2001

Progress Report

REGIONAL ALMOND VARIETY TRIALS

Planted in 1993

University of California

TABLE OF CONTENTS

Page

Regional Almond Variety Trials: Background, Locations, Varieties Included, Details of Trials, Data Being Collected, Notes and Observations on the 2001 Season, Contributors 2-4

2001 Bloom Data
- CSU-Chico 5-7
- Delta College 8
  - Bloom Rainfall 9
- Kern 10-11

2001 Maturity Data
- CSU-Chico 12
- Delta College 13
- Kern 14-15

2001 Yield, Individual Kernel Weight and Shelling Percentage Summary
- CSU-Chico 16
- Delta College 17
- Kern 18

Annual and Accumulative Yield Summary
- CSU-Chico 19
- Delta College 20
- Kern 21

2001 Kernel Defects 22-23

Alternaria Leafspot Ratings--Kern 24

Hull Rot Ratings-- Kern 25

REGIONAL ALMOND VARIETY TRIALS

Planted in 1993

Bruce D. Lampinen, Joseph H. Connell, Paul Verdegaal, Mario Viveros, Samuel G. Metcalf, James T. Yeager, Mary Ann Thorpe, Thomas M. Gradziel and Warren C. Micke,[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 earlier 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 2001. 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.

---

[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. Samuel G. Metcalf, 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.

2001 Data and Observations

This 2001 report includes information, 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. At the CSU-Chico trial, conditions were cold, windy and rainy throughout much of the bloom period. At the Delta trial, there was measurable rainfall on about 1/3 of the days during bloom. At the Kern trial, a windstorm with gusts up to 70 mph during the bloom period caused the loss of two Padre, three 2-43W and three Sonora trees.

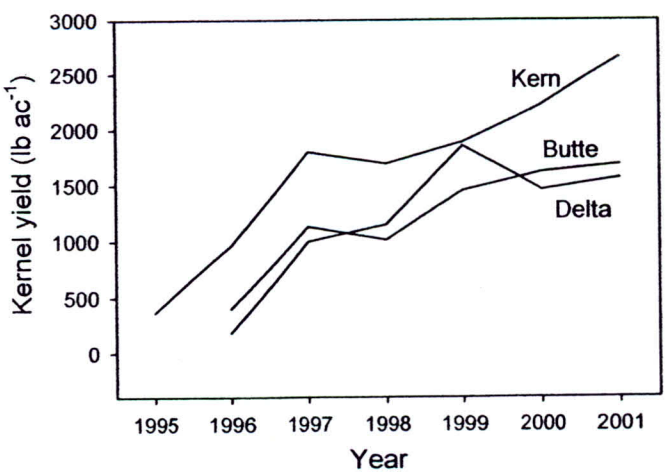


Fig. 1. Average annual yield for all varieties and selections combined at each trial.

Overall yield for all varieties was up

4% at the CSU-Chico trial, up 7% at the Delta trial, and up 19% at the Kern trial (Fig. 1).

In 2001, the CSU-Chico, Delta and Kern trials had 14, 22 and 10 varieties, respectively, with 6% or higher kernel doubles. The Kern trial had the most extensive worm damage with 25 varieties having 6% or higher worm damage while the CSU-Chico trial had six and Delta only had one variety with higher than 6% worm damage.

Over the last six 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. 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 some 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.

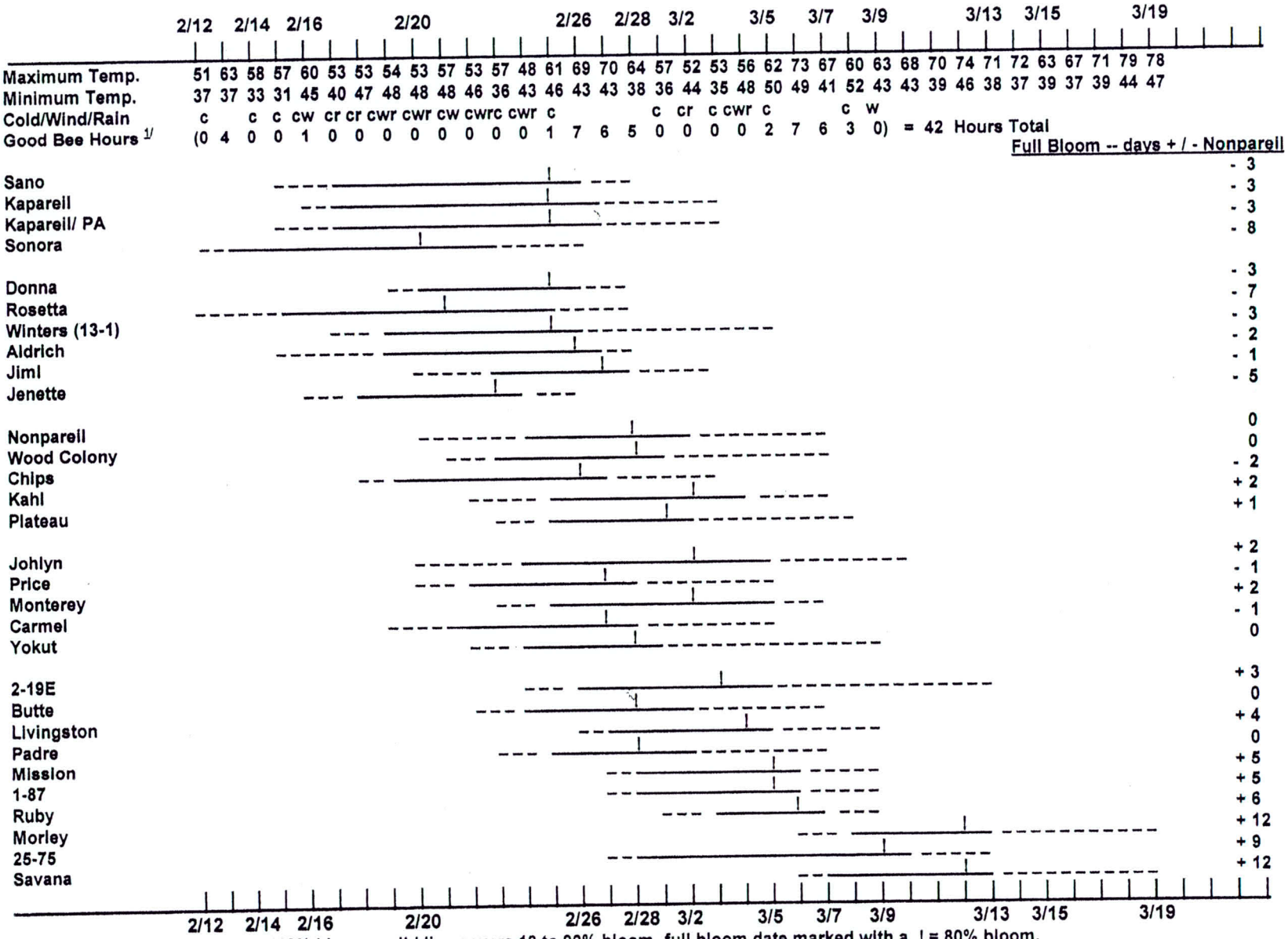
To date only Yokut at the CSU-Chico trial has shown any indication of possible noninfectious bud failure (BF) symptoms, and these symptoms might be due to a virus condition that mimics BF. No other variety in any of the three trials has shown any signs of BF. Selection 13-1 was released this year as Winters. It has shown good production (particularly at the CSU-Chico trial) and should be a good pollenizer for Nonpareil. However, the disease susceptibility, especially to *Alternaria* and *Anthracnose,* will have to be watched. Winters also had extensive worm damage at the CSU-Chico trial in 2001.

