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CALIFORNIA RICE VARIETIES

Description and Performance Summary of the 1993 and Multiyear Statewide Rice Variety Tests in California

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University of California Cooperative Extension rice variety evaluation tests were conducted in the Sacramento and San Joaquin Valleys in 1993. This program, a cooperative effort involving the California Cooperative Rice Research Foundation, Inc. (CCRRFI) and the United States Department of Agriculture (USDA), compares advanced breeding lines with commercially available rice varieties and evaluates preliminary breeding lines to determine their adaptation to the principal rice growing areas of California. Entries in the tests include lines and varieties developed by CCRRFI rice breeders. Selected lines and varieties from private breeding programs are also included. The program is partially funded by the Rice Research Board and cooperating growers provide land, water and on-site management for the tests. Names and brief descriptions of the current publicly developed varieties are listed in Table 1.

With the end of California's seven year drought and the return of normal water supplies, rice acreage increased to 463,000 acres in 1993, an increase of about 73,000 acres over 1992 and 147,000 acres over 1991 (Table 2). Medium-grain varieties M-202, M-201, M-204, M-401, and M-103 occupied 93.4% of the acreage. As in recent years, most acreage was planted to M-202 (65.9%). M-204, released in 1991, was planted on more than 36,000 acres. Premium quality medium-grain (M-401) was produced on 23,150 acres, about 9,000 acres less than in 1992. Acreage of short- and long-grain types also decreased from 1992 levels. Leading short- and long-grain varieties were Calmochi-101 and L-203 which occupied 2.1% and 0.9% of the acreage, respectively.

Field preparation and planting were somewhat delayed due to heavy winter rains which caused some fields to remain saturated longer than normal, especially in Butte County. Strong north winds affected planting and stand establishment at some locations. Seed drift and bunching was observed in many fields, particularly on the west side of the Sacramento Valley. Several fields were reseeded due to stand establishment problems. Lower-than-normal spring temperatures also affected seedling emergence and contributed to thin stands. Consequently, weed infestations were severe in some cases and required additional post-emergence herbicide applications. However, most of the growing season was characterized by mild temperatures which provided excellent conditions for tillering, seed set and extended grain fill. Thus, despite stand establishment and weed problems, the California Agricultural Statistics Service estimates statewide average yields at 8,200 lbs/A, down slightly from the record high 8,400 lbs/A in 1992.

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Experimental Procedure

Field experiments were conducted at eight farm locations in the rice growing counties of California. Two classes of tests were conducted at each site: 1) Advanced tests consisting of advanced breeding lines and commercial varieties; and 2) Preliminary tests consisting of lines to be newly evaluated on a statewide basis. Entries in each test were generally restricted to a single maturity group to avoid too early or too late maturation relative to the field variety of the test location. Commercial varieties in the very early and early maturity classes, however, were evaluated in both very early and early tests. Advanced and preliminary lines from three maturity groups were also evaluated at the Rice Experiment Station (RES), Biggs, California for a total of 22 statewide tests. Advanced tests were arranged in randomized complete block designs with four replications, while preliminary lines were planted in two replications only. Seed for the tests was provided by the RES or, in the case of proprietary lines, by their respective owners. Maturity groups, test locations and commercial standards in each test were as follows:

Very Early Maturity Group. Twelve advanced breeding lines and ten commercial varieties were evaluated in uniform tests at each of the following on-farm sites: [1] the RES (Butte County), [2] The Skinner Ranch (Butte County) [3] the Brumley Ranch (San Joaquin County), and [4] the Lauppe Ranch (Sutter County). Twenty-two preliminary lines were also evaluated in separate tests at each location. Commercial varieties included Calmochi-101, Valencia 87, M-103, M-201, M-202, M-203, M-204, L-202, L-203, and S-201. Advanced lines at each location included nine entries from the RES breeding program and three proprietary entries from Busch Agricultural Resources (VT-957, VT-1017, and VT-1051). In addition, the Japanese variety Akitakomachi and an increased seeding rate of M-204 (176 lbs/A) were included in the off-station preliminary line tests.

Early Maturity Group. Fourteen advanced lines and ten commercial varieties were evaluated in uniform tests at each of the following locations: [1] the RES (Butte County), [2] the Dennis Ranch (Colusa County), [3] Geer and Sons (District 108, Yolo County) and [4] the Mohammed Ranch (District 10, Yuba County). Nineteen preliminary lines were also included in separate tests at each site. Commercial varieties included Calmochi-101, Valencia 87, M-103, M-201, M-202, M-203, M-204, L-202, L-203 and S-201. Advanced lines included twelve entries from the RES, and two entries from Busch Agricultural Resources (VT-315 and VT-390). These two lines had been previously evaluated in the 1992 statewide tests. In addition, an increased seeding rate of M-204 (176 lbs/A) was included in the off-station preliminary tests.

Late Maturity Group. Nine advanced lines and seven commercial varieties were evaluated in uniform tests at the following locations: [1] the RES (Butte County), [2] the Wylie Ranch (Glenn County), and [3] the Catlett Ranch (Sutter County). Eighteen preliminary lines, L-202 and the Japanese short grain Koshihikari were also included in separate tests at each site. Commercial varieties included M-401, S-301, A-301, M-202, M-203, M-204, and L-202. Advanced entries included eight lines from the RES and one medium grain from Busch Agricultural Resources (VT-1006).

Individual plots were water seeded by hand at a planting rate of 144 lbs/A. Advanced entries from Busch Agricultural Resources were seeded at 180 lbs/A. Agronomic character-

istics measured for each entry were seedling vigor, days to 50% heading, plant height, lodging at harvest, grain moisture at harvest and grain yield at 14% moisture. Seedling vigor was rated subjectively by visual observation on a scale of 1 (poor) to 5 (excellent) at three to four weeks after planting. Scores were based on plant health and stand at crop emergence (through the water). Days to 50% heading measured the number of days from planting to when 50% of the heads were free from the boot. Plant height was measured at harvest as the distance from the soil surface to the tip of the panicle. Plant lodging was rated visually on a scale of 1 (no lodging) to 99 (all plants completely lodged).

County tests were harvested with a SWECO 324 combine and plots at the RES were harvested with an Allis-Chalmers combine. Both machines are modified for small plot harvesting and all plots had a harvest area of 150 square feet (.0034 A). Grain moisture was assessed at harvest and grain yield was adjusted to 14% moisture.

Summary of the Very Early Rice Variety Tests (<90 days to 50% heading at Biggs, CA)

Agronomic performance data for individual entries at each location are presented in Tables 3 through 6. A four-location combined summary is given in Table 7. Entries are ranked by grain yield with the highest yielding entry appearing first. Data for Akitakomachi and the increased seeding rate of M-204 are not included in the four location summary since these entries were excluded from the preliminary line test at the RES.

Grain yields in the advanced line tests averaged 9,870 lbs/A at the RES, 8,750 lbs/A at Sutter, 7,950 lbs/A at Butte, and 8,660 lbs/A at San Joaquin. Lower average yields in the off-station Butte County test were attributed to thin stands which allowed for increased weed competition. Over the four locations, the highest yielding entry was 91-y-177, a very early (83 days to 50% heading) short-grain (Table 7), which ranked 1st in yield in the Sutter and San Joaquin tests. Entry 89-y-103, another advanced short-grain, was the highest yielding entry at the RES and ranked 3rd in the four location summary. Entry VT-1051 (Busch Agricultural Resources) averaged only 82 days to 50% heading over locations, but ranked 20th in yield. Of the very early commercial varieties, Calmochi-101 and M-103 ranked 6th and 12th, respectively, over locations, but were among the top four yielding entries at San Joaquin.

No entry produced yields statistically higher than M-202 at the RES, Butte, and Sutter. Yields of M-204 were similar to M-202 at the RES and Butte, but were 8% and 9% lower in the Sutter and San Joaquin tests, respectively, indicating a lower degree of tolerance to the cooler conditions in San Joaquin and the delayed planting date (5/21/93) at Sutter. A direct comparison between seeding rates for M-204 can not be made since the two rates were not evaluated in the same test. However, their appeared to be no benefit from the increased rate except at Butte where stands were generally thin across the entire test. The early, premium quality variety, M-203, continues to perform very well in the San Joaquin test and in other locations where severe early lodging is avoided.

Table 8 shows over-year and location yields for the very early commercial varieties compared with leading early varieties in the same tests. Common year-location entries are compared to give relative yield as a percentage of the very early standard, M-103. M-202 has

yielded 105% of M-103 in the very early tests over the past five year period, while yields of Calmochi-101 and L-203 yields have been equal to M-103. M-204 has yielded slightly higher (101%) than M-103 in very early tests conducted over the past three years.

Summary of the Early Rice Variety Tests (90-97 days to 50% heading at Biggs, CA)

Agronomic performance data for individual entries at each location are presented in Tables 9 through 12. A four location combined location summary is given in Table 13. Entries are ranked by grain yield with the highest yielding entry appearing first. Data for the increased seeding rate of M-204 are not included in the four location summary since this treatment was not evaluated at the RES.

Yields in the advanced line tests averaged 9,950 lbs/A at the RES, 9,870 lbs/A at Yolo, 9,270 lbs/A at Yuba, and 8,600 lbs/A at Colusa. Strong winds during the seeding of the Colusa tests adversely affected stand establishment. The medium-grain line 91-y-381 exceeded 10,000 lbs/A at the RES, Yolo, and Yuba, and was the highest yielding entry over the four locations (Table 13). Other leading advanced lines were entries 89-y-103 and 90-y-253. The variety M-202 ranked 1st and 3rd in yield at Yolo and Yuba, respectively, but was below average at the RES and Colusa. The new early variety M-204 exceeded the yield of M-202 at these locations. As in the very early tests, increased seeding rates for M-204 appeared beneficial where overall stands were thin (Colusa). L-203, released in 1991, continued to show improvement over L-202 at each location. Of the preliminary lines, 92-y-624 and 93-y-75 (medium-grains) and 92-y-521 (long-grain) exceeded 10,000 lbs/A and showed improvement in other agronomic traits.

