

1997 Almond Objective Measurement Survey Results



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1997 CALIFORNIA ALMOND FORECAST

California's 1997 almond production is forecast at 680 million meat pounds, down 4 percent from May's subjective forecast and up 33 percent from last year's crop. This is based on 420,000 bearing acres. The Nonpareil variety is forecast at 333 million meat pounds, up 33 percent from last season. The Nonpareil variety represents 49 percent of total almond production.

Statewide bloom reports were excellent with a warm and mild spring. The crop is one to two weeks ahead of normal. There has been some concern about bud failure, a genetic susceptibility of some varieties, to extreme heat. Some orchards in the central and southern San Joaquin Valley were subject to high heat last summer, affecting this year's bud development. The average nut set per tree is 7,567, up 38 percent from 1996. The Nonpareil average nut set of 7,714 represents a 55 percent increase from last year's set. The average kernel weight for all varieties sampled was 1.59 grams, down 14 percent from last year. A total of 97.9 percent of the 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. Since at each forking only one branch is randomly selected to continue the path, the procedure is random. 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 counts along the chosen path and then arrive 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 23 and sampling was completed by June 17. There were 1,774 trees sampled for the 1997 survey in 887 orchards. An additional 117 orchards were not sampled for one of the following reasons:

- 1) Orchard had been sprayed.
- 2) Orchard 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% confidence interval is from 628 million meat pounds to 732 million meat pounds. This means that 80% of the time the actual production will fall in this range.

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

District and Variety	1992		1993		1994		1995		1996		1997	
	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)	7,217	678	5,871	767	8,183	766	3,792	798	5,482	872	7,567	887
BY DISTRICTS												
<u>District I</u>												
Sacramento	8,171	139	6,801	173	9,498	176	4,926	176	6,739	175	8,544	190
<u>District II</u>												
San Joaquin	6,908	535	5,652	587	7,830	586	3,471	622	5,194	693	7,347	691
BY VARIETIES												
California Types	8,406	113	5,901	129	9,081	134	3,635	151	6,510	174	7,597	171
Carmel 2/	8,301	73	5,317	85	8,749	86	3,384	99	5,993	116	7,862	107
Merced	6,618	34	6,332	30	8,848	32	2,841	32	4,450	31	6,020	20
Mission	8,097	70	6,117	70	6,909	69	4,534	72	6,320	78	6,831	78
Ne Plus Ultra	6,479	25	4,808	29	9,785	26	2,557	29	3,486	28	7,215	30
Nonpareil	6,567	376	5,849	447	7,869	431	3,851	430	4,963	464	7,714	485

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												
1992	1.65	23.80	13.24	9.90	95.3	2.8	b/	1.2	0.2	0.1	0.4	
1993	1.78	24.59	13.61	10.17	92.6	3.8	b/	2.6	0.4	b/	0.5	
1994	1.63	23.56	12.99	10.12	95.0	2.4	b/	1.7	0.3	b/	0.6	
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	
BY DISTRICT												
Sacramento Valley ^{c/}												
1992	1.59	23.56	13.25	9.81	95.1	3.3	b/	1.0	0.2	b/	0.3	
1993	1.71	24.84	13.44	9.71	93.1	4.4	0.1	2.0	b/	0.1	0.2	
1994	1.61	23.52	13.06	9.87	94.3	3.1	b/	1.0	0.2	0.1	1.3	
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	
San Joaquin Valley ^{d/}												
1992	1.67	23.88	13.24	9.94	95.4	2.6	b/	1.3	0.2	b/	0.5	
1993	1.81	24.50	13.67	10.34	92.4	3.6	b/	2.9	0.6	b/	0.6	
1994	1.64	23.57	12.96	10.21	95.2	2.1	b/	2.0	0.4	b/	0.3	
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/	
BY VARIETY												
California Types ^{e/}												
1992	1.52	23.69	12.32	9.84	94.0	4.5	b/	0.9	0.1	b/	0.5	
1993	1.67	24.47	12.69	10.12	89.8	5.8	b/	3.8	0.3	b/	0.3	
1994	1.49	23.00	12.14	10.05	94.9	2.5	b/	2.0	0.1	b/	0.5	
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	
Carmel ^{f/}												
1992	1.54	24.27	12.27	9.81	94.2	4.5	b/	0.7	0.1	b/	0.5	
1993	1.69	25.03	12.68	10.06	91.7	5.2	b/	2.6	0.3	b/	0.2	
1994	1.51	23.42	12.13	10.06	95.7	1.9	b/	1.5	b/	b/	0.7	
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/	
Merced												
1992	1.59	22.34	12.81	10.24	90.7	6.8	b/	1.2	0.8	0.1	0.3	
1993	1.70	23.13	13.32	10.53	88.1	8.5	b/	2.3	0.4	b/	0.6	
1994	1.60	22.20	12.69	10.65	92.5	4.4	b/	2.3	0.6	b/	0.2	
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/	
Mission												
1992	1.31	19.71	12.16	10.07	96.9	0.4	b/	1.6	0.3	0.2	0.5	
1993	1.45	20.61	12.34	10.62	90.1	7.5	0.1	1.6	0.1	b/	0.7	
1994	1.39	19.97	12.36	10.73	94.7	2.5	b/	1.0	1.3	b/	0.4	
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	
Ne Plus Ultra												
1992	1.87	26.61	13.37	10.05	87.8	10.1	b/	1.2	0.4	b/	0.4	
1993	2.11	28.50	14.22	10.12	87.9	8.5	b/	2.6	0.4	b/	0.6	
1994	1.88	26.78	13.14	10.36	81.8	11.4	b/	4.7	0.2	b/	1.6	
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/	
Nonpareil												
1992	1.80	25.01	13.95	9.87	96.6	1.7	b/	1.3	0.1	b/	0.3	
1993	1.89	25.37	14.12	10.10	95.0	1.4	b/	2.6	0.4	0.1	0.4	
1994	1.72	24.36	13.44	10.00	96.8	1.1	b/	1.4	0.2	b/	0.5	
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	

