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CALIFORNIA RICE VARIETIES DESCRIPTION AND PERFORMANCE SUMMARY OF THE 1989 AND MULTIYEAR STATEWIDE RICE VARIETY TESTS IN CALIFORNIA

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INTRODUCTION

University of California rice cultivar evaluation trials were conducted in the Sacramento and San Joaquin Valleys in cooperation with the California Cooperative Rice Research Foundation, Inc. (CCRRFI) and the United States Department of Agriculture (USDA). The tests, conducted by UC Cooperative Extension, compared advanced experimental lines with commercially available rice cultivars to determine their adaptation to the principal rice growing regions of the state. The program is partially funded by a grant from the Rice Research Board and California rice growers provide land and on-site management for the trials. This report describes the results of the 1989 regional rice testing program. The names and a brief description of the current publicly developed cultivars are listed in Table 1.

GENERAL SUMMARY OF THE 1989 SEASON

Approximately 410,000 acres of rice

were harvested in California in 1989, down from 420,000 acres in 1988. Most of the acreage was planted to M-202 and M-201, followed by S-201, L-202, M-401 and various public and proprietary cultivars.

Early season conditions were characterized as cool and windy, although mid-season temperatures were ideal (Table 2). Early fall rains caused severe lodging which delayed and extended harvest. In spite of widespread lodging, head rice and average yields were higher than in either 1987 or 1988. Average statewide yields, as reported by California Field Crop Review, were 7,900 lbs/A in 1989 as compared to 7,000 lbs/A in 1988 and 7,550 lbs/A in 1987.

Most notable for the 1989 season was a management change caused by regulations banning the use of Basagran and the concurrent registration of Londax. As a result, 93% of California's rice acreage shifted to Londax, in the first year of registration, for broadleaf weed control. Recent studies have indicated that Londax may improve nitrogen use efficiency, thus many fields may have been over

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fertilized in 1989. In some cases, this over fertilization contributed to blanking, delayed maturity, lodging and reduced yields.

EXPERIMENTAL PROCEDURE FOR THE 1989 REGIONAL RICE VARIETY TESTS

Fourteen uniform rice variety tests were conducted in ten locations from Butte to Fresno County. Twenty-four to 32 entries, including both commercially grown "standards" and experimental lines, were planted in one of three maturity groups. Four tests, one from each maturity group plus a special short and medium grain test, were conducted at the Rice Experiment Station in Biggs, California by the CCRRFI. The remaining tests were conducted in grower fields, throughout the state, by UC Cooperative Extension, under a wide range of production practices and environments. The maturity groups and locations were as follows:

Very Early Maturity Group. Four uniform tests were conducted at [1] the Rice Experiment Station (Butte County), [2] The Skinner Ranch (Butte County), [3] the Hoffman Ranch (San Joaquin County), and [4] the Lauppe Ranch (Sutter County). Twenty-one advanced breeding lines and nine commercially available cultivars were included.

Early Maturity Group. Five uniform tests were conducted at [1] the Rice Experiment Station (Butte County), [2] Britz Inc. (Fresno County), [3] the Hanson Ranch (Glenn County), [4] William Geer and Son (Yolo County) and [5] the Mohammed Ranch (Yuba County). Twenty-two advanced breeding lines and nine commercially available cultivars were tested at all sites.

Late Maturity Group. Three uniform late maturity tests were conducted at [1] the Rice Experiment Station (Butte County), [2] the Wylie Ranch (Glenn County), and the [3] Shannon Ranch (Sutter County). Twenty advanced breeding lines and four commercially available cultivars were tested at all locations.

Short and Medium Grain Group. Two uniform tests were conducted at [1] the Rice Experiment Station (Butte County) and [2] the Erdman Ranch (Colusa County). Twenty experimental lines and four commercially available cultivars were tested at each location. An additional five commercially available cultivars were included at the Colusa County site.

Performance characteristics measured for each cultivar were seedling vigor, days to 50% heading, plant height, lodging, 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 21 to 28 days 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 at harvest on a scale of 1 (no lodging) to 99% lodging (all plants completely lodged). This method does not characterize time of lodging. Early lodging may lower grain yield significantly.