Table 14 shows the over-location and over-year yields for early varieties. M-201 is used as a standard to compare common year-location yield data. Based on tests conducted over the last five years, M-202, M-203, L-202, L-203 and S-201 have yielded 101%, 88%, 93%, 97% and 95% of M-201, respectively. Since its entry into the statewide testing program, M-204 has yielded 103% of M-201 based on 20 tests conducted during the past five years.

Summary of the Intermediate-Late Rice Variety Tests (intermediate= 98-105 days and late= > 105 days to 50% heading at Biggs, CA)

Agronomic performance data for individual entries at each location are presented in Tables 15 through 17. A three-location combined summary is given in Table 18. Entries are ranked by grain yield with the highest yielding entries appearing first.

Average yields in the advanced intermediate-late tests were 9,210 lbs/A at the RES, 9,710 lbs/A at Sutter, and 9,350 lbs/A at Glenn. An advanced short-grain, 91-y-581, was the highest yielding entry at the RES and Sutter and ranked 3rd in the over location summary (Table 18). This entry had been advanced from preliminary testing in 1992. Entry 90-y-686, a premium quality advanced medium-grain, ranked 1st in yield in the Glenn County test. This entry was the highest yielding line over three locations in 1992. M-204 produced higher yields than M-202 at each location and ranked 2nd in yield in the over location summary. Premium quality M-401 ranked 2nd, 5th, and 9th in yield at the RES, Sutter, and Glenn,

respectively. M-203 was the lowest yielding entry in each of the three tests due to severe early lodging. In the preliminary test, medium-grains 92-y-612, 92-y-642, and 92-y-643 exceeded 10,000 lbs/A over the three locations. The Japanese variety Koshihikari lodged severely at both Sutter and Glenn, resulting in the lowest yields.

Table 19 compares intermediate-late maturing commercial cultivars in over-location/year tests. Using M-401 as the standard for comparison, A-301 and S-301 have yielded 97% and 106% of M-401, respectively, over the last five years.

TABLE 1

Characteristics of publicly developed California rice varieties, 1993.

	Maturity	Seed widely available	Stem rot score[1]	Seedling vigor[2]	Comments
Short Grain					
S-201	Early	1981	5.2	4.4	High yield potential, excellent seedling vigor, similar to M-201 in maturity and in resistance to blanking. Good pearl shape, larger seed size than other short grains. Maturity delayed by cool temperatures.
Medium Grain					
M-103	Very Early[3]	1990	5.1	3.9	Earliest variety, vigor less than M-202. Excellent resistance to blanking. Good head and total milled rice yields. Moderate lodging. Good yield potential, about 7% less than M-202 at normal planting dates. Alternative variety for M-202 in coldest rice producing areas and for late planting in warmer areas.
M-201	Early	1984	4.8	3.8	Very high yield potential. Two inches shorter than M-202 with excellent resistance to lodging. Threshes very easily so reduce reel and cylinder speed to minimize shatter and enhance head rice. Best resistance to stem rot.
M-202	Early	1987	5.2	4.3	Very high yield potential. Performs better than M-201 in cooler growing areas. Three days earlier, ripens more uniformly and more resistant to blanking than M-201. Moderate lodging. Threshes easily but does not shatter.
M-204	Early	1993	5.0	4.0	Very high yield potential. Seedling vigor lower than M-202, higher than M-201. Height and heading date like M-201; matures very close to M-202. Lodging resistance intermediate between M-201 and M-202. Improved total milling and head rice yields. Resistance to blanking is similar to M-202. Threshes easily like M-202.
Long Grain					
L-202	Early	1986	5.4	3.7	Good yield potential in warmer areas. Not adapted to colder areas. Shortest of current varieties. Excellent resistance to lodging. Seedling vigor fair, may be affected by water depth. Threshes easily so reduce cylinder speed to enhance head rice. Harvest moisture for L-202 should be between 18% and 21%.
L-203	Early	1993	5.2	3.9	High yield potential. Five to 7 days earlier than L-202. Resistant to lodging. Seedling vigor fair, may be affected by water depth. Cooking and milling similar to L-202. Harvest moisture at 18-20%. Reduce cylinder speed for harvesting to enhance head rice.
Premium Quality					
M-203	Early	1992	6.1	4.2	*Premium quality* rice with large kernels. An early maturing mutant of M-401 (heads 17 days earlier). Susceptible to blanking and has weak straw. Reduced N is necessary to prevent lodging. Not a substitute for M-201 or M-202. Yields 15% below M-202. Most susceptible to stem rot. Milling yields lower than other medium grains.
M-401	Late	1983	5.6	4.3	*Premium quality* rice with large kernels. Susceptible to blanking, lodging and damage from premature drainage. Use somewhat less N than on other varieties. Best adapted to warmer areas. Milling yields lower than other medium grains.
Specialty Rices[4]					
Calmochi-101	Very Early[3]	1987	4.9	4.2	A sweet glutinous rice. Two weeks earlier than S-201. Excellent resistance to low temperature blanking. Has rough leaves and hulls; no awns. Grains dry down rapidly during ripening. Be careful not to contaminate with other varieties. ASCS non-program rice.
-301	Intermediate	1988	5.2	3.5	An aromatic ("popcorn" aroma) long grain. Moderately high yield in warmer areas. Not adapted to late seeding dates, deep water or cool areas. Seedling vigor fair to poor. Suggest harvest moisture of 20-22% and air drying without heat to retain maximum aroma. Has excellent straw strength.

Average stem rot score: 1 = no disease and 10 = disease severe.
Subjective rating of 1-5 where 1 = poor and 5 = excellent seedling emergence.
Milling quality and yield may be reduced by early planting in warmer areas.
Specialty varieties should not be grown unless arrangements have first been made with marketing agency.

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TABLE 2

California Rice Variety Acreage, 1991-1993.[1]

Variety	1993		1992		1991	
	(acres)	(%)	(acres)	(%)	(acres)	(%)
Medium Grains	**432,442**	**93.4**	**341,730**	**87.6**	**295,689**	**93.4**
M-103	23,613	5.1	18,580	4.8	11,929	3.8
M-201	43,985	9.5	34,060	8.7	46,873	14.7
M-202	305,117	65.9	256,970	65.9	210,184	66.5
M-204	36,577	7.9	--	< 1.0	--	--
M-401	23,150	5.0	32,120	8.2	26,703	8.4
Short Grains	**21,761**	**4.7**	**23,600**	**6.1**	**9,769**	**3.2**
S-201	8,797	1.9	11,610	3.0	3,448	1.1
Calpearl	3,241	0.7	3,480	0.9	2,043	0.7
Calmochi-101	9,723	2.1	8,510	2.2	4,278	1.4
Long Grains	**4,630**	**1.0**	**17,810**	**4.6**	**6,647**	**2.1**
L-202	463	0.1	6,970	1.8	6,647	2.1
L-203	4,167	0.9	10,840	2.8	--	--
Others[2]	**4,167**	**0.9**	**6,630**	**1.7**	**4,432**	**1.3**
Total	**463,000**	**100**	**389,770**	**100**	**316,051**	**100**

[1]Estimates based on survey of rice millers and seed production.

[2]Others include: Short Grain 'Valencia 87'; Medium Grains M-203, SP-411, and Kokuho Rose, and long grain A-301.

TABLE 3

1993 Very Early Rice Variety Test - Butte County (Biggs RES).

	Entry	Grain[1] Type	Grain Yield at 14% Moisture (lbs/a)	Grain Moisture at Harvest (%)	Seedling[2] Vigor (1-5)	Days to 50% Heading	Lodging[3] (1-99)	Plant Height (inches)
Advanced Lines and Varieties								
7	89-Y-103	S	10780	16.2	4.9	84	4	33.9
12	M-204	M	10760	17.8	5.0	88	3	34.9
3	S-201	S	10740	19.3	5.0	95	3	36.7
15	91-Y-408	M	10690	17.0	4.8	86	3	38.3
4	91-Y-171	S	10640	13.5	4.9	78	24	35.4
13	91-Y-253	M	10630	17.3	4.9	84	5	36.6
17	L-203	L	10400	16.5	4.8	87	1	32.5
10	M-201	M	10310	18.0	4.9	88	3	34.8
2	VALENCIA 87	S	10230	14.3	5.0	84	3	34.0
21	VT-1017	S	10130	14.2	5.0	78	26	36.2
5	92-Y-295	S	10050	17.1	4.9	85	5	38.5
16	L-202	L	9990	17.2	4.8	92	1	31.7
6	92-Y-188	S	9980	15.7	4.9	88	1	32.9
11	M-202	M	9940	17.2	5.0	88	12	36.3
14	91-Y-208	M	9810	16.8	4.9	80	39	36.3
19	92-Y-41	L	9320	14.5	4.6	87	1	34.3
9	M-103	M	9120	17.4	4.8	79	35	35.4
20	VT-957	S	9010	13.9	5.0	78	34	35.0
1	CALMOCHI-101	W	8940	14.8	4.9	78	60	35.9
8	M-203	M	8860	18.9	5.0	86	75	38.6
18	92-Y-21	L	8850	13.6	4.8	85	2	33.2
22	VT-1051	M	7930	13.4	5.0	74	39	32.2
Mean			9870	16.1	4.9	84	17	35.2
CV %			8.0	8.3	1.3	3.2	89.0	4.4
LSD (.05)			1110	1.9	0.1	4	22	2.2
Preliminary Lines								
35	92-Y-274	M	10830	16.3	4.9	83	8	38.6
33	92-Y-271	M	10400	16.2	4.9	84	16	36.0
31	92-Y-232	M	10380	16.3	4.8	81	3	36.5
32	92-Y-260	M	10170	17.0	4.9	82	35	36.1
27	91-Y-199	W	10160	15.9	4.9	85	1	37.8
39	92-Y-483	L	9880	13.8	4.8	80	4	34.2
34	92-Y-273	M	9870	17.9	4.9	83	19	38.8
25	92-Y-179	S	9780	14.4	4.9	80	12	35.8
36	L-203	L	9780	15.7	4.7	87	1	31.6
43	93-Y-43	L	9580	13.3	4.9	80	1	35.6
42	92-Y-548	L	9460	15.4	4.7	84	1	33.1
26	92-Y-200	W	9360	17.6	4.9	78	51	35.6
37	92-Y-443	L	9340	14.7	4.7	78	2	36.0
29	92-Y-224	M	9240	16.0	4.9	81	8	37.5
23	93-Y-23	M	9160	17.7	4.9	83	20	35.5
40	92-Y-490	L	9120	14.8	4.7	86	1	33.5
28	91-Y-227	M	9090	15.6	4.8	79	3	33.1
30	92-Y-231	M	9050	16.8	5.0	86	4	35.6
38	92-Y-444	L	8900	14.0	4.8	81	2	34.9
41	92-Y-494	L	8380	14.2	4.9	88	1	33.3
44	93-Y-44	L	8290	13.9	4.8	86	2	34.5
24	93-Y-24	S	8050	14.5	5.0	74	54	35.0
Mean			9470	15.5	4.9	82	11	35.4
CV %			8.9	10.2	1.5	2.6	119.7	4.1
LSD (.05)			1190	2.2	0.1	3	19	2.0

