1989 ALMOND OBJECTIVE MEASUREMENT SURVEY

I. Results

The July 1989 almond forecast is 425 million meat pounds based on 402,000 bearing acres. The July forecast is down 6 percent from June and 28 percent from last year. The Nonpareil variety is forecast at 235 million meat pounds, 33 percent below 1988. The Nonpareil variety represents 55 percent of the total almond production.

The average nut set per tree was 6,352, down 24 percent from 1988 season. The average nut set for Nonpareil was 6,019, down 32 percent from last year.

The average kernel weight was 1.54 grams, down 2 percent from 1988. A total of 94 percent of the nuts sized were sound.

The almond crop is progressing well. The condition and quality is good to excellent. Nut sizes are slightly larger than normal.

II. Survey Procedures

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. Each branch at a forking has a given probability of selection proportional to its cross-sectional area. This methodology is used because of its statistical efficiency. The 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. 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 known probability of selection associated with it and thus can be used to expand the counts along the path in order to arrive at an estimated set for the entire tree.

III. Field Sampling Activities

The Survey began May 26th in southern California, with the remaining part of the State underway by May 31st. Sampling was completed by June 22nd. There were 1,596 trees sampled for the 1989 survey in 796 orchards. An additional 74 orchards were not sampled for one of the following reasons:

1) Orchard had been sprayed (a major problem this year); lost 29 samples compared to last year's 4 samples.
2) Orchard was wet.
3) Orchard had been pulled.
4) 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.

CALIFORNIA FRUIT AND NUT ACREAGE AS OF 1988—VARIETIES AND AGE GROUPS—STATE SUMMARY
ACREAGE PLANTED DURING YEARS SHOWN AND STANDING IN 1988

CROP AND VARIETY	1976 AND EARLIER	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	ACRES STANDING IN 1988: NON-BEARING	BEARING	TOTAL
ALMONDS																
BALLICO	65	0	0	0	0	0	0	0	0	0	0	0	0	65	0	65
BUTTE	426	31	88	270	531	964	701	349	215	126	109	390	422	3,575	1,047	4,622
CARMEL	9,914	1,101	2,588	6,189	5,740	9,337	6,182	2,185	1,759	1,255	928	909	1,161	44,995	4,253	49,248
CARRIENS	8	19	2	4	34	65	0	18	0	1	0	11	8	150	20	170
DAVEY	1,103	0	0	0	1	0	0	0	0	1	0	0	32	1,104	33	1,137
DRAKE	2,144	0	0	0	0	0	0	0	0	0	0	0	0	2,144	0	2,144
EARLY MISSION	52	8	3	6	1	0	0	0	0	0	0	13	0	70	13	83
EMERALD	50	0	0	0	0	0	0	0	0	0	0	0	0	50	0	50
FRITZ	338	69	155	100	254	471	272	96	102	260	176	92	140	1,857	668	2,525
HARVEY	1,776	12	30	385	73	124	68	0	8	0	4	0	0	2,476	4	2,480
HASHAM	0	50	136	230	145	0	78	62	0	0	0	0	0	701	0	701
IXL	972	0	0	0	2	1	0	0	0	0	0	0	0	975	0	975
JEFFRIES	31	0	30	177	132	261	0	0	0	0	0	0	0	631	0	631
JORDANOLO	444	0	0	6	0	0	0	1	0	0	0	0	0	451	0	451
JUBILEE	75	0	0	0	0	0	0	0	0	0	0	0	0	75	0	75
KAPAREIL	328	3	14	3	25	4	13	11	1	2	0	0	0	402	2	404
LE GRAND	781	73	136	102	111	230	88	43	0	0	0	0	0	1,564	0	1,564
LEWELLING	54	0	0	0	0	0	0	6	0	0	0	0	0	60	0	60
LIVINGSTON	32	32	21	25	4	7	11	5	0	0	6	15	28	137	49	186
MERCED	21,305	171	192	422	171	91	48	15	23	82	28	21	24	22,438	155	22,593
MONO	860	26	99	187	159	36	47	8	32	13	0	15	0	1,454	28	1,482
MONTEREY	52	14	48	300	442	559	1,198	283	75	124	18	55	85	2,971	282	3,253
N-43	0	0	0	0	60	0	0	0	0	0	0	0	0	60	0	60
NE PLUS ULTRA	15,092	390	636	532	754	609	328	72	84	30	10	15	45	18,497	100	18,597
NONPAREIL	150,264	2,657	6,706	12,220	12,370	16,402	7,741	2,607	2,476	1,933	1,416	1,172	1,446	213,443	5,967	219,410
NORMAN	815	0	23	68	0	0	12	0	0	0	1	0	0	918	1	919
PADRE	0	0	0	0	0	0	37	9	0	0	2	86	141	46	229	275
PEERLESS	6,179	82	285	626	1,123	1,414	604	192	167	157	93	84	69	10,672	403	11,075
PRICE CLUSTER	3,393	301	1,018	2,099	2,374	4,067	1,821	604	519	445	173	245	149	16,196	1,012	17,208
RIPON	46	11	0	0	0	0	0	0	0	0	0	0	0	57	0	57
RUBY	747	48	45	248	248	405	397	151	106	66	30	78	176	2,395	350	2,745
SAURET #1	23	0	11	184	117	55	6	7	2	15	0	1	1	405	17	422
SAURET #2	64	0	6	121	133	43	2	0	3	10	0	0	0	372	10	382
SMITH XL	22	0	0	12	0	1	34	0	0	1	0	0	0	69	1	70
SONORA	0	0	0	0	0	0	0	0	12	40	4	29	72	12	145	157
TEXAS/MISSION	35,482	466	834	1,007	1,375	1,594	999	465	289	117	187	327	411	42,511	1,042	43,553
THOMPSON	9,276	125	169	110	88	66	151	56	15	9	0	0	5	10,056	14	10,070
TIOGA	23	0	8	0	36	12	1	0	0	0	0	0	0	80	0	80
TOKOYO	359	16	81	82	73	46	40	0	0	24	0	0	0	697	24	721
TREMBATH/BAKERS SDLG	53	0	0	0	0	0	0	0	0	0	0	0	0	53	0	53
YOSEMITE	381	18	66	137	87	104	40	8	0	0	0	0	0	841	0	841
OTHER	851	51	67	123	99	64	107	35	19	25	42	56	89	1,416	212	1,628
CROP TOTAL	263,880	5,774	13,497	25,975	26,762	37,032	21,026	7,288	5,907	4,736	3,227	3,614	4,504	407,141	16,081	423,222

