

2000 California Almond Objective Measurement Report



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CALIFORNIA AGRICULTURAL
STATISTICS SERVICE

2000 CALIFORNIA ALMOND FORECAST

California's 2000 almond production is forecast at 640 million meat pounds, down 5 percent from May's subjective forecast and down 23 percent from last year's record crop. The forecast is based on 500,000 bearing acres. Production for the Nonpareil variety is forecast at 235 million meat pounds, down 36 percent from last season. The Nonpareil variety represents 37 percent of California's total almond production.

The weather during the critical bloom was variable with heavy rain and cool temperatures. This resulted in an uneven set with some varieties having a heavy set, while others were very light. The warm temperatures in April helped get the crop back on track, with crop development 2-3 weeks ahead of last year and near or slightly ahead of normal progress. The average nut set per tree is 5,298, down 30 percent from 1999. The Nonpareil average nut set of 4,959 represents a 38 percent decrease from last year's set. The average kernel weight for all varieties sampled was 1.69 grams, up 15 percent from last year. A total 98.2 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 27 and sampling was completed by June 21. There were 1,371 trees sampled for the 2000 survey in 686 orchards. A larger than usual number of 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) Owner refused to cooperate or could not be contacted.

The Objective Measurement Survey is funded by monies provided by the Almond Board of California, in cooperation with the California Department of Food and Agriculture.

DATA RELIABILITY

The 80 percent confidence interval is from 590 million meat pounds to 690 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

District and Variety	1995		1996		1997		1998		1999		2000	
	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)	3,792	798	5,482	872	7,567	887	5,314	979	7,568	838	5,298	686
BY DISTRICTS												
<u>District I</u>												
Sacramento Valley	4,926	176	6,739	175	8,544	190	6,257	200	8,158	188	6,167	126
<u>District II</u>												
San Joaquin Valley	3,471	622	5,194	693	7,347	691	5,116	772	7,440	645	5,111	559
BY VARIETIES												
California Types ^{1/}	3,635	151	6,510	174	7,597	171	5,497	201	7,602	167	5,332	140
Carmel ^{2/}	3,384	99	5,993	116	7,862	107	5,645	118	6,716	99	5,275	84
Merced	2,841	32	4,450	31	6,020	20	4,664	24	6,818	16	2,540	4
Mission	4,534	72	6,320	78	6,831	78	5,722	79	6,844	58	4,975	31
Ne Plus Ultra	2,557	29	3,486	28	7,215	30	2,116	27	4,992	24	5,709	4
Nonpareil	3,851	430	4,963	464	7,714	485	5,129	491	8,054	403	4,959	359

^{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 breakdown was first provided in 1988. Carmel variety is also included in California Types.

