2000

Progress Report

REGIONAL ALMOND VARIETY TRIALS

Planted in 1993

University of California

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REGIONAL ALMOND VARIETY TRIALS

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Bruce D. Lampinen, Warren C. Micke, Joseph H. Connell, Paul Verdegaal, Mario Viveros, James T. Yeager, Mary Ann Thorpe and Thomas M. Gradziel[1]

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 2000. 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 planted on 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.

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[1]Bruce D. Lampinen is Extension Specialist, University of California, Davis, Warren C. Micke is Extension Pomologist, Emeritus, University of California, Davis. Joseph H. Connell, Paul Verdegaal, and Mario Viveros, are University of California Farm Advisors in Butte, San Joaquin, and Kern Counties, respectively. James T. Yeager and Mary Ann Thorpe are Staff Research Associates with the Pomology Department, University of California, Davis. Thomas M. Gradziel is Associate Professor of Pomology, University of California, Davis.

The Kern plot is planted on a Milham sandy loam soil and is irrigated with a drip system (it was 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. The rows at CSU-Chico are longer so 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.

2000 Data and Observations

This 2000 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.

Bloom time weather was variable this spring. Overall yield for all varieties was up 11% at the Butte trial, down 21% at the Delta trial, and up 18% at the Kern trial (Fig. 1). The decrease in average yield at the Delta trial in 2000 may have been partially due to generally poor weather conditions during bloom. Also at the Delta trial, yields were generally lower in the center of the orchard where the sandiest soil conditions are, suggesting water stress may have played a role in the yield decrease as well.

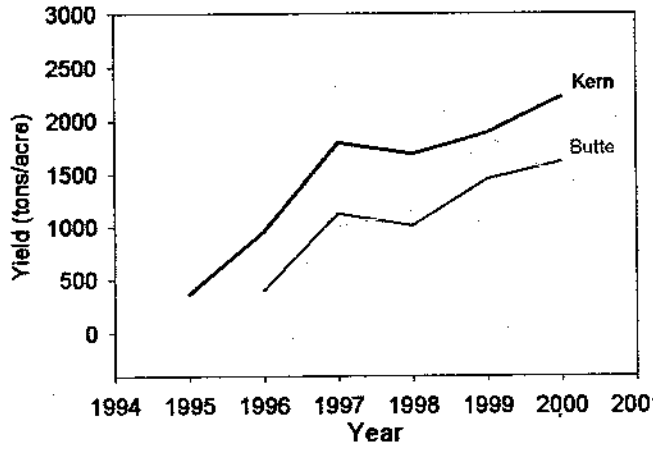


Fig. 1. Cumulative yield for all varieties combined at each trial

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. There was gum damage in some varieties at all sites in 2000. Gum damage was commonly observed in commercial orchards in the central part of the state in 2000 as well, suggesting the damage may have been related weather conditions, in particular a relatively mild period early in the summer followed by a sudden hot spell. Worm damage was extensive at two of the sites in the 2000 season with 26 varieties at the Delta College trial and 20 varieties at the Kern trial having over 4% worm damage. Kapareil has had four percent or more worm damage every year in at least one trial.

Considerable splitting (breakage) and loss of scaffold limbs, and sometimes entire trees, has occurred in both the CSU-Chico and Delta College trials. The exact cause of this splitting is uncertain, 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. Loss 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 for the Aldrich variety with its upright growth habit and narrow crotch angles. Thus, this variety will require special care in tree training.