TABLE 1: WEIGHT, SIZE, AND GRADE OF AVERAGE ALMOND SAMPLE

District and Variety	Weight (Grams)		Size (Millimeters)					Grade (Percent of Nuts) a/						
			Suture		Kernel			Edible Nuts						
	In-Hull	Kernel	In-Hull	In-Shell	Length	Width	Thickness	Singles	Doubles	Insect Damage	Shrivel	Natural Gum	Blank	Other
ALL DISTRICTS	DISTRICT (Weighted by bearing acreage)													
1985	10.83	1.51	26.19	20.58	23.03	13.07	9.88	93.6	4.7	b/	0.8	0.2	0.1	0.5
1986	13.53	1.84	28.22	22.16	24.80	14.23	10.73	94.2	1.8	b/	2.4	0.4	0.1	1.1
1987	10.41	1.53	26.38	20.82	23.00	13.53	10.12	93.8	4.4	b/	1.0	b/	0.1	0.7
1988	10.91	1.57	26.30	20.73	22.75	13.20	10.21	93.7	3.1	b/	1.2	0.6	0.1	1.2
1989	11.52	1.54	26.34	20.79	23.84	13.04	9.64	95.1	2.1	b/	1.1	0.3	0.1	1.3
BY DISTRICT														
Sacramento Valley														
1985	10.12	1.39	25.50	21.47	22.58	12.38	9.29	92.5	4.9	0.1	0.8	0.2	0.3	1.2
1986	13.39	1.81	28.08	23.40	25.14	13.67	10.77	93.7	3.5	b/	1.5	0.5	b/	0.7
1987	10.34	1.48	26.61	22.15	23.30	13.50	9.91	93.5	5.1	b/	0.6	0.1	0.2	0.5
1988	10.46	1.50	25.69	22.22	22.58	12.74	10.00	93.8	3.9	b/	0.7	0.2	0.2	0.9
1989	12.70	1.60	27.67	23.94	24.60	13.30	9.46	93.0	5.0	b/	0.5	0.4	0.3	0.7
San Joaquin Valley														
1985	11.05	1.55	26.41	20.29	23.18	13.28	10.06	93.9	4.7	b/	0.8	0.2	b/	0.3
1986	13.57	1.85	28.27	21.78	24.69	14.40	10.72	94.4	1.3	b/	2.7	0.4	0.1	1.2
1987	10.43	1.54	26.31	20.43	22.92	13.55	10.19	93.9	4.2	b/	1.1	b/	b/	0.7
1988	11.06	1.59	26.49	20.26	22.82	13.35	10.29	93.7	2.8	b/	1.4	0.7	0.1	1.3
1989	11.27	1.53	26.06	20.10	23.69	12.99	9.69	95.6	1.5	b/	1.2	0.3	b/	1.4
Contra Costa & San Luis Obispo Counties														
1985	11.70	1.27	26.60	20.92	21.96	12.56	8.42	89.2	1.7	b/	4.4	3.6	b/	0.7
1986	15.85	1.93	30.70	24.63	24.93	14.64	10.77	96.6	b/	b/	b/	3.4	b/	b/
1987	9.29	1.12	25.82	20.25	21.03	12.59	8.33	92.7	3.2	b/	1.5	b/	b/	2.6
1988	10.10	1.15	25.56	19.73	20.31	12.40	8.84	98.7	0.8	b/	0.4	b/	b/	0.1
1989	9.72	1.11	25.58	20.07	20.73	12.14	8.15	95.6	0.9	0.4	1.4	0.4	b/	1.4
BY VARIETY														
California Types c/	VARIETY													