Planting date: May 15, 1993 (Reps 1 & 2), May 26, 1993 (Reps 3 & 4).

[1]S = short; M = medium; L = long; W = waxy.
[2]Subjective rating of 1-5 where 1 = poor and 5 = excellent seedling emergence.
[3]Subjective rating of 1-99 where 1 = none and 99 = completely lodged.

TABLE 4

1993 Very Early Rice Variety Test - Butte County (Skinner Bros., Durham).

	Entry	Grain[1] Type	Grain Yield at 14% Moisture (lbs/a)	Grain Moisture at Harvest (%)	Seedling[2] Vigor (1-5)	Days to 50% Heading	Lodging[3] (1-99)	Plant Height (inches)
Advanced Lines and Varieties								
11	M-202	M	8630	20.2	4.6	83	19	32.7
12	M-204	M	8520	20.5	4.0	86	4	31.6
3	S-201	S	8460	23.2	4.5	90	1	31.2
1	CALMOCHI-101	W	8420	17.7	3.5	82	6	32.0
4	91-Y-171	S	8370	17.1	3.6	80	1	32.1
10	M-201	M	8350	20.3	4.1	85	1	32.1
5	92-Y-295	S	8330	22.3	3.7	86	1	32.8
21	VT-1017	M	8290	17.4	4.8	82	1	31.9
17	L-203	L	8100	18.9	3.0	89	1	29.5
7	89-Y-103	S	8050	20.8	3.9	84	1	28.2
6	92-Y-188	S	8020	20.0	3.7	84	1	29.8
8	M-203	M	8010	21.9	3.8	86	30	32.8
9	M-103	M	7990	19.9	3.9	82	6	30.4
2	VALENCIA 87	S	7970	17.0	3.5	85	1	29.0
14	91-Y-208	M	7830	18.2	3.4	81	2	33.3
22	VT-1051	M	7670	14.0	4.9	76	7	29.0
19	92-Y-41	L	7670	18.6	3.1	91	1	31.0
15	91-Y-408	M	7560	18.8	2.9	83	1	32.1
13	91-Y-253	M	7350	19.3	3.5	87	1	31.9
18	92-Y-21	L	7260	17.2	3.0	87	1	31.4
16	L-202	L	7120	19.0	3.1	90	1	28.4
20	VT-957	S	6900	15.8	4.4	78	16	29.8
Mean			7950	19.0	3.8	84	5	31.0
CV %			6.5	2.7	12.3	0.8	194.6	4.3
LSD (.05)			730	0.7	0.7	1	13	1.9
Preliminary Lines								
46	M-204 (176#/A)	M	9180	21.0	4.3	85	1	33.3
30	92-Y-231	M	8660	20.6	4.5	86	1	30.9
25	92-Y-179	S	8310	19.6	4.0	81	1	30.9
43	93-Y-43	L	8300	16.4	4.5	83	1	32.3
23	93-Y-23	M	8060	19.6	4.0	81	1	30.1
32	92-Y-260	M	7970	18.9	4.0	82	8	31.1
33	92-Y-271	M	7940	20.0	4.3	85	1	30.1
26	92-Y-200	W	7920	20.8	3.3	80	18	30.1
39	92-Y-483	L	7720	17.5	3.5	84	1	31.1
35	92-Y-274	M	7700	18.8	4.0	84	1	32.5
36	L-203	L	7650	18.5	3.5	87	1	27.8
29	92-Y-224	M	7550	19.2	3.5	81	1	34.6
27	91-Y-199	W	7550	18.4	3.0	86	1	34.4
41	92-Y-494	L	7470	18.3	4.5	88	1	31.3
38	92-Y-444	L	7290	17.5	3.5	81	1	31.7
42	92-Y-548	L	7240	19.1	3.8	88	1	29.5
45	AKITAKOMACHI	S	7160	19.6	3.5	84	95	32.7
40	92-Y-490	L	7140	18.3	3.3	87	1	29.7
34	92-Y-273	M	7130	19.7	3.5	84	1	31.3
31	92-Y-232	M	7110	17.1	3.5	79	1	30.7
44	93-Y-44	L	6950	17.7	3.3	90	1	30.5
28	91-Y-227	M	6940	16.4	4.5	79	11	28.5
24	93-Y-24	S	6800	15.0	4.8	76	8	28.3
37	92-Y-443	L	6730	17.0	3.5	81	1	29.9
Mean			7600	18.5	3.8	83	7	31.0
CV %			7.0	3.5	12.3	1.2	59.6	3.6
LSD (.05)			1110	1.3	1.0	2	8	2.3

Planting date: May 12, 1993 Harvest date: September 15, 1993

[1]S = short; M = medium; L = long; W = waxy.
[2]Subjective rating of 1-5 where 1 = poor and 5 = excellent seedling emergence.
[3]Subjective rating of 1-99 where 1 = none and 99 = completely lodged.

TABLE 5

1993 Very Early Rice Variety Test - Sutter County (Daryl Lauppe, Natomas).

	Entry	Grain[1] Type	Grain Yield at 14% Moisture (lbs/a)	Grain Moisture at Harvest (%)	Seedling[2] Vigor (1-5)	Days to 50% Heading	Lodging[3] (1-99)	Plant Height (inches)
Advanced Lines and Varieties								
4	91-Y-171	S	9630	22.0	3.5	86	3	36.9
21	VT-1017	S	9460	19.9	4.9	87	8	36.9
7	89-Y-103	S	9340	21.9	4.9	91	1	32.5
11	M-202	M	9300	23.4	4.8	93	1	35.2
8	M-203	M	9240	25.2	4.4	93	23	34.9
3	S-201	S	9140	23.1	4.3	96	1	35.3
1	CALMOCHI-101	W	9090	21.8	4.1	85	15	36.0
5	92-Y-295	S	9080	22.6	4.5	92	1	35.7
14	91-Y-208	M	8960	22.9	3.5	87	1	34.8
6	92-Y-188	S	8880	23.4	3.7	91	1	33.5
15	91-Y-408	M	8830	21.2	3.4	90	1	36.8
2	VALENCIA 87	S	8790	20.2	2.9	91	1	34.4
13	91-Y-253	M	8690	23.2	3.9	93	1	35.6
9	M-103	M	8680	23.9	4.3	88	15	35.2
12	M-204	M	8550	22.1	4.4	95	1	32.8
22	VT-1051	M	8360	22.1	5.0	84	1	34.6
20	VT-957	S	8320	20.9	4.4	87	13	33.6
10	M-201	M	8150	22.7	4.4	95	1	33.5
18	92-Y-21	L	8140	18.4	4.1	91	1	31.7
17	L-203	L	8070	21.2	3.8	95	1	30.4
19	92-Y-41	L	7960	20.3	4.3	93	1	32.9
16	L-202	L	7820	21.5	3.9	97	1	31.1
Mean			8750	22.0	4.1	91	4	34.3
CV %			4.7	11.0	9.9	1.6	125.0	4.5
LSD (.05)			580	3.4	0.6	2	7	2.2
Preliminary Lines								
32	92-Y-260	M	9900	19.5	3.3	89	3	34.6
25	92-Y-179	S	9760	20.8	4.0	89	1	34.8
29	92-Y-224	M	9460	20.5	3.5	86	1	36.0
35	92-Y-274	M	9430	19.5	4.3	89	1	35.4
26	92-Y-200	W	9290	21.6	3.3	84	5	36.4
30	92-Y-231	M	9000	20.4	4.3	92	1	34.6
39	92-Y-483	L	8920	18.2	3.8	86	1	34.1
38	92-Y-444	L	8910	17.6	4.0	86	1	35.4
23	93-Y-23	M	8890	20.2	3.5	89	1	33.5
27	91-Y-199	W	8880	19.1	2.8	93	1	37.0
43	93-Y-43	L	8850	17.1	3.8	86	1	34.4
40	92-Y-490	L	8820	18.1	3.3	92	1	33.5
33	92-Y-271	M	8810	18.9	3.8	89	1	34.3
34	92-Y-273	M	8720	21.5	3.5	87	1	36.8
37	92-Y-443	L	8520	17.3	2.9	86	1	35.4
28	91-Y-227	L	8510	19.8	4.0	85	1	32.7
31	92-Y-232	M	8490	20.7	3.3	87	1	36.0
42	92-Y-548	L	8440	18.9	3.5	92	1	33.3
36	L-203	L	8250	18.8	3.5	96	1	30.1
44	93-Y-44	L	7990	17.5	3.5	91	1	33.3
46	M-204 (176#/A)	M	7920	19.4	4.0	93	1	32.3
41	92-Y-494	L	7890	18.6	4.0	93	1	33.9
24	93-Y-24	M	7520	19.5	4.0	82	50	36.2
45	AKITAKOMACHI	S	6320	22.4	3.8	86	99	39.8
Mean			8640	19.4	3.6	88	7	34.7
CV %			4.1	3.1	11.0	1.1	98.5	3.6
LSD (.05)			740	1.2	0.8	2	15	2.6

Planting date: May 21, 1993 Harvest date: October 13, 1993

[1]S = short; M = medium; L = long; W = waxy.
[2]Subjective rating of 1-5 where 1 = poor and 5 = excellent seedling emergence.
[3]Subjective rating of 1-99 where 1 = none and 99 = completely lodged.