County trials were harvested with a SWECO 324 combine and trials at the Rice Experiment Station were harvested with an Allis-Chalmers combine. Both machines were modified for small

plot harvesting and all plots had a harvest area of 150 square feet (.0034 A). Grain was subsampled at harvest for moisture determination and final grain yield was adjusted to 14% moisture.

AGRONOMIC PERFORMANCE SUMMARY OF 1989 AND MULTIYEAR VARIETAL ENTRIES BY MATURITY GROUP

Varietal performance summaries are presented by location for each maturity group followed by over-location and multiyear, multilocation grain yield summaries. Only the yields of commercial cultivars or very advanced experimental cultivars are summarized in the multiyear multilocation tables. Comparative yield in the latter is expressed as a percentage of a standard cultivar based only on equivalent location and year means.

The "short and medium grain" tests are reported by location.

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

The 1989 very early maturity tests were conducted at the three locations previously described. Commercial standards at all locations included S-101, S-201, Calmochi-101, Valencia '87, M-103, M-201, M-202, M-203, and L-202. Fourteen new experimental lines were tested in the 1989 off-station trials and seven had been tested previously. The experimental lines included 6 short, 9 medium and 6 long grain types.

Tables 3, 4, 5 and 6 show the agronomic performance of these lines at each location and Table 7 gives the over-location summary. Entries are ranked by yield with the highest yielding entries appearing first. Yields in Sutter County were significantly higher than any of the other locations. Poor stand establishment

and subsequent weed competition was responsible for reduced yields at the Butte County site. At the San Joaquin site, low fertility, as well as typically cool temperatures at heading, contributed to reduced yields. A promising new long grain cultivar, 88-Y-774, was among the top four yielding varieties in three of the tests and the highest yielding entry overall (Table 7). In addition to averaging over 10,000 lbs/a at all locations, 88-Y-774 also exhibits excellent cooking qualities and is scheduled for seed increase in 1990. In general, M-202 and L-202 (early standards) out-yielded M-103 and S-101 (very early standards) except at the cool San Joaquin location. At the San Joaquin location, M-103 and Calmochi-101 were the third and fourth highest yielding cultivars, respectively.

Although grain moisture was generally low, it remains a valuable tool in assessing maturity. For example, moisture averaged 16.5% for M-103 and, among the experimental cultivars, as high as 20.1% (88-Y-14). The proprietary cultivar Valencia '87 averaged 14.7% moisture, lower than cultivars with similar heading dates, indicating a faster filling and/or dry-down rate.

Seedling vigor ratings were typically low for San Joaquin, reflecting the utility of this site for screening cold tolerance of seedlings (Table 5). Heading was also greatly delayed and extended at the San Joaquin site, averaging 103 days versus an average of about 87 days for the other trials. Heading of the very early standards ranged between 95 and 105 days after planting in San Joaquin, but only 79 to 86 at all other sites. Across all sites, 88-Y-774 headed 4 to 7 days earlier than L-202.

Lodging was especially severe at the Butte county trial and may have contributed to the lower-than-expected yields (Table 4). However, the

under-fertilized San Joaquin trial exhibited no lodging. Overall, in a year when weather conditions favored lodging, the very early experimental lines exhibited strong lodging resistance.

Table 8 shows the over-year and location yields for the very early commercial cultivars. All entries were not tested at each location and/or every year; therefore, means cannot be directly compared. However, common year-location entries can be compared to give relative yield as a percent of the standard, M-103. S-101, released for commercial production in 1989, had an average yield of 97% of M-103, over a four year period.

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

The 1989 early maturity tests were conducted in the five locations previously described. However, a heavy watergrass infestation, at the Fresno County location severely reduced yields. Because only seedling vigor from the Fresno trial can legitimately be compared to other trials, data from this location was dropped from the analysis. The ten commercial standards included in all trials were S-101, S-201, Calmochi-101, Valencia '87, M-103, M-201, M-202, M-203, and L-202. S-2, a proprietary cultivar, was also included in the off-station tests. Sixteen new experimentals were included in the 1989 off-station tests and six had been tested previously. Experimentals included 6 short, 8 medium, and 7 long grain types.

Tables 9 through 12 show the agronomic performance of these lines at each location, and Table 13 gives the over-location summary. Entries are ranked by yield with the highest ranking entries appearing first.

