



United States Department of Agriculture
National Agricultural Statistics Service



2009 California Almond Objective Measurement Report

Cooperating with the California Department of Food and Agriculture

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2009 CALIFORNIA ALMOND FORECAST DOWN

California's 2009 almond production is forecast at 1.35 billion meat pounds, down 7 percent from May's subjective forecast and 17 percent below last year's crop. The forecast is based on 710 thousand bearing acres. Production for the Nonpareil variety is forecast at 450 million meat pounds, 26 percent below last year's deliveries. The Nonpareil variety represents 36 percent of California's total almond production.

After a difficult spring, the 2009 almond crop is generally in good condition, although it looks to be about 2 weeks behind. Bloom progressed slowly due to wet conditions, and wet weather hampered pollination. Cool temperatures did extend the almond bloom in parts of the Sacramento Valley. Freezing temperatures in March caused damage to some almond orchards. Mites were present on almonds across the state; however, control measures combined with some spring rains resulted in little damage to the crop. Irrigation water availability is a concern but has had minimal impact on the 2009 crop.

The average nut set per tree is 5,589, down 25 percent from 2008. The Nonpareil average nut set of 5,136 is down 27 percent from last year's set. The average kernel weight for all varieties sampled was 1.58 grams, 10 percent above last year. A total 98.5 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 26 and sampling was completed by June 17. There were 1,704 trees sampled for the 2009 survey in 852 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 1,219 million meat pounds to 1,481 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, 2004-2009

District and Variety	2004		2005		2006		2007		2008		2009	
	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)	7,162	749	5,461	838	6,723	834	7,413	865	7,452	816	5,589	852
BY DISTRICTS												
<u>District I</u>												
Sacramento Valley	6,527	131	6,326	142	6,888	151	7,758	135	8,157	112	6,737	120
<u>District II</u>												
San Joaquin Valley	7,290	618	5,262	696	6,710	683	7,350	730	7,340	704	5,400	732
BY VARIETIES												
Butte	8,788	112	7,471	112	7,624	110	7,866	109	8,038	106	7,505	108
California Types 1/	6,665	172	5,275	262	5,945	268	7,633	285	7,458	273	5,302	284
Carmel 2/	6,380	90	4,698	144	5,415	149	7,159	161	7,259	149	5,129	141
Mission	6,719	26	6,410	19	6,667	21	7,391	16	8,901	12	5,578	10
Nonpareil	6,676	335	4,650	347	6,848	340	7,067	370	7,079	344	5,136	360
Padre	9,414	54	7,127	52	7,801	52	8,000	59	9,195	57	6,791	63

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, Tokoyo and Yosemite.

2/ Carmel variety is also included in California Types.