TABLE 6

1993 Very Early Rice Variety Test - San Joaquin County (Brumley Ranch, Escalon).

	Entry	Grain[1] Type	Grain Yield at 14% Moisture (lbs/a)	Grain Moisture at Harvest (%)	Seedling[2] Vigor (1-5)	Days to 50% Heading	Lodging[3] (1-99)	Plant Height (inches)
Advanced Lines and Varieties								
4	91-Y-171	S	10040	19.3	4.8	90	1	32.8
8	M-203	M	9860	26.5	3.5	99	1	33.3
1	CALMOCHI-101	W	9780	19.5	4.0	90	1	29.7
9	M-103	M	9590	23.0	3.8	91	1	31.8
5	92-Y-295	S	9390	27.2	4.3	100	1	34.8
11	M-202	M	9190	24.7	4.0	100	1	33.0
14	91-Y-208	S	9020	23.3	3.5	93	1	32.6
21	VT-1017	S	8960	21.2	4.8	93	1	33.4
7	89-Y-103	S	8750	24.5	4.0	101	1	28.9
20	VT-957	S	8690	21.4	4.4	94	1	32.3
13	91-Y-253	M	8610	24.2	3.6	97	1	32.5
15	91-Y-408	M	8500	24.2	3.3	98	1	34.5
22	VT-1051	M	8500	20.5	5.0	94	1	30.5
12	M-204	M	8300	25.8	4.0	101	1	30.1
2	VALENCIA 87	S	8260	22.7	4.8	97	1	32.2
6	92-Y-188	S	8240	26.4	4.0	103	1	30.4
19	92-Y-41	L	8100	20.5	2.5	98	1	31.9
17	L-203	L	8010	22.4	3.0	100	1	29.9
18	92-Y-21	L	8000	19.2	3.3	95	1	29.4
10	M-201	M	7930	26.0	4.0	103	1	31.7
3	S-201	S	7520	27.2	4.8	111	1	31.9
16	L-202	L	7240	22.1	3.0	102	1	29.5
Mean			8660	23.3	3.9	98	1	31.7
CV %			6.4	6.1	10.3	1.0	0.0	5.9
LSD (.05)			780	2.0	0.6	1		2.6
Preliminary Lines								
26	92-Y-200	W	10160	23.5	3.5	90	1	33.1
32	92-Y-260	M	9780	22.5	4.0	94	1	32.1
39	92-Y-483	L	9220	19.0	3.5	89	1	31.9
23	93-Y-23	M	9120	23.9	4.0	95	1	30.1
43	93-Y-43	L	9070	17.4	4.5	91	1	31.7
29	92-Y-224	M	9050	22.0	4.5	95	1	34.1
31	92-Y-232	M	8790	22.8	3.0	94	1	31.3
40	92-Y-490	L	8620	19.6	3.0	94	1	29.9
27	91-Y-199	W	8540	21.6	3.5	98	1	32.1
35	92-Y-274	M	8490	21.4	4.0	96	1	34.6
30	92-Y-231	M	8360	22.4	4.0	96	1	30.9
33	92-Y-271	M	8230	21.9	4.0	92	1	32.7
34	92-Y-273	M	8220	22.3	4.0	93	1	31.9
45	AKITAKOMACHI	S	7980	22.0	3.0	92	28	35.4
46	M-204 (176#/A)	M	7810	24.7	4.0	98	1	30.7
42	92-Y-548	L	7800	19.2	4.0	94	1	28.7
38	92-Y-444	L	7690	18.1	3.0	85	1	31.5
25	92-Y-179	S	7630	22.1	4.0	93	1	30.5
28	91-Y-227	M	7530	21.4	4.0	91	1	29.7
37	92-Y-443	L	7520	17.6	3.0	84	1	30.1
44	93-Y-44	L	7440	18.5	3.5	91	1	29.3
24	93-Y-24	S	7070	17.6	4.0	88	1	27.2
41	92-Y-490	L	7030	19.2	4.5	95	1	29.9
36	L-203	L	6870	21.4	3.0	103	1	26.2
Mean			8250	20.9	3.7	93	2	31.1
CV %			7.1	3.8	10.2	0.9	171.5	6.0
LSD (.05)			1210	1.6	0.8	2	7	3.9

Planting date: May 3, 1993 Harvest date: September 14, 1993

[1]S = short; M = medium; L = long; W = waxy.
[2]Subjective rating of 1-5 where 1 = poor and 5 = excellent seedling emergence.
[3]Subjective rating of 1-99 where 1 = none and 99 = completely lodged.

TABLE 7

1993 Very Early Rice Variety Test - Four Location Summary:
Biggs RES, Butte, Sutter, San Joaquin.

	Entry	Grain[1] Type	Grain Yield at 14% Moisture (lbs/a)	Grain Moisture at Harvest (%)	Seedling[2] Vigor (1-5)	Days to 50% Heading	Lodging[3] (1-99)	Plant Height (inches)
Advanced Lines and Varieties								
4	91-Y-171	S	9670	18.0	4.2	83	7	34.3
11	M-202	M	9260	21.4	4.6	91	8	34.3
7	89-Y-103	S	9230	20.8	4.4	90	2	30.9
5	92-Y-295	S	9210	22.3	4.3	91	2	35.5
21	VT-1017	S	9210	18.2	4.8	85	9	34.6
1	CALMOCHI-101	W	9060	18.5	4.1	84	20	33.4
12	M-204	M	9030	21.6	4.3	93	2	32.4
8	M-203	M	8990	23.1	4.2	91	32	34.9
3	S-201	S	8970	23.2	4.6	98	2	33.8
14	91-Y-208	W	8900	20.3	3.8	85	11	34.3
15	91-Y-408	M	8900	20.3	3.6	89	1	35.4
9	M-103	M	8840	21.1	4.2	85	14	33.2
13	91-Y-253	M	8820	21.0	4.0	90	2	34.2
2	VALENCIA 87	S	8810	18.6	4.0	89	1	32.4
6	92-Y-188	S	8780	21.4	4.1	92	1	31.6
10	M-201	M	8680	21.7	4.3	93	1	33.0
17	L-203	L	8640	19.7	3.6	93	1	30.6
19	92-Y-41	L	8260	18.5	3.6	92	1	32.5
20	VT-957	S	8230	18.0	4.5	84	16	32.7
22	VT-1051	M	8110	17.5	5.0	82	12	31.6
18	92-Y-21	L	8060	17.1	3.8	90	1	31.4
16	L-202	L	8040	20.0	3.7	95	1	30.2
Mean			8810	20.1	4.2	89	7	33.0
CV %			6.6	7.8	8.9	1.8	137.2	4.8
LSD (.05)			410	1.1	0.3	1	6	1.1
Preliminary Lines								
32	92-Y-260	M	9440	19.9	4.0	86	10	33.5
26	92-Y-200	W	9120	20.9	3.7	83	12	33.7
35	92-Y-274	M	8960	19.2	4.3	87	2	35.3
23	93-Y-23	M	8920	20.9	4.1	86	3	32.6
39	92-Y-483	L	8870	17.0	3.9	84	2	32.9
43	93-Y-43	L	8820	15.9	4.4	85	1	33.5
27	91-Y-199	W	8820	19.0	3.5	89	1	35.3
29	92-Y-224	M	8720	19.4	4.1	85	2	35.2
30	92-Y-231	M	8710	20.1	4.4	89	2	32.8
25	92-Y-179	S	8700	18.8	4.2	85	2	32.6
33	92-Y-271	M	8660	19.5	4.2	86	4	33.4
31	92-Y-232	M	8510	19.2	3.6	84	2	33.7
34	92-Y-273	M	8440	20.6	4.0	86	5	34.8
40	92-Y-490	L	8300	17.5	3.5	89	1	31.4
42	92-Y-548	L	8250	18.3	4.0	89	1	31.0
38	92-Y-444	L	8070	16.6	3.8	81	1	33.2
36	L-203	L	8050	18.5	3.7	92	1	28.9
37	92-Y-443	L	7980	16.5	3.5	81	1	32.7
41	92-Y-494	L	7820	17.3	4.5	90	1	32.1
44	93-Y-44	L	7730	16.8	3.8	88	1	32.0
28	91-Y-227	M	7560	18.2	4.3	83	4	30.7
24	93-Y-24	S	7350	15.9	4.4	79	17	31.3
Mean			8450	18.5	4.0	86	3	32.8
CV %			7.6	4.6	9.3	1.0	142.4	4.6
LSD (.05)			640	0.9	0.4	1	5	1.5

[1]S = short; M = medium; L = long; W = waxy.
[2]Subjective rating of 1-5 where 1 = poor and 5 = excellent seedling emergence.
[3]Subjective rating of 1-99 where 1 = none and 99 = completely lodged.

TABLE 8

Grain yield (lbs/A @ 14% moisture) comparison of very early varieties with early varieties by locations and years.