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 - 2001 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 I = 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. 11/20/01.

Full Bloom Timing -- CSU Chico, Regional Variety Trial

Variety	# Days before or after Nonpareil Full Bloom 1/ 1996	1997	1998	1999	2000	2001	Average
Sano	-12	-4	-4	-3	-7	-3	-5.5
Kapareil	-11	-2	-5	-3	-7	-3	-5.2
Kapareil/PA	-8	-3	-6	-4	-7	-3	-5.2
Sonora	-8	-6	-9	-5	-7	-8	-7.2
Donna	-6	-4	-2	-4	-4	-3	-3.8
Rosetta	-4	-4	-5	-2	-7	-7	-4.8
Winters (13-1)	-4	-6	-6	-2	-4	-3	-4.2
Aldrich	-3	0	0	1	-5	-2	-1.5
Jiml	-2	0	1	3	-3	-1	-0.3
Jenette	-1	3	4	2	-5	-5	-0.3
Nonpareil	0	0	0	0	0	0	0.0
Wood Colony	0	-1	7	2	2	0	1.7
Chips	0	-2	-1	-1	-2	-2	-1.3
Kahl	0	1	5	3	1	2	2.0
Plateau	0	0	8	4	4	1	2.8
2-43W	1	0	9	5	7	---	4.4
Johlyn	1	6	3	4	0	2	2.7
Price	2	0	3	1	-1	-1	0.7
Monterey	2	0	6	4	0	2	2.3
Carmel	2	1	6	2	0	-1	1.7
Yokut	2	-2	4	2	0	0	1.0
2-19E	3	6	5	5	4	3	4.3
Butte	3	6	8	6	4	0	4.5
Livingston	4	4	7	10	7	4	6.0
1-102W	4	6	8	3	6	---	5.4
Padre	4	8	9	6	4	0	5.2
Mission	4	8	10	6	6	5	6.5
1-87	4	11	8	5	4	5	6.2
Ruby	6	11	17	10	10	6	10.0
Morley	6	11	19	18	16	12	13.7
25-75	11	13	10	12	15	9	11.7
Savana	11	17	20	18	17	12	15.8
Good Bee Hours 2/	77	74	43	37	24	42	

1/ Full bloom as defined here equals the day when 80% of the flowers are open.

2/ 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.

Bloom Conditions

1996 - Cold, rainy & windy prior to Nonpareil full bloom, excellent weather from then on.

1997 - A low chilling year, cool during entire blooming period but generally good weather.

1998 - Cold, rainy & windy through much of bloom, a few good days for Butte through Mission bloom.

1999 - Cold throughout bloom, 1 good day each at Sonora & Carmel full bloom, 3 good days for last 10% of late varieties

2000 - Cold, windy & rainy throughout bloom, 3 ok days around Sonora full bloom, 1 good day after Butte full bloom.

2001 - Cold, windy & rainy throughout bloom, 3 good days Winters-Nonpareil full bloom, 2 good days-last 10% of late varieties.

