

1999

Progress Report

**REGIONAL ALMOND
VARIETY TRIALS**

Planted in 1993

University of California

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REGIONAL ALMOND VARIETY TRIALS

Planted in 1993

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Background

Regional Almond Variety Trials (RAVTs) were designed to evaluate newer varieties in a semi-commercial (20 to 40 trees per variety) manner and to compare them to standard varieties such as Nonpareil, Mission and currently accepted pollenizers.

Previous RAVTs were established between 1974 and 1981 in Kern, Colusa, Butte, San Joaquin and Fresno Counties. These trials were planted over several years and had trees of different ages and variety combinations. Thus, the data from these trials were not directly comparable and at this point data collection has ended.

1993 Trials

Three new RAVTs were established in 1993, and this leaflet presents data collected from these trials in 1999. These RAVTs are located in Butte County at the California State University at Chico farm (CSU-Chico), in San Joaquin County at the San Joaquin Delta College farm (Delta College) near Manteca and in Kern County at a Paramount Farming Company orchard (Kern) located south of Shafter and just off of 7th Standard road. At all locations signs are in place to identify each variety.

To be comparable these three new trials were all planted in the same year and with essentially the same variety composition. Thus, any differences in varietal performance among various regions should become evident. The only differences in variety composition among these trials were that Fritz was not included at the CSU-Chico trial (it was in the previous trial at this location) and Dottie Won was added to the Delta College plot. Some trees were planted/replanted after 1993. A few trees of several varieties were not available in 1993, especially for the Delta College trial. Vandalism and a tornado destroyed a few trees at CSU-Chico and normal replanting has occurred at all locations.

Varieties were planted on peach rootstock; Lovell for those at CSU-Chico and Nemaguard for trees in the Delta College and Kern plots. One exception, Kapareil, is being grown on both peach and peach-almond hybrid rootstocks at all locations, but data isn't always included in this publication for the trees on peach-almond hybrid.

The Kern plot is planted on a Milham sandy loam soil and is irrigated with a drip system (it was

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irrigated with micro-sprinklers prior to 1999). The trial at CSU-Chico is on a Vina loam soil and is irrigated with solid-set sprinklers. The Delta College trial is on a Delhi loamy sand soil and is flood irrigated. Probably as a result of the coarse textured soil and flood irrigation, the trees in this latter trial are generally somewhat smaller than those in the other two RAVTs. In the Delta College trial there appears to be a sandier area in the middle of the orchard where trees are more subject to periodic moisture stress.

Varieties Included

Standard varieties are planted 1:1 with new varieties Nonpareil for the early-mid blooming varieties and Mission for the late blooming varieties to ensure adequate pollination. In the Kern and Delta College trials, varieties are planted as a full row of 29 to 38 trees. With longer rows at CSU-Chico, each row has three different variety sections, with 21 to 25 trees per section. In addition to Nonpareil and Mission, a plot of each of seven "new standard" varieties (other varieties commonly planted today) has been included. These new standard varieties are Butte, Carmel, Fritz (not at CSU-Chico), Monterey, Padre, Price and Sonora.

The new varieties being tested in these trials are Aldrich, Chips, Donna, Dottie Won (Delta College only), Kahl, Kapareil, Jenette, Jiml, Johlyn, Livingston, Morley, Plateau, Rosetta, Ruby, Sano, Savana, Wood Colony and Yokut. While several of these varieties are not new to the almond industry, they had not been adequately tested in the uniform RAVT concept. In addition six numbered selections from a University of California at Davis almond breeding program were included in these trials. These are 1-87, 1-102W, 2-19E, 2-43W, 13-1 and 25-75.

Data to be collected from these trials include bloom time, hullsplit/harvest time, yield, and nut quality. Trees in these trials are also being observed and evaluated for growth characteristics, pest and disease susceptibility and noninfectious bud failure symptoms.

1999 Data and Observations

This 1999 report includes information, mostly in table or graph form, on bloom time, hullsplit/harvest time, yields, shelling percentage (percent kernel) and kernel defects. In addition previous years and accumulated yield data are given. Some information on disease susceptibility is also included; although, diseases were generally not a serious problem in 1999. However, in the Kern trial there was some indication that severe disease (*Alternaria*) infection in 1998 may have adversely affected yields in 1999.