Location	Year	M-103	Calmochi-101	M-202	M-204	L-203
Butte	1989	9250	8220	9980		9460
(Durham)	1990	8080	7790	9120		10370
	1991	8050	7280	7860	9000	7760
	1992	9150	8670	9380	9580	9520
	1993	7990	8420	8630	8520	8100
Loc. mean		8500	8080	8990	9030	9040
Sutter	1989	10930	11060	12300		12050
(Natomas)	1990	9770	10380	11920		11220
	1991	11370	11430	12650	12250	11980
	1992	9320	9660	10360	10130	9430
	1993	8680	9090	9300	8550	8070
Loc. mean		10010	10320	11310	10310	10550
San Joaquin	1989	9370	9290	6880		7900
(Valley	1990	9380	9520	9260		9420
Home)	1991	9630	10120	10380	10010	8520
	1992	10120	10360	10340	8550	8520
	1993	9590	9780	9190	8300	8010
Loc. mean		9620	9810	9210	8950	8470
Loc.-years mean		9380	9400	9840	9430	9350
Yield % M-103		--	100	105	101	100
Number of tests		15	15	15	9	15

TABLE 9

1993 Early Rice Variety Test - Butte County (Biggs RES).

Entry	Grain[1] Type	Grain Yield at 14% Moisture (lbs/a)	Grain Moisture at Harvest (%)	Seedling[2] Vigor (1-5)	Days to 50% Heading	Lodging[3] (1-99)	Plant Height (inches)
Advanced Lines and Varieties							
54 89-Y-103	S	11100	15.6	4.9	84	3	34.3
67 90-Y-253	M	10980	17.9	4.8	84	3	35.6
65 91-Y-381	M	10750	17.5	5.0	86	22	37.3
53 S-201	S	10720	17.6	5.0	95	3	36.0
66 91-Y-413	M	10440	16.8	4.9	82	3	37.3
62 M-201	M	10430	17.3	4.8	87	2	34.4
64 M-204	M	10410	17.4	4.9	88	1	35.9
58 91-Y-332	S	10320	17.0	4.8	90	10	37.0
55 92-Y-328	M	10260	17.0	4.9	84	13	36.3
52 VALENCIA 87	S	10220	14.2	4.8	83	2	33.6
74 VT-390	S	10100	14.1	4.3	78	60	33.5
68 L-203	L	9930	15.5	4.6	88	1	32.7
63 M-202	M	9760	16.8	5.0	86	31	36.8
70 92-Y-93	L	9690	15.9	4.5	86	1	30.9
51 CALMOCHI-101	W	9640	14.1	4.9	78	45	35.6
73 VT-315	M	9630	16.1	4.9	86	49	42.2
59 93-Y-59	M	9510	18.2	4.9	97	1	36.8
61 M-103	M	9510	16.4	4.8	80	33	36.6
60 M-203	M	9460	17.6	5.0	83	72	38.0
69 L-202	L	9450	16.2	4.7	92	1	31.1
72 91-Y-631	L	9320	16.0	4.8	93	1	34.4
71 92-Y-133	L	9180	15.7	4.5	94	1	35.2
57 92-Y-77	M	9080	17.3	4.9	81	74	34.8
56 92-Y-75	L	8960	17.0	4.8	87	36	39.0
Mean		9950	16.5	4.8	86	19	35.6
CV %		6.4	7.4	2.4	3.3	92.9	4.1
LSD (.05)		890	1.7	0.2	4	25	2.1
Preliminary Lines							
82 92-Y-624	M	11300	18.1	4.9	90	7	38.1
87 92-Y-521	L	11040	15.3	5.0	86	2	34.9
75 93-Y-75	M	10520	17.4	4.9	90	8	39.8
79 91-Y-265	M	10320	17.5	4.7	83	8	34.9
81 92-Y-606	M	10290	18.5	4.9	90	2	36.4
83 92-Y-641	M	10150	17.9	4.9	92	6	36.8
88 92-Y-523	L	10150	14.5	4.8	86	2	36.8
85 92-Y-91	L	10040	16.3	4.6	87	2	36.4
80 92-Y-363	M	9970	17.5	5.0	86	38	37.4
84 L-203	L	9850	15.6	4.7	88	1	31.7
86 92-Y-94	L	9730	14.5	4.6	90	3	32.8
92 93-Y-92	L	9540	15.4	4.7	92	1	35.3
77 92-Y-207	M	9450	15.6	4.8	77	5	34.2
90 91-Y-561	L	9250	15.8	4.6	91	1	33.5
78 92-Y-211	M	9040	16.8	4.8	81	55	37.5
76 93-Y-76	M	8980	17.0	5.0	88	19	39.4
91 93-Y-91	L	8720	15.6	4.6	94	1	31.5
89 92-Y-650	L	8430	17.2	4.9	92	2	34.7
Mean		9820	16.5	4.8	88	9	35.7
CV %		5.3	8.1	2.1	3.5	105.7	4.0
LSD (.05)		740	1.9	0.1	4	13	2.1

Planting date: May 16, 1993 (Reps 1 & 2), May 26, 1993 (Reps 3 & 4).

[1]S = short; M = medium; L = long; W = waxy.
[2]Subjective rating of 1-5 where 1 = poor and 5 = excellent seedling emergence.
[3]Subjective rating of 1-99 where 1 = none and 99 = completely lodged.

TABLE 10

1993 Early Rice Variety Test - Yuba County (Roy Morello, District 10).

	Entry	Grain[1] Type	Grain Yield at 14% Moisture (lbs/a)	Grain Moisture at Harvest (%)	Seedling[2] Vigor (1-5)	Days to 50% Heading	Lodging[3] (1-99)	Plant Height (inches)
Advanced Lines and Varieties								
56	92-Y-75	M	10300	24.4	3.0	96	2	38.9
65	91-Y-381	M	10270	20.6	5.0	90	1	36.3
63	M-202	M	10160	23.6	5.0	94	13	38.8
60	M-203	M	10160	22.9	4.5	92	28	39.3
51	CALMOCHI-101	W	10010	20.7	3.3	87	6	38.8
54	89-Y-103	S	9740	23.3	3.8	96	1	36.8
61	M-103	M	9680	19.0	4.0	87	15	38.3
74	VT-390	S	9660	18.4	5.0	79	1	33.5
57	92-Y-77	M	9620	22.0	3.8	93	1	36.7
67	90-Y-253	M	9620	20.3	4.5	91	1	36.4
55	92-Y-328	M	9380	22.0	4.0	93	2	38.2
64	M-204	M	9270	21.9	4.5	97	1	35.7
52	VALENCIA 87	S	9250	19.7	4.3	90	1	35.3
58	91-Y-332	S	9130	24.0	4.3	101	1	37.8
66	91-Y-413	M	9130	22.1	4.8	91	1	38.7
70	92-Y-93	L	9010	18.1	4.5	91	1	33.8
62	M-201	M	8920	22.7	5.0	96	1	35.4
68	L-203	L	8870	20.3	4.0	96	1	31.9
71	92-Y-133	L	8830	20.0	4.5	93	1	35.4
69	L-202	L	8600	19.3	4.0	96	1	32.3
59	93-Y-59	M	8530	23.3	4.0	103	1	37.6
73	VT-315	M	8460	21.7	4.5	90	86	42.8
53	S-201	S	8160	25.6	3.8	106	1	36.5
72	92-Y-631	L	7820	18.7	4.3	96	1	35.2
Mean			9270	21.4	4.2	93	7	36.7
CV %			2.9	6.2	10.8	0.9	98.4	3.5
LSD (.05)			390	1.9	0.6	1	10	1.8
Preliminary Lines								
82	92-Y-624	M	10740	20.0	4.5	94	1	39.2
81	92-Y-606	M	10300	18.4	4.0	92	1	35.8
77	92-Y-207	M	10300	17.3	4.0	85	1	34.4
75	93-Y-75	M	10210	20.2	3.5	92	1	41.5
79	91-Y-265	M	9850	19.6	4.0	91	1	37.4
80	92-Y-363	M	9770	19.4	4.5	92	1	38.8
78	92-Y-211	M	9500	17.8	4.5	89	1	37.2
87	92-Y-521	L	9470	17.3	5.0	93	1	35.6
86	92-Y-94	L	9460	17.4	4.0	90	1	35.8
93	M-204 (176#/A)	M	9430	19.3	4.5	96	1	34.4
89	92-Y-650	L	9340	18.4	4.5	93	1	33.2
92	93-Y-92	L	9240	16.6	4.5	90	1	35.0
88	92-Y-523	L	9180	15.1	5.0	88	1	38.0
94	92-Y-418	M	9130	17.6	4.5	90	1	37.6
76	93-Y-76	M	9020	19.6	4.0	98	1	39.4
85	92-Y-91	L	8900	17.1	4.5	88	1	37.4
83	92-Y-641	M	8770	19.4	4.5	98	1	36.0
84	L-203	L	8740	16.8	4.0	92	1	31.3
90	91-Y-561	L	7820	17.9	3.0	97	1	32.1
91	91-Y-91	L	7330	18.0	3.5	96	1	36.0
Mean			9320	18.2	4.2	92	1	36.3
CV %			3.9	2.8	11.2	0.7	0.0	4.4
LSD (.05)			760	1.1	1.0	1		3.3

Planting date: May 7, 1993 Harvest date: September 23, 1993

[1]S = short; M = medium; L = long; W = waxy.
[2]Subjective rating of 1-5 where 1 = poor and 5 = excellent seedling emergence.
[3]Subjective rating of 1-99 where 1 = none and 99 = completely lodged.

