

PERMANENT
RECORD FILE

1986

**ALMOND OBJECTIVE
MEASUREMENT SURVEY**

**CALIFORNIA CROP & LIVESTOCK
REPORTING SERVICE**

P.O. BOX 1258

SACRAMENTO, CALIFORNIA 95806

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1986 ALMOND OBJECTIVE MEASUREMENT SURVEY

I. Results

Based on the findings of the 1986 Objective Measurement Survey, California almond production is estimated at 265 million meat pounds as of July 1, down 43 percent from the crop of 465 million meat pounds produced in 1985. At this level, the 1986 crop will be the smallest since 1983 and the second smallest since 1978. Of the last 21 years, only 1968 and 1978 had a lower yield per bearing acre. Nonpareil production is forecast at 150 million meat pounds comprising 57 percent of the total production forecast.

The 1986 forecasted bearing acreage is 418,000 acres, up 2 percent from the 1985 level and 62,000 more acres (17 percent) than were in production in 1983.

The average set of nuts per tree is estimated at 3,723, down 50 percent from the 7,373 average in 1985 and 6 percent less than the 1983 set of 3,949.

The average kernel weight was 1.84 grams which is 5 percent higher than the ten year average of 1.75 grams.

II. Survey History

The Almond Objective Measurement Survey began in 1962 to fulfill industry needs for an accurate almond production forecast prior to harvest.

To determine tree set, we use a method which counts nuts along a path that starts at the trunk and ends at the end of a terminal branch on the tree. This path is random in that, at each forking, only one of the branches is randomly selected to continue the path. In this way it is possible to end up at any of the tree's terminal branches. This method of selecting branches, wherein each branch at a forking is given probability of selection proportional to its cross-sectional area, is used because it has the highest statistical efficiency. Along intermediate stages, i.e., the bearing surface between forkings, every fifth nut is picked. All nuts on the terminal branch are picked. The path chosen has a certain probability of selection associated with it, and this is used to expand the counts along the path in order to arrive at an estimated set for the entire tree.

A Growth Survey was conducted from 1962 to 1968 to establish the growth pattern of nuts. The Survey determined that in-hull growth was generally complete by June 1st. A Post-Harvest Survey was conducted during November from 1962 through 1967 to provide information about varietal shelling ratios. A Nut Drop Survey indicated that the nut drop was substantially over by June 1st. Tree density, an important forecasting factor, results from information contained in the Fruit and Nut Acreage Survey. A table indicating trees per acre for the last 10 years is included in this report.

III. Field Sampling Activities

The Survey began May 30 in the San Joaquin Valley and sampling in all areas of the State was in full swing by June 6th. Sampling was completed on June 21st.

There were 1,605 trees sampled for the 1986 Survey in approximately 808 orchards. An additional 153 trees were not sampled for one of the following reasons:

- 1) orchard was wet
- 2) orchard had been pulled
- 3) owner refused to cooperate or could not be contacted

IV. 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.

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TABLE 2: CALIFORNIA ALMOND ACREAGE AND PRODUCTION, 1966-86

Year	Bearing Acres ^{1/}	Meat Production		
		Total		Per Bearing Acre
	<u>Acres</u>	<u>Metric Tons</u>	<u>Million Lbs.</u>	<u>Lbs.</u>
1966	118,260	43,000	95.4	807
1967	124,600	38,000	82.8	665
1968	135,120	37,000	80.8	598
1969	149,030	60,000	132.0	886
1970	169,920	68,000	149.0	877
1971	187,770	73,000	162.0	863
1972	198,910	68,000	151.0	759
1973	213,560	70,000	155.0	726
1974	231,200	104,000	230.0	995
1975	248,760	84,000	186.0	748
1976	256,850	129,000	284.0	1,106
1977	276,500	142,000	313.0	1,132
1978	303,600	82,000	181.0	596
1979	322,600	171,000	376.0	1,166
1980	326,800	146,000	322.0	985
1981	326,210	185,000	408.0	1,251
1982	339,320	157,000	347.0	1,023
1983	356,220	113,000	240.0	674
1984	379,565	266,000	587.0	1,486
1985	409,243	211,000	465.0	1,136
1986	418,000 ^{2/}	120,000	265.0 ^{3/}	634 ^{3/}

^{1/} Bearing acreage defined to be plantings 4 years and older.

^{2/} Preliminary figure.

^{3/} July forecast.

TABLE 3: COMPARISON OF NUT ESTIMATES AND ORCHARDS SAMPLED BY AREA AND VARIETY
JUNE OBJECTIVE MEASUREMENT SURVEY COUNTS

Area or Variety	1981			1982			1983			1984			1985			1986		
	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)	7,598	794		5,982	768		3,949	776		9,216	804		7,373	843		3,723	808	
BY DISTRICTS District I 1/ Sacramento Vly.	10,124	196		5,678	174		3,046	186		9,537	193		7,602	182		3,660	178	
District II 2/ San Joaquin Vly.	7,006	575		6,338	573		4,353	572		9,297	595		7,463	647		3,775	624	
Contra Costa & S.L.O. Counties	3,006	23		1,238	21		389	18		2,370	16		194	14		191	6	
BY VARIETIES Calif. Types 3/ Merced	8,955	48		6,844	48		4,091	61		10,202	82		8,746	108		3,786	120	
Mission	8,313	62		6,822	63		4,946	63		9,349	60		7,957	56		3,567	50	
Ne Plus Ultra	8,410	112		6,453	112		4,544	101		8,556	104		7,890	101		4,784	92	
Nonpareil	7,097	59		4,327	53		3,517	54		6,699	55		6,499	54		2,445	52	
	7,124	430		5,924	421		3,753	428		9,592	443		7,017	449		3,606	417	

1/ Sacramento Valley District includes Butte, Colusa, Glenn, Solano, Sutter, Tehama, Yolo, and Yuba counties.