With good bloom time weather this spring, yields for many but not all varieties were very good for trees in their **seventh growing season**. On a **per tree basis**, overall yields were similar for all three trials. However, in the early bearing years tree spacing can have a significant impact on **production per acre**, and trees per acre vary in these RAVTs with 86 trees per acre in the Kern trial, 64 trees per acre in the CSU-Chico trial and 75 trees per acre in the Delta College trial.

Over the last four years, Kahl, Sano and Plateau have had the most double kernels, all having as many or more than Monterey. Both Kahl and Donna have had eight percent or more blank kernels in at least one of the trials each year. While worm damage was generally low in 1999, Kapareil has had four percent or more worm damage every year in at least one trial.

Considerable splitting (breakage) and lost of scaffold limbs, and sometimes entire trees, has occurred in both the CSU-Chico and Delta College trials. It is uncertain as to the exact cause of this splitting, but it

may be a result of the wide tree spacing and tree damage from a 1995 tornado at the CSU-Chico trial and the prevailing wind, heavy crops and lack of sufficient tree tying at the Delta College plot. Lost of scaffold limbs and trees have been taken into account in calculating per acre yields. Even without the above conditions, scaffold splitting may be a problem with the Aldrich variety with its upright growth habit and narrow crotch angles. Thus, this variety will require special care in tree training.

To date only Yokut at the CSU-Chico trial has shown any indication of possible noninfectious bud failure (BF) symptoms, and these symptoms might be due to a virus condition that mimics BF. No other variety in any of the three trials has shown any signs of BF. U. C. selection 13-1 may be released in the near future as it has shown good production of very good quality nuts and should be a good pollinizer for Nonpareil. However, this selection may have some disease susceptibilities, especially to *Alternaria* and *Anthraco*se.

Acknowledgements

The authors wish to thank the Almond Board of California for helping with tree purchase and for continued support of this project. The following nurseries supplied trees at reduced cost for these trials: Bright's Nursery, Burchell Nursery, Dave Wilson Nursery, Fowler Nursery, Sierra Gold Nurseries and Spoto Nursery. We particularly want to express our appreciation and thanks to the staffs of California State University at Chico, San Joaquin Delta College and Paramount Farming Company for excellent cooperation and for managing and maintaining these trials. The assistance of retired farm advisor Donald Rough, Cooperative Extension field assistants in Kern, Butte and San Joaquin Counties and field personnel of the University of California Pomology Department is gratefully acknowledged.

Bloom Density at the Almond Regional Variety Trial – Chico, CSUC Farm

Variety	Bloom Density*			
	1996	1997	1998	1999
Sano	4	4	3	4
Kapareil	5	5	5	5
Kapareil/ PA	5	5	5	5
Sonora	4	2	5	4
Donna	3	3	3	4
Rosetta	3	4	2	3
13-1	5	4	3	4
Aldrich	4	5	3	5
Jiml	2	3	2	2
Jenette	4	5	3	5
Nonpareil	4	4	3	4
Wood Colony	4	3	3	3
Chips	3	4	4	4
Kahl	2	3	2	3
Plateau	2	3	3	3
2-43W	4	3	2	3
Johlyn	4	4	1	4
Price	1	1	4	2
Monterey	4	4	2	3
Carmel	3	3	3	5
Yokut	1	3	1	2
2-19E	3	3	2	5
Butte	4	4	3	4
Livingston	3	4	3	4
1-102W	4	4	4	4
Padre	3	3	4	5
Mission	3	3	3	3
1-87	3	3	3	3
Ruby	3	3	3	3
Morley	3	3	3	3
25-75	2	3	3	3
Savana	4	3	3	3

* The density of bloom is rated annually for each variety on a subjective scale of 1 to 5 with a rating of 5 being the heaviest bloom. Consistency of bloom from one year to the next and tendencies toward alternate bloom/bearing may be indicated by these ratings.