Average grain yields of all trials

ranged from 8790 lb/a at Butte County to 9150 lb/a in Yolo County. The experimental cultivar 88-Y-271 was the highest yielding line in three of the four trials (table 13). M-202 and M-201 were the highest ranking commercial cultivars. The premium quality medium grain, M-203, ranked last of all cultivars with respect to yield at 7,750 lb/a, but still approached the statewide average yield of 7,900 lb/a. The Yolo and Yuba county trials were harvested at ideal moistures (19-22%). In the off-station trials, 88-Y-242 exhibited significantly higher moistures at harvest compared to other cultivars, in spite of a moderate heading date. Valencia '87 again exhibited extremely low moisture at harvest, when compared to cultivars with similar heading dates.

Seedling vigor of the experimental long grain cultivars was not significantly different from L-202, indicating acceptable performance with respect to this agronomic trait. On the average, all experimental cultivars headed earlier than S-201 (102 days after planting) and most headed after M-202 (95 days after planting). Average heading date for the early standards was 98 days after planting. The very early standards which were included in the early trials, headed at about 88 days after planting.

Lodging was not generally a problem at most sites. However, the commercial standard M-203 lodged severely at all sites except Yolo where it was among the top ten yielding cultivars. Proper fertility management prevented lodging and resulted in maximum yields.

Table 14 shows the over-location and over-year yields for early cultivars. M-201 was used as a standard to compare common year-location summaries. M-202 yielded 105% of M-201 over twenty trials. M-203, which is susceptible to blanking and has weak straw, yielded 88% of M-201. This

cultivar is produced as a premium quality rice commanding a higher price than either M-201 or M-202.

Summary of the Intermediate and Late Rice Variety Trials (>105 days to 50% heading at Biggs, CA)

The 1989 intermediate and late maturity tests were conducted at the three locations described previously and included 20 experimental cultivars as well as M-401, M-302, A-301, and M-7. Grain types, of the experimentals, included 8 short grain, 9 medium grain, and 3 long grain.

Tables 15, 16, and 17 show the agronomic performance of these lines at each location and Table 18 gives the over-location summary. Entries are ranked by yield with the highest yielding entries appearing first.

Average yields at Biggs were significantly higher than at the Glenn or Sutter County trials (10,290, 8,630 and 7,670 lb/a, respectively). Of special interest is the short grain, intermediate-maturing cultivar, 85-Y-502, recently released as S-301. This cultivar ranked sixth in yield and was higher than any of the late maturing standards included in the trial (Table 18). Although this cultivar is intermediate in maturity, it is considered an alternative to S-201, an early maturing cultivar. Paddy yields are comparable to S-201; however, S-301 has head yields superior to both S-101 and S-201. A-301, an aromatic long grain, yielded 8810 lb/A. The long grain cultivars were harvested at moistures 2 to 3% lower than the short or medium grain cultivars, typical of the difference

in drydown time between the grain types.

Although the Sutter and Glenn County trials had similar planting dates, average days to 50% heading differed by nearly two weeks. At Sutter and Glenn, M-401, a late maturing cultivar, headed at 111 and 116 days, respectively; whereas, A-301, an intermediate maturing cultivar, matured at 98 and 115 days respectively. None of the trials or cultivars exhibited lodging.

Table 19 compares several late maturing commercial cultivars in over-location tests from 1985 through 1989 to M-7 as the standard for comparison. M-401 and M-302 yielded 108 and 101% of M7, respectively, whereas A-301 yielded 89% of M-7 over the five year period.

SUMMARY OF THE SPECIAL SHORT AND MEDIUM GRAIN TRIALS

Special short and medium grain tests were conducted in Butte and Colusa counties to rapidly identify superior lines. Grain types, of the experimentals included 8 short grain and 13 medium grain.

Tables 20 and 21 show the results for the Butte and Colusa county trials, respectively. Table 22 shows an over-location summary for the two trials.

M-202 yielded over 11,000 lb/a at the Colusa County site (Table 21). Several experimental cultivars showed excellent seedling vigor and a yield potential of over 10,000 lb/a.

Table 1. Characteristics of publicly-developed rice varieties, 1989.