Bloom Density -- CSU Chico, Regional Variety Trial

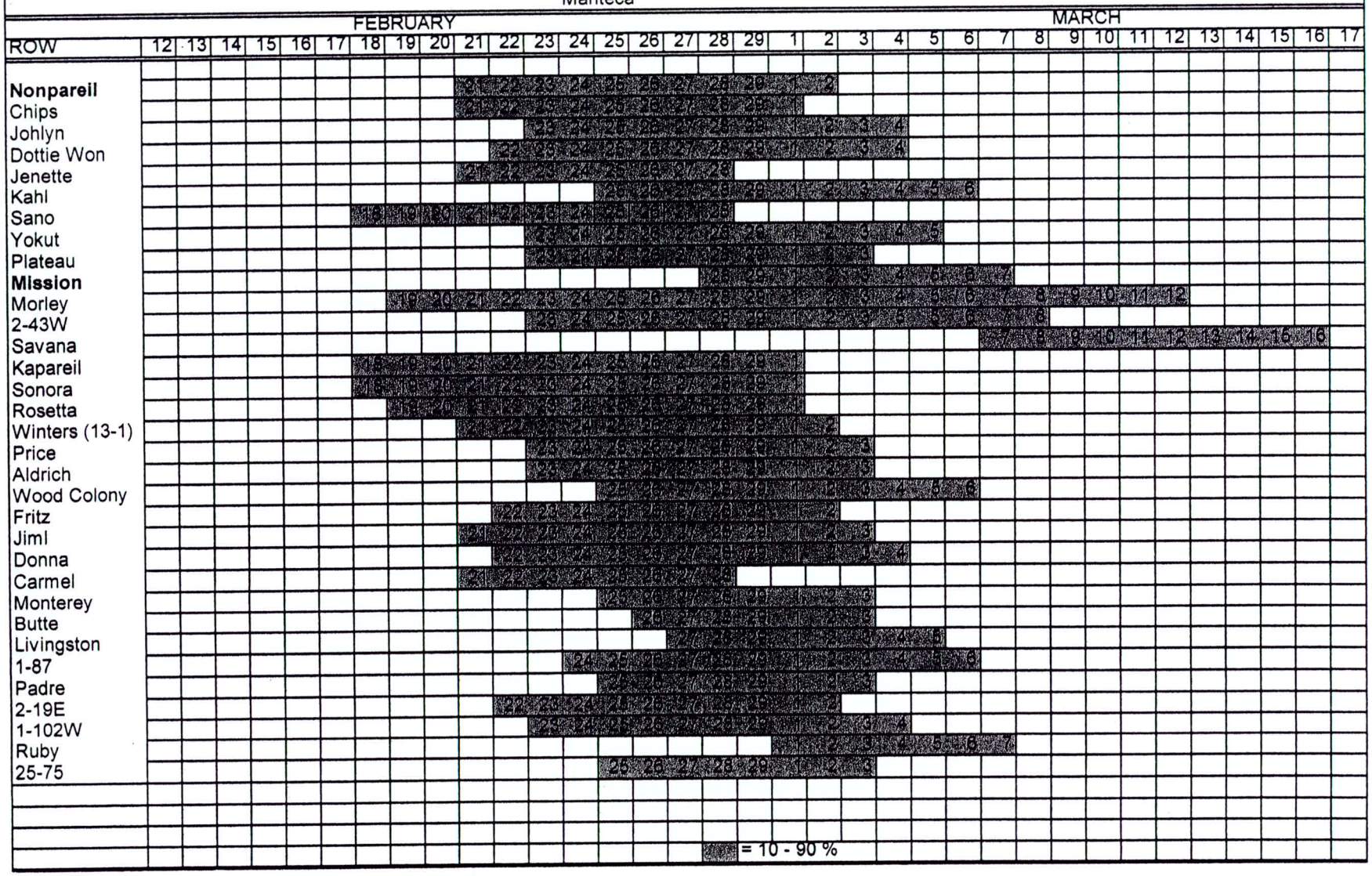
	Bloom Density*					
Variety	1996	1997	1998	1999	2000	2001
Sano	4	4	3	4	4	4
Kapareil	5	5	5	5	5	5
Kapareil/PA	5	5	5	5	5	5
Sonora	4	2	5	4	4	3
Donna	3	3	3	4	3	3
Rosetta	3	4	2	3	4	4
Winters (13-1)	5	4	3	4	4	3
Aldrich	4	5	3	5	5	4
Jiml	2	3	2	2	3	3
Jenette	4	5	3	5	5	4
Nonpareil	4	4	3	4	3	3
Wood Colony	4	3	3	3	3	4
Chips	3	4	4	4	4	3
Kahl	2	3	2	3	2	4
Plateau	2	3	3	3	4	3
2-43W	4	3	2	3	4	---
Johlyn	4	4	1	4	3	3
Price	1	1	4	2	4	3
Monterey	4	4	2	3	3	2
Carmel	3	3	3	5	3	4
Yokut	1	3	1	2	1	4
2-19E	3	3	2	5	2	5
Butte	4	4	3	4	4	4
Livingston	3	4	3	4	4	4
1-102W	4	4	4	4	4	---
Padre	3	3	4	5	4	5
Mission	3	3	3	3	4	4
1-87	3	3	3	3	3	4
Ruby	3	3	3	3	4	3
Morley	3	3	3	3	4	4
25-75	2	3	3	3	4	3
Savana	4	3	3	3	2	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