San Joaquin Delta College Almond Regional Variety Trial

Row	1999 Bloom Dates																
	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Chips									20	21	22	23	24	25	26	27	28
Nonpareil									20	21	22	23	24	25	26	27	28
Johlyn									20	21	22	23	24	25	26	27	28
Dottie Won											22	23	24	25	26	27	28
Jenette											22	23	24	25	26	27	28
Kahl												24	25	26	27	28	
Sano						16	17	18	19	20	21	22	23				
Yokut												24	25	26	27	28	
Plateau												26	27	28			
2-43W												24	25	26	27	28	
Morley																	
Savana																	
Kapareil												24	25	26	27	28	
Sonora																	
Rosetta						13	14	15	16	17	18	19	20	21	22		
13-1												23	24	25	26	27	28
Mission																	
Price										20	21	22	23	24	25	26	27
Aldrich												23	24	25	26	27	28
Wood Colony												22	23	24	25	26	27
Fritz										21	22	23	24	25	26	27	28
Jiml												22	23	24	25	26	27
Donna												22	23	24	25	26	27
Carmel												22	23	24	25	26	27
Monterey												24	25	26	27	28	
Butte																	
Livingston																	
1-87																	
Padre																	
2-19E																	
1-102W																	
Ruby																	
25-75												23	24	25	26	27	28

MARCH

FEBRUARY

= 10 TO 90%

**SAN JOAQUIN DELTA COLLEGE
REGIONAL ALMOND VARIETY TRIAL
1999 RAINFALL AND WIND SPEEDS
MANTECA**

February	Rain (inches)	Wind > 8 m.p.h.	March	Rain (inches)	Wind > 8 m.p.h.
1	0		1	0	
2	0		2	0	
3	0		3	0.08	
4	0		4	0	
5	0		5	0	
6	0.20	8.6	6	0	
7	0.55	8.1	7	0	
8	0.28		8	0.04	
9	0.55	10.9	9	0.04	
10	0		10	0	
11	0		11	0	
12	0		12	0	
13	0.04		13	0	
14	0		14	0	
15	0		15	0	
16	0.12		16	0	
17	0.20		17	0	
18	0.08		18	0	
19	0		19	0.20	
20	0.71		20	0	
21	0.04		21	0	
22	0		22	0.04	
23	0		23	0.08	
24	0		24	0.08	
25	0.04		25	0.24	
26	0		26	0	
27	0		27	0	
28	0		28	0	
			29	0	
			30	0.04	
			31	0.04	

Rainfall subtotal for:

January	3.11
February	2.80
March	.88
Grand Total	6.79

Shaded dates = Bloom period

EFFECTIVE BLOOM PERIOD
Kern RVT - Paramount Farming Company

Early Blooming Varieties			
	Bloom Period		
	Beginning	Full	End
Sano	02-15-99	02-24-99	03-03-99
Kapareil	02-12-99	02-24-99	03-05-99
Rosetta	02-15-99	02-25-99	03-05-99
Sonora	02-16-99	02-25-99	03-04-99
13-1	02-17-99	02-24-99	03-09-99

Mid-Season Blooming Varieties			
	Bloom Period		
	Beginning	Full	End
Nonpareil	02-18-99	02-27-99	03-07-99
Price	02-12-99	02-26-99	03-08-99
Jenette	02-17-99	02-25-99	03-07-99
Yokut	02-19-99	02-27-99	03-11-99
Johlyn	02-22-99	02-27-99	03-09-99
Plateau	02-22-99	03-01-99	03-08-99
Chips	02-19-99	02-27-99	03-05-99
Kahl	02-20-99	02-25-99	03-12-99
Fritz	02-22-99	02-27-99	03-12-99
Monterey	02-22-99	03-03-99	03-13-99
Aldrich	02-19-99	03-01-99	03-13-99
Wood Colony	02-22-99	03-03-99	03-13-99
1-102W	02-23-99	03-03-99	03-16-99
Jim1	02-20-99	02-28-99	03-09-99
Donna	02-18-99	02-28-99	03-05-99
Carmel	02-22-99	02-28-99	03-12-99
2-19E	02-24-99	03-03-99	03-17-99
2-43W	02-29-99	03-05-99	03-10-99

Late Season Blooming Varieties			
	Bloom Period		
	Beginning	Full	End
Butte	02-26-99	03-03-99	03-16-99
Livingston	02-26-99	03-03-99	03-16-99
Padre	02-26-99	03-03-99	03-16-99
1-87	02-26-99	03-03-99	03-16-99
25-75	02-28-99	03-03-99	03-20-99
Mission	02-25-99	03-03-99	03-12-99
Ruby	02-28-99	03-03-99	03-14-99
Morley	03-02-25	03-08-99	03-21-99
Savana	03-02-99	03-10-99	03-21-99