1985	9.44	1.45	24.35	19.04	22.99	12.40	9.95	92.4	6.1	b/	0.8	0.1	0.1	0.5
1986	12.16	1.69	26.21	20.36	25.18	13.10	10.40	94.4	1.4	b/	2.9	0.1	0.1	1.0
1987	9.00	1.42	24.31	18.94	22.40	12.49	10.15	91.9	6.4	b/	0.9	b/	b/	0.8
1988	9.28	1.45	24.29	18.87	22.22	12.31	10.07	93.0	3.3	b/	1.8	0.7	0.1	1.2
1989	9.58	1.38	23.87	18.76	23.58	11.98	9.48	94.4	2.3	b/	1.4	0.1	b/	1.7
Carmel d/														
1988	9.44	1.48	24.34	18.70	22.84	12.29	10.01	93.9	2.6	b/	1.4	1.0	0.1	1.1
1989	9.44	1.39	23.56	18.37	23.96	11.89	9.47	95.3	1.7	b/	1.0	0.1	b/	1.8
Merced														
1985	10.03	1.50	25.55	19.65	21.76	13.17	10.48	93.6	3.7	0.1	1.4	0.6	0.1	0.4
1986	12.45	1.73	27.43	21.18	23.30	14.04	10.98	93.7	0.9	b/	2.5	1.7	b/	1.0
1987	9.74	1.53	25.99	20.03	21.33	13.51	10.77	88.2	8.4	b/	2.2	0.3	b/	0.7
1988	11.04	1.59	26.34	20.08	21.92	13.35	10.65	88.0	4.1	b/	2.0	3.6	0.3	2.1
1989	10.42	1.49	25.28	19.18	22.30	12.77	10.07	92.6	3.6	b/	1.5	1.2	b/	1.1
Mission														
1985	7.88	1.22	24.40	18.64	19.30	12.27	10.12	96.9	1.8	b/	0.6	0.2	b/	0.5
1986	10.09	1.56	25.91	19.81	21.38	13.46	11.13	93.7	2.8	b/	1.4	0.4	b/	1.8
1987	8.53	1.28	25.09	19.33	19.94	12.89	10.67	93.4	4.5	b/	0.8	0.1	0.1	1.2
1988	8.22	1.33	24.77	19.19	19.36	12.62	10.76	95.5	1.4	b/	0.7	0.2	b/	2.0
1989	8.60	1.25	24.69	18.92	20.23	12.14	9.84	96.6	1.4	b/	0.4	0.2	b/	1.4
Ne Plus Ultra														
1985	11.93	1.76	26.55	21.14	26.15	12.96	10.02	80.9	16.7	b/	0.8	0.3	0.3	0.9
1986	15.20	2.19	29.33	22.99	28.02	14.54	10.62	84.4	7.1	0.1	4.5	1.3	b/	2.6
1987	11.12	1.84	26.96	21.35	26.36	13.72	10.42	79.9	17.8	b/	1.7	b/	b/	0.5
1988	12.61	1.88	27.65	21.95	26.64	13.65	10.27	78.3	16.3	b/	3.0	0.6	b/	1.4
1989	12.04	1.77	26.84	21.36	26.91	13.22	9.71	86.3	9.7	b/	1.9	0.2	b/	1.8
Nonpareil														
1985	12.07	1.62	27.35	21.62	24.14	13.54	9.76	94.8	3.7	b/	0.8	0.1	b/	0.5
1986	14.90	1.97	29.54	23.40	25.80	14.82	10.68	95.7	0.6	b/	2.5	0.2	0.1	0.7
1987	11.21	1.59	27.24	21.70	23.78	13.97	9.95	96.3	2.1	b/	1.0	b/	b/	0.6
1988	11.82	1.64	27.20	21.65	23.52	13.59	10.13	95.5	2.2	b/	1.0	0.3	0.1	0.8
1989	12.99	1.67	27.80	22.06	24.73	13.73	9.64	96.5	1.1	b/	1.0	0.2	0.1	1.1