2001 Bloom Dates

Manteca



SAN JOAQUIN DELTA COLLEGE
REGIONAL ALMOND VARIETY TRIAL
2001 RAINFALL
MANTECA

		Air Temperature					Air Temperature		
February	Rain (inches)	Max	Min	Wind > 5 mph	**March**	Rain (inches)	Max	Min	Wind > 5 mph
1	0	58	32		1	0	62	31	
2	0	59	32		2	0.35	55	45	
3	0	65	39		3	0.04	55	44	
4	0	70	43		4	0.59	60	51	12.2
5	0	67	36		5	0.24	61	51	7.0
6	0	57	39	8.5	6	0	68	47	
7	0	56	37	9.4	7	0	69	40	
8	0	56	31	5.3	8	0	63	47	7.6
9	0.12	51	44	7.6	9	0	61	32	5.7
10	0.08	52	42	7.6	10	0	64	42	5.1
11	0.24	54	41	8.6	11	0	64	34	
12	0	54	37	6.6	12	0	69	36	
13	0	58	37	7.0	13	0	70	36	
14	0	58	33		14	0	70	40	
15	0	59	31		15	0	62	36	5.3
16	0	63	35		16	0	67	44	7.2
17	0	57	46	5.1	17	0	74	39	
18	0.08	63	47	5.2	18	0	76	42	
19	0.20	60	48	8.5	19	0	79	50	
20	0	59	48	7.0	20	0	81	53	
21	0.12	60	43	8.2	21	0	76	47	
22	0.39	57	43	6.1	22	0	69	50	5.4
23	0.12	54	43	6.1	23	0	70	45	
24	0.71	50	44	11.0	24	0.12	74	49	
25	0	62	46		25	0.04	67	51	6.2
26	0	61	43		26	0	69	47	7.3
27	0	68	39	5.0	27	0	74	46	5.6
28	0	60	33		28	0	77	50	6.5
					29	0	76	49	7.0
					30	0	79	49	
					31	0	80	44	

Rainfall subtotal for:

January	2.87
February	2.05
March	1.38
Total	6.30

Shaded dates = Bloom period

EFFECTIVE BLOOM PERIOD

Kern RVT - Paramount Farming Company

Early Blooming Varieties			
	Bloom Period		
	Beginning	**Full**	**End**
Sano	02-06	02-25	03-01
Kapareil	02-18	02-27	03-08
Rosetta	02-13	02-25	02-28
Sonora	02-16	02-25	03-02
13-1	02-20	02-27	03-03

Mid-Season Blooming Varieties			
	Bloom Period		
	Beginning	**Full**	**End**
Nonpareil	02-20	02-27	03-04
Price	02-20	02-27	03-02
Jenette	02-20	02-26	03-02
Yokut	02-18	02-27	03-06
Johlyn	02-18	02-27	03-06
Plateau	02-22	02-27	03-06
Chips	02-18	02-25	03-04
Kahl	02-18	02-27	03-06
Fritz	02-20	02-27	03-06
Monterey	02-22	02-27	03-08
Aldrich	02-17	02-25	03-06
Wood Colony	02-20	02-25	03-06
1-102W	02-25	03-06	03-14
Jim1	02-18	02-27	03-06
Donna	02-20	02-26	03-04
Carmel	02-22	02-27	03-08
2-19E	02-22	03-02	03-08
2-43W	02-24	03-02	03-09

Late Season Blooming Varieties			
	Bloom Period		
	Beginning	Full	End
Butte	02-24	03-02	03-10
Livingston	02-26	03-02	03-11
Padre	02-25	03-02	03-11
1-87	02-27	03-02	03-11
25-75	02-27	03-06	03-16
Mission	02-25	03-05	03-14
Ruby	02-28	03-06	03-16
Morley	03-06	03-14	03-19
Savana	03-01	03-14	03-19

Bloom Observations

Good Blooming Varieties: Chips, Jenette, Sano, Yokut, Plateau, Fritz, 2-43W, Kapareil, Aldrich, Carmel, Monterey, Butte, Ruby, Rosseta and Padre.

Average Blooming Varieties: Kahl, Nonpareil, Wood Colony, Mission, Livingston, 2-19E and 1-87.

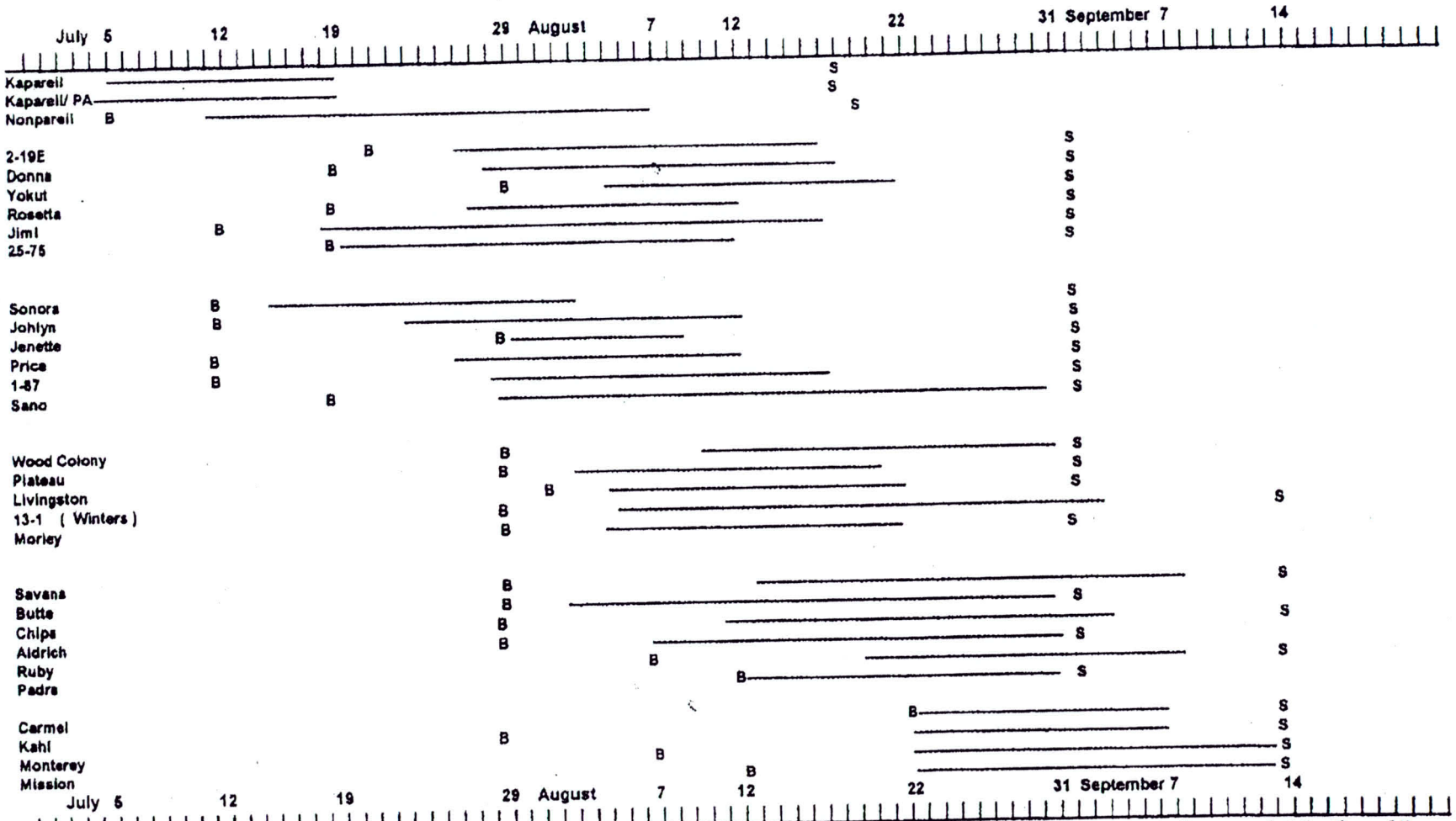
Poor Blooming Varieties: Johlyn, Sonora, 13-1, Price, Jiml, 1-102W, 25-75 and Donna..