TABLE 11

1993 Early Rice Variety Test - Colusa County (Dennis Ranch).

Entry	Grain[1] Type	Grain Yield at 14% Moisture (lbs/a)	Grain Moisture at Harvest (%)	Seedling[2] Vigor (1-5)	Days to 50% Heading	Lodging[3] (1-99)	Plant Height (inches)
Advanced Lines and Varieties							
73 VT-315	S	9250	17.4	4.3	92	1	42.8
58 91Y332	S	9210	22.7	4.3	97	1	37.2
56 92-Y-75	M	9030	21.4	3.5	96	1	39.3
68 L-203	L	8960	18.1	3.5	97	1	37.2
71 92-Y-133	L	8850	19.3	3.5	99	1	39.5
64 M-204	M	8840	19.9	3.8	97	1	36.8
65 91-Y-381	M	8840	19.2	4.0	92	1	38.2
54 89-Y-103	S	8800	19.5	4.0	89	1	35.5
53 S-201	S	8730	21.2	4.0	100	1	37.6
66 91-Y-413	M	8670	19.1	4.3	93	1	38.1
69 L-202	L	8630	19.3	3.5	103	1	34.0
70 92-Y-93	L	8620	19.4	3.5	97	1	34.7
51 CALMOCHI-101	W	8610	18.1	3.8	89	1	39.1
67 90-Y-253	M	8530	19.8	3.0	92	1	37.2
60 M-203	M	8530	19.6	3.5	94	1	38.4
62 M-201	M	8520	21.0	4.0	96	1	37.7
72 91-Y-631	L	8480	17.9	3.3	99	1	38.3
55 92-Y-328	M	8390	19.9	4.0	95	1	37.9
74 VT-390	S	8230	16.8	3.8	86	1	38.3
63 M-202	M	8210	20.0	3.8	92	1	37.3
57 92-Y-77	M	8200	21.4	3.0	93	1	38.1
52 VALENCIA 87	S	8190	17.5	3.8	91	1	36.2
61 M-103	M	8120	19.4	4.0	90	1	37.4
59 93-Y-59	M	7860	21.3	3.5	101	1	37.9
Mean		8600	19.6	3.7	95	1	37.7
CV %		5.6	5.4	12.2	1.3	0.0	3.9
LSD (.05)		670	1.5	0.6	2		2.1
Preliminary Lines							
87 92-Y-521	L	9980	17.2	4.3	103	1	37.4
82 92-Y-624	M	9540	20.4	3.9	96	1	40.4
86 92-Y-94	L	9370	17.2	3.3	98	1	37.4
85 92-Y-91	L	9320	17.9	3.3	98	1	39.2
93 M-204 (176#/A)	M	9240	19.3	4.0	96	1	37.6
92 93-Y-92	L	9210	17.6	3.6	101	1	40.7
94 92-Y-418	M	9190	18.5	4.3	93	1	37.4
79 91-Y-265	M	8970	20.0	2.8	95	1	37.6
88 92-Y-523	L	8930	16.3	4.0	99	1	40.0
80 92-Y-363	M	8860	18.7	3.5	95	1	38.6
81 92-Y-606	M	8740	18.9	3.5	96	1	38.2
75 93-Y-75	M	8640	20.0	3.3	96	1	39.2
84 L-203	L	8350	17.1	4.0	98	1	37.4
91 93-Y-91	L	8340	18.2	3.3	102	1	37.2
83 92-Y-641	M	8170	19.6	3.8	96	1	37.8
90 91-Y-561	L	8100	18.9	3.5	97	1	35.0
89 92-Y-650	L	8080	18.3	4.0	98	1	37.4
77 92-Y-207	M	7940	18.1	2.3	90	1	36.8
78 92-Y-211	M	7920	18.0	3.0	89	1	37.4
76 93-Y-76	M	7540	19.4	3.7	97	1	40.9
Mean		8720	18.5	3.6	96	1	38.2
CV %		3.6	2.6	17.0	0.6	0.0	4.1
LSD (.05)		660	1.0	ns	1		ns

Planting date: April 30, 1993 Harvest date: September 21, 1993

[1]S = short; M = medium; L = long; W = waxy.
[2]Subjective rating of 1-5 where 1 = poor and 5 = excellent seedling emergence.
[3]Subjective rating of 1-99 where 1 = none and 99 = completely lodged.

TABLE 12

1993 Early Rice Variety Test - Yolo County (Bill Geer, District 108).

Entry	Grain[1] Type	Grain Yield at 14% Moisture (lbs/a)	Grain Moisture at Harvest (%)	Seedling[2] Vigor (1-5)	Days to 50% Heading	Lodging[3] (1-99)	Plant Height (inches)
Advanced Lines and Varieties							
63 M-202	M	10660	22.6	4.3	85	10	37.5
54 89-Y-103	S	10250	21.8	3.8	83	1	33.2
65 91-Y-381	M	10200	21.6	4.0	82	4	37.8
64 M-204	M	10150	22.1	3.5	87	6	35.3
62 M-201	M	10140	22.2	4.0	88	1	35.9
56 92-Y-75	M	10140	23.2	3.4	89	10	36.1
70 92-Y-93	L	10140	18.5	3.5	81	1	34.6
66 91-Y-413	M	10070	21.2	4.3	80	1	37.3
60 M-203	M	10060	23.9	4.0	88	48	39.0
55 92-Y-328	M	9970	21.6	3.4	86	1	36.1
72 91-Y-631	L	9960	18.8	3.6	88	1	35.7
67 90-Y-253	M	9930	22.0	3.6	82	1	34.3
73 VT-315	M	9880	17.1	4.4	82	1	39.3
59 93-Y-59	M	9850	22.3	3.5	93	6	37.2
58 91-Y-332	S	9810	22.3	3.1	89	2	36.8
53 S-201	S	9770	23.3	4.4	94	11	35.8
57 92-Y-77	M	9730	22.1	3.4	87	2	35.5
74 VT-390	S	9720	17.0	3.5	79	1	35.1
51 CALMOCHI-101	W	9630	19.0	3.5	79	2	35.8
71 92-Y-133	L	9620	17.9	3.5	82	1	36.8
69 L-202	L	9460	19.6	3.1	92	1	32.9
68 L-203	L	9330	19.0	3.5	91	1	31.7
61 M-103	M	9330	20.1	3.8	77	32	36.8
52 VALENCIA 87	M	9180	18.2	3.4	83	1	33.2
Mean		9870	20.7	3.7	85	6	35.8
CV %		4.1	3.9	15.4	0.9	151.8	3.1
LSD (.05)		570	1.1	0.8	1	13	1.6
Preliminary Lines							
82 92-Y-624	M	10760	23.0	4.3	89	1	36.0
93 M-204 (176#/A)	M	10510	21.6	4.0	87	1	35.8
87 92-Y-521	L	10340	19.2	3.8	86	11	35.0
76 93-Y-76	M	10240	21.8	4.0	86	1	40.2
88 92-Y-523	L	10180	16.9	4.0	82	1	38.6
75 93-Y-75	M	10100	21.7	4.0	82	8	37.0
86 92-Y-94	L	10050	17.6	4.0	80	3	33.7
85 92-Y-91	L	10040	19.6	4.0	84	1	36.4
92 93-Y-92	L	9930	18.1	3.3	89	1	36.8
79 91-Y-265	M	9930	21.0	3.5	82	1	35.4
84 L-203	L	9810	18.4	3.8	89	1	35.4
77 92-Y-207	M	9780	17.7	3.0	75	1	35.2
78 92-Y-211	M	9680	19.4	3.5	81	1	37.8
80 92-Y-363	M	9660	22.1	4.5	85	15	35.2
94 92-Y-418	M	9320	21.1	2.8	82	1	36.6
81 92-Y-606	M	9190	19.7	3.3	86	1	34.1
83 92-Y-641	M	9180	19.6	3.0	90	1	32.9
90 91-Y-561	L	8970	18.5	3.0	90	1	33.1
91 93-Y-91	L	8930	19.6	3.3	91	1	34.6
89 92-Y-650	L	8600	19.9	3.0	87	1	32.9
Mean		9760	19.8	3.6	85	3	35.6
CV %		4.3	3.2	13.3	1.0	192.2	4.3
LSD (.05)		890	1.3	1.0	2	ns	3.2

Planting date: May 14, 1993 Harvest date: September 24, 1993

[1]S = short; M = medium; L = long; W = waxy.
[2]Subjective rating of 1-5 where 1 = poor and 5 = excellent seedling emergence.
[3]Subjective rating of 1-99 where 1 = none and 99 = completely lodged.

