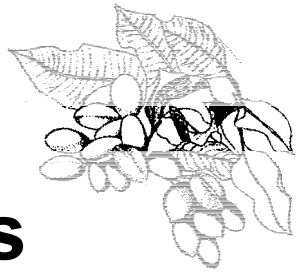
1999 California Pistachio Objective Measurement Survey Results



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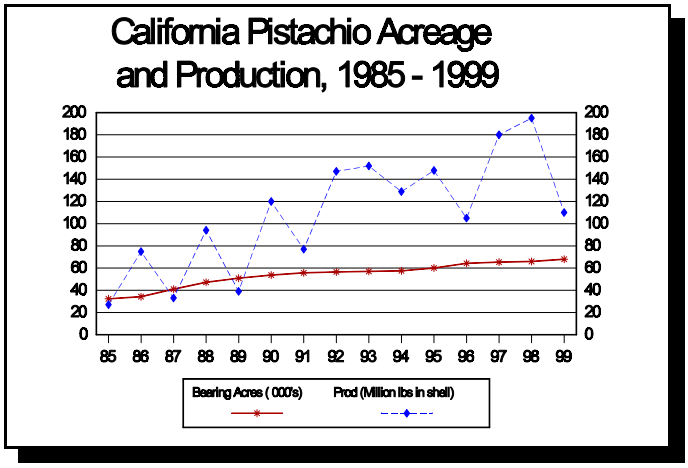
CALIFORNIA AGRICULTURAL STATISTICS SERVICE

1999 PISTACHIO PRODUCTION FORECAST AT 110 MILLION POUNDS

California pistachio production for 1999 is forecast at 110 million pounds. The 80 percent confidence interval is from 80 to 130 million pounds. This means that 80 percent of the time the actual production will fall within this range. This forecast is based on an objective measurement survey conducted by the California Agricultural Statistics Service under the sponsorship of the California Pistachio Commission. The survey collects data such as clusters per tree, nuts per cluster, percent of bearing trees, as well as weight and size information. Due to the later than usual spring, the crop is approximately two to three weeks behind normal. In recent years, production has remained more stable as Pioneer Gold rootstock (verticillium wilt resistant) has increasingly replaced the older Atlantica rootstock.



HISTORY

Forecasting research on California's pistachio crop began in 1980 by the California Agriculture Statistics Service under the sponsorship of the California Pistachio Commission. The Pistachio Objective Measurement Survey uses randomly selected trees throughout the State. These trees are used in gathering detailed observations on the total number of clusters, nuts within clusters, frequency of blank nuts, and other measurements. The Pistachio Objective Measurement Survey began in 1982 to meet grower and processor needs for accurate production data. No objective measurement survey was conducted in 1993.

The August Pistachio Objective Measurement Survey procedures consist of sampling 1,200 randomly selected trees. For each tree, clusters are counted up a "random path" to a terminal branch, and randomly selected clusters are picked for measurements. Each branch selected for counting has its cross-sectional measurements made at each branch forking. These counts are then expanded according to the corresponding branch size to estimate the total number of nuts on the entire tree. Then average counts per tree, by county, and for the entire State are calculated. Starting in 1998, two random paths per tree were completed.

Field staff also make a "Ten Tree Count" of bearing (female) and pollinator (male) trees. From these counts the "Estimated Percent Of All Spaces That Contain Bearing Trees" and the "Estimated Percent Of All Spaces That Contain Pollinators" are determined. A tree may be classified as too young, or too diseased to be counted bearing or pollinator.

The clusters are sent to a sizing station where field staff count the nuts on each cluster, determine the number of filled and blank nuts per cluster, and obtain in-hull weight, in-hull cross-suture width, kernel weight, kernel cross-suture width, kernel suture width, and kernel length measurements for each nut on the cluster. Beginning in 1995, the weight of in-hull filled nuts was obtained.