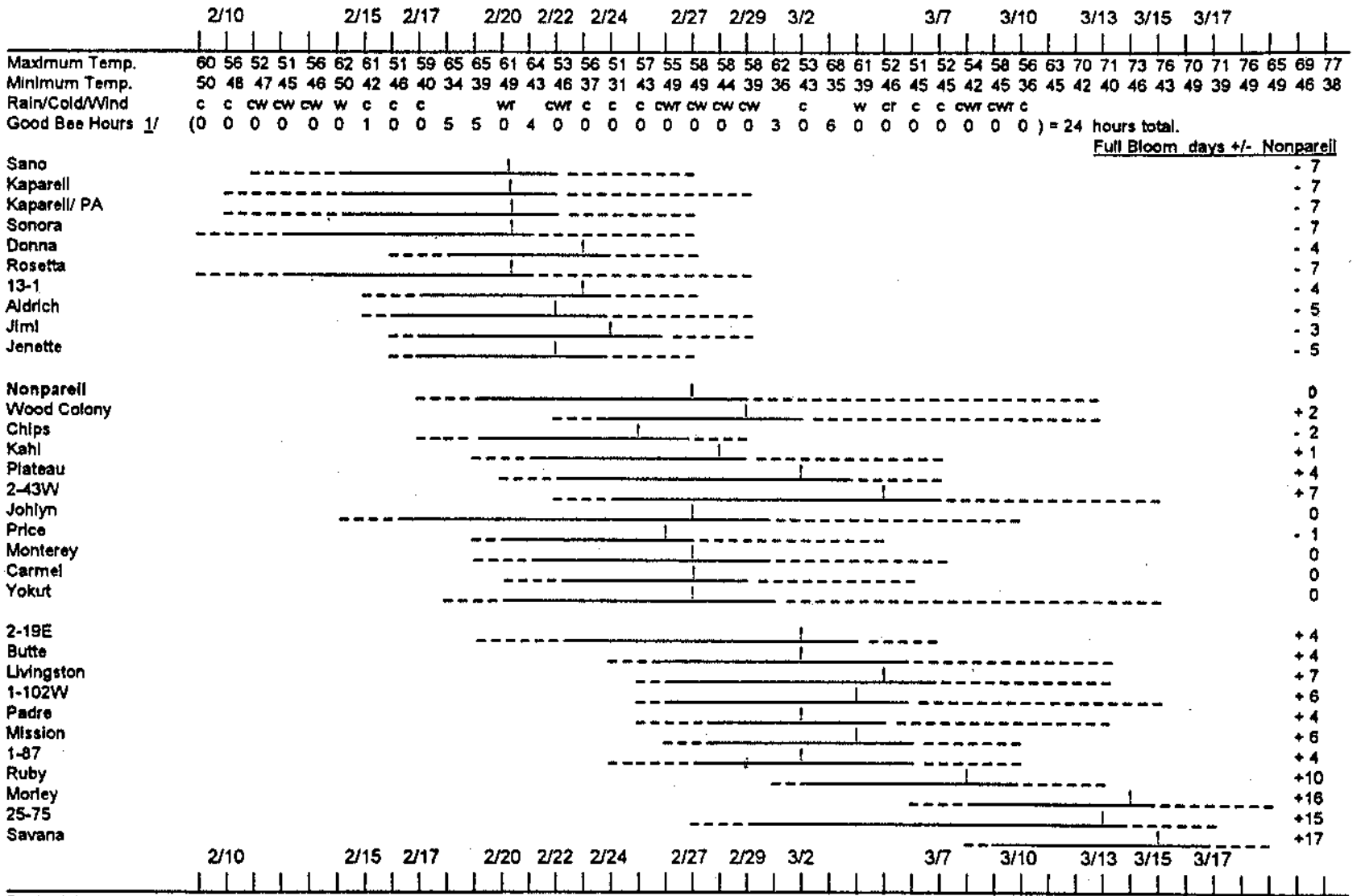
To date only Yokut at the CSU-Chico trial has shown any indication of possible noninfectious bud failure (BF) symptoms, and these symptoms might be due to a virus condition that mimics BF. No other variety in any of the three trials has shown any signs of BF. U. C. selection 13-1 may be released in the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

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 in 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.

ALMOND REGIONAL VARIETY TRIAL - 2000 BLOOM

Planted in 1993 at the California State University Farm, Chico



Dashed line encompasses 1 to 100% bloom, solid line covers 10 to 90% bloom, full bloom date marked with a ! = 80% bloom.

1/ Good Bee Hours = total daylight hours between 1% bloom on Sonora and 100% bloom on Mission when temperatures are ≥ 59 F, wind ≤ 10 mph, and no rain.

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. March 20, 2000.

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

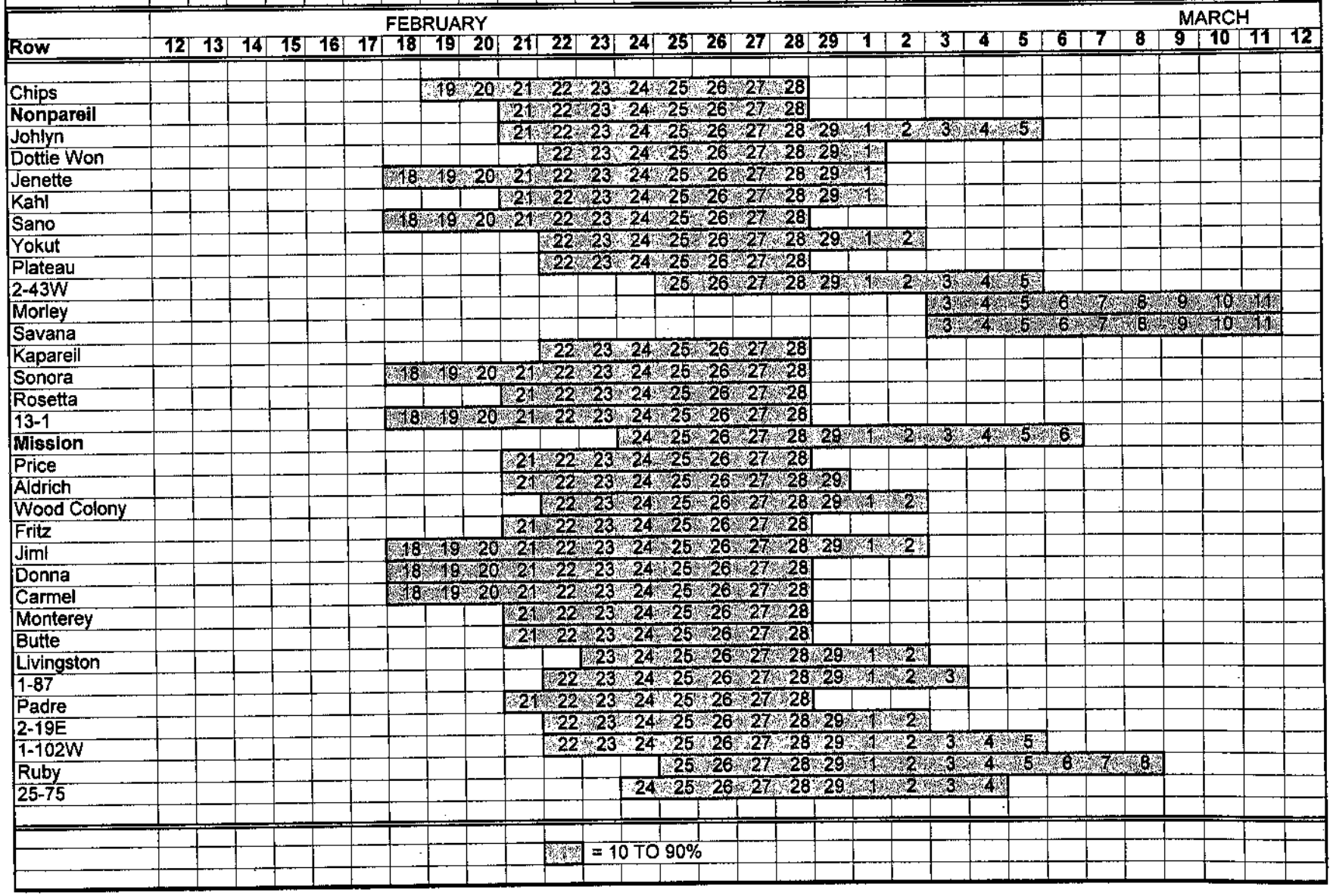
Variety	Bloom Density*				
	1996	1997	1998	1999	2000
Sano	4	4	3	4	4
Kapareil	5	5	5	5	5
Kapareil/ PA	5	5	5	5	5
Sonora	4	2	5	4	4
Donna	3	3	3	4	3
Rosetta	3	4	2	3	4
13-1	5	4	3	4	4
Aldrich	4	5	3	5	5
Jiml	2	3	2	2	3
Jenette	4	5	3	5	5
Nonpareil	4	4	3	4	3
Wood Colony	4	3	3	3	3
Chips	3	4	4	4	4
Kahl	2	3	2	3	2
Plateau	2	3	3	3	4
2-43W	4	3	2	3	4
Johlyn	4	4	1	4	3
Price	1	1	4	2	4
Monterey	4	4	2	3	3
Carmel	3	3	3	5	3
Yokut	1	3	1	2	1
2-19E	3	3	2	5	2
Butte	4	4	3	4	4
Livingston	3	4	3	4	4
1-102W	4	4	4	4	4
Padre	3	3	4	5	4
Mission	3	3	3	3	4
1-87	3	3	3	3	3
Ruby	3	3	3	3	4
Morley	3	3	3	3	4
25-75	2	3	3	3	4
Savana	4	3	3	3	2