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

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												
1995	1.91	24.56	14.09	10.30	91.9	3.5	0.1	3.0	0.5	0.1	0.9	
1996	1.85	23.09	13.54	10.21	93.4	3.6	b/	2.2	0.2	0.1	0.4	
1997	1.59	20.34	11.95	9.22	92.3	5.6	b/	1.8	0.1	0.1	0.2	
1998	1.76	23.51	13.64	10.42	95.8	4.0	b/	b/	0.1	b/	b/	
1999	1.47	23.21	13.57	10.64	93.4	5.7	b/	0.8	b/	b/	0.1	
2000	1.69	23.55	13.63	10.24	95.8	2.4	b/	1.4	0.2	0.1	0.1	
BY DISTRICT												
Sacramento Valley ^{c/}												
1995	1.82	23.72	13.70	9.88	91.4	5.4	b/	1.2	0.5	b/	1.5	
1996	1.68	22.99	13.70	10.11	92.9	4.7	b/	1.4	0.2	b/	0.9	
1997	1.59	22.54	13.17	9.92	91.5	6.2	b/	1.2	0.1	0.2	0.7	
1998	1.71	23.48	13.54	10.25	93.5	6.2	b/	b/	0.3	b/	b/	
1999	1.42	22.82	12.55	9.33	93.6	5.5	b/	0.7	b/	b/	0.3	
2000	1.65	24.11	13.48	10.02	93.5	3.5	b/	1.8	0.6	0.2	0.5	
San Joaquin Valley ^{d/}												
1995	1.95	24.95	14.27	10.51	92.2	2.6	0.2	3.8	0.5	0.2	0.6	
1996	1.91	23.13	13.49	10.25	93.6	3.2	b/	2.5	0.2	0.1	0.3	
1997	1.59	19.61	11.55	8.99	92.5	5.4	b/	2.0	0.1	b/	b/	
1998	1.78	23.52	13.67	10.47	96.6	3.3	b/	b/	b/	b/	b/	
1999	1.49	23.34	13.90	11.06	93.3	5.8	b/	0.8	b/	b/	b/	
2000	1.70	23.40	13.68	10.30	96.4	2.1	b/	1.3	0.1	0.1	b/	
BY VARIETY												
California Types ^{e/}												
1995	1.81	25.23	13.18	10.25	88.7	5.3	0.1	4.4	0.5	0.1	0.9	
1996	1.68	23.14	12.68	10.12	92.3	4.8	b/	2.1	0.1	0.1	0.7	
1997	1.53	19.90	11.23	9.23	89.3	8.6	b/	1.8	0.1	b/	0.1	
1998	1.70	23.76	12.93	10.33	94.9	9.9	b/	b/	b/	b/	b/	
1999	1.41	22.68	12.75	10.58	89.3	9.8	b/	0.6	b/	b/	b/	
2000	1.54	23.02	12.84	10.09	94.8	3.6	b/	1.4	0.1	0.2	0.1	
Carmel ^{f/}												
1995	1.83	25.97	13.13	10.19	91.7	4.3	0.1	2.5	0.8	0.2	0.4	
1996	1.77	23.90	12.78	10.14	94.0	4.2	b/	1.5	0.1	b/	0.2	
1997	1.52	20.13	11.28	9.31	89.4	8.6	b/	1.6	0.2	b/	b/	
1998	1.71	24.30	12.85	10.31	96.0	3.8	b/	b/	b/	b/	b/	
1999	1.53	24.70	13.95	11.59	90.6	9.0	b/	0.2	b/	b/	0.2	
2000	1.69	24.69	13.12	10.16	96.3	2.3	b/	1.0	0.2	0.1	b/	
Merced												
1995	1.86	23.91	13.90	10.67	87.8	4.3	b/	4.1	2.7	b/	1.2	
1996	1.58	21.22	13.14	10.36	91.8	4.2	b/	1.9	1.9	b/	0.1	
1997	1.54	20.82	12.66	10.01	93.0	5.8	b/	1.1	0.1	b/	b/	
1998	1.84	22.27	13.55	10.61	94.7	5.2	b/	b/	0.1	b/	b/	
1999	1.50	24.40	15.61	12.84	94.1	5.0	b/	0.7	b/	b/	0.3	
2000	1.88	23.22	14.14	10.57	84.5	7.8	b/	0.3	2.0	b/	5.4	
Mission												
1995	1.66	21.39	13.47	10.89	91.1	5.2	b/	1.8	0.7	b/	1.3	
1996	1.56	19.46	12.61	10.37	91.9	4.9	b/	2.7	0.1	0.2	0.2	
1997	1.37	17.28	11.31	9.49	91.6	6.8	b/	1.3	b/	b/	0.4	
1998	1.59	20.51	13.20	11.35	88.6	11.4	b/	b/	b/	b/	b/	
1999	1.34	20.04	12.82	10.71	91.6	7.7	b/	0.7	b/	b/	b/	
2000	1.45	20.17	13.04	10.92	90.4	7.6	b/	1.5	0.2	b/	0.2	
Ne Plus Ultra												
1995	2.17	26.59	14.32	10.32	76.5	13.2	b/	4.8	2.3	b/	3.2	
1996	2.20	27.53	14.65	10.39	87.1	7.1	b/	3.7	0.9	b/	1.2	
1997	1.85	21.74	11.44	8.78	82.3	15.0	b/	2.7	b/	b/	b/	
1998	2.03	27.20	14.58	9.89	90.1	9.3	b/	b/	0.6	b/	b/	
1999	1.76	26.27	13.85	10.64	83.5	15.7	b/	0.7	b/	b/	0.1	
2000	1.73	23.67	13.28	10.35	95.0	4.2	b/	b/	b/	0.8	b/	
Nonpareil												
1995	2.01	25.24	14.58	10.19	93.7	2.1	0.1	2.9	0.3	0.1	0.7	
1996	2.06	24.27	14.26	10.22	94.7	2.6	b/	2.2	0.2	b/	0.3	
1997	1.67	21.05	12.29	9.09	94.3	3.4	b/	1.9	b/	0.1	0.2	
1998	1.90	24.61	14.22	10.30	97.8	2.1	b/	b/	b/	b/	b/	
1999	1.51	23.85	13.77	10.39	95.6	3.3	b/	1.0	b/	b/	0.1	
2000	1.83	24.55	14.23	10.24	96.7	1.6	b/	1.3	0.2	0.1	0.1	