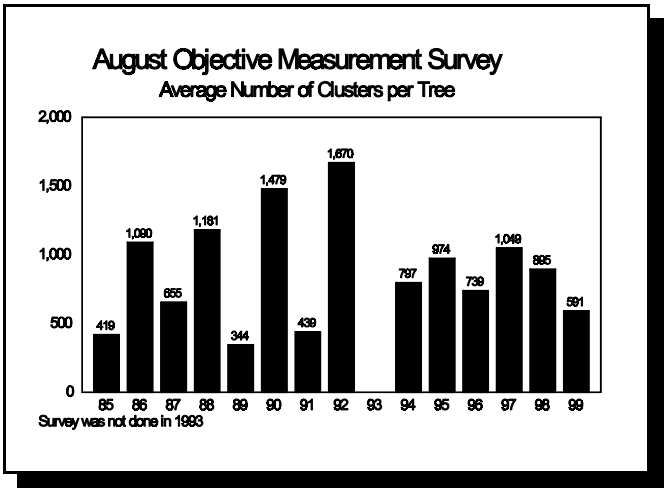
THE 1999 PISTACHIO OBJECTIVE MEASUREMENT SURVEY

The Pistachio Objective Measurement Survey was completed by August 27. All samplers are employees of the National Association of State Departments of Agriculture and work in cooperation with the California Agricultural Statistics Service. Equipment and supplies were furnished, and survey procedures were discussed at training schools prior to the survey. Supervisors also trained enumerators on an individual basis. Quality control checks were made by all field supervisors to assure that uniform procedures were followed statewide.

THE SAMPLE

There were 603 blocks completed from the original selected for sampling with two sample trees per block and two random paths per tree. The trees were visited unless a tree was pulled out, an orchard was extremely wet, or other conditions existed which prevented field staff from reaching the sample tree.

RESULTS OF THE SURVEY

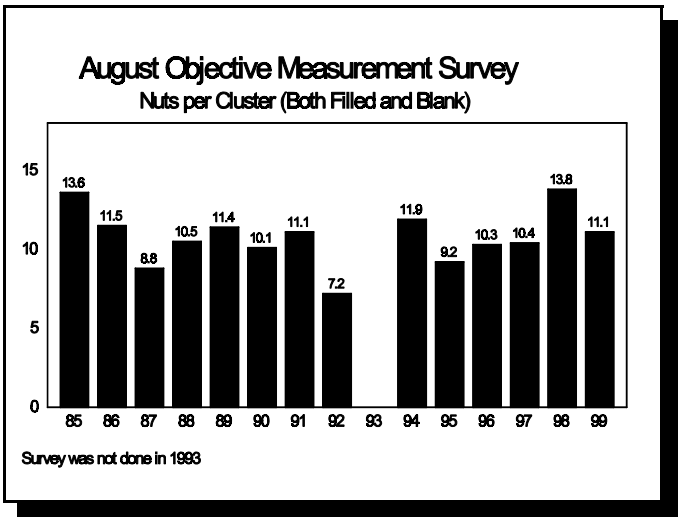


Cluster Count

The estimated average number of clusters per tree was 591. Atlantica rootstock was identified in 257 sampled orchards; Pioneer Gold I in 313; Pioneer Gold II in 17 sampled orchards. The mean cluster set was 690; 476 and 851 clusters, respectively.

Bearing and Pollinator Trees

In August, 90.5 percent of the tree spaces in California's bearing pistachio orchards contained bearing (female) trees, while 5.6 percent of the tree spaces contained pollinator trees.