Bloom Observations:

Good Blooming Varieties: Kapareil, Rosetta, Aldrich, Monterey, Butte, Livingston, Padre, 2-19E, and 1-102W

Average Blooming Varieties: Nonpareil, Jenette, Sano, Plateau, 1-87, and Mission

Poor Blooming Varieties: Price, Johlyn, 2-43W, Wood Colony, Carmel, 13-1, Chips, Kahl, Yokut, Sonora, Fritz, Jiml, Donna, Ruby, 25-75, Morley and Savana

Chilling Hours: (11-02-98 to 01-31-99)
1,152

ALMOND REGIONAL VARIETY TRIAL - 1999 HARVEST MATURITY

Planted in 1993 at the California State University Farm, Chico

	July 21	29 August 3	12	19	26 September 2	9	16	23	29
Kapareil	B				S				
Kapareil/PA	B				S				
Nonpareil	B				S				
2-19E	B				S				
Donna			B		S				
Yokut			B		S				
Rosetta			B		S				S
Jimi					S				
25-75		B			S				
1-102W		B			S				
Sonora		B			S				
Johlyn		B			S				
Jenette		B			S				
Price			B		S				
1-87		B			S				
Sano			B		S				S
2-43W			B		S				
Wood Colony			B		S				S
Plateau		B			S				
Livingston				B	S				S
13-1			B		S				
Monley			B		S				S
Savana		B			S				
Butte			B		S				
Chips			B		S				
Aldrich			B		S				
Ruby			B		S				
Padre			B		S				
Carmel					B				S
Kahl			B		S				S
Monterey			B		S				S
Mission			B		S				S

Dashed line encompasses 1 to 100% hullsplit. B -- denotes blanks beginning to split. S -- indicates that the variety was shaken to the ground at the time of the observation. Five harvests were conducted this year to complete harvest in the entire block. This is a cooperative project between the Almond Board of California, California State University-Chico, and University of California Cooperative Extension. Prepared by: Joseph H. Connell, U.C. Farm Advisor, Butte County. 11/4/99.

**SAN JOAQUIN DELTA COLLEGE
REGIONAL ALMOND VARIETY TRIAL
1999 HULL SPLIT DATES
MANTECA**

Variety	10%	90%
Kapareil (1)	8/2	8/15
Nonpareil (2)	8/4	8/21
Donna (10)	8/7	8/23
Jiml (9)	8/10	8/23
Chips (21)	8/11	8/21
Sonora (6)	8/12	9/1
Johlyn (3)	8/13	9/1
25-75 (7)	8/13	9/3
Jenette (13)	8/16	9/12
Plateau (18)	8/17	9/16
2-43W (16)	8/18	9/16
13-1 (11)	8/18	9/12
Price (5)	8/18	9/8
Morley (14)	8/19	9/9
Rosetta (4)	8/19	9/4
Dottie Won (12)	8/22	9/8
Yokut (15)	8/22	9/12
Savana (28)	8/22	9/13
Aldrich (19)	8/26	9/18
Livingston (25)	8/29	9/20
1-87 (22)	8/31	10/2
Wood Colony (20)	9/1	9/20
Carmel (29)	9/1	10/1
Sano (17)	9/2	9/20
Monterey (24)	9/4	10/1
Butte (26)	9/4	10/1
Kahl (27)	9/7	9/20
Mission (32)	10/6	10/22
Padre (30)	10/6	10/22
2-19E (8)	10/6	10/21
Ruby (31)	10/7	10/22
1-102W (23)	10/8	10/21
Fritz (33)	10/21	NA

Numbers in () = 1998 order of hull split

HULLSPLIT PERIOD
Kern RVT - Paramount Farming Company

EARLY - SEASON		
	Hullsplt Period	
	Beginning*	End**
Kapareil	07-12-99	08-02-99
Nonpareil	07-16-99	08-11-99
2-19E	07-30-99	08-27-99
Sonora	07-23-99	08-16-99
Rosetta	07-31-99	08-19-99
2-43W	07-25-99	08-19-99
1-102W	08-02-99	08-23-99
Donna	07-30-99	08-16-99
Aldrich	08-11-99	09-09-99
Jiml	07-29-99	08-19-99
Jenette	08-11-99	09/01/99
Johlyn	07-28-99	08-27-99

