

2001 California Almond Objective Measurement Report



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CALIFORNIA AGRICULTURAL
STATISTICS SERVICE

2001 CALIFORNIA ALMOND FORECAST

California's 2001 almond production is forecast at a record 850 million meat pounds, down 3 percent from May's subjective forecast, but up 21 percent from last year's crop. The forecast is based on 525,000 bearing acres. Production for the Nonpareil variety is forecast at 330 million meat pounds, up 20 percent from last season. The Nonpareil variety represents 39 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 May and June helped get the crop back on track with crop development near or slightly behind last year, but with near normal progress. The average nut set per tree is 6,672, up 26 percent from 2000. The Nonpareil average nut set of 6,449 represents a 30 percent increase from last year's set. The average kernel weight for all varieties sampled was 1.60 grams, down 5 percent from last year. A total 98.1 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 20. There were 1,596 trees sampled for the 2001 survey in 798 orchards. An additional 118 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 791 million meat pounds to 909 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	1996		1997		1998		1999		2000		2001	
	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)	5,482	872	7,567	887	5,314	979	7,568	838	5,298	686	6,672	798
BY DISTRICTS												
<u>District I</u>												
Sacramento Valley	6,739	175	8,544	190	6,257	200	8,158	188	6,167	126	7,189	165
<u>District II</u>												
San Joaquin Valley	5,194	693	7,347	691	5,116	772	7,440	645	5,111	559	6,537	633
BY VARIETIES												
California Types ^{1/}	6,510	174	7,597	171	5,497	201	7,602	167	5,332	140	6,850	167
Carmel ^{2/}	5,993	116	7,862	107	5,645	118	6,716	99	5,275	84	6,832	99
Merced	4,450	31	6,020	20	4,664	24	6,818	16	2,540	4	5,739	7
Mission	6,320	78	6,831	78	5,722	79	6,844	58	4,975	31	5,928	41
Ne Plus Ultra	3,486	28	7,215	30	2,116	27	4,992	24	5,709	4	6,859	14
Nonpareil	4,963	464	7,714	485	5,129	491	8,054	403	4,959	359	6,449	386

^{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												
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	
2001	1.60	23.90	12.87	9.89	95.0	3.1	b/	1.4	0.1	b/	0.2	
BY DISTRICT												
Sacramento Valley c/												
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	
2001	1.61	24.37	13.05	9.68	94.4	3.4	b/	1.1	0.1	b/	1.0	
San Joaquin Valley d/												
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/	
2001	1.60	23.75	12.82	9.96	95.2	3.0	b/	1.5	0.1	b/	b/	
BY VARIETY												
California Types e/												
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	
2001	1.57	24.45	12.24	9.97	92.6	5.3	b/	1.6	b/	b/	0.3	
Carmel f/												
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/	
2001	1.53	24.74	12.03	9.83	94.8	3.7	b/	1.2	b/	b/	0.2	
Merced												
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	
2001	1.52	23.04	12.23	10.00	92.6	6.3	b/	0.6	0.4	b/	b/	
Mission												
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	
2001	1.43	21.84	12.42	10.27	92.6	5.3	b/	1.4	0.3	b/	0.3	
Ne Plus Ultra												
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/	
2001	1.85	26.75	13.31	9.64	88.5	9.5	b/	1.0	0.2	b/	0.6	
Nonpareil												
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	
2001	1.73	24.97	13.52	9.82	96.9	1.3	b/	1.3	0.1	0.1	0.2	

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

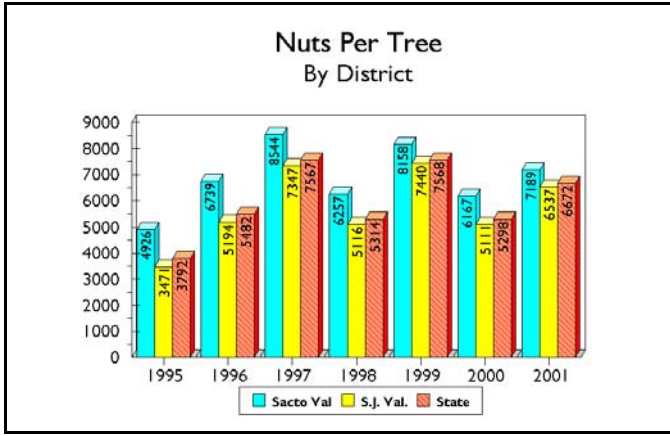
b/ Not shown if less than 0.07 percent.