2/ San Joaquin Valley District includes Fresno, Kern, Kings, Madera, Merced, San Joaquin, Stanislaus, and Tulare counties.

3/ California types include the following varieties: Ballico, Carmel, Davey, Fritz, Harvey, Le Grand, Mono, Norman, Price Cluster, Ruby, Tokyo, and Yosemite.

Table 4: CALIFORNIA FRUIT AND NUT ACREAGE AS OF 1985--VARIETIES AND AGE GROUPS--STATE SUMMARY
ACREAGE PLANTED DURING YEARS SHOWN AND STANDING IN 1985

CROP AND VARIETY	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	ACRES STANDING IN 1985:
	AND													NON-
	EARLIER													BEARING: TOTAL:
ALMONDS														
BALLICO	71	0	0	0	0	0	0	0	0	0	0	0	0	71
BUTTE	300	45	25	47	31	88	288	541	905	416	276	41	38	2,270
CARMEL	3,237	3,153	2,725	1,029	1,025	2,462	6,082	5,227	8,968	5,095	1,889	977	395	33,908
DAVEY	1,983	34	1	3	0	0	0	0	0	0	0	0	0	142
DAKE	2,879	34	7	5	0	0	0	0	0	0	0	0	0	1,998
EARLY MISSION	63	0	0	0	0	0	0	0	0	0	0	0	0	2,928
EMERALD	137	28	103	35	70	136	75	192	307	157	40	17	77	1,083
HARVEY	956	400	362	90	12	30	207	118	61	0	0	0	0	2,236
HUSHAM	0	0	0	0	0	0	236	145	0	78	62	0	0	573
IXL	1,583	0	0	0	0	0	26	2	1	0	0	0	0	1,612
JEFFRIES	0	0	0	0	0	0	238	66	304	0	0	0	0	669
JORDANLO	803	0	1	2	0	0	0	0	0	0	0	0	0	806
JUBILEE	90	0	0	0	0	0	0	0	0	0	0	0	0	90
KAPANEIL	410	8	6	4	23	0	0	25	3	8	68	0	0	481
LE GRAND	279	385	60	100	67	134	77	125	236	88	1,463	139	0	1,463
LEVELLING	120	0	0	0	0	0	0	0	0	0	0	0	0	120
LIVINGSTON	0	5	12	10	32	21	25	4	7	8	0	0	0	122
LONG IXL	136	0	0	0	0	0	0	0	0	0	0	0	0	136
MERCED	19,311	2,875	1,434	311	137	211	565	103	42	7	31	5	2	24,989
MONO	385	198	80	68	26	92	192	158	41	47	14	9	0	1,240
MONTENEY	11	0	23	8	16	50	259	451	519	990	275	39	1	1,328
N-43	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NE PLUS ULTRA	16,974	832	802	375	391	595	426	848	521	200	33	15	2	21,754
NONPAREIL	136,773	19,679	12,842	3,827	2,634	6,465	11,749	11,686	14,938	6,195	1,933	1,056	701	220,593
NORMAN	917	29	19	14	0	63	13	0	0	12	0	0	0	1,055
PADRE	6,146	280	372	203	81	269	524	1,047	895	435	69	0	0	9,817
PEERLESS	1,506	671	790	388	337	947	1,672	2,453	3,623	1,319	477	170	106	12,387
PRICE CLUSTER	43	8	4	4	11	0	7	0	0	0	0	0	0	73
RIPON	615	50	128	73	42	45	274	252	388	258	98	41	20	1,867
RUBY	13	0	0	0	0	11	105	225	43	0	7	0	15	1,867
SAURET #1	22	0	0	6	0	6	198	164	28	2	0	0	0	397
SAURET #2	36,388	4,063	2,438	692	455	729	985	1,160	1,516	632	348	79	35	424
TEXAS/MISSION	8,182	779	754	161	110	180	115	27	66	100	49	9	13	48,426
THOMPSON	20	3	11	0	0	0	0	0	0	0	0	0	0	10,374
TIOGA	38	202	75	30	16	71	82	73	46	43	0	0	0	90
TOKYO	106	3	0	0	0	0	0	0	0	0	0	0	0	632
TREMBATH/BAKERS SOLG	236	62	36	25	18	63	137	95	111	40	8	0	0	106
YOSEMITE	1,245	285	29	66	50	54	155	69	60	99	32	20	9	783
OTHER														2,013
CROP TOTAL	242,027	34,105	23,141	7,586	5,664	12,895	24,737	25,390	33,698	16,224	5,771	2,530	1,496	409,243
														26,021
														435,264

TABLE 5: BEARING TREES PER ACRE, 1976-1986

Year	Average No. Trees/Acre	Year	Average No. Trees/Acre
1976	80.5	1981	81.4
1977	80.3	1982	81.8
1978	80.1	1983	82.6
1979	80.4	1984	83.0
1980	81.1	1985	84.0
		1986	84.5