MID-SEASON		
	HULLSPLIT PERIOD	
	Beginning*	End**
25-75	08-03-99	09-01-99
13-1	07-30-99	09-01-99
1-87	08-01-99	08-19-99
Price	07-24-99	08-19-99
Plateau	08-03-99	08-27-99
Chips	08-03-99	09-06-99
Savana	08-10-99	09-02-99
Morley	08-11-99	09-01-99
Wood Colony	08-04-99	08-19-99

MID to LATE SEASON		
	Hullsplit Period	
	Beginning*	End**
Sano	08-10-99	09-13-99
Yokut	08-03-99	09-06-99
Padre	08-08-99	09-06-99
Butte	08-09-99	09-06-99
Livingston	08-09-99	09-13-99
Kahl	08-13-99	09-06-99
Carmel	08-08-99	09-01-99
Ruby	08-19-99	09-16-99

LATE-SEASON		
	Hullsplit Period	
	Beginning*	End**
Mission	08-23-99	09-10-99
Monterey	09-03-99	09-27-99
Fritz	09-01-99	09-28-99

*Beginning means one to five percent of hullsplit.

**End means 100% hullsplit.

NOTES: The length of the hullsplit period depended on crop load. Varieties with a big crop took longer to complete hullsplit than varieties with a light crop.

The hullsplit was also affected by Alternaria Leaf Spot disease.

1999 Yield Summary for the Regional Almond Variety Trial at California State University at Chico Farm, Butte County. Planted in 1993

Variety	No. of Nuts/Tree	Average Kernel Weight (g)	Shelling Percentage	Kernel Pounds Per	
				Tree	Acre ¹
13-1	21094	0.92	51.1	42.7	2736
Plateau	11863	1.20	47.6	31.4	2007
Nonpareil	12540	1.10	62.3	30.5	1952
Johlyn	13006	1.02	68.9	29.2	1870
Ruby	11971	1.08	47.8	28.5	1823
Livingston	11810	1.06	58.9	27.6	1765
Carmel	10052	1.20	56.6	26.6	1700
Jiml	9820	1.18	56.7	25.5	1633
Sano	8773	1.26	53.8	24.3	1558
2-43W	11285	0.96	51.1	23.9	1527
1-102W	7613	1.38	62.2	23.1	1481
Wood Colony	8953	1.16	51.8	22.9	1464
Rosetta	8007	1.26	48.8	22.2	1422
Monterey	8333	1.20	45.5	22.0	1410
Jenette	8315	1.20	67.4	22.0	1407
Butte	10711	0.93	47.9	21.9	1404
Aldrich	10477	0.94	54.0	21.7	1388
Morley	10993	0.88	51.2	21.3	1364
2-19E	10840	0.88	47.8	21.0	1345
1-87	11884	0.80	48.8	20.9	1340
Kahl	9226	1.00	42.0	20.3	1301
Sonora	7218	1.24	71.3	19.7	1262
Padre	9297	0.96	51.1	19.7	1258
Price	8902	0.98	56.3	19.2	1230
Yokut	6779	1.26	54.8	18.8	1204
25-75	9100	0.86	54.4	17.2	1103
Chip's	7773	0.94	56.0	16.1	1030
Mission	6770	1.07	40.6	15.9	1018
Donna	7565	0.94	46.5	15.7	1003
Savana	7177	0.98	62.0	15.5	992
Kapareil	8344	0.80	65.6	14.7	941

¹Based on a spacing that gives 64 trees per acre.

1999 Yield Summary for the Regional Almond Variety Trial at San Joaquin Delta College Farm, Manteca, San Joaquin County. Planted in 1993.