a/ Percentages may not add to 100 due to rounding.
b/ Not shown if less than 0.07 percent.
c/ California types include the following varieties: Ballico, Carmel, Davey, Fritz, Harvey, Le Grand, Mono, Monterey, Norman, Price Cluster, Ruby, Tokoyo, and Yosemite.
d/ The Carmel breakdown was available for the first time in 1988. Carmel variety is still included in California Types.
NOTE: Sacramento Valley includes these counties: Butte, Colusa, Glenn, Solano, Sutter, Tehama, Yolo, and Yuba.
San Joaquin Valley includes these counties: Fresno, Kern, Kings, Madera, Merced, San Joaquin, Stanislaus, and Tulare.

TABLE 2: CALIFORNIA ALMOND ACREAGE, PRODUCTION AND TREES/ACRE, 1985-89

Year	Bearing Acres a/	Total Meat Production			Average Trees Per Acre
		Metric Tons b/	Million Lbs.	Lbs. Per Acre	
1985	409,200	211,000	465	1,140	84.0
1986	415,700	113,000	250	602	84.0
1987	417,000	299,000	660	1,580	85.4
1988	407,000	268,000	590	1,450	86.3
1989 c/	402,000	193,000	425	1,060	86.0

a/ Bearing acreage defined to be plantings 4 years and older.
b/ Rounded to nearest thousand.
c/ July forecast.