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

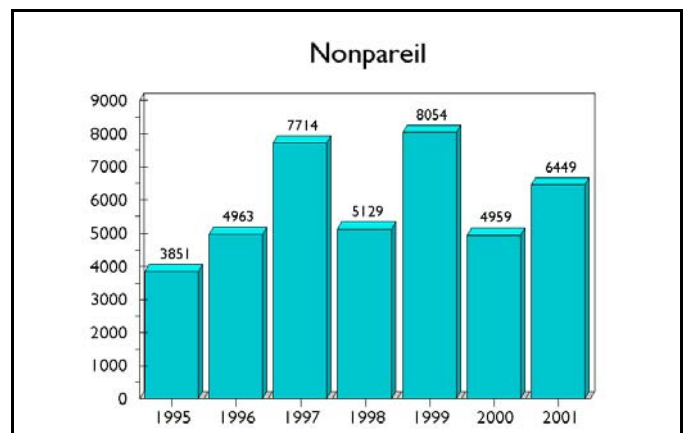
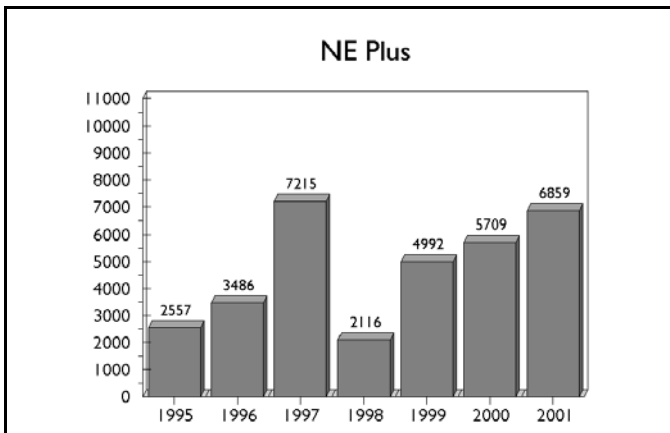
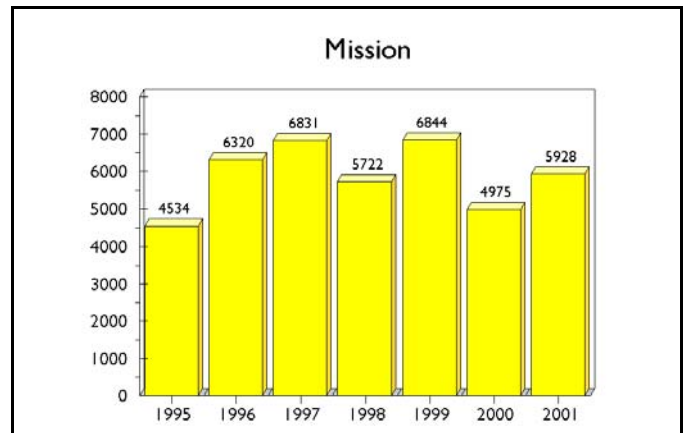
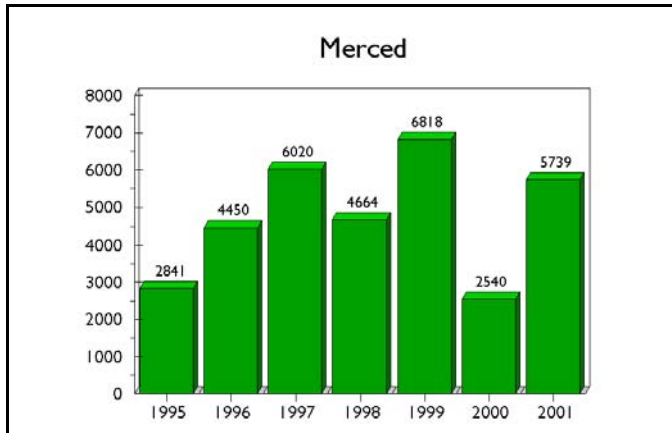
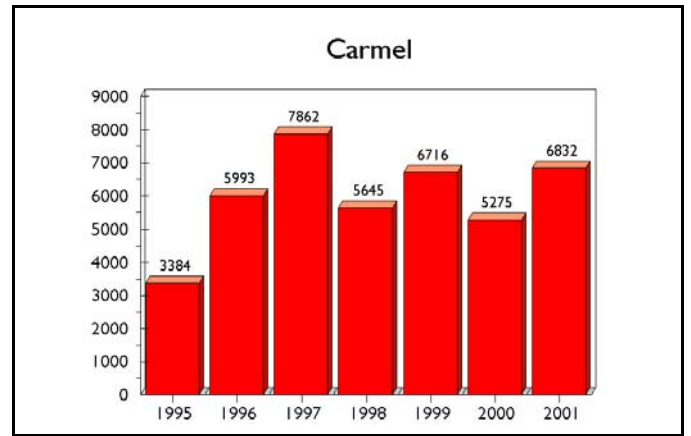
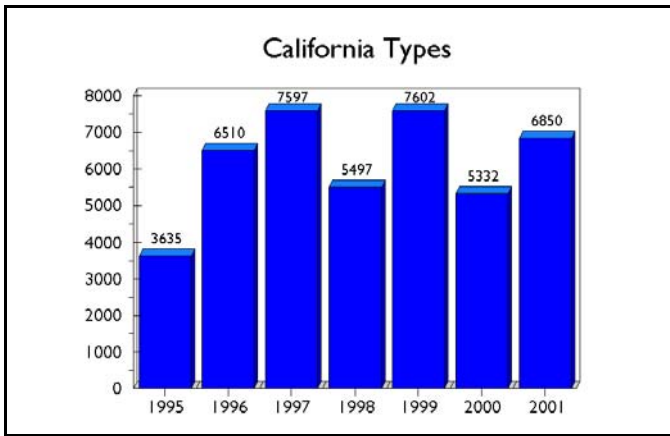


TABLE 3: CALIFORNIA ALMOND ACREAGE, PRODUCTION AND TREES PER ACRE, 1980-01

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	378,000	833	1,740	97.3
2000	500,000	319,000	703	1,410	99.0
2001	525,000	386,000	850	1,620	101.0

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

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