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

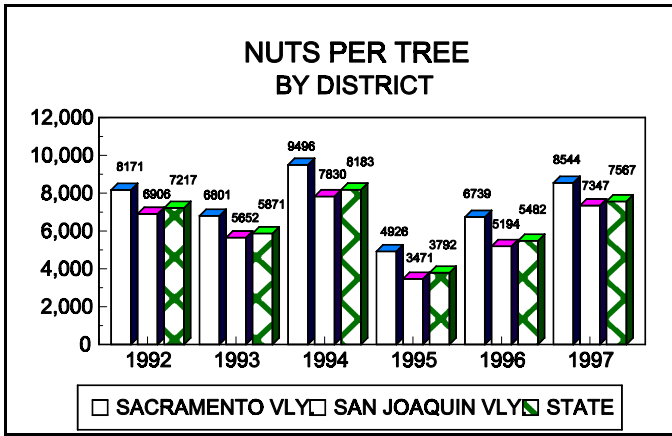
^{b/} Not shown if less than 0.07 percent.

^{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

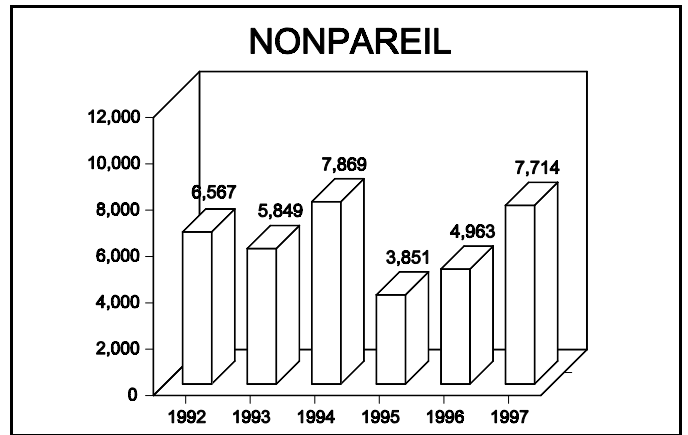
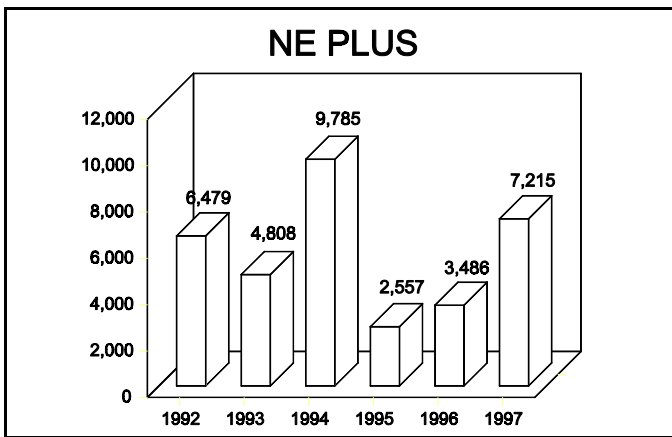
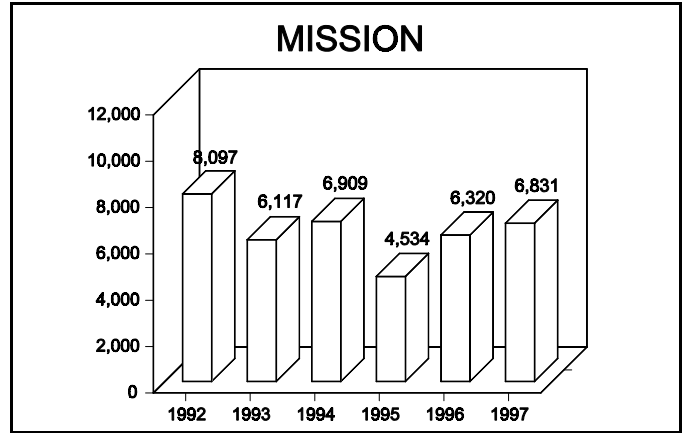
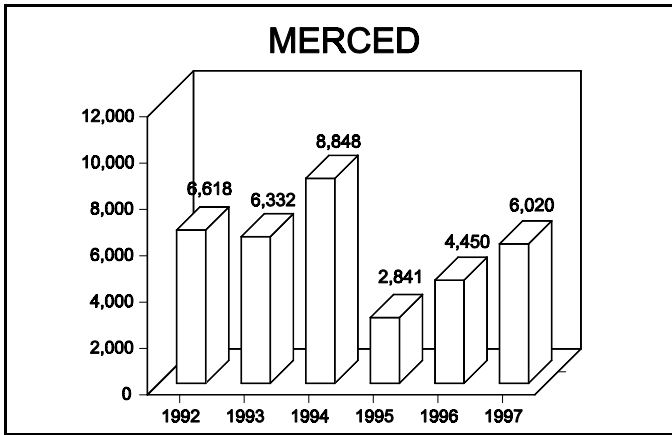
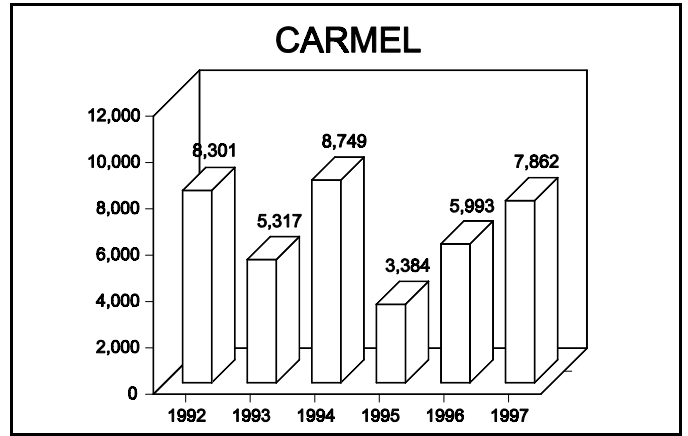
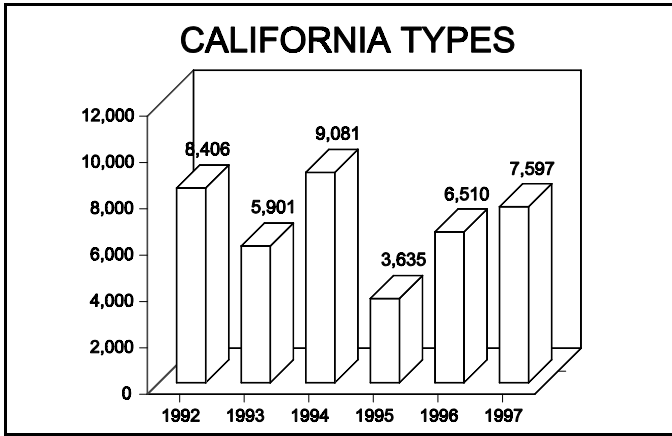


TABLE 3: CALIFORNIA ALMOND ACREAGE, PRODUCTION AND TREES/ACRE, 1980-97

Year	Bearing Acres <u>1/</u>	Total Meat Production			Average Trees Per Acre
		Metric Ton <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	402,000	222,000	490	1,220	92.0
1994	409,000	333,000	735	1,800	92.6
1995	400,000	168,000	370	930	93.7
1996	410,000	240,000	510	1,240	94.4
1997	420,000	308,000	680	1,620	94.8

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

2/ Rounded to nearest thousand.

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