Chilling Hours: 750.

Wind Storm: It took place March 3. The wind gusted 70 mph and lasted more than 24 hrs. There were two Padres, three 2-43W's and three Sonoras lost to this wind.

ALMOND REGIONAL VARIETY TRIAL - 2001 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. Three 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. 10/19/01.

Almond Regional Variety Trial
2001 Hull Split Dates
Manteca

Variety	10%	90%	Average Progression 1997-2001
Kapareil	24-Jul	25-Jul	1
Nonpareil	24-Jul	25-Jul	2
Jiml	24-Jul	27-Jul	4
2-43W	25-Jul	10-Aug	6
Yokut	25-Jul	14-Aug	8
Sonora	25-Jul	8-Aug	5
Donna	26-Jul	12-Aug	9
Johlyn	27-Jul	14-Aug	3
Price	27-Jul	3-Aug	7
25-75	27-Jul	3-Aug	10
1-102W	27-Jul	14-Aug	24
Kahl	27-Jul	21-Aug	29
2-19E	28-Jul	14-Aug	18
Jenette	28-Jul	13-Aug	12
1-87	28-Jul	14-Aug	23
Rosetta	30-Jul	13-Aug	17
Morley	30-Jul	13-Aug	15
13-1	3-Aug	21-Aug	13
Aldrich	3-Aug	14-Aug	20
Plateau	3-Aug	21-Aug	16
Livingston	3-Aug	14-Aug	27
Sano	4-Aug	21-Aug	22
Dottie Won	5-Aug	14-Aug	14
Wood Colony	5-Aug	25-Aug	21
Chips	14-Aug	22-Aug	11
Padre	14-Aug	30-Aug	31
Ruby	14-Aug	29-Aug	32
Butte	15-Aug	30-Aug	28
Mission	18-Aug	30-Aug	30
Savana	21-Aug	3-Sep	19
Carmel	21-Aug	30-Aug	25
Fritz	21-Aug	1-Sep	33
Monterey	22-Aug	1-Sep	26

HULLSPLIT PERIOD

Kern RVT - Paramount Farming Company

EARLY - SEASON		
	Hullsplit Period	
	Beginning*	**End****
Kapareil	06-28	07-29
Nonpareil	07-09	08-12
2-19E	08-10	09-07
Sonora	07-23	08-31
Rosetta	07-12	08-31
2-43W	07-09	09-07
1-102W	07-30	08-31
Donna	08-01	08-31
Aldrich	08-01	09-07
Jiml	07-23	09-07
Jenette	08-10	09-14
Johlyn	07-28	09-07

MID-SEASON		
	Hullsplit Period	
	Beginning*	**End****
25-75	08-10	09-30
13-1	08-01	09-14
1-87	07-25	09-07
Price	07-20	09-07
Plateau	08-17	09-18
Chips	08-17	09-18
Savana	08-14	09-20
Morley	08-06	09-18
Wood Colony	07-25	08-31

MID to LATE SEASON		
	Hullsplit Period	
	Beginning*	End**
Sano	08-10	09-07
Yokut	07-25	09-07
Padre	08-17	09-14
Butte	08-23	09-20
Livingston	08-17	09-20
Kahl	08-12	09-20
Carmel	08-20	09-27
Ruby	08-23	09-27

LATE-SEASON		
	Hullsplit Period	
	Beginning*	End**
Mission	08-24	09-27
Monterey	08-20	10-04
Fritz	09-07	10-14

*Beginning means one to five percent of hullsplit.

