	1.2	2/	1.8	2/	2/	2/

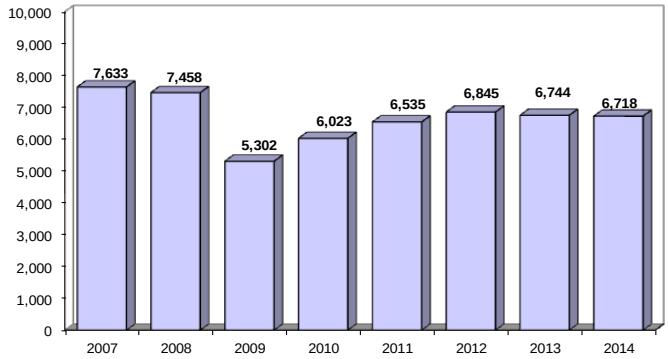
1/ Percentages may not add to 100 due to rounding.
2/ Not shown if less than 0.07 percent.
3/ Sacramento Valley includes these counties: Butte, Colusa, Glenn, Solano, Sutter, Tehama, Yolo and Yuba.
4/ San Joaquin Valley includes these counties: Fresno, Kern, Kings, Madera, Merced, San Joaquin, Stanislaus and Tulare.
5/ For survey purposes, the California classification includes the following varieties: Aldrich, Ballico, Carmel, Davey, Fritz, Harvey, Le Grand, Mono, Monterey, Norman, Price Cluster, Ruby, Sonora, Tokyo and Yosemite.
6/ Carmel and Monterey varieties are also included in California Types.

CALIFORNIA ALMONDS
Nuts per Tree, by District

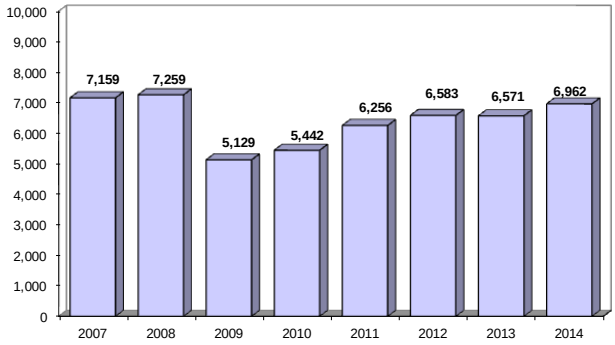


ALMONDS BY VARIETY

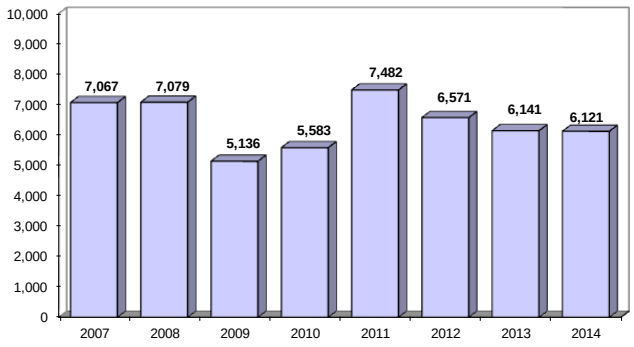
CALIFORNIA TYPE
Nuts per Tree



CARMEL TYPE
Nuts per Tree



NONPAREIL TYPE
Nuts per Tree



BUTTE TYPE
Nuts per Tree

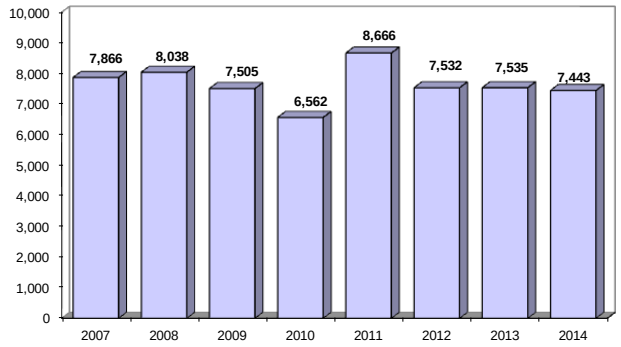


TABLE 3: CALIFORNIA ALMOND ACREAGE, PRODUCTION AND TREES PER ACRE, 1982-2014

Year	Bearing Acres 1/	Total Meat Production			Acreage
		Metric Tons 2/	Million Lbs.	Lbs. Per Acre	Trees Per Acre
1982	339,000	157,000	347	1,020	N/A
1983	360,000	110,000	242	673	N/A
1984	381,000	268,000	590	1,550	N/A
1985	409,000	211,000	465	1,140	N/A
1986	416,000	113,000	250	601	84.5
1987	417,000	299,000	660	1,580	84.0
1988	419,000	268,000	590	1,410	86.3
1989	411,000	222,000	490	1,190	87.3
1990	411,000	299,000	660	1,610	88.4
1991	405,000	222,000	490	1,210	89.6
1992	401,000	249,000	548	1,370	90.5
1993	413,000	222,000	490	1,190	92.0
1994	433,000	333,000	735	1,700	92.6
1995	418,000	168,000	370	885	93.7
1996	428,000	231,000	510	1,190	94.4
1997	442,000	344,000	759	1,720	95.5
1998	460,000	236,000	520	1,130	96.3
1999	485,000	378,000	833	1,720	97.3
2000	510,000	319,000	703	1,380	99.0
2001	530,000	376,000	830	1,570	101.0
2002	545,000	494,000	1,090	2,000	101.0
2003	550,000	472,000	1,040	1,890	103.0
2004	570,000	456,000	1,005	1,760	103.0
2005	590,000	415,000	915	1,550	104.0
2006	610,000	508,000	1,120	1,840	105.0
2007	640,000	630,000	1,390	2,170	105.0
2008	710,000	739,000	1,630	2,300	107.0
2009	750,000	640,000	1,410	1,880	108.0
2010	770,000	744,000	1,640	2,130	108.0
2011	800,000	921,000	2,030	2,540	111.0
2012	820,000	857,000	1,890	2,300	112.0
2013	840,000	912,000	2,010	2,390	112.0
2014	860,000	953,000	2,100	2,440	114.0

1/ Bearing acreage is defined as plantings four years and older

2/ Rounded to nearest thousand, metric ton = 2,204.62 pounds.