Grain Type	Maturity	Seed Widely Available	Comments
SHORT GRAIN			
S-101	Very Early	1989	High yield potential, 3 inches shorter than S-201, heads 7 days earlier and ready to harvest 10-12 days earlier than S-201. Translucent seeds 13% smaller than S-201. Has rough leaves and hulls with awns. Grains dry down rapidly during ripening. Adapted to S-201 area.
S-201	Early	1981	High yield potential, excellent seedling vigor, similar to M-201 in maturity and in resistance to blanking; has good pearl shape.
MEDIUM GRAIN			
M-102	Very Early- Early	1988	Heads 2 days earlier but maturity similar to M-202; very high yield potential, excellent seedling vigor, good resistance to blanking, has more resistance to stem rot and to lodging than M-202. Has more variable maturity within panicles and lower total and whole grain milling yields than M-202.
M-103	Very Early	1990	Earliest variety, vigor less than M-202 and M-102, excellent resistance to blanking. Good whole grain and total milling yields. Moderate lodging, good yield potential, about 3% less than M-202 at normal planting dates. Alternative variety for M-202 in coldest rice producing areas and for late (or delayed) planting in warmer areas.
M-201	Early	1984	Very high yield potential; 2 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 but susceptible to aggregate sheath spot.
M-202	Early	1987	Very high yield potential; adapted to cooler growing areas where M-201 is not well adapted, and for general use; 3 days earlier, ripens more uniformly and more resistant to blanking than M-201; moderate lodging; threshes easily but does not shatter; not as resistant to stem rot as M-201 or M-102.
LONG GRAIN			
L-202	Early	1986	Good yield potential in warmer areas; not adapted to colder areas; shortest of current varieties; excellent resistance to lodging. Seedling vigor fair; requires careful water management for stand establishment. Threshes easily so reduce cylinder speed to minimum to enhance head rice. Harvest moisture for L-202 should <u>not</u> be below 18% or above 21%.
SPECIALTY RICES*			
M-401	Late	1983	Is a <i>premium quality</i> rice with high yield potential. Has large bold seeds; is sensitive to blanking, lodging and damage from early drainage; therefore use somewhat less N than on other varieties.
Calmochi-101	Very Early	1987	A sweet rice 2 weeks earlier than S-201; has desirable larger seed and improved cooking quality; excellent resistance to low temperature blanking; has rough leaves and hulls; no awns. Grains dry down rapidly during ripening.
A-301	Intermediate	1988	An aromatic ("popcorn" aroma) long grain with moderately high yield in warmer areas, not adapted to late seeding dates, deep water or cool areas. Suggest harvest moisture of 20-22% and air drying without heat to retain maximum aroma. A-301 has excellent straw strength.

Proper management of the short stature varieties to obtain high yield include: (1) managing water depth and other factors to obtain a dense stand; (2) good weed control; (3) adequate nitrogen fertilization; (4) increase water depth to about 8 inches at 65 to 70 days after seeding; (5) drain as late as possible before harvest.

*Specialty varieties should not be grown unless arrangements have first been made with marketing agency.

(Prepared by: The California Co-operative Rice Research Foundation and the University of California Cooperative Extension.)

Table 2. Comparison of daily temperature patterns between Butte and Sutter Counties, 1989.