* 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

2000 Bloom Dates

Manteca



SAN JOAQUIN DELTA COLLEGE
REGIONAL ALMOND VARIETY TRIAL
2000 RAINFALL
MANTECA

		Air Temperature					Air Temperature		
February	Rain (inches)	Max	Min	Wind > 8 mph	March	Rain (inches)	Max	Min	Wind > 8 mph
1	0	62	43		1	0	61	37	
2	0	62	40		2	0.04	52	46	
3	0.16	65	44		3	0	63	37	
4	0.04	60	45		4	0.04	65	40	
5	0	64	43		5	0.16	54	46	
6	0	65	39		6	0	58	44	
7	0	69	38		7	0.24	56	41	
8	0	69	46		8	0.04	57	41	
9	0.04	61	46		9	0.04	60	43	
10	0.31	59	43		10	0	65	54	
11	0.63	57	45	8.4	11	0	65	46	
12	0.04	57	45	8.6	12	0	67	42	
13	1.02	58	51	13.2	13	0	70	40	
14	0.04	65	43	9.7	14	0	72	43	
15	0	63	37		15	0	74	42	
16	0.39	55	48		16	0	71	45	
17	0	60	41		17	0	71	39	
18	0	63	40		18	0	76	39	
19	0	62	40		19	0	68	48	
20	0.31	69	50	8.6	20	0	65	46	12.3
21	0.04	65	46		21	0	75	40	
22	0.87	55	45		22	0	76	46	
23	0.28	56	36		23	0	69	46	
24	0	54	35		24	0	70	40	
25	0	59	44		25	0	69	45	
26	0.04	65	53	9.0	26	0	69	40	
27	0.20	58	48		27	0	59	47	8.2
28	0	59	47		28	0	64	44	
29	0.31	60	46		29	0	68	38	
					30	0	75	39	
					31	0	80	38	8.4

Rainfall subtotal for:		
	January	3.94
	February	4.72
	March	.56
	Total	9.22

Shaded dates = Bloom period

EFFECTIVE BLOOM PERIOD 2000- Kern RVT

Early Blooming Varieties

	Bloom Period		
	Beginning	Full	End
Sano	02-08-00	02-17-00	02-25-00
Kapareil	02-09-00	02-27-00	02-24-00
Rosetta	02-08-00	02-14-00	02-21-00
Sonora	02-10-00	02-17-00	02-22-00
13-1	02-14-00	02-22-00	

Mid-Season Blooming Varieties

	Bloom Period		
	Beginning	Full	End
Nonpareil	02-12-00	02-18-00	02-29-00
Price	02-11-00	02-17-00	02-29-00
Jenette	02-10-00	02-18-00	02-29-00
Yokut	02-11-00	02-22-00	03-07-00
Johlyn	02-10-00	02-22-00	03-07-00
Plateau	02-12-00	02-22-00	02-29-00
Chips	02-12-00	02-22-00	02-29-00
Kahl	02-12-00	02-22-00	02-29-00
Fritz	02-11-00	02-18-00	02-23-00
Monterey	02-11-00	02-22-00	02-29-00
Aldrich	02-11-00	02-22-00	02-29-00
Wood Colony	02-14-00	02-22-00	02-29-00
1-102W	02-17-00	02-29-00	03-09-00
Jim1	02-14-00	02-22-00	03-03-00
Donna	02-14-00	02-22-00	02-29-00
Carmel	02-14-00	02-22-00	03-03-00
2-19E	02-14-00	02-29-00	03-03-00
2-43W	02-17-00	02-27-00	03-03-00