TABLE 13

1993 Early Rice Variety Test - Four Location Summary:
Biggs RES, Yuba, Colusa, Yolo.

	Entry	Grain[1] Type	Grain Yield at 14% Moisture (lbs/a)	Grain Moisture at Harvest (%)	Seedling[2] Vigor (1-5)	Days to 50% Heading	Lodging[3] (1-99)	Plant Height (inches)
Advanced Lines and Varieties								
65	91-Y-381	M	10010	19.7	4.5	87	7	37.4
54	89-Y-103	S	9980	20.0	4.1	88	1	34.9
67	90-Y-253	M	9760	20.0	4.0	87	1	35.9
63	M-202	M	9700	20.7	4.5	89	14	37.6
64	M-204	M	9670	20.3	4.2	92	2	35.9
58	91-Y-332	S	9620	21.5	4.1	94	3	37.2
56	92-Y-75	M	9610	21.5	3.7	92	12	38.3
66	91-Y-413	M	9580	19.8	4.6	87	1	37.8
60	M-203	M	9550	21.0	4.3	89	38	38.7
62	M-201	M	9500	20.8	4.4	92	1	35.9
55	92-Y-328	M	9500	20.1	4.1	89	4	37.1
51	CALMOCHI-101	W	9470	18.0	3.9	83	13	37.3
74	VT-390	S	9430	16.6	4.2	81	16	35.1
70	92-Y-93	L	9360	18.0	4.0	89	1	33.5
53	S-201	S	9340	21.9	4.3	99	4	36.5
73	VT-315	M	9300	18.1	4.5	87	34	41.8
68	L-203	L	9270	18.2	3.9	93	1	33.4
52	VALENCIA 87	S	9210	17.4	4.1	87	1	34.6
61	M-103	M	9160	18.7	4.1	84	20	37.3
57	92-Y-77	M	9160	20.7	3.8	88	19	36.3
71	92-Y-133	L	9120	18.2	4.0	92	1	36.7
69	L-202	L	9040	18.6	3.8	95	1	32.6
59	93-Y-59	M	8940	21.3	4.0	98	2	37.4
72	91-Y-631	L	8900	17.9	4.0	94	1	35.9
Mean			9420	19.5	4.1	90	8	36.5
CV %			4.9	5.7	10.5	1.8	127.5	3.7
LSD (.05)			320	0.8	0.3	1	7	0.9
Preliminary Lines								
82	92-Y-624	M	10680	20.7	4.4	92	3	38.7
87	92-Y-521	L	10300	17.5	4.5	92	4	35.8
75	93-Y-75	M	10030	20.3	3.9	89	5	39.5
86	92-Y-94	L	9930	16.7	4.0	89	3	34.9
79	91-Y-265	M	9920	19.6	4.1	87	5	36.7
88	92-Y-523	L	9790	15.6	4.4	88	1	38.4
81	92-Y-606	M	9700	18.5	3.9	90	1	36.1
92	93-Y-92	L	9680	17.1	4.0	93	1	37.1
85	92-Y-91	L	9640	17.6	4.1	88	1	37.3
77	92-Y-207	M	9540	17.4	3.5	82	2	35.4
80	92-Y-363	M	9520	19.4	4.4	89	16	37.9
84	L-203	L	9400	17.0	4.1	91	1	34.3
83	92-Y-641	M	9180	18.9	4.0	93	3	36.2
76	93-Y-76	M	9150	19.5	4.2	92	4	40.4
78	92-Y-211	M	9070	18.3	3.9	85	20	37.6
89	92-Y-650	L	8720	18.4	4.1	91	1	34.4
90	91-Y-561	L	8630	17.9	3.5	93	1	33.3
91	93-Y-91	L	8360	17.9	3.6	95	1	34.8
Mean			9510	18.2	4.0	90	4	36.6
CV %			4.2	2.9	11.9	0.8	116.6	3.9
LSD (.05)			400	0.5	0.5	1	5	1.4

[1]S = short; M = medium; L = long; W = waxy.
[2]Subjective rating of 1-5 where 1 = poor and 5 = excellent seedling emergence.
[3]Subjective rating of 1-99 where 1 = none and 99 = completely lodged.

TABLE 14

Grain yield summary of the early varieties by location and year.

Location	Year	M-201	M-202	M-203	M-204	L-202	L-203	S-201
Butte	1989	9540	9530	7410	9570	9050		8820
(RES)	1990	9920	8790	7000	10200	10230	10700	8900
	1991	10280	9490	8570	9940	9330	8830	9030
	1992	10080	10250	9040	9780	8930	8990	9810
	1993	10430	9760	9460	10410	9450	9930	10720
Loc. mean		10050	9560	8300	9980	9400	9610	9460
Colusa/	1989	9640	9900	8410	10440	8300		9540
Glenn	1990	8530	7430	6050	8760	8780	9220	7810
	1991	9850	9130	7790	10390	8490	9680	9020
	1992	9630	10270	8970	10070	7980	8830	10160
	1993	8520	8210	8530	8840	8630	8960	8730
Loc. mean		9230	8990	7950	9700	8440	9170	9050
Yolo	1989	9170	9600	9670	9840	8990		8360
(Dist. 108)	1990	9300	9640	6830	9500	9210	9750	7970
	1991	11020	11500	10480	11300	10570	10780	11240
	1992	10660	11920	9460	11020	10720	10750	9290
	1993	10140	10660	10060	10150	9460	9330	9770
Loc. mean		10060	10660	9300	10360	9790	10150	9330
Yuba	1989	9640	8960	5520	10250	8960		9560
(Dist. 10)	1990	9500	8940	7620	10160	8770	9740	8630
	1991	10700	11070	10530	11170	9130	9350	10540
	1992	9860	11340	10460	11020	8440	9280	9080
	1993	8920	10160	10160	9270	8600	8870	8160
Loc. mean		9720	10090	8860	10370	8780	9310	9190
Loc.-years mean		9760	9820	8600	10100	9100	9560	9260
Yield % M-201		--	101	88	103	93	97	95
Number of tests		20	20	20	20	20	16	20

TABLE 15

1993 Intermediate-Late Rice Variety Test - Butte County (Biggs RES).

Entry	Grain[1] Type	Grain Yield at 14% Moisture (lbs/a)	Grain Moisture at Harvest (%)	Seedling[2] Vigor (1-5)	Days to 50% Heading	Lodging[3] (1-99)	Plant Height (inches)
Advanced Lines and Varieties							
103 91-Y-581	S	10390	14.7	4.9	91	1	36.4
107 M-401	M	10310	16.6	5.0	108	2	41.6
111 90-Y-275	M	10280	14.1	4.9	81	16	37.2
109 M-204	M	9810	14.2	4.9	85	19	37.9
101 S-301	S	9740	15.6	4.9	105	1	40.3
112 L-202	L	9670	14.1	4.7	91	1	33.1
104 90-Y-686	M	9480	15.7	5.0	105	1	37.8
106 92-Y-106	M	9380	16.3	4.9	96	66	44.4
115 92-Y-673	L	9270	13.3	4.8	94	1	34.5
105 92-Y-585	M	9240	17.0	4.9	84	85	39.2
114 91-Y-561	L	9100	13.6	4.5	92	1	34.3
113 A-301	L	8840	13.9	4.4	105	1	33.1
102 89-Y-103	S	8410	14.0	5.0	81	70	36.0
116 VT-1006	M	8270	16.7	5.0	85	97	38.9
110 M-202	M	7940	18.6	5.0	83	98	40.0
108 M-203	M	7290	19.0	5.0	83	99	41.0
Mean		9210	15.5	4.9	92	35	37.8
CV %		9.8	9.2	1.9	1.1	27.4	3.0
LSD (.05)		1280	2.0	0.1	1	14	1.6
Preliminary Lines							
125 92-Y-642	M	10080	14.4	4.8	88	2	36.4
124 92-Y-612	M	9940	15.1	4.9	89	3	36.8
126 92-Y-643	M	9830	14.6	4.9	89	4	36.5
123 92-Y-429	M	9680	14.7	5.0	84	35	42.4
119 92-Y-267	M	9470	14.5	4.9	80	16	38.2
130 92-Y-653	L	9450	13.6	4.5	90	1	34.8
129 91-Y-631	L	9430	13.5	4.7	90	1	35.9
127 92-Y-631	M	9420	14.4	4.7	89	5	38.1
128 L-202	L	9390	13.8	4.7	91	1	31.9
132 92-Y-663	L	9140	13.6	4.6	89	1	34.2
133 92-Y-667	L	9100	14.7	4.3	94	1	32.3
122 92-Y-384	M	8990	14.4	5.0	82	76	38.2
121 92-Y-373	M	8660	13.5	4.8	81	38	35.5
134 92-Y-672	L	8660	13.2	4.5	92	1	32.9
131 92-Y-656	L	8470	13.9	4.5	95	1	36.4
118 92-Y-251	M	8120	14.5	4.8	76	94	36.4
117 93-Y-117	M	7890	15.3	4.8	106	2	37.5
120 92-Y-364	M	7050	15.3	4.9	83	90	40.2
Mean		9040	14.3	4.7	88	21	36.4
CV %		5.0	6.2	2.0	2.1	53.8	3.5
LSD (.05)		640	1.2	0.1	3	16	1.8

Planting date: May 18, 1993

[1]S = short; M = medium; L = long; W = waxy.
[2]Subjective rating of 1-5 where 1 = poor and 5 = excellent seedling emergence.
[3]Subjective rating of 1-99 where 1 = none and 99 = completely lodged.

TABLE 16

1993 Intermediate-Late Rice Variety Test - Sutter County (Alan Catlett, Sutter).

	Entry	Grain[1] Type	Grain Yield at 14% Moisture (lbs/a)	Grain Moisture at Harvest (%)	Seedling[2] Vigor (1-5)	Days to 50% Heading	Lodging[3] (1-99)	Plant Height (inches)
Advanced Lines and Varieties								
103	91-Y-581	S	10460	18.4	3.5	96	1	36.4
101	S-301	S	10390	18.7	4.0	107	16	38.9
109	M-204	M	10340	16.7	4.3	94	4	36.2
104	90-Y-686	M	10240	18.0	4.8	107	10	36.0
107	M-401	M	9970	16.5	3.5	108	71	40.4
110	M-202	M	9870	18.0	4.5	90	54	37.7
102	89-Y-103	S	9840	16.3	4.0	89	82	35.8
116	VT-1006	M	9780	18.5	4.8	90	61	37.3
115	92-Y-673	L	9730	15.8	4.8	101	2	32.5
113	A-301	L	9430	16.7	2.5	107	1	32.9
111	90-Y-275	M	9400	17.6	3.5	89	1	36.0
105	92-Y-585	M	9320	18.1	4.3	92	9	37.3
112	L-202	L	9310	16.6	4.0	95	1	31.9
106	92-Y-106	M	9190	19.6	3.8	101	53	41.5
114	91-Y-561	L	9140	16.8	3.5	95	1	34.2
108	M-203	M	8980	18.4	4.3	89	97	39.4
Mean			9710	17.5	4.0	97	29	36.5
CV %			4.9	4.4	15.8	1.0	51.3	5.7
LSD (.05)			680	1.1	0.9	1	21	2.9
Preliminary Lines								
126	92-Y-643	M	10420	19.4	4.0	97	1	35.4
124	92-Y-612	M	10320	18.9	4.0	102	3	34.8
125	92-Y-642	M	10230	19.2	4.0	99	1	34.3
131	92-Y-656	L	10120	16.5	3.5	100	1	38.0
136	92-Y-610	M	10700	17.8	4.5	95	1	37.0
123	92-Y-429	M	9980	18.3	4.5	93	3	40.9
127	92-Y-631	M	9800	16.6	4.5	98	3	34.4
133	92-Y-667	L	9690	15.6	3.5	100	1	34.8
129	91-Y-631	L	9640	16.5	4.0	96	1	37.4
119	92-Y-267	M	9610	16.3	4.5	88	3	36.6
122	92-Y-384	M	9450	16.7	4.5	92	3	36.6
128	L-202	L	9420	15.7	4.0	95	1	31.7
121	92-Y-373	M	9380	16.6	4.0	93	60	34.8
130	92-Y-653	L	9190	16.0	3.5	96	1	32.5
117	93-Y-117	M	9070	18.3	4.0	109	23	37.2
132	92-Y-663	L	9060	16.1	4.0	94	1	33.7
134	92-Y-672	L	8840	15.8	4.5	95	1	35.8
120	92-Y-364	M	8550	17.3	4.5	91	70	39.6
118	92-Y-251	M	7880	20.6	3.5	86	78	37.8
135	KOSHIHIKARI	S	4650	20.5	4.5	102	99	42.7
Mean			9270	17.4	4.1	96	18	36.3
CV %			6.1	4.8	12.6	1.2	44.9	4.8
LSD (.05)			1180	1.7	ns	2	17	3.7