TABLE 2: WEIGHT, SIZE AND GRADE OF AVERAGE ALMOND SAMPLE, 2004-2009

District and Variety	Kernel Weight (Grams)	Kernel Size (Millimeters)			Grade (Percent of Nuts) a/							
		Length	Width	Thickness	Edible Nuts		Insect Damage	Shrivel	Natural Gum	Blank	Other	
					Singles	Doubles						
ALL DISTRICTS												
2004	1.45	22.44	12.34	9.72	95.2	3.2	b/	1.3	0.1	b/	0.1	
2005	1.79	23.73	13.35	10.45	95.0	2.7	b/	1.9	0.1	b/	0.3	
2006	1.57	21.64	12.91	10.31	92.0	5.3	b/	1.9	0.1	b/	0.5	
2007	1.47	21.81	12.39	9.96	94.6	3.9	b/	1.2	0.2	b/	0.2	
2008	1.43	21.60	12.30	9.66	96.2	2.8	b/	0.6	0.1	0.2	0.1	
2009	1.58	22.96	13.10	9.93	97.1	1.8	b/	0.7	0.2	0.1	0.1	
BY DISTRICT												
Sacramento Valley c/												
2004	1.52	23.62	12.42	9.66	94.3	3.8	b/	1.1	0.1	b/	0.7	
2005	1.82	24.63	13.75	10.73	94.5	2.7	b/	1.5	b/	b/	1.1	
2006	1.55	22.30	13.24	10.39	87.1	8.0	b/	1.9	0.2	b/	2.8	
2007	1.59	22.97	13.26	10.34	93.4	4.5	b/	0.7	0.2	b/	1.2	
2008	1.43	22.52	12.80	9.69	95.1	3.6	b/	0.8	0.1	b/	0.5	
2009	1.65	22.90	13.63	10.16	97.4	1.2	b/	0.5	0.1	b/	0.8	
San Joaquin Valley d/												
2004	1.44	22.17	12.32	9.74	95.4	3.0	b/	1.3	0.1	b/	b/	
2005	1.78	23.46	13.23	10.37	95.1	2.6	b/	2.1	0.1	b/	b/	
2006	1.58	21.49	12.84	10.29	98.1	4.8	b/	1.9	0.1	b/	b/	
2007	1.44	21.58	12.22	9.89	94.8	3.8	b/	1.3	0.2	b/	b/	
2008	1.43	21.41	12.21	9.66	96.4	2.6	b/	0.5	0.1	0.3	b/	
2009	1.57	22.98	13.00	9.89	97.0	1.9	b/	0.7	0.2	0.1	b/	
BY VARIETY												
Butte												
2004	1.22	19.98	11.66	9.76	100.0	b/	b/	b/	b/	b/	b/	
2005	1.47	20.79	12.62	10.45	95.6	2.5	b/	1.7	b/	b/	0.2	
2006	1.32	19.08	12.37	10.26	93.9	4.9	b/	0.9	b/	b/	0.2	
2007	1.22	19.18	11.74	9.87	94.8	4.2	b/	0.7	b/	b/	0.3	
2008	1.21	18.72	11.76	9.70	95.5	3.6	b/	0.6	b/	0.3	b/	
2009	1.26	19.86	12.19	9.78	96.9	2.3	b/	0.6	0.1	b/	0.1	
California Types e/												
2004	1.50	23.15	12.20	9.74	95.9	2.3	b/	1.5	0.2	b/	b/	
2005	1.77	23.90	13.07	10.45	92.9	5.6	b/	1.4	b/	b/	b/	
2006	1.60	21.75	12.74	10.42	87.6	9.9	b/	2.0	b/	b/	0.5	
2007	1.44	22.20	11.85	9.88	93.3	5.0	b/	1.2	0.2	b/	0.2	
2008	1.41	22.14	11.79	9.60	95.6	3.5	b/	0.4	0.1	0.3	b/	
2009	1.62	24.12	12.77	9.85	96.7	2.4	b/	0.6	0.2	0.1	0.1	
Carmel f/												
2004	1.49	24.01	11.83	9.62	95.6	3.2	0.2	0.9	b/	b/	0.1	
2005	1.83	25.65	12.74	10.19	94.0	3.9	b/	1.6	0.4	b/	0.1	
2006	1.59	23.12	12.38	10.06	90.6	7.0	b/	1.8	0.3	b/	0.3	
2007	1.47	22.78	11.74	9.86	93.5	4.8	b/	1.4	0.2	b/	b/	
2008	1.43	22.75	11.79	9.63	96.1	3.1	b/	0.6	b/	0.1	b/	
2009	1.64	24.62	12.62	9.79	97.1	1.8	b/	0.7	0.1	0.1	b/	
Mission												
2004	1.42	19.97	12.26	10.48	90.4	7.8	b/	0.9	0.5	b/	0.3	
2005	1.63	20.78	13.29	11.16	94.0	2.2	b/	3.2	0.2	b/	0.4	
2006	1.53	19.30	13.56	11.23	92.9	5.4	b/	1.7	b/	b/	b/	
2007	1.33	19.41	12.44	10.43	96.0	3.5	b/	0.6	b/	b/	b/	
2008	1.32	18.81	12.19	9.99	95.8	2.7	b/	b/	0.3	0.9	0.4	
2009	1.43	20.68	13.04	10.36	97.4	0.7	b/	b/	0.5	1.1	0.5	
Nonpareil												
2004	1.58	23.70	12.95	9.66	96.2	2.2	b/	1.3	0.1	b/	0.2	
2005	1.99	25.23	14.13	10.43	95.5	1.5	b/	2.4	b/	b/	0.5	
2006	1.68	22.45	13.39	10.30	92.8	3.8	b/	2.5	0.1	b/	0.8	
2007	1.61	22.87	13.17	10.06	95.3	3.2	b/	1.1	0.1	b/	0.2	
2008	1.55	22.68	13.02	9.68	96.9	2.1	b/	0.7	b/	0.1	0.1	
2009	1.74	23.97	13.93	10.03	97.5	1.3	b/	0.7	0.2	0.1	0.2	
Padre												
2004	1.20	19.38	11.65	9.92	96.4	2.0	b/	1.3	0.3	b/	0.1	
2005	1.60	20.96	13.10	10.92	96.5	1.3	b/	2.0	b/	b/	b/	
2006	1.34	18.82	12.37	10.49	95.1	2.8	b/	1.6	0.3	0.1	b/	
2007	1.22	19.03	11.61	9.98	95.3	2.2	b/	2.1	0.3	b/	0.1	
2008	1.23	18.86	11.64	9.84	97.3	1.4	b/	0.8	0.2	0.2	b/	
2009	1.32	20.09	12.24	10.08	96.6	1.6	b/	1.4	0.2	b/	0.2	