Late Season Blooming Varieties			
	Bloom Period		
	Beginning	Full	End
Butte	02-16-00	02-25-00	03-05-00
Livingston	02-17-00	02-29-00	03-05-00
Padre	02-17-00	02-29-00	03-13-00
1-87	02-16-00	02-27-00	02-29-00
25-75	02-17-00	02-29-00	03-03-00
Mission	02-17-00	02-28-00	02-29-00
Ruby	02-22-00	03-07-00	03-18-00
Morley	02-29-00	03-10-00	03-18-00
Savana	02-29-00	03-13-00	03-21-00

Bloom Observations: The overall bloom was poor this year. The trees are losing the lower fruit wood. The length of bloom was short.

Good Blooming Varieties: Kahl, Sano, Yokit, Plateau, Price, Aldrich, Wood Colony, Fritz, Jiml, Carmel, Monterey, Linvingston, Mission, Padre, 2-19E and 1-102W.

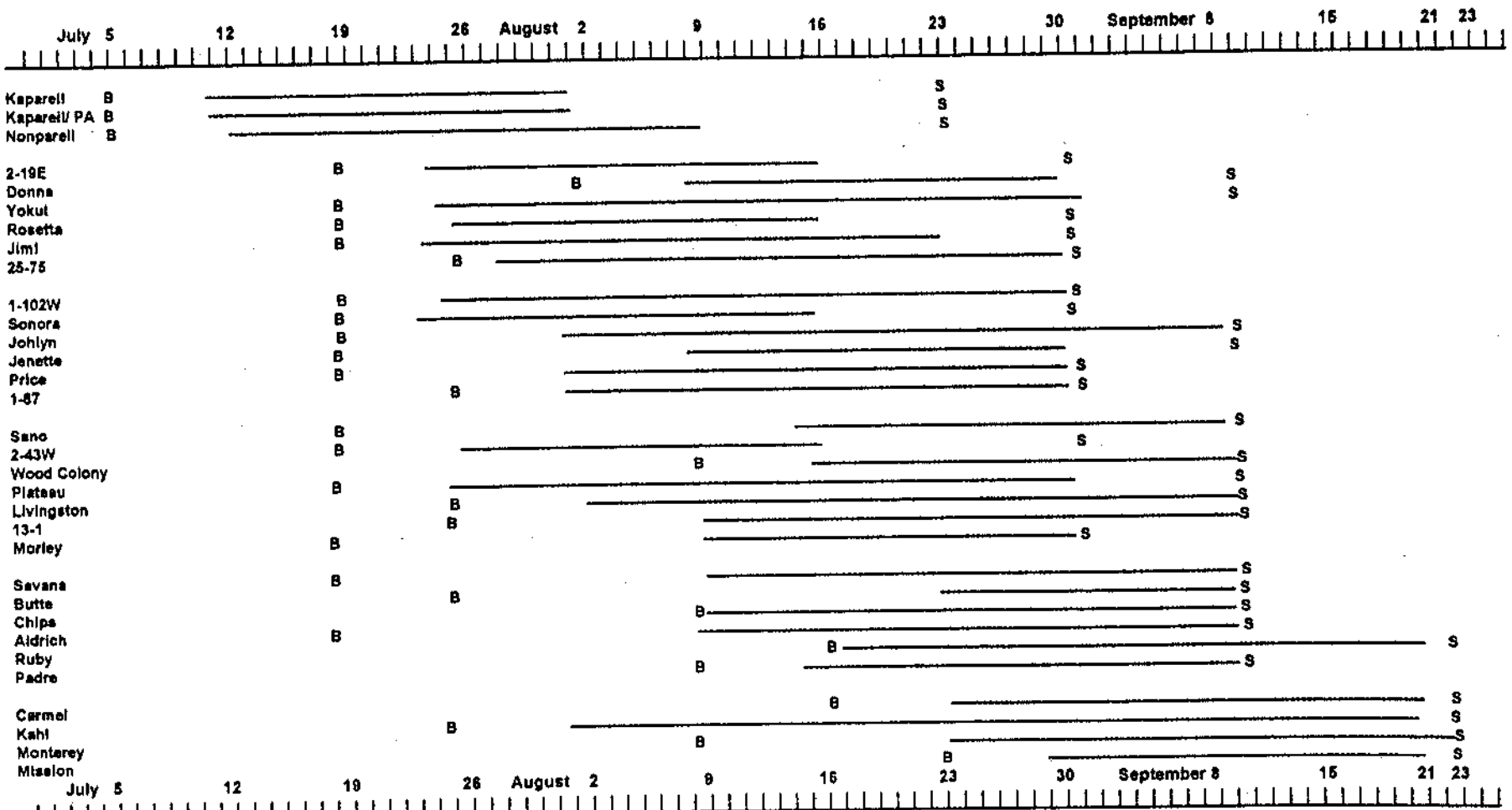
Average Blooming Varieties: Chips, 2-43W, Kapareil, Sonora, Rosetta, 13-1, Donna, Butte, Ruby and 25-75.

Poor Blooming Varieties: Jenette and Johlyn.

Chilling Hours: 755.

ALMOND REGIONAL VARIETY TRIAL - 2000 HARVEST MATURITY

Planted in 1993 at the California State University Farm, Chico



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. Four 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. 10/4/00.