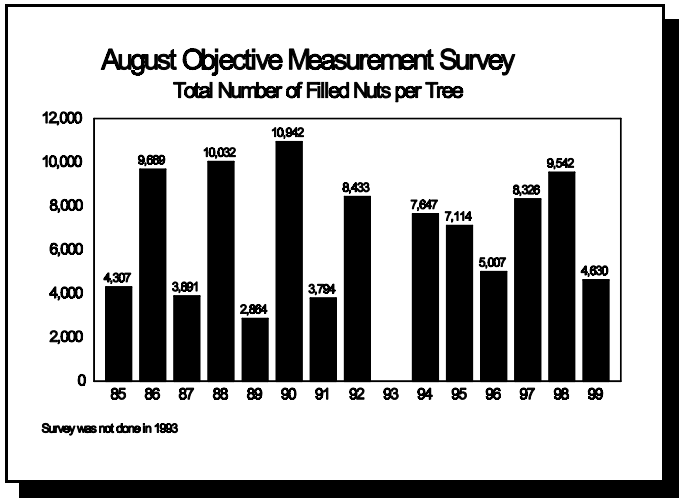


FILLED NUTS AND NUTS PER CLUSTER

The estimated total number of filled nuts per tree was 4,630 as compared with 9,542 in 1998. The average number of nuts per cluster, including both filled and blank, was 11.1 nuts per cluster. The percent of nuts filled was 70.4 percent.

IN-HULL WEIGHTS AND MEASUREMENTS

This year the average in-hull weight per nut including blanks was 2.82 grams, compared to 2.86 grams in 1998. The in-hull cross suture measurement was 15.29 millimeters, compared to 15.05 millimeters in 1998.



KERNEL WEIGHTS AND MEASUREMENTS

Average weight per kernel in 1999 was 0.928 grams. The average suture was 10.16 millimeters, the average cross suture was 9.78 millimeters, and the kernel length was 16.72 millimeters.