^{a/} Percentages may not add to 100 due to rounding.

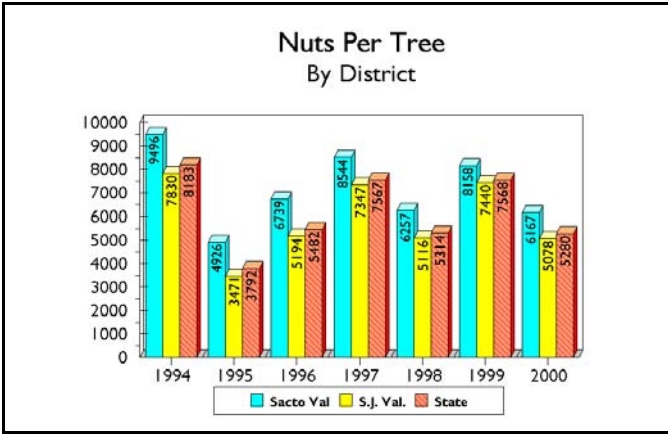
^{b/} Not shown if less than 0.07 percent.

^{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 breakdown was available for the first time in 1988. Carmel variety is also included in California Types.



NUTS PER TREE

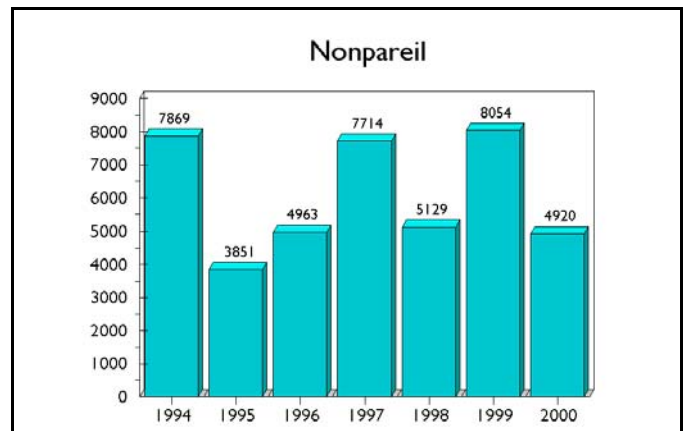
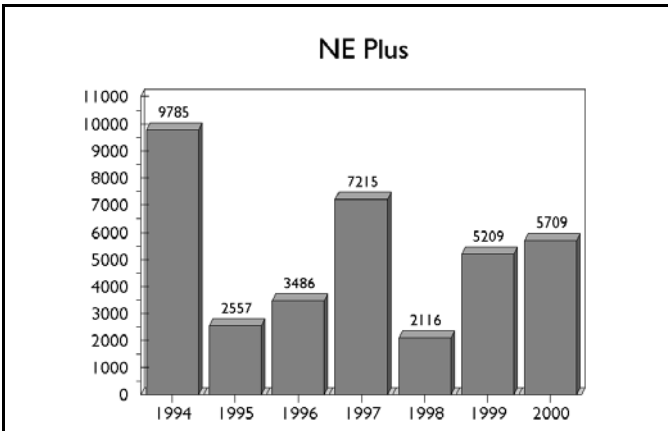
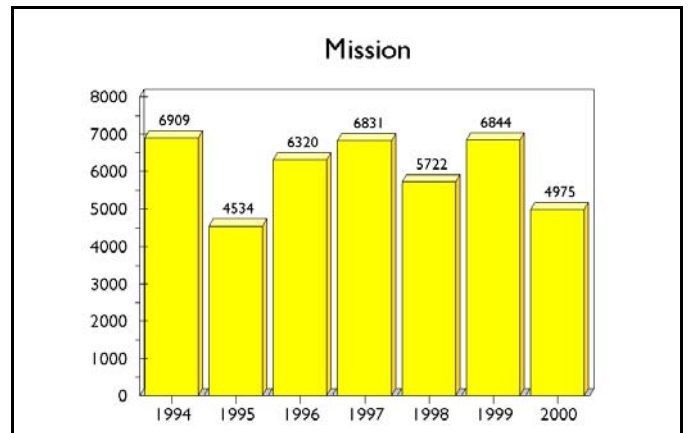
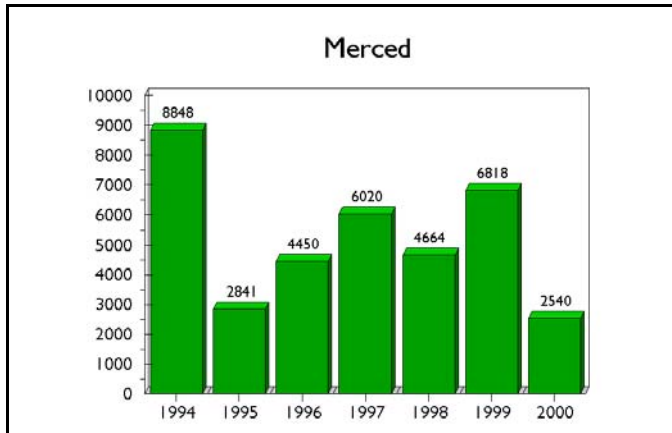
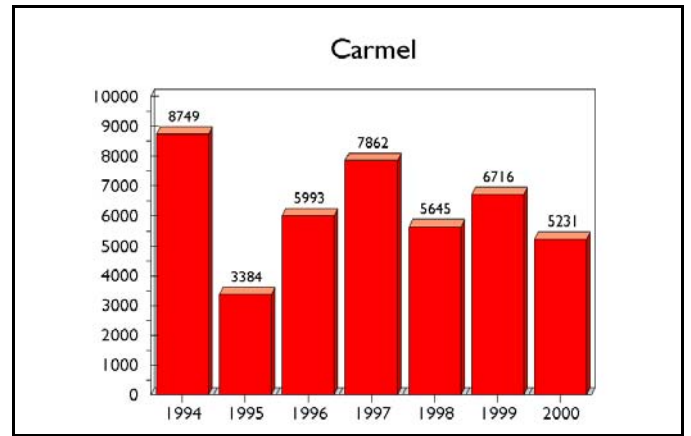