Planting date: May 7, 1993 Harvest date: October 18, 1993

[1]S = short; M = medium; L = long; W = waxy.
[2]Subjective rating of 1-5 where 1 = poor and 5 = excellent seedling emergence.
[3]Subjective rating of 1-99 where 1 = none and 99 = completely lodged.

TABLE 17

1993 Intermediate-Late Rice Variety Test - Glenn County (Wylie Farms).

	Entry	Grain[1] Type	Grain Yield at 14% Moisture (lbs/a)	Grain Moisture at Harvest (%)	Seedling[2] Vigor (1-5)	Days to 50% Heading	Lodging[3] (1-99)	Plant Height (inches)
Advanced Lines and Varieties								
104	90-Y-686	M	10240	14.9	4.0	119	1	37.3
109	M-204	M	10090	13.8	3.8	101	8	38.3
103	91-Y-581	S	10000	15.1	4.3	95	2	39.7
101	S-301	S	9940	15.6	4.0	114	3	40.2
116	VT-1006	M	9890	14.6	4.5	94	45	39.5
111	90-Y-275	M	9870	14.4	3.5	100	1	38.6
110	M-202	M	9810	13.1	4.0	94	12	38.4
102	89-Y-103	S	9670	14.8	4.3	94	70	37.8
107	M-401	M	9500	14.9	4.8	119	2	40.1
115	92-Y-673	L	9470	14.0	4.0	104	1	36.6
113	A-301	L	8970	14.6	3.0	113	1	34.6
105	92-Y-585	M	8790	14.9	4.3	98	18	39.4
106	92-Y-106	M	8750	15.8	4.0	100	78	44.6
112	L-202	L	8680	14.3	3.5	104	1	33.5
114	91-Y-561	L	8430	14.3	3.0	107	1	34.8
108	M-203	M	7490	14.6	4.8	94	86	40.1
Mean			9350	15.0	4.0	103	21	38.3
CV %			5.3	3.8	9.0	0.9	73.3	3.3
LSD (.05)			700	0.8	0.5	1	21	1.8
Preliminary Lines								
124	92-Y-612	M	10410	14.8	3.8	106	1	38.6
126	92-Y-643	M	10280	15.0	3.5	107	1	40.2
125	92-Y-642	M	9970	14.7	3.3	106	1	41.5
127	92-Y-631	M	9870	13.0	3.3	102	13	37.6
136	92-Y-610	M	9600	14.1	3.0	102	3	40.0
123	92-Y-429	M	9600	14.1	4.2	101	1	39.4
131	92-Y-656	L	9540	14.1	3.5	105	1	38.8
121	92-Y-373	M	9460	12.7	4.3	96	21	37.4
128	L-202	L	9380	13.9	3.8	106	1	36.6
119	92-Y-267	M	9380	13.2	4.0	95	1	37.4
133	92-Y-667	L	9170	13.8	3.0	107	1	33.9
122	92-Y-384	M	9050	13.0	4.3	94	8	38.6
130	92-Y-653	L	9010	13.6	2.8	105	1	35.8
118	92-Y-251	M	8970	12.9	2.8	92	8	39.2
120	92-Y-364	M	8930	13.8	4.3	99	46	41.3
117	93-Y-117	M	8800	14.0	4.5	119	41	38.4
134	92-Y-672	L	8740	14.3	3.5	108	1	36.8
132	92-Y-663	L	8500	13.5	3.3	105	1	36.4
129	91-Y-631	L	8360	14.6	3.8	105	1	36.4
135	KOSHIHIKARI	S	7350	16.0	3.5	112	92	43.9
Mean			9220	14.0	3.6	103	13	38.4
CV %			4.2	4.6	16.4	0.8	167.2	5.9
LSD (.05)			820	1.4	ns	2	42	4.7

Planting date: April 28, 1993 Harvest date: October 25, 1993

[1]S = short; M = medium; L = long; W = waxy.
[2]Subjective rating of 1-5 where 1 = poor and 5 = excellent seedling emergence.
[3]Subjective rating of 1-99 where 1 = none and 99 = completely lodged.

TABLE 18

1993 Intermediate-Late Variety Test - Three Location Summary:
Biggs RES, Sutter Basin, Glenn.

Entry	Grain[1] Type	Grain Yield at 14% Moisture (lbs/a)	Grain Moisture at Harvest (%)	Seedling[2] Vigor (1-5)	Days to 50% Heading	Lodging[3] (1-99)	Plant Height (inches)
Advanced Lines and Varieties							
103 91-Y-581	S	10280	16.0	4.2	94	1	37.5
109 M-204	M	10080	14.9	4.3	93	11	37.5
101 S-301	S	10030	16.6	4.3	109	7	39.8
104 90-Y-686	M	9990	16.2	4.6	110	4	37.0
107 M-401	M	9930	16.0	4.4	112	25	40.7
111 90-Y-275	M	9850	15.4	4.0	90	6	37.3
115 92-Y-673	L	9490	14.4	4.5	100	1	34.5
116 VT-1006	M	9320	16.6	4.8	90	68	38.5
102 89-Y-103	S	9310	15.0	4.4	88	74	36.5
112 L-202	L	9220	15.0	4.1	97	1	32.8
110 M-202	M	9210	16.6	4.5	89	54	38.7
105 92-Y-585	M	9120	16.7	4.5	92	37	38.6
106 92-Y-106	M	9110	17.3	4.2	99	65	43.5
113 A-301	L	9080	15.1	3.3	108	1	33.5
114 91-Y-561	L	8890	14.9	3.7	98	1	34.4
108 M-203	M	7920	17.3	4.7	88	94	40.2
Mean		9420	15.9	4.3	97	28	37.6
CV %		6.9	6.2	9.8	1.0	47.7	4.1
LSD (.05)		530	0.8	0.3	1	11	1.2
Preliminary Lines							
124 92-Y-612	M	10310	16.2	4.2	99	2	36.5
125 92-Y-642	M	10110	16.1	4.1	98	1	37.5
126 92-Y-643	M	10090	16.4	4.1	98	2	37.4
127 92-Y-631	M	9800	14.7	4.1	95	7	36.8
123 92-Y-429	M	9620	16.0	4.6	92	23	40.9
119 92-Y-267	M	9430	14.4	4.4	88	5	37.4
131 92-Y-656	L	9420	14.8	3.8	100	1	37.7
133 92-Y-667	L	9420	14.7	3.6	100	1	34.0
130 92-Y-653	L	9320	14.5	3.5	97	1	34.1
128 L-202	L	9310	14.7	4.1	97	1	33.5
129 91-Y-631	L	9210	14.7	4.1	97	1	36.7
121 92-Y-373	M	9210	14.4	4.3	90	39	36.0
122 92-Y-384	M	9130	14.8	4.6	89	30	37.9
132 92-Y-663	L	8930	14.2	4.0	96	1	35.0
134 92-Y-672	L	8840	14.2	4.2	98	1	35.3
117 93-Y-117	M	8620	16.0	4.4	111	22	37.8
118 92-Y-251	M	8330	15.8	3.6	85	58	37.5
120 92-Y-364	M	8170	15.4	4.5	91	66	39.8
Mean		9290	15.1	4.1	95	15	36.8
CV %		4.6	4.8	10.5	1.5	96.0	5.3
LSD (.05)		500	0.8	0.5	2	16	2.3

[1]S = short; M = medium; L = long; W = waxy.
[2]Subjective rating of 1-5 where 1 = poor and 5 = excellent seedling emergence.
[3]Subjective rating of 1-99 where 1 = none and 99 = completely lodged.

TABLE 19

Grain yield summary of the intermediate and late varieties by location and year.

Location	Year	M-401	A-301	S-301
Butte	1989	9070	10040	10890
(RES)	1990	7800	10370	10840
	1991	9950	8910	10110
	1992	10320	9100	10490
	1993	10310	8840	9740
Loc. mean		9490	9450	10410
Glenn	1989	8780	8660	9310
	1990	8600	10700	9990
	1991	11750	9810	11700
	1992	11710	10120	11580
	1993	9500	8970	9940
Loc. mean		10070	9650	10500
Sutter	1989	8340	7730	7380
(Basin)	1990	7990	8520	9350
	1991	8760	8040	8640
	1992	10800	9680	11730
	1993	9970	9430	10390
Loc. mean		9170	8680	9500
Loc.-years mean		9580	9260	10140
Yield % M-401		--	97	106
Number of tests		15	15	15