TABLE 1 -- PISTACHIO OBJECTIVE MEASUREMENT SURVEY DATA, 1986-1999 1/

Area	Year	Samples Completed 2/	Estimated Average Number Of Clusters Per Tree	Estimated Percent Of All Spaces That Contain		Count Data			In-Hull Data 3/			Kernel Data 3/			
				Bearing Trees	Pollinators	Nuts Per Cluster (Filled & Blank)	Percent Of Nuts Filled	Est. Total Number Of Filled Nuts Per Tree	Weight Per Nut (Includes Blanks)	Weight Per Nut (Filled)	In-Hull Cross Suture	Average Weight Per Kernel	Suture	Cross Suture	Length
Kern	1986	147	1,251	76.1	5.1	12.7	81.0	12,857	2.83	---	15.93	1.007	10.63	10.30	16.95
	1987	114	639	76.3	5.3	10.4	69.5	4,628	2.59	---	14.56	0.906	10.26	9.59	16.64
	1988	123	1,665	79.2	5.4	11.9	84.1	16,677	2.69	---	14.29	0.840	9.93	9.46	15.95
	1989	125	333	82.3	5.3	14.6	72.8	3,540	2.94	---	14.70	0.998	10.69	9.97	17.58
	1990	126	2,002	83.1	6.7	10.3	76.7	15,884	2.47	---	14.29	0.888	10.22	9.43	16.14
	1991	134	503	84.6	6.3	11.9	77.5	4,627	3.09	---	15.65	0.986	10.65	10.02	16.42
	1992	145	2,068	85.9	7.7	7.5	65.9	10,269	3.16	---	15.59	1.452	10.90	10.46	17.79
	1993	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	1994	177	984	87.4	5.4	12.1	79.5	9,460	3.04	---	15.34	0.986	10.42	9.71	17.10
	1995	215	1,000	90.5	5.0	9.8	77.7	7,651	3.17	3.29	15.50	0.995	10.22	9.96	16.23
	1996	211	702	89.1	5.2	11.7	58.8	4,848	2.44	2.60	14.49	0.757	9.51	9.14	15.73
	1997	236	1,200	89.7	5.1	10.4	76.3	9,563	2.82	3.00	14.83	0.947	10.77	9.62	16.67
	1998	251	1,102	91.5	5.4	13.9	76.2	11,700	2.87	3.07	15.35	0.897	10.35	9.21	16.27
	1999	239	479	92.7	5.2	11.2	66.8	3,589	2.86	3.09	15.16	0.971	10.45	9.88	16.74
Kings	1986	36	1,076	73.1	3.5	12.0	73.9	9,565	2.67	---	15.05	1.065	10.93	10.43	17.58
	1987	22	625	73.5	4.0	13.6	72.8	6,177	2.54	---	14.30	0.884	10.17	9.65	16.89
	1988	32	1,332	77.8	5.2	9.1	80.4	9,732	2.81	---	14.70	0.938	10.45	9.83	16.55
	1989	35	452	78.4	4.9	13.7	68.8	4,276	2.88	---	14.89	0.977	10.71	9.98	17.01
	1990	44	1,739	84.5	4.7	10.0	71.3	12,338	2.60	---	14.34	0.914	10.45	9.75	16.85
	1991	39	493	86.7	4.6	12.7	79.9	5,014	2.82	---	15.29	0.867	10.50	10.19	16.49
	1992	34	2,122	78.0	3.9	9.2	72.8	14,215	2.98	---	15.05	1.093	11.37	10.58	18.20
	1993	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	1994	49	776	86.5	3.5	13.4	78.5	8,133	3.08	---	15.10	1.047	11.08	10.34	17.72
	1995	55	1,165	90.7	3.7	10.8	79.6	10,050	3.09	3.35	15.68	0.983	10.50	10.35	16.86
	1996	39	359	91.0	5.1	20.0	62.5	4,485	2.56	2.76	14.28	0.826	9.75	9.47	16.15
	1997	55	1,319	92.9	3.8	11.8	68.3	10,659	2.69	2.76	14.62	0.885	10.33	9.76	16.51
	1998	58	828	93.2	4.1	15.6	76.4	9,899	2.94	3.14	14.78	0.948	10.50	9.96	17.20
	1999	51	626	93.3	2.4	13.9	71.0	6,179	2.79	3.32	16.06	0.912	10.25	9.74	17.00
Madera	1986	109	895	85.5	7.8	10.0	68.6	6,120	2.71	---	15.45	0.987	10.18	11.17	16.86
	1987	109	725	85.6	7.1	6.8	61.5	3,051	2.38	---	15.86	0.925	10.70	9.45	16.12
	1988	120	980	86.8	6.3	8.7	72.0	6,111	2.39	---	13.61	0.778	9.93	8.94	15.27
	1989	125	326	89.4	6.4	8.7	73.5	2,080	2.74	---	14.75	0.979	10.86	10.05	17.53
	1990	117	1,232	87.5	6.4	9.4	70.9	8,168	2.31	---	14.06	0.842	10.06	9.07	15.94
	1991	123	311	89.6	6.4	9.0	75.4	2,112	3.08	---	15.34	1.053	11.00	10.28	17.13
	1992	112	1,466	87.3	7.5	5.8	76.1	6,499	2.87	---	14.87	1.046	10.68	9.98	17.29
	1993	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	1994	132	673	87.2	7.1	10.8	80.8	5,895	2.70	---	14.67	0.872	10.36	9.46	16.49