Variety	No. of Nuts/Tree	Average Kernel Weight (g)	Shelling Percentage	Kernel Pounds Per	
				Tree	Acre ¹
Livingston	15575	1.08	66.7	37.1	2779
Carmel	13154	1.24	58.5	35.9	2695
Butte	15988	1.00	58.1	35.2	2641
Jenette	12390	1.26	73.3	34.4	2579
Plateau	10135	1.50	50.7	33.5	2511
Jiml	13092	1.16	63.0	33.5	2509
Sonora	11749	1.24	79.5	32.1	2407
Sano	10232	1.36	56.7	30.7	2299
Nonpareil	12036	1.13	69.5	30.0	2252
13-1	12937	1.04	59.8	29.6	2223
Wood Colony	10622	1.24	57.9	29.0	2176
Aldrich	12872	1.02	56.7	28.9	2169
Chip's	12419	1.04	59.8	28.4	2134
Fritz	11276	1.12	55.4	27.8	2086
Monterey	9340	1.30	50.0	26.7	2006
Ruby	9850	1.22	53.0	26.5	1985
Yokut	8707	1.36	55.3	26.1	1956
Kahl	10103	1.10	47.0	24.5	1836
Mission	9371	1.15	46.4	23.7	1780
Rosetta	8001	1.32	51.2	23.3	1745
Price	10693	0.98	61.3	23.1	1731
Dottie Won	9518	1.06	53.0	22.2	1667
1-87	10766	0.90	57.7	21.3	1601
Johlyn	7881	1.16	72.5	20.1	1510
Morley	8480	1.00	46.3	18.7	1401
Donna	8441	1.00	53.2	18.6	1394
Padre	7372	1.10	55.0	17.9	1340
Kapareil	10093	0.72	70.6	16.0	1200
2-43W	6973	1.04	62.7	16.0	1198
2-19E	5770	1.06	58.2	13.5	1010
1-102W	3643	1.56	69.0	12.5	939
Savana	3912	1.16	65.9	10.0	750
25-75	3564	0.92	60.5	7.2	542

¹Based on a spacing that gives 75 trees per acre.

1999 Yield Summary for the Regional Almond Variety Trial at Paramount Farming Company, Shafter, Kern County. Planted in 1993

Variety	No. of Nuts/Tree	Average Kernel Weight (g)	Shelling Percentage	Kernel Pounds Per	
				Tree	Acre ¹
Livingston	16794	0.96	72.7	35.5	3054
Aldrich	20391	0.76	50.7	34.1	2936
Jenette	14801	0.96	65.8	31.3	2692
Nonpareil	13518	1.00	63.2	29.8	2560
Ruby	13460	1.00	51.0	29.6	2550
2-19E	14974	0.88	51.2	29.0	2496
Sano	11738	1.10	52.9	28.4	2446
Padre	14830	0.86	51.8	28.1	2416
Rosetta	11493	1.06	44.9	26.8	2308
Plateau	10553	1.12	48.7	26.0	2239
Sonora	11046	1.06	69.7	25.8	2218
Monterey	9984	1.16	50.4	25.5	2194
1-87	15281	0.75	52.8	25.2	2171
Yokut	9886	1.08	51.4	23.5	2023
Kahl	10816	0.94	43.9	22.4	1926
1-102W	6814	1.36	61.8	20.4	1755
Mission	8847	1.02	44.9	20.0	1716
Chip's	9208	0.98	59.0	19.9	1709
Fritz	9754	0.92	53.5	19.8	1700
Butte	9798	0.90	51.7	19.4	1670
13-1	9634	0.90	57.7	19.1	1643
Jiml	7552	1.14	55.9	19.0	1631
Kapareil	11246	0.74	66.1	18.3	1576
Morley	9308	0.86	48.9	17.6	1516
2-43W	8164	0.98	53.3	17.6	1516
Carmel	5881	1.22	54.5	15.8	1359
25-75	9016	0.76	52.1	15.1	1298
Johlyn	5660	1.20	65.9	15.0	1287
Price	6148	1.06	59.6	14.4	1235
Donna	6719	0.84	48.8	12.4	1069
Wood Colony	3518	1.14	49.6	8.8	760
Savana	3266	1.06	61.6	7.6	656

¹Based on a spacing that gives 86 trees per acre.

Yield Summary for the Regional Almond Variety Trial at California State University at Chico Farm, Butte County. Planted in 1993. Yields are shown for 1996 through 1999 and accumulative for this period.