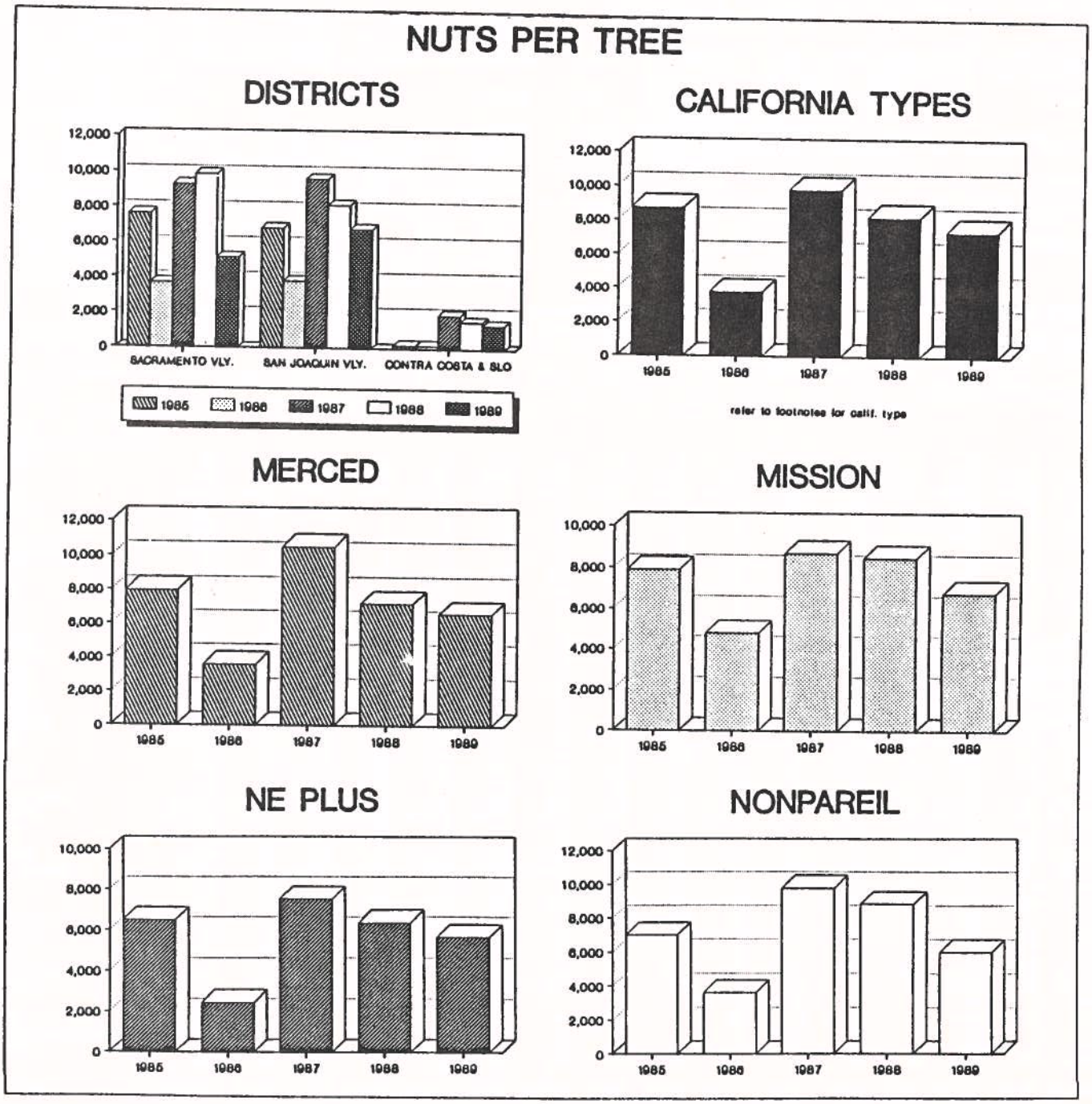

TABLE 3: COMPARISON OF NUT ESTIMATES AND ORCHARDS SAMPLED BY DISTRICT AND VARIETY, JUNE OBJECTIVE MEASUREMENT SURVEY COUNTS

DISTRICT AND VARIETY	1985		1986		1987		1988		1989	
	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)	7,373	843	3,171	808	9,410	835	8,386	850	6,352	795
BY DISTRICTS										
District I Sacramento Vly.	7,602	182	3,660	178	9,261	175	9,835	177	5,136	172
District II San Joaquin Vly.	6,803	647	3,775	624	9,600	647	8,123	661	6,765	615
Contra Costa & S.L.O. Counties	194	14	191	6	1,910	13	1,535	12	1,367	9
BY VARIETIES										
Calif. Types c/	8,746	108	3,786	120	9,835	144	8,253	154	7,421	153
Carmel d/	n/a	n/a	n/a	n/a	n/a	n/a	8,184	88	7,855	90
Merced	7,957	56	3,567	50	10,477	46	7,199	51	6,561	43
Mission	7,890	101	4,784	92	8,699	94	8,479	87	6,768	78
Ne Plus Ultra	6,499	54	2,445	52	7,525	42	6,354	43	5,639	38
Nonpareil	7,017	449	3,606	417	9,793	443	8,843	457	6,019	431

See footnotes on page 2.

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