Almond Regional Variety Trial

2000 Hull Split Dates

Manteca

Variety	10%	90%	Average Progression 1997-2000
Kapareil	7/17	7/25	1
Nonpareil	7/17	7/29	2
Jiml	7/22	8/6	4
2-43W	7/26	8/12	6
Johlyn	7/26	8/15	3
13-1	7/29	8/7	13
Price	7/29	8/9	7
Yokut	8/1	8/12	8
Rosetta	8/1	8/9	17
Sonora	8/5	8/13	5
Savana	8/6	8/14	19
Dottie Won	8/6	8/25	14
Chips	8/8	8/24	11
Morley	8/8	8/19	15
Aldrich	8/8	8/20	20
Wood Colony	8/9	8/23	21
Donna	8/11	8/23	9
25-75	8/11	8/21	10
1-102W	8/13	8/26	24
Plateau	8/15	8/24	16
2-19E	8/16	8/24	18
Jenette	8/20	8/28	12
Carmel	8/20	9/12	25
Sano	8/22	9/3	22
1-87	8/23	9/10	23
Monterey	8/23	9/12	26
Butte	8/23	9/19	28
Kahl	8/26	9/5	29
Mission	8/26	9/14	30
Padre	8/26	9/15	31
Livingston	8/29	9/17	27
Ruby	9/2	9/22	32
Fritz	9/2	9/29	33

HULLSPLIT PERIOD 2000

Kern RVT - Paramount Farming Company

EARLY – SEASON		
	Hullsplit Period	
	Beginning*	End**
Kapareil	07-01-00	07-27-00
Nonpareil	07-05-00	08-10-00
2-19E	07-27-00	08-29-00
Sonora	07-24-00	08-24-00
Rosetta	07-20-00	08-10-00
2-43W	07-17-00	08-14-00
1-102W	07-20-00	08-22-00
Donna	07-27-00	08-29-00
Aldrich	07-24-00	08-24-00
Jiml	07-24-00	08-24-00
Jenette	07-24-00	08-24-00
Johlyn	07-27-00	08-29-00

MID-SEASON		
	HULLSPLIT PERIOD	
	Beginning*	End**
25-75	07-31-00	09-04-00
13-1	07-24-00	08-24-00
1-87	07-24-00	08-24-00
Price	07-22-00	08-24-00
Plateau	07-31-00	09-04-00
Chips	08-07-00	09-11-00
Savana	08-10-00	09-07-00
Morley	08-03-00	09-05-00
Wood Colony	08-03-00	09-05-00

MID to LATE SEASON		
	Hullsplit Period	
	Beginning*	End**
Sano	08-07-00	09-11-00
Yokut	08-07-00	09-11-00
Padre	08-10-00	09-14-00
Butte	08-07-00	09-11-00
Livingston	07-31-00	09-05-00
Kahl	08-07-00	09-26-00
Carmel	08-10-00	09-26-00
Ruby	08-10-00	09-28-00

LATE-SEASON		
	Hullsplit Period	
	Beginning*	End**
Mission	08-17-00	09-26-00
Monterey	08-22-00	09-28-00
Fritz	08-29-00	09-02-00

*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.

Sunlight also affects hull splits. Nuts fully exposed to light split first than nuts inside the canopy.

2000 Yield and Individual Kernel Weight 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)	Kernel Pounds Per	
			Tree	Acre[1]
13-1	15116	1.15	38.2	2446
Monterey	11959	1.35	35.6	2279
Sano	11438	1.32	33.3	2128
Jiml	9773	1.41	30.4	1948
Plateau	9277	1.49	30.4	1943
Carmel	9984	1.37	30.2	1934
Jenette	10641	1.29	30.2	1932
1-102W	9899	1.38	30.1	1926
25-75	14504	0.93	29.8	1910
Morley	13204	0.99	28.9	1846
Ruby	10592	1.22	28.6	1828
Nonpareil	9174	1.37	27.5	1762
2-43W	12008	1.03	27.2	1740
Rosetta	9024	1.36	27.0	1727
Wood Colony	9667	1.24	26.5	1695
Mission	9900	1.16	25.2	1616
Livingston	8946	1.27	25.1	1607
Johlyn	8688	1.30	24.9	1595
Sonora	7760	1.38	23.6	1510
Butte	11247	0.95	23.6	1509
Aldrich	9186	1.15	23.3	1494
1-87	10439	0.99	22.7	1454
Chip's	8696	1.17	22.4	1434
Padre	9751	1.02	21.9	1402
Donna	8354	1.07	19.6	1255
Yokut	5663	1.41	17.6	1126
Price	6039	1.25	16.7	1066
Kahl	6012	1.22	16.2	1034
Kapareil	7405	0.99	16.1	1029
Savana	6033	1.13	15.0	958
2-19E	5707	1.13	14.2	906