	1995	147	850	88.0	6.2	7.8	81.5	5,385	2.99	3.19	15.55	0.896	10.58	9.77	16.21
	1996	162	932	88.3	5.7	7.9	74.2	5,464	2.54	2.69	15.47	0.751	9.82	8.71	15.11
	1997	162	715	89.3	5.5	8.1	78.4	4,527	2.80	2.92	16.38	0.995	11.15	9.98	17.48
	1998	136	634	89.7	3.9	13.0	79.1	6,511	2.74	2.93	14.85	0.672	9.97	9.99	16.10
	1999	144	637	87.1	7.7	11.5	71.4	5,232	2.87	3.03	15.22	0.911	9.86	9.86	16.71
	1988	33	585	88.5	6.9	11.6	81.9	5,577	2.36	---	13.57	0.742	10.07	9.12	14.86
Merced 4/	1989	32	209	92.5	7.7	9.9	78.0	1,613	2.68	---	14.56	0.941	10.40	9.74	16.74
	1990	34	897	89.4	7.0	9.4	67.8	5,722	2.11	---	13.34	0.801	9.65	8.73	15.34
	1991	30	269	89.7	5.8	14.7	70.7	2,796	2.94	---	15.39	1.051	11.30	10.77	17.48
	1992	32	1,217	88.0	6.1	5.8	72.1	5,088	2.79	---	14.80	1.030	10.65	9.91	17.16
	1993	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	1994	21	525	84.3	7.1	14.5	84.4	6,443	2.61	---	14.35	0.848	10.31	9.39	16.42
	1995	34	753	88.2	5.7	11.2	79.8	6,745	2.91	3.11	15.36	0.852	9.93	9.46	16.44
	1996	29	802	87.2	6.8	10.9	70.6	6,195	2.66	2.86	16.47	0.811	10.23	9.51	16.18
	1997	47	953	85.6	9.3	12.2	80.5	9,380	2.74	2.82	14.23	0.906	9.69	8.89	14.41
	1998	44	655	87.8	7.7	14.9	76.3	7,434	2.98	3.16	15.19	0.859	10.83	9.70	16.96
	1999	35	1,087	86.2	6.5	11.0	71.1	8,490	2.68	2.93	14.60	0.944	10.04	9.79	16.67
Tulare 4/	1988	16	837	81.9	4.4	8.7	81.9	5,931	2.40	---	13.90	0.790	10.54	9.60	16.86
	1989	23	449	86.7	5.7	8.5	74.1	2,840	2.64	---	14.31	0.940	10.84	9.99	17.72
	1990	26	1,128	87.3	6.2	11.8	67.3	8,944	2.39	---	13.82	0.852	9.66	8.90	15.62
	1991	33	495	92.9	4.8	10.2	82.9	4,172	2.87	---	15.24	0.906	10.66	10.24	17.28
	1992	36	1,377	89.6	5.4	6.7	74.6	6,904	3.03	---	15.14	1.086	11.27	10.55	18.41
	1993	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	1994	49	941	90.4	5.1	11.8	86.5	9,585	2.74	---	14.34	0.866	10.18	9.63	16.81
	1995	59	1,002	91.0	4.5	9.9	82.5	8,190	2.97	3.23	15.33	0.950	10.41	10.12	17.20
	1996	48	793	92.5	4.4	11.5	70.6	6,435	2.53	2.76	14.10	0.819	9.86	9.33	16.41
	1997	58	901	90.1	4.7	12.4	74.3	8,322	2.59	2.69	14.12	0.821	9.91	9.26	16.18
	1998	62	859	91.1	4.8	12.0	81.3	8,383	2.79	3.00	14.48	0.878	10.12	9.49	16.72
	1999	63	645	89.5	4.0	8.3	73.4	3,949	2.82	3.32	16.07	0.870	9.83	9.41	16.76
State	1986	332	1,090	79.8	6.1	11.5	77.3	9,689	2.77	---	15.63	1.000	10.50	10.49	17.00
	1987	286	655	81.1	5.9	8.8	67.6	3,891	2.51	---	14.95	0.912	10.36	9.56	16.51
	1988	347	1,181	83.2	5.7	10.5	80.7	10,032	2.61	---	14.13	0.832	10.02	9.37	15.87
	1989	367	344	85.8	6.1	11.4	72.9	2,864	2.84	---	14.70	0.979	10.71	9.97	17.40
	1990	373	1,479	85.6	6.3	10.1	73.5	10,942	2.43	---	14.14	0.871	10.12	9.32	16.11
	1991	389	439	87.7	5.9	11.1	77.8	3,794	2.99	---	15.41	0.963	10.69	10.11	16.68
	1992	394	1,670	86.3	6.8	7.2	70.4	8,433	3.04	---	15.26	1.240	10.96	10.35	17.79
	1993	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	1994	491	797	87.4	6.0	11.9	80.6	7,647	2.92	---	15.02	0.952	10.43	9.68	16.97
	1995	586	974	89.9	5.4	9.2	78.9	7,114	3.07	3.26	15.51	0.949	10.33	9.94	16.40
	1996	562	739	89.3	5.3	10.3	65.7	5,007	2.52	2.72	14.87	0.775	9.76	9.08	15.70
	1997	642	1,049	89.5	5.4	10.4	76.0	8,326	2.78	2.92	14.92	0.896	10.56	9.60	16.55
	1998	610	895	90.9	5.0	13.8	77.2	9,542	2.86	3.04	15.05	0.828	10.31	9.51	16.48
	1999	603	591	90.5	5.6	11.1	70.4	4,630	2.82	3.09	15.29	0.928	10.16	9.78	16.72