Variety	Yield/acre (lbs.) ¹				
	1996	1997	1998	1999	Accum.
13-1	425	2076	784	2736	6021
Plateau	360	1215	2367	2007	5949
Monterey	749	1535	1531	1410	5225
Nonpareil	494	1427	1127	1952	5000
Carmel	741	1240	1260	1700	4941
Livingston	425	1449	1275	1765	4914
Ruby	448	1208	1315	1823	4794
Butte	443	1169	1549	1404	4565
2-43W	309	1615	1081	1527	4532
Johlyn	537	1047	1046	1870	4500
Aldrich	275	1813	1005	1388	4481
Wood Colony	724	978	951	1464	4117
Sano	372	1036	1020	1558	3986
1-87	190	1295	1074	1340	3899
Morley	219	1102	1189	1364	3874
Price	538	931	990	1230	3689
Padre	541	1013	832	1258	3644
Sonora	732	494	1152	1262	3640
Rosetta	248	1039	840	1422	3549
Jiml	262	873	738	1633	3506
Chip's	344	817	1188	1030	3379
2-19E	276	1299	454	1345	3374
Savana	451	1079	815	992	3337
1-102W	144	1266	436	1481	3327
Kahl	208	672	1070	1301	3251
Mission	383	941	890	1018	3232
Jenette	279	868	672	1407	3226
Yokut	359	765	896	1204	3224
Donna	582	913	712	1003	3210
25-75	308	668	815	1103	2894
Kapareil	68	1129	280	941	2418

¹Based on a spacing that gives 64 trees per acre.

Yield Summary for the Regional Almond Variety Trial at San Joaquin Delta College Farm, Manteca, San Joaquin County. Planted in 1993. Yields are shown for 1996 through 1999 and accumulative for this period.

Variety	Yield/acre (lbs.) ¹				
	1996	1997	1998	1999	Accum.
Carmel	114	2111	1893	2695	6813
Butte	328	1631	2075	2641	6675
Plateau	²	1198	2301	2511	6010
Jenette	226	1313	1530	2579	5648
Ruby	419	1274	1890	1985	5568
Fritz	134	1692	1539	2086	5451
Yokut	251	1288	1882	1956	5377
Chip's	420	920	1798	2134	5272
Monterey	153	1315	1660	2006	5134
Livingston	73	683	1572	2779	5107
Dottie Won	100	1287	1757	1667	4811
Wood Colony	211	1131	1168	2176	4686
Sano	²	1213	995	2299	4507
Nonpareil	115	1165	918	2252	4450
Mission	219	813	1332	1780	4144
13-1	²	1591	192	2223	4006
Kahl	²	757	1320	1836	3913
Jiml	²	534	744	2509	3787
Aldrich	34	937	636	2169	3776
Rosetta	²	1323	600	1745	3668
Padre	221	579	1502	1340	3642
Donna	169	1000	990	1394	3553
Sonora	123	²	965	2407	3495
1-87	79	486	1207	1601	3373
Price	²	947	573	1731	3251
Johlyn	²	634	997	1510	3141
Morley	²	559	576	1401	2536
1-102W	217	457	892	939	2505
2-19E	²	503	507	1010	2020
2-43W	²	²	776	1198	1974
Kapareil	²	361	183	1200	1744
25-75	75	192	660	542	1469
Savana	²	²	184	750	934

¹Based on a spacing that gives 75 trees per acre.

²Because of poor production in 1996 and poor production and a harvesting error in 1997, some varieties were not harvested in these years. Thus, accumulative yields for these varieties should be somewhat higher than what is shown in this table.

Yield Summary for the Regional Almond Variety Trial at Paramount Farming Company, Shafter, Kern County. Planted in 1993. Yields are shown for 1995 through 1999 and accumulative for this period.

Variety	Yield/acre (lbs.) ¹					
	1995	1996	1997	1998	1999	Accum.
Ruby	664	1406	2413	2180	2550	9213
Plateau	282	1340	2525	2419	2239	8805
Jenette	294	952	3085	1574	2692	8597
Padre	802	1624	1624	1883	2416	8349
Butte	377	1364	2400	2353	1670	8164
2-19E	341	963	2347	1944	2496	8091
Monterey	591	1141	2184	1914	2194	8024
Nonpareil	259	782	2428	1963	2560	7992
Livingston	323	760	1972	1749	3054	7858
13-1	599	1224	2076	2152	1643	7694
Mission	545	1353	1949	1816	1716	7379
Aldrich	422	459	2230	1295	2936	7342
Kahl	383	1319	1852	1683	1926	7163
Yokut	382	1316	1519	1835	2023	7075
Sano	291	1209	1345	1754	2446	7045
Johlyn	291	1221	2195	1936	1287	6930
Fritz	²	1261	1706	2234	1700	6901
2-43W	477	1028	2056	1794	1516	6871
Carmel	634	1260	1944	1427	1359	6624
Chip's	401	882	1417	2004	1709	6413
1-102W	304	464	2143	1742	1755	6408
1-87	228	607	1598	1594	2171	6198
Rosetta	93	481	2164	1123	2308	6169
Sonora	337	843	1315	1120	2218	5833
Jiml	107	626	1565	1887	1631	5816
Price	297	746	1118	1772	1235	5168
Morley	176	372	1091	1871	1516	5026
Wood Colony	559	1136	1545	1024	760	5024
25-75	167	808	1184	1138	1298	4595
Savana	418	697	1008	1271	656	4050
Donna	324	935	766	955	1069	4049
Kapareil	41	110	733	670	1576	3130