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

2000 Yield and Individual Kernel Weight 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)	Kernel Pounds Per	
			Tree	Acre[1]
Padre	14705	1.15	37.1	2784
Carmel	12096	1.27	33.8	2538
Ruby	12213	1.25	33.6	2518
Butte	14141	0.96	29.9	2243
Sano	9601	1.39	29.4	2205
Dottie Won	12991	0.99	28.4	2133
Yokut	9834	1.27	27.5	2060
Fritz	12302	1.00	27.0	2024
Mission	10887	1.12	26.7	2001
Plateau	7879	1.51	26.2	1968
Chips	10112	1.09	24.4	1828
Livingston	8625	1.22	23.1	1736
Monterey	8523	1.22	22.9	1718
Jenette	7311	1.38	22.2	1667
Kahl	9471	1.03	21.4	1605
Wood Colony	7086	1.32	20.6	1543
Rosetta	6569	1.37	19.8	1487
Nonpareil	5753	1.40	17.8	1333
1-87	7954	0.99	17.3	1296
Johlyn	5472	1.38	16.6	1246
Sonora	4725	1.53	15.9	1194
Donna	6092	1.15	15.4	1153
Jiml	5104	1.30	14.6	1098
Price	4585	1.23	12.4	932
25-75	5039	1.10	12.2	912
2-19E	4306	1.27	12.0	903
Aldrich	4425	1.23	12.0	902
Morley	4669	1.09	11.2	842
2-43W	3095	1.24	8.4	632
1-102W	1936	1.62	6.9	519
Kapareil	2747	1.07	6.5	485
13-1	1884	1.26	5.2	392
Savana	470	1.40	1.5	109

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

2000 Yield and Individual Kernel Weight 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)	Kernel Pounds Per	
			Tree	Acre[1]
Sano	13552	1.44	43.0	3702
Plateau	10627	1.59	37.2	3197
Yokut	11973	1.40	37.0	3184
Sonora	12475	1.35	37.0	3181
Ruby	12501	1.34	36.8	3164
Chip's	13825	1.19	36.1	3106
Price	14461	1.09	34.8	2997
Padre	13180	1.14	33.0	2841
Jenette	10842	1.37	32.7	2810
Fritz	13561	1.09	32.6	2805
Kahl	11859	1.20	31.3	2696
2-19E	11896	1.17	30.8	2646
Carmel	9382	1.43	29.5	2534
Monterey	8198	1.56	28.2	2429
Mission	9560	1.26	26.6	2285
Donna	11108	1.08	26.5	2281
Nonpareil	8491	1.27	23.2	2216
Johlyn	7803	1.41	24.2	2084
13-1	8868	1.23	24.1	2073
25-75	12127	0.90	24.1	2072
Jiml	6735	1.60	23.7	2039
Wood Colony	7169	1.42	22.4	1923
Rosetta	6520	1.46	21.0	1808
Morley	8467	1.09	20.3	1742
Livingston	5752	1.48	18.7	1608
Savana	5956	1.31	17.2	1480
Aldrich	5936	1.25	16.4	1410
2-43W	4578	1.45	14.6	1254
Butte	5130	1.21	13.7	1178
1-87	4661	1.14	11.7	1008
1-102W	2043	1.71	7.7	661
Kapareil	3109	1.05	7.2	618

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

Annual Yield Summary for 1996 through 2000 and Accumulative Yield for This Period for the Regional Variety Trial at California State University at Chico Farm, Butte County. Planted in 1993.

Variety	Yield/acre (lbs)[1]					
	1996	1997	1998	1999	2000	Accum.
13-1	425	2076	784	2736	2446	8467
Plateau	360	1215	2367	2007	1943	7892
Monterey	749	1535	1531	1410	2279	7504
Carmel	741	1240	1260	1700	1934	6875
Nonpareil	494	1427	1127	1952	1762	6762
Ruby	448	1208	1315	1823	1828	6622
Livingston	425	1449	1275	1765	1607	6521
2-43W	309	1615	1081	1527	1740	6272
Sano	372	1036	1020	1558	2128	6114
Johlyn	537	1047	1046	1870	1595	6095
Butte	443	1169	1549	1404	1509	6074
Aldrich	275	1813	1005	1388	1494	5975
Wood Colony	724	978	951	1464	1695	5812
Morley	219	1102	1189	1364	1846	5720
Jiml	262	873	738	1633	1948	5454
1-87x	190	1295	1074	1340	1454	5353
Rosetta	248	1039	840	1422	1727	5276
1-102W	144	1266	436	1481	1926	5253
Jenette	279	868	672	1407	1932	5158
Sonora	732	494	1152	1262	1510	5150
Padre	541	1013	832	1258	1402	5046
Mission	383	941	890	1018	1616	4848
Chip's	344	817	1188	1030	1434	4813
25-75	308	668	815	1103	1910	4804
Price	538	931	990	1230	1066	4755
Donna	582	913	712	1003	1255	4465
Yokut	359	765	896	1204	1126	4350
Savana	451	1079	815	992	958	4295
Kahl	208	672	1070	1301	1034	4285
2-19E	276	1299	454	1345	906	4280
Kapareil	68	1129	280	941	1029	3447

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

Annual Yield Summary for 1996 through 2000 and Accumulative Yield for This Period for the Regional Variety Trial at San Joaquin Delta College Farm, Manteca, San Joaquin County. Planted in 1993.