**End means 100% hullsplit.

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

2001 Yield Summary for the Regional Almond Variety Trial at California State University at Chico Farm, Butte County. Planted in 1993.					
				Kernel Pounds Per	
Variety	No. of Nuts/Tree	Average Kernel Weight (g)	Shelling Percentage	**Tree**	Acre[1]
Winters (13-1)	18880	1.01	53.4	41.8	2677
Livingston	13724	1.18	58.8	35.7	2283
Plateau	12010	1.28	45.8	33.8	2160
Carmel	12994	1.13	52.4	32.3	2070
Morley	15761	0.92	48.2	32.1	2053
Rosetta	10967	1.32	46.9	31.9	2041
Yokut	10919	1.28	58.2	30.7	1964
Nonpareil	**11059**	**1.18**	**63.9**	**28.9**	**1846**
Padre	13326	0.98	52.7	28.6	1833
2-19E	13478	0.96	50.8	28.6	1828
Wood Colony	10948	1.15	51.4	27.8	1781
1-87	13886	0.87	49.5	26.7	1711
Butte	13597	0.89	48.4	26.6	1705
Ruby	10557	1.13	49.3	26.2	1676
Aldrich	11683	1.01	50.1	26.0	1663
Sano	8561	1.29	44.4	24.2	1552
Monterey	8489	1.29	47.5	24.1	1541
Kahl	10076	1.05	42.5	23.3	1491
Chip's	9881	1.07	52.8	23.3	1490
Jiml	9000	1.17	60.4	23.2	1484
Mission	**9879**	**1.07**	**42.8**	**23.2**	**1483**
Price	10874	0.96	53.2	22.9	1469
Johlyn	9607	1.08	65.3	22.8	1457
25-75	11796	0.86	52.8	22.4	1433
Kapareil	10971	0.88	71.1	21.3	1364
Jenette	7263	1.26	62.9	20.2	1290
Sonora	5305	1.56	69.9	18.2	1165
Donna	7226	1.10	51.6	17.5	1118
Savana	7813	1.00	62.3	17.3	1106
2-43W	Selection was removed from the Butte RAVT				
1-102W	Selection was removed from the Butte RAVT				

[1]Based on a spacing that gives 78 trees per acre.

2001 Yield Summary for the Regional Almond Variety Trial at San Joaquin Delta College Farm, Manteca, San Joaquin County. Planted in 1993.					
				Kernel Pounds Per	
Variety	No. of Nuts/Tree	Average Kernel Weight (g)	Shelling Percentage	**Tree**	Acre[1]
Winters (13-1)	14643	1.10	65.8	35.6	2671
Butte	13713	1.02	52.0	30.8	2311
Carmel	11220	1.19	58.2	29.4	2206
Plateau	9613	1.39	51.3	29.3	2201
Livingston	10653	1.21	57.3	28.4	2133
Padre	11351	1.13	54.8	28.3	2123
Dottie Won	11914	1.03	53.6	26.9	2019
Jenette	9735	1.20	66.6	25.7	1927
Nonpareil	**8566**	**1.27**	**67.3**	**23.9**	**1794**
Sano	7448	1.43	49.7	23.5	1762
Mission	**9248**	**1.15**	**47.3**	**23.4**	**1754**
Morley	10448	0.99	46.3	22.7	1702
Wood Colony	8020	1.27	52.4	22.4	1677
Yokut	7690	1.32	55.0	22.3	1674
Sonora	7308	1.37	76.6	22.0	1651
Fritz	9272	1.08	53.4	22.0	1648
Rosetta	7036	1.39	50.3	21.5	1611
Monterey	7424	1.28	50.3	20.9	1570
Ruby	7433	1.23	50.6	20.1	1505
Chips	7149	1.24	58.5	19.5	1464
1-102W	5634	1.48	63.2	18.4	1379
Kapareil	9300	0.88	67.5	17.9	1346
Aldrich	7504	1.05	51.0	17.4	1307
Kahl	7383	1.02	41.5	16.6	1246
1-87	8345	0.90	70.5	16.5	1238
Johlyn	5806	1.24	73.7	15.8	1188
Jiml	6317	1.13	60.4	15.7	1179
Donna	5931	1.16	52.7	15.2	1137
Price	6164	1.06	62.3	14.3	1075
2-19E	5437	1.12	58.1	13.4	1008
2-43W	4089	1.14	71.2	10.2	767
25-75	4013	1.03	68.3	9.1	683
Savana	2539	1.28	69.1	7.1	536

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

2001 Yield Summary for the Regional Almond Variety Trial at Paramount Farming Company, Shafter, Kern County. Planted in 1993.					
				Kernel Pounds Per	
Variety	No. of Nuts/Tree	Average Kernel Weight (g)	Shelling Percentage	**Tree**	Acre[1]
Jenette	17985	1.23	77.0	48.6	4177
Padre	19736	1.09	55.3	47.3	4068
Carmel	16206	1.24	62.6	44.4	3819
Plateau	13504	1.43	59.8	42.5	3653
Morley	20131	0.93	49.8	41.1	3531
Ruby	14140	1.30	60.1	40.5	3482
2-19E	16000	1.15	62.1	40.5	3479
Butte	18322	0.98	54.9	39.5	3401
Monterey	13428	1.31	57.3	38.9	3342
Aldrich	15443	1.10	62.9	37.6	3230
Fritz	15753	1.07	54.5	37.2	3199
Sano	10936	1.46	61.8	35.3	3033
Nonpareil	**11773**	**1.36**	**69.8**	**35.1**	**3022**
Price	12199	1.22	65.1	32.8	2819
Kahl	12156	1.14	54.0	30.6	2634
Winters (13-1)	11626	1.12	58.8	28.8	2475
Chip's	11126	1.15	64.6	28.1	2419
Johlyn	9348	1.31	68.4	26.9	2313
Rosetta	7672	1.59	54.8	26.8	2308
Mission	**9831**	**1.24**	**47.9**	**26.7**	**2296**
1-87	11977	1.00	55.9	26.3	2260
Livingston	8835	1.33	69.6	26.0	2233
Wood Colony	8614	1.34	64.6	25.5	2193
25-75	11972	0.95	69.7	25.0	2150
Yokut	8518	1.28	61.4	23.9	2059
Sonora	6707	1.43	76.4	21.2	1822
Savana	8033	1.16	66.0	20.6	1771
1-102W	5791	1.54	66.7	19.6	1685
Donna	6928	1.18	62.3	18.0	1549
2-43W	7089	1.14	60.7	17.7	1526
Kapareil	8507	0.92	67.6	17.3	1486
Jiml	4750	1.55	70.5	16.2	1391