a/ Percentages may not add to 100 due to rounding.

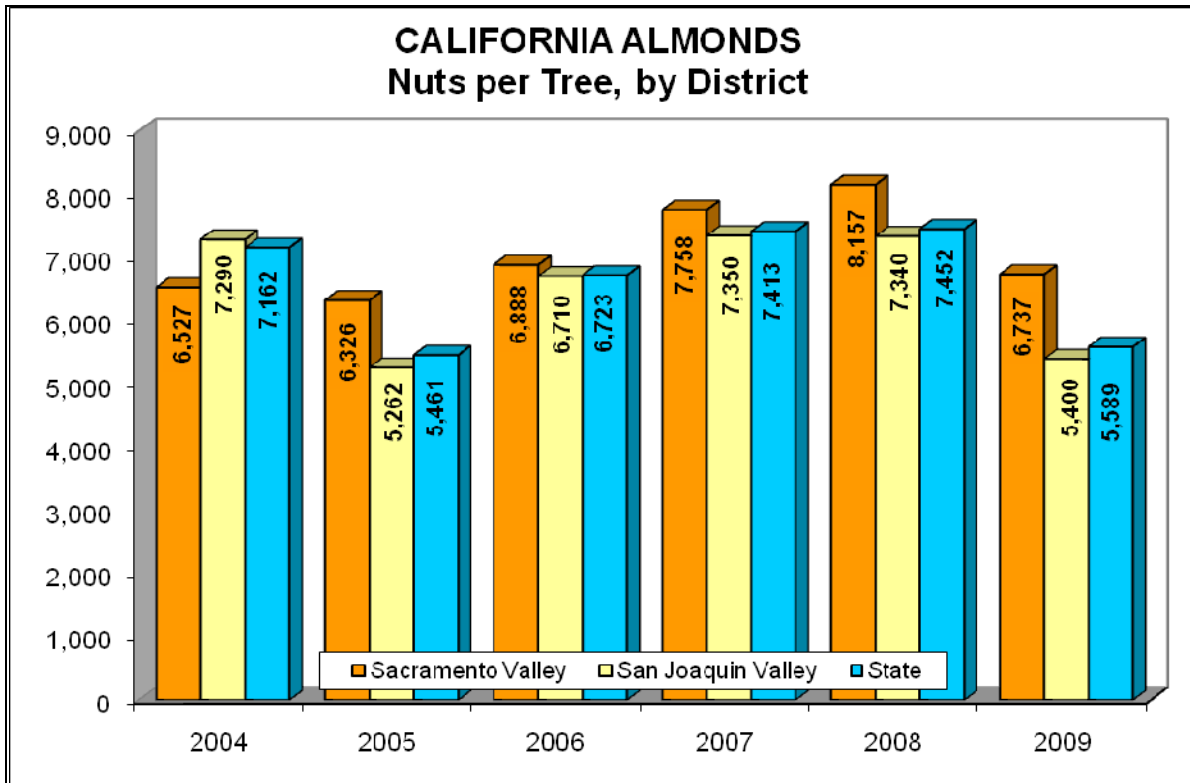
b/ Not shown if less than 0.07 percent.

c/ Sacramento Valley includes these counties: Butte, Colusa, Glenn, Solano, Sutter, Tehama, Yolo and Yuba.

d/ San Joaquin Valley includes these counties: Fresno, Kern, Kings, Madera, Merced, San Joaquin, Stanislaus and Tulare.

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

f/ Carmel variety is also included in California Types.