Variety	Yield/acre (lbs)[1]					
	1996	1997	1998	1999	2000	Accum.
Carmel	114	2111	1893	2695	2538	9351
Butte	328	1631	2075	2641	2243	8918
Ruby	419	1274	1890	1985	2518	8086
Plateau	[2]	1198	2301	2511	1968	7978
Fritz	134	1692	1539	2086	2024	7475
Yokut	251	1288	1882	1956	2060	7437
Jenette	226	1313	1530	2579	1667	7315
Chips	420	920	1798	2134	1828	7100
Dottie Won	100	1287	1757	1667	2133	6944
Monterey	153	1315	1660	2006	1718	6852
Livingston	73	683	1572	2779	1736	6843
Sano	[2]	1213	995	2299	2205	6712
Padre	221	579	1502	1340	2784	6426
Wood Colony	211	1131	1168	2176	1543	6229
Mission	219	813	1332	1780	2001	6145
Nonpareil	115	1165	918	2252	1333	5783
Kahl	[2]	757	1320	1836	1605	5518
Rosetta	[2]	1323	600	1745	1487	5155
Jiml	[2]	534	744	2509	1098	4885
Donna	169	1000	990	1394	1153	4706
Sonora	123	[2]	965	2407	1194	4689
Aldrich	34	937	636	2169	902	4678
1-87	79	486	1207	1601	1296	4669
13-1	[2]	1591	192	2223	392	4398
Johlyn	[2]	634	997	1510	1246	4387
Price	[2]	947	573	1731	932	4183
Morley	[2]	559	576	1401	842	3378
1-102W	217	457	892	939	519	3024
2-19E	[2]	503	507	1010	903	2923
2-43W	[2]	[2]	776	1198	632	2606
25-75	75	192	660	542	912	2381
Kapareil	[2]	361	183	1200	485	2229
Savana	[2]	[2]	184	750	109	1043

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

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

Annual Yield Summary for 1995 through 2000 and Accumulative Yield for This Period for the Regional Almond Variety Trial at Paramount Farming Company, Shafter, Kern County. Planted in 1993.

Variety	Yield/acre (lbs)[1]						
	1995	1996	1997	1998	1999	2000	Accum.
Ruby	664	1406	2413	2180	2550	3164	12377
Plateau	282	1340	2525	2419	2239	3197	12002
Jenette	294	952	3085	1574	2692	2810	11407
Padre	802	1624	1624	1883	2416	2841	11190
Sano	291	1209	1345	1754	2446	3702	10747
2-19E	341	963	2347	1944	2496	2646	10737
Monterey	591	1141	2184	1914	2194	2429	10453
Yokut	382	1316	1519	1835	2023	3184	10259
Nonpareil	259	782	2428	1963	2560	2216	10208
Kahl	383	1319	1852	1683	1926	2696	9859
13-1	599	1224	2076	2152	1643	2073	9767
Fritz	[2]	1261	1706	2234	1700	2805	9706
Mission	545	1353	1949	1816	1716	2285	9664
Chip's	401	882	1417	2004	1709	3106	9519
Livingston	323	760	1972	1749	3054	1608	9466
Butte	377	1364	2400	2353	1670	1178	9342
Carmel	634	1260	1944	1427	1359	2534	9158
Johlyn	291	1221	2195	1936	1287	2084	9014
Sonora	337	843	1315	1120	2218	3181	9014
Aldrich	422	459	2230	1295	2936	1410	8752
Price	297	746	1118	1772	1235	2997	8165
2-43W	477	1028	2056	1794	1516	1254	8125
Rosetta	93	481	2164	1123	2308	1808	7977
Jiml	107	626	1565	1887	1631	2039	7855
1-87	228	607	1598	1594	2171	1008	7206
1-102W	304	464	2143	1742	1755	661	7069
Wood Colony	559	1136	1545	1024	760	1923	6947
Morley	176	372	1091	1871	1516	1742	6768
25-75	167	808	1184	1138	1298	2072	6667
Donna	324	935	766	955	1069	2281	6330
Savana	418	697	1008	1271	656	1480	5530
Kapareil	41	110	733	670	1576	618	3748

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

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

KERNEL DEFECTS OBSERVED IN 2000

Significant defects noted in the 2000 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.

	Trial		
Varieties with defect	CSU-Chico	Delta College	Kern
10% or more double kernels:	Kahl (34%) Sano (32%) Monterey (24%) Mission (21%) Plateau (20%) Wood Colony (18%) Donna (18%) Price (14%) Yokut (12%) 2-43W (10%)	Plateau (34%) Donna (28%) Kahl (18%) Sano (12%) Jiml (10%)	Plateau (38%) Kahl (28%) Donna (22%) 1-102W (22%) Butte (12%) Sano (12%) Monterey (12%) Mission (11%)
Varieties with 10% or more twin kernels (two kernels within the same pellicle):		Sonora (12%)	
Varieties with 6% or more blank kernels:	Kahl (20%) 2-43W (8%) 2-19E (6%)	Plateau (10%) Price (8%) Donna (8%) Sonora (6%) 2-43W (6%) 2-19E (6%)	Plateau (14%) Donna (12%) Kahl (8%) Morley (8%) Padre (6%) Butte (6%) Chip's (6%)
Varieties with 4% or more kernels with gum:	Johlyn (38%) 1-102W (36%) Yokut (22%)	13-1 (52%) Savana (32%) 1-102W (24%) Yokut (16%) Johlyn (8%) Rosetta (8%) 2-19E (4%) Livingston (4%)	25-75 (8%) Livingston (8%) Jenette (4%) 13-1 (4%)

KERNEL DEFECTS OBSERVED IN 2000 (continued)

	Trial		
Varieties with defect	CSU-Chico	Delta College	Kern
Varieties with 4% or more worm and/or ant damage[1]	Monterey (8%) Chip's (6%)	Johlyn (26%) 2-43W (26%) Aldrich (26%) Donna (24%) Kapareil (24%) Savana (22%) Dottie Won (22%) 1-102W (20%) 1-87 (20%) Sano (18%) Jiml (16%) Sonora (16%) 25-75 (16%) Chip's (16%) Livingston (14%) Jenette (14%) Butte (10%) Monterey (10%) Yokut (8%) Morley (8%) Plateau (6%) Price (6%) Fritz (6%) Padre (6%) Carmel (6%) Nonpareil (6%)	Kapareil (22%) 13-1 (18%) 1-87 (18%) Jiml (14%) Fritz (14%) 1-102W (12%) Livingston (10%) Johlyn (10%) Sonora (10%) Carmel (10%) Plateau (8%) Butte (8%) Price (8%) Sano (6%) Monterey (6%) Nonpareil (5%) 25-75 (4%) Jenette (4%) 2-43W (4%) Rosetta (4%)

[1] This damage caused by navel orangeworm unless noted as P (peach twig borer) or A (ant) damage (in 2000, all damage was from naval orangeworm).