¹Based on a spacing that gives 86 trees per acre.

²Yield for Fritz in 1995 was lost due to a harvesting error. Thus, the accumulative yield should be somewhat higher than what is shown in this table.

KERNEL DEFECTS OBSERVED IN 1999

Significant defects noted in the 1999 harvest nut samples of the three RAVTs are outlined below. The trees were in their seventh growing season. Defects listed may only become important if they continue to show in the same varieties over several years as the trees mature.

Defect	Trial		
	CSU-Chico	Delta College	Kern
Varieties with more than 20% double kernels:	Kahl (32%) Mission Donna Sano Wood Colony 2-43W Price	Kahl (46%) Plateau Sano	Plateau (34%) Sano
10-20% double kernels:	Plateau Livingston Monterey Ruby 2-19E Aldrich Butte 1-87	Price Dottie Won Monterey Wood Colony Aldrich Donna Fritz Jiml	Kahl 25-75 Aldrich
Varieties with 10% or more twin kernels (two kernels within the same pellicle):		Sonora (16%) 1-87 (10%)	
Varieties with 6% or more blank kernels:	Monterey (6%)	Kahl (18%) Dottie Won (8%) Donna (8%) Fritz (8%) Morley (6%) 1-102W (6%)	Carmel (6%) Chip's (6%) Kahl (6%) 13-1 (6%)
Varieties with 4% or more kernels with gum:	1-102W (22%) Johlyn (4%)	1-102W (10%) Price (4%)	
Varieties with 4% or more worm damage (including ant damage):	Kapareil (N & P)(4%)	Aldrich (N)(6%) Chip's (N)(6%) Donna (N)(6%) Dottie Won (N)(6%) Carmel (N)(4%) Johlyn (N)(4%) Ruby (N)(4%) Sonora (N)(4%)	Johlyn (N)(4%)

¹ This damage caused by N (navel orangeworm), P (peach twig borer) or A (ants).

Effect of Alternaria Leafspot on Return Bloom

VARIETY	EFFECT ON BLOOM (%)*
Nonpareil	0
Jenette	0
Mission	0
Kapareil	0
Rosetta	0
Aldrich	0
Livingston	0
1-87	0
1-102W	0
Padre	0
Chips	1-5
2-19E	1-5
Plateau	5-10
Jiml	5-10
Butte	5-10
Sonora	10-15
Monterey	10-15
Sano	20-25
Ruby	20-25
Yokut	25-30
Fritz	35-40
Kahl	55-60
2-43W	65-70
Carmel	65-70
25-75	65-70
Morley	75-80
Savana	75-80
13-1	75-80
Donna	75-80
Price	85-90
Wood Colony	90-95

*The effect on bloom is based on the amount of leaf growth during bloom.

ALMOND ALTERNARIA LEAFSPOT

Percent of Leaves Showing Alternaria Lesions

Kern RAVT

VARIETY	% PERCENT
Carmel	2
Savana	4
Wood Colony	5
13-1	1
Mission	4
Kahl	0
Morley	3
Price	2
Ruby	5
Yokut	2
2-43W	0
Butte	0
Fritz	0
Sonora	0
Donna	13
Johlyn	2
Monterey	10
Plateau	0
Sano	0
1-102W	5
Jiml	0
Kapareil	0
Nonpareil	0
Aldrich	1
Chips	0
Jenette	0
Livingston	2
Padre	0
Rosetta	0
1-87	0
2-19E	1
25-75	2