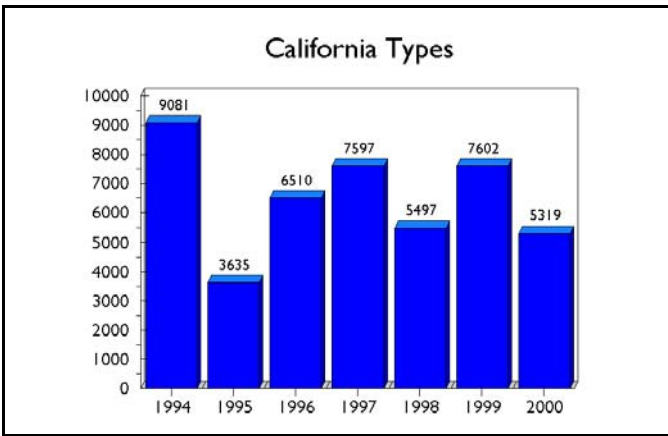


TABLE 3: CALIFORNIA ALMOND ACREAGE, PRODUCTION AND TREES PER ACRE, 1980-00

Year	Bearing Acres <u>1/</u>	Total Meat Production			Average Trees Per Acre
		Metric Tons <u>2/</u>	Million Lbs.	Lbs. Per Acre	
1980	327,000	146,000	322	985	N/A
1981	326,000	185,000	408	1,250	N/A
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	480,000	376,000	830	1,730	97.3
2000	500,000	290,000	640	1,280	99.0

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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