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

Annual Yield Summary for 1996 through 2001 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	2001	Accum.
Winters (13-1)	425	2076	784	2736	2446	2677	11144
Plateau	360	1215	2367	2007	1943	2160	10052
Monterey	749	1535	1531	1410	2279	1541	9045
Carmel	741	1240	1260	1700	1934	2070	8945
Livingston	425	1449	1275	1765	1607	2283	8804
Nonpareil	**494**	**1427**	**1127**	**1952**	**1762**	**1846**	**8608**
Ruby	448	1208	1315	1823	1828	1676	8298
Butte	443	1169	1549	1404	1509	1705	7779
Morley	219	1102	1189	1364	1846	2053	7773
Sano	372	1036	1020	1558	2128	1552	7666
Aldrich	275	1813	1005	1388	1494	1663	7638
Wood Colony	724	978	951	1464	1695	1781	7593
Johlyn	537	1047	1046	1870	1595	1457	7552
Rosetta	248	1039	840	1422	1727	2041	7317
1-87	190	1295	1074	1340	1454	1711	7064
Jiml	262	873	738	1633	1948	1484	6938
Padre	541	1013	832	1258	1402	1833	6879
Jenette	279	868	672	1407	1932	1290	6448
Mission	**383**	**941**	**890**	**1018**	**1616**	**1483**	**6331**
Sonora	732	494	1152	1262	1510	1165	6315
Yokut	359	765	896	1204	1126	1964	6314
Chip's	344	817	1188	1030	1434	1490	6303
25-75	308	668	815	1103	1910	1433	6237
Price	538	931	990	1230	1066	1469	6224
2-19E	276	1299	454	1345	906	1828	6108
Kahl	208	672	1070	1301	1034	1491	5776
Donna	582	913	712	1003	1255	1118	5583
Savana	451	1079	815	992	958	1106	5401
Kapareil	68	1129	280	941	1029	1364	4811

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

Annual Yield Summary for 1996 through 2001 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	2001	Accum.
Carmel	114	2111	1893	2695	2538	2206	11556
Butte	328	1631	2075	2641	2243	2311	11228
Plateau	[2]	1198	2301	2511	1968	2201	10179
Ruby	419	1274	1890	1985	2518	1505	9591
Jenette	226	1313	1530	2579	1667	1927	9241
Fritz	134	1692	1539	2086	2024	1648	9123
Yokut	251	1288	1882	1956	2060	1674	9111
Livingston	73	683	1572	2779	1736	2133	8975
Dottie Won	100	1287	1757	1667	2133	2019	8964
Chips	420	920	1798	2134	1828	1464	8564
Padre	221	579	1502	1340	2784	2123	8549
Sano	[2]	1213	995	2299	2205	1762	8474
Monterey	153	1315	1660	2006	1718	1570	8422
Wood Colony	211	1131	1168	2176	1543	1677	7906
Mission	**219**	**813**	**1332**	**1780**	**2001**	**1754**	**7900**
Nonpareil	**115**	**1165**	**918**	**2252**	**1333**	**1794**	**7577**
Winters (13-1)	[2]	1591	192	2223	392	2671	7069
Rosetta	[2]	1323	600	1745	1487	1611	6766
Kahl	[2]	757	1320	1836	1605	1246	6765
Sonora	123	[2]	965	2407	1194	1651	6341
Jiml	[2]	534	744	2509	1098	1179	6064
Aldrich	34	937	636	2169	902	1307	5985
1-87	79	486	1207	1601	1296	1238	5907
Donna	169	1000	990	1394	1153	1137	5843
Johlyn	[2]	634	997	1510	1246	1188	5574
Price	[2]	947	573	1731	932	1075	5258
Morley	[2]	559	576	1401	842	1702	5080
1-102W	217	457	892	939	519	1379	4403
2-19E	[2]	503	507	1010	903	1008	3931
Kapareil	[2]	361	183	1200	485	1346	3575
2-43W	[2]	[2]	776	1198	632	767	3373
25-75	75	192	660	542	912	683	3064
Savana	[2]	[2]	184	750	109	536	1579