ALMONDS BY VARIETY

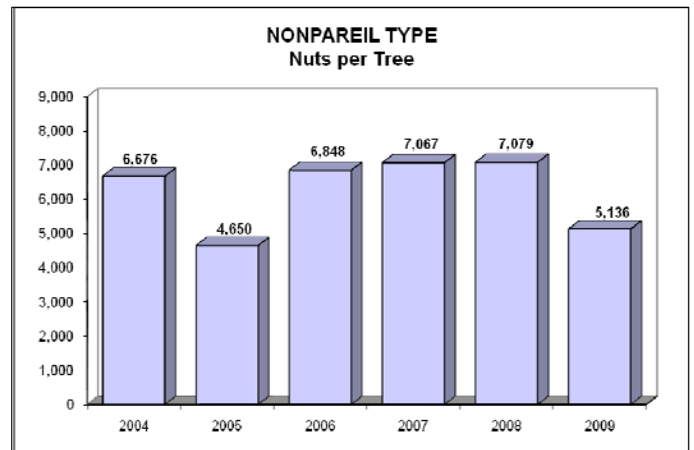
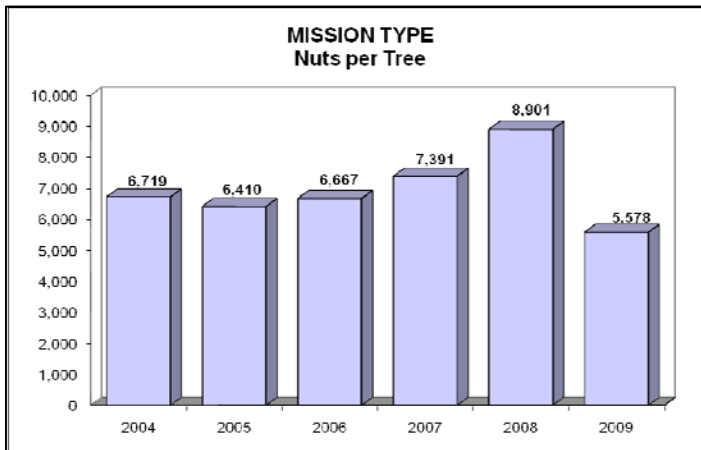
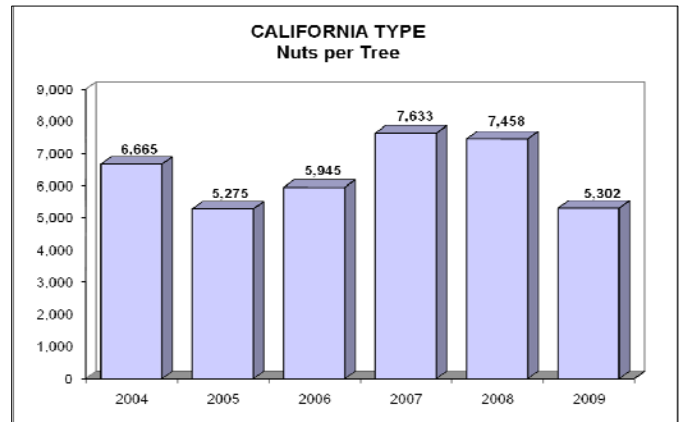
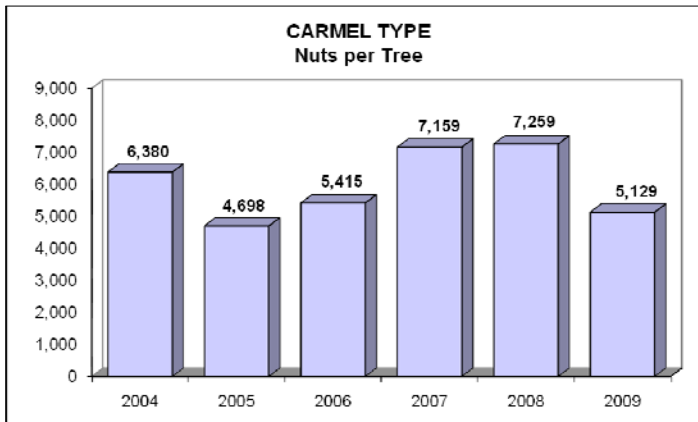


TABLE 3: CALIFORNIA ALMOND ACREAGE, PRODUCTION AND TREES PER ACRE, 1982-2009

Year	Bearing Acres 1/	Total Meat Production			Acerage Trees Per Acre
		Metric Tons 2/	Million Lbs.	Lbs. 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	680,000	775,000	1,630	2,400	107.0
2009	710,000	615,000	1,350	1,900	108.0

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

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

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