1/ Survey was not conducted in 1993.
2/ Number of samples is based on the August Pistachio Objective Measurement Survey. There are two trees per sample.
3/ All weights are in grams. Suture, cross suture and length measurements are in millimeters.
4/ Data prior to 1987 is not available due to small sample size.

TABLE 2 -- PISTACHIO OBJECTIVE MEASUREMENT SURVEY DATA, 1999

Area & Variety	Samples Completed b/	Estimated Average Number Of Clusters Per Tree	Est. Percent Of All Spaces That Contain		Count Data			In-Hull Data			Kernel Data a/			
			Bearing Trees	Pollinators	Nuts Per Cluster (Filled & Blank)	Percent Of Nuts Filled	Est. Total Number Of Filled Nuts Per Tree	Weight Per Nut (Includes Blanks)	Weight Per Nut (Filled)	In-Hull Cross Suture	Average Weight Per Kernel	Suture	Cross Suture	Length
KERN														
Kerman/ Atlantica	62	510	90.3	7.2	10.9	65.2	3,635	2.71	2.97	14.83	0.946	10.22	9.89	16.46
Kerman/ Pioneer Gold I	161	425	93.6	4.5	11.5	70.0	3,432	2.96	3.20	15.37	0.983	10.70	10.05	17.14
Kerman/ Pioneer Gold II	5	340	98.8	1.2	16.3	71.4	3,961	2.93	3.19	15.05	1.035	11.28	10.16	17.33
TOTAL	239	479	92.7	5.2	11.2	66.8	3,589	2.86	3.09	15.16	0.971	10.45	9.88	16.74
KINGS														
Kerman/ Atlantica	14	539	91.1	1.6	19.2	71.0	7,350	2.52	3.20	15.92	0.776	9.89	9.17	16.08
Kerman/ Pioneer Gold I	35	605	94.3	2.5	13.4	72.0	5,837	2.92	3.38	16.14	0.983	10.47	10.04	17.50
Kerman/ Pioneer Gold II	2	1,598	93.3	6.7	4.2	44.4	3,014	2.85	3.70	15.95	0.875	9.21	9.14	15.93
TOTAL	51	626	93.3	2.4	13.9	71.0	6,179	2.79	3.32	16.06	0.912	10.25	9.74	17.00
MADERA														
Kerman/ Atlantica	109	674	85.5	8.6	11.6	71.4	5,604	2.86	3.01	15.17	0.904	9.77	9.80	16.63
Kerman/ Pioneer Gold I	30	477	92.6	5.3	12.1	71.4	4,104	2.95	3.19	15.48	0.950	10.23	10.11	17.02
Kerman/ Pioneer Gold II	4	978	97.1	0.0	6.4	72.0	4,514	2.62	2.79	14.92	0.876	10.61	10.25	17.30
TOTAL	144	637	87.1	7.7	11.5	71.4	5,232	2.87	3.03	15.22	0.911	9.86	9.86	16.71
MERCED														
Kerman/ Atlantica	33	1,139	87.4	6.3	11.0	71.3	8,902	2.68	2.93	14.60	0.944	10.03	9.79	16.68
Kerman/ Pioneer Gold I	2	219	64.3	10.0	15.5	61.9	2,097	2.94	3.16	15.33	0.976	10.49	10.02	15.96
Kerman/ Pioneer Gold II	---	---	---	---	---	---	---	---	---	---	---	---	---	---
TOTAL	35	1,087	86.2	6.5	11.0	71.1	8,490	2.68	2.93	14.60	0.944	10.04	9.79	16.67
TULARE														
Kerman/ Atlantica	15	613	75.4	3.2	12.3	78.7	5,929	2.84	3.06	15.92	0.820	9.64	9.09	16.90
Kerman/ Pioneer Gold I	43	627	93.5	4.3	7.0	73.6	3,240	2.81	3.48	16.15	0.885	9.86	9.48	16.61
Kerman/ Pioneer Gold II	3	626	100.0	0.0	14.2	69.1	6,129	2.85	3.32	16.19	0.981	10.41	10.36	17.32
TOTAL	63	645	89.5	4.0	8.3	73.4	3,949	2.82	3.32	16.07	0.870	9.83	9.41	16.76
STATE														
Kerman/ Atlantica	257	690	86.9	7.0	11.7	71.5	5,767	2.78	3.01	15.08	0.909	9.99	9.72	16.58
Kerman/ Pioneer Gold I	313	476	93.3	4.5	11.0	71.1	3,720	2.90	3.23	15.60	0.953	10.44	9.93	17.04
Kerman/ Pioneer Gold II	17	851	97.0	2.3	8.3	66.3	4,707	2.75	3.06	15.20	0.954	10.62	10.06	17.07
TOTAL	603	591	90.5	5.6	11.1	70.4	4,630	2.82	3.09	15.29	0.928	10.16	9.78	16.72