[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 2001 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	2001	Accum.
Ruby	664	1406	2413	2180	2550	3164	3482	15859
Plateau	282	1340	2525	2419	2239	3197	3653	15655
Jenette	294	952	3085	1574	2692	2810	4177	15584
Padre	802	1624	1624	1883	2416	2841	4068	15258
2-19E	341	963	2347	1944	2496	2646	3479	14216
Monterey	591	1141	2184	1914	2194	2429	3342	13795
Sano	291	1209	1345	1754	2446	3702	3033	13780
Nonpareil	**259**	**782**	**2428**	**1963**	**2560**	**2216**	**3022**	**13230**
Carmel	634	1260	1944	1427	1359	2534	3819	12977
Fritz	[2]	1261	1706	2234	1700	2805	3199	12905
Butte	377	1364	2400	2353	1670	1178	3401	12743
Kahl	383	1319	1852	1683	1926	2696	2634	12493
Yokut	382	1316	1519	1835	2023	3184	2059	12318
Winters (13-1)	599	1224	2076	2152	1643	2073	2475	12242
Aldrich	422	459	2230	1295	2936	1410	3230	11982
Mission	**545**	**1353**	**1949**	**1816**	**1716**	**2285**	**2296**	**11960**
Chip's	401	882	1417	2004	1709	3106	2419	11938
Livingston	323	760	1972	1749	3054	1608	2233	11699
Johlyn	291	1221	2195	1936	1287	2084	2313	11327
Price	297	746	1118	1772	1235	2997	2819	10984
Sonora	337	843	1315	1120	2218	3181	1822	10836
Morley	176	372	1091	1871	1516	1742	3531	10299
Rosetta	93	481	2164	1123	2308	1808	2308	10285
2-43W	477	1028	2056	1794	1516	1254	1526	9651
1-87	228	607	1598	1594	2171	1008	2260	9466
Jiml	107	626	1565	1887	1631	2039	1391	9246
Wood Colony	559	1136	1545	1024	760	1923	2193	9140
25-75	167	808	1184	1138	1298	2072	2150	8817
1-102W	304	464	2143	1742	1755	661	1685	8754
Donna	324	935	766	955	1069	2281	1549	7879
Savana	418	697	1008	1271	656	1480	1771	7301
Kapareil	41	110	733	670	1576	618	1486	5234

[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 2001

Significant defects noted in the 2001 harvest nut samples of the three RAVTs are outlined below. The trees were in their ninth 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
6% or more double kernels:	Kahl (36%) Sano (28%) Plateau (24%) Price (20%) Aldrich (18%) 25-75 (16%) Donna (14%) Wood Colony (12%) Livingston (12%) Carmel (10%) Mission (6%) Monterey (6%) 1-87 (6%) Rosetta (6%)	Kahl (44%) Aldrich (42 %) Donna (38%) Plateau (30%) Livingston (24%) Wood Colony (20%) Fritz (20 %) Sano (18%) 2-19E (14%) Price (14%) Monterey (12%) Dottie Won (10%) Morley (10%) Rosetta (10%) Butte (8%) Savana (8%) 2-43W (8%) Jiml (8%) Carmel (8%) Mission (7%) Ruby (6%) Chips (6%)	Plateau (34%) Kahl (30%) Donna (16%) Sano (10%) Wood Colony (8%) Butte (8%) Mission (7%) Livingston (6%) Price (6%) Aldrich (6%)
6% or more twin kernels (two kernels within the same pellicle):		Price (18%) Sonora (14%) Jenette (12%) Kapareil (12%) Jiml (10%) 1-87 (10%) 25-75 (10%) Livingston (6%)	Price (6%) Jenette (6%) 2-19E (6%)

Varieties with defect	CSU-Chico	Delta College	Kern
6% or more blank kernels:	Kahl (10%) Price (8%) Kapareil (6%) Donna (6%)	1-87 (18%) 2-43W (14%) Price (12%) Donna (10%) 2-19E (8%) Savana (8%) Monterey (8%) 25-75 (6%) Chips (6%)	Kahl (16%) Price (8%)
6% or more kernels with gum:	Johlyn (8%) Sonora (6%)	Sonora (8%) Livingston (8%) 1-102W (6%)	Sonora (6%)
6% or more worm damage	Winters (14%) Chips (14 %) Sonora (8 %) Carmel (8 %) 25-75 (6 %) Wood Colony (6%)	Dottie Won (8%)	Plateau (40%) Kapareil (34%) Livingston (28%) Johyln (26%) Jenette (24%) Donna (22%) Jiml (18%) Savana (16%) 1-87 (16%) 1-102W (14 %) Winters (14%) Sonora (12%) Sano (12 %) 2-43W (12%) Kahl (10 %) Price (10 %) Nonpareil (10%) Wood Colony(8%) Ruby (8%) Aldrich (8%) Carmel (8%) 25-75 (6%) Butte (6%) Monterey (6%) 2-19E (6%)

ALMOND ALTERNARIA LEAFSPOT

Kern RAVT 2001

VARIETY	Percent Infected 08-07-01	No. of Infected Leaves in 30 spc. 08-24-01
Ruby	0	144
Carmel	0	142
Donna	0	135
Morley	2	130
1-87	0	130
Livingston	0	124
Kahl	0	121
Wood Colony	5	120
Mission	0	118
2-19E	1	115
Yokut	0	110
Sano	0	108
Plateau	0	106
Price	0	104
1-102W	0	100
Aldrich	0	98
Monterey	0	92
Savana	3	91
Padre	0	90
Winters (13-1)	5	85
Butte	0	83
Johlyn	0	72
Sonora	0	66
2-43W	2	56
25-75	0	53
Jenette	0	49
Jiml	0	44
Rosetta	0	27
Chips	0	25
Fritz	0	20
Nonpareil	1	20
Kapareil	4	4

HULL ROT

Kern RAVT 2001

Variety	No. Strikes / Tree
Kapareil	802
Nonpariel	576
Butte	251
Winters (13-1)	216
25-75	196
Price	194
Johlyn	183
2-19E	156
Jenette	149
Sonora	128
Rosseta	89
Jiml	80
1-102W	72
2-43W	71
Aldrich	63
Livingston	52
Sano	43
Plateau	35
1-87	34
Wood Colony	29
Padre	21
Chips	18
Yokut	17
Morley	15
Ruby	5
Kahl	4
Mission	2
Savana	0
Fritz	0
Donna	0
Carmel	0
Monterey	0