ALMOND ALTERNARIA LEAFSPOT 2000

Percent of Leaves With Alternaria Lesions

Kern RAVT

VARIETY	% PERCENT
Donna	16
13-1	14
Carmel	12
Sonora	10
Price	9
Kahl	8
Jenette	8
Wood Colony	4
2-19E	4
Yokut	3
Monterey	3
Savana	2
Mission	2
Morley	2
Ruby	2
Aldrich	2
Livingston	2
Jan-87	2
Johlyn	1
2-43W	0
Butte	0
Fritz	0
Plateau	0
Sano	0
1-102W	0
Jiml	0
Kapareil	0
Nonpareil	0
Chips	0
Padre	0
Rosetta	0
25-75	0

Regional Almond Variety Trial, Delta College
1996-99

Sample	Description	N-Total %	P-Total %	K-Total %	S-Total ppm	Ca %	Mg %	Na ppm	Cl %	B ppm	Zn ppm	Cu ppm
1	Chips	2.21	0.16	2.34	1663	5.17	0.71	119	0.15	48	40	5.6
2	Johlyn	2.40	0.16	1.81	1548	4.26	0.68	86	0.11	55	31	4.0
3	Dottie Won	2.38	0.16	1.76	1663	5.12	0.76	76	0.13	52	37	4.9
4	Jenette	2.34	0.17	2.04	1830	5.47	0.75	105	0.14	58	43	5.2
5	Kahl	2.49	0.15	1.82	1700	4.66	0.70	67	0.09	49	37	4.9
6	Sano	2.28	0.18	2.34	1663	5.10	0.75	93	0.13	56	43	6.1
7	Yokut	2.21	0.13	1.92	1658	5.17	0.77	87	0.11	50	47	6.1
8	Plateau	2.35	0.17	1.96	1673	4.66	0.67	78	0.10	48	43	6.3
9	2-43W	2.40	0.17	1.79	1515	4.01	0.68	97	0.10	56	21	5.0
10	Morley	2.21	0.16	1.92	1625	4.37	0.64	99	0.09	52	26	9.0
11	Savana	2.46	0.18	1.47	1733	4.33	0.66	82	0.08	53	20	6.0
12	Kapareil	2.19	0.15	1.97	1515	4.38	0.71	89	0.10	56	33	6.3
13	Sonora	2.25	0.19	1.85	1518	4.81	0.70	67	0.09	50	37	6.1
14	Nonpareil #2	2.20	0.16	1.79	1570	4.84	0.76	72	0.08	48	35	5.5
15	Rosetta	2.03	0.15	1.91	1880	5.21	0.70	108	0.12	52	47	6.7
16	Nonpareil #6	2.36	0.16	1.77	1733	4.85	0.75	93	0.10	58	43	5.6
17	13-1	2.18	0.14	1.69	1528	4.85	0.73	101	0.11	55	35	5.0
18	Price	2.27	0.16	1.86	1805	5.09	0.75	96	0.11	52	40	5.6
19	Aldrich	2.17	0.15	1.56	1628	5.57	0.70	124	0.13	51	42	6.2
20	Wood Colony	2.25	0.14	1.49	1673	6.45	0.78	89	0.12	50	39	6.1
21	Fritz	2.27	0.15	1.49	1693	5.69	0.76	104	0.13	50	46	5.9
22	Jiml	2.59	0.14	2.07	1808	4.61	0.65	86	0.11	54	42	6.7
23	Donna	2.38	0.15	1.45	1580	5.90	0.70	87	0.13	50	44	6.2
24	Carmel	2.38	0.13	1.71	1600	5.65	0.78	83	0.14	49	38	5.8
25	Monterey	2.42	0.15	2.12	1605	4.24	0.66	76	0.11	53	38	5.3
26	Butte	2.31	0.14	1.85	1600	4.88	0.78	85	0.12	52	35	5.5
27	Livingston	2.55	0.17	1.93	2013	4.57	0.61	94	0.12	61	27	9.8
28	Mission #2	2.43	0.15	1.85	1650	4.71	0.62	82	0.11	52	27	8.4
29	1-87	2.35	0.16	2.00	1633	4.94	0.65	71	0.11	56	19	6.1
30	Mission #5	2.36	0.15	1.83	1753	4.89	0.62	93	0.11	56	31	13.0
31	Padre	2.44	0.13	1.95	1638	4.54	0.64	101	0.12	50	31	9.2
32	2-195	2.53	0.15	2.06	1778	4.45	0.64	86	0.08	61	29	7.0
33	1-102W	2.50	0.15	1.92	1645	3.90	0.57	76	0.09	56	22	5.2
34	Ruby	2.28	0.13	1.64	1515	6.03	0.78	93	0.11	54	40	6.7
35	25-75	2.61	0.16	2.19	1725	3.33	0.57	82	0.09	55	33	4.5