a/ All weights are in grams. Suture, cross suture and length measurements are in millimeters.
b/ Number of samples is based on the August Pistachio Objective Measurement Survey. There are two trees per sample. Samples completed may not add to Total due to other miscellaneous variety/rootstock which are not listed.

SOURCE : CALIFORNIA AGRICULTURAL STATISTICS SERVICE

TABLE 3 --- CALIFORNIA PISTACHIO ACREAGE, PRODUCTION, PRICE AND VALUE, 1980-99

Year	Acreage			Production				Value of Production	
	Bearing a/	Non-Bearing	Total Acres	Marketable In-Hull	Shelling Stock	Total	Yield Per Bearing Acre	Grower Return Per Pound	Total Value
	Acres			1,000 Pounds (In-Hull Basis)			Pounds	Cents	$1,000
1980	26,000	9,000	35,000	18,600	8,300	26,900	1,030	205.0	55,145
1981	27,500	13,100	40,600	11,300	3,200	14,500	527	136.0	19,720
1982	29,900	15,600	45,500	39,600	4,400	44,000	1,470	149.0	66,560
1983	31,100	16,000	47,100	20,700	5,700	26,400	849	141.0	37,224
1984	30,800	16,800	47,600	45,200	17,900	63,100	2,050	97.6	61,586
1985	32,300	18,700	51,000	23,100	4,000	27,100	839	137.0	37,127
1986	34,200	20,400	54,600	57,500	17,400	74,900	2,190	112.0	83,888
1987	41,000	16,400	57,400	27,200	5,900	33,100	807	137.0	45,347
1988	47,200	10,300	57,500	76,100	17,900	94,000	1,990	122.0	114,680
1989	50,900	12,000	62,900	33,000	6,000	39,000	766	163.0	63,570
1990	53,700	11,100	64,800	94,600	25,400	120,000	2,230	102.0	122,400
1991	55,700	13,300	69,000	59,000	18,000	77,000	1,280	125.0	96,250
1992	56,500	13,900	70,400	114,500	32,500	147,000	2,600	103.0	151,410
1993	57,000	15,700	72,700	113,000	39,000	152,000	2,670	107.0	162,640
1994	57,500	16,600	74,100	94,600	34,400	129,000	2,235	92.1	118,809
1995	60,300	13,400	73,700	107,500	40,500	148,000	2,454	109.0	161,320
1996	64,300	17,100	81,400	85,000	20,000	105,000	1,630	116.0	121,800
1997	65,400	17,000	82,400	137,000	43,000	180,000	2,750	113.0	203,400
1998	65,900	N/A	N/A	138,000	50,000	188,000	2,850	103.0	193,640
1999	68,000	N/A	N/A	b/	b/	b/	b/	b/	b/

a/ Bearing acreage for 1988 to date is defined as plantings that are six years old and older. Bearing acreage for 1980 through 1987 is defined as plantings that are seven years old and older.

b/ Pistachio price, total crop value, and production will be available in January 2000.

The California Agriculture Statistics Service would like to thank the California Pistachio Industry for their cooperation and support!