Month	Butte		Sutter		Month	Butte		Sutter		Month	Butte		Sutter	
	Max	Min	Max	Min		Max	Min	Max	Min		Max	Min	Max	Min
April														
1	63	51	87	51	78	41	97	57	93	53	84	55	85	50
2	68	58	82	49	81	46	102	58	98	64	87	54	91	52
3	76	50	88	55	86	48	88	64	88	56	89	57	91	55
4	86	47	93	63	90	53	73	60	73	55	91	56	90	55
5	94	52	96	62	96	55	82	63	83	56	97	58	97	58
6	99	55	96	61	91	58	87	65	87	57	103	57	101	55
7	97	56	88	61	92	57	83	64	77	55	98	60	99	58
8	97	62	88	64	82	55	85	61	83	53	91	68	88	58
9	102	54	92	46	69	47	86	62	84	54	91	68	85	63
10	91	57	79	52	79	43	85	59	80	53	95	59	89	59
11	92	56	85	40	79	50	83	59	79	53	91	53	89	52
12	91	58	87	45	77	50	79	58	87	52	93	53	89	52
13	88	53	77	47	78	51	89	59	92	53	92	57	95	54
14	86	55	75	49	83	51	91	62	93	56	96	56	97	50
15	90	53	80	47	86	56	87	68	85	63	101	64	102	54
16	92	57	83	44	90	52	89	62	86	56	94	58	87	57
17	86	56	75	51	76	54	92	59	92	55	86	51	80	54
18	92	52	83	45	73	48	90	59	90	56	96	64	96	62
19	91	61	85	49	81	43	87	56	89	54	100	68	101	65
20	86	63	78	52	77	51	80	52	85	54	97	67	100	62
21	77	49	70	45	71	48	87	54	85	54	20	87	62	83
22	73	48	69	42	71	47	91	64	93	62	21	87	60	84
23	67	46	62	37	69	50	96	63	99	54	22	81	59	84
24	69	47	62	37	74	45	95	62	94	59	23	87	63	80
25	68	49	68	47	80	46	84	60	83	59	24	89	58	86
26	77	42	69	35	77	47	83	59	82	58	25	90	54	93
27	81	47	74	41	85	54	86	59	84	56	26	90	56	87
28	87	47	80	40	78	53	79	58	77	53	27	90	55	90
29	86	50	77	45	78	54	72	56	69	53	28	90	56	90
30	76	56	68	46	84	48	75	58	88	55	29	79	56	79
					82	45	81	62	83	59	30	85	54	81
					90	50					31	86	54	89
May														
1	63	51	87	51	78	41	97	57	93	53	84	55	85	50
2	68	58	82	49	81	46	102	58	98	64	87	54	91	52
3	76	50	88	55	86	48	88	64	88	56	89	57	91	55
4	86	47	93	63	90	53	73	60	73	55	91	56	90	55
5	94	52	96	62	96	55	82	63	83	56	97	58	97	58
6	99	55	96	61	91	58	87	65	87	57	103	57	101	55
7	97	56	88	61	92	57	83	64	77	55	98	60	99	58
8	97	62	88	64	82	55	85	61	83	53	91	68	88	58
9	102	54	92	46	69	47	86	62	84	54	91	68	85	63
10	91	57	79	52	79	43	85	59	80	53	95	59	89	59
11	92	56	85	40	79	50	83	59	79	53	91	53	89	52
12	91	58	87	45	77	50	79	58	87	52	93	53	89	52
13	88	53	77	47	78	51	89	59	92	53	92	57	95	54
14	86	55	75	49	83	51	91	62	93	56	96	56	97	50
15	90	53	80	47	86	56	87	68	85	63	101	64	102	54
16	92	57	83	44	90	52	89	62	86	56	94	58	87	57
17	86	56	75	51	76	54	92	59	92	55	86	51	80	54
18	92	52	83	45	73	48	90	59	90	56	96	64	96	62
19	91	61	85	49	81	43	87	56	89	54	100	68	101	65
20	86	63	78	52	77	51	80	52	85	54	97	67	100	62
21	77	49	70	45	71	48	87	54	85	54	20	87	62	83
22	73	48	69	42	71	47	91	64	93	62	21	87	60	84
23	67	46	62	37	69	50	96	63	99	54	22	81	59	84
24	69	47	62	37	74	45	95	62	94	59	23	87	63	80
25	68	49	68	47	80	46	84	60	83	59	24	89	58	86
26	77	42	69	35	77	47	83	59	82	58	25	90	54	93
27	81	47	74	41	85	54	86	59	84	56	26	90	56	87
28	87	47	80	40	78	53	79	58	77	53	27	90	55	90
29	86	50	77	45	78	54	72	56	69	53	28	90	56	90
30	76	56	68	46	84	48	75	58	88	55	29	79	56	79
					82	45	81	62	83	59	30	85	54	81
					90	50					31	86	54	89
August														
1	63	51	87	51	78	41	97	57	93	53	84	55	85	50
2	68	58	82	49	81	46	102	58	98	64	87	54	91	52
3	76	50	88	55	86	48	88	64	88	56	89	57	91	55
4	86	47	93	63	90	53	73	60	73	55	91	56	90	55
5	94	52	96	62	96	55	82	63	83	56	97	58	97	58
6	99	55	96	61	91	58	87	65	87	57	103	57	101	55
7	97	56	88	61	92	57	83	64	77	55	98	60	99	58
8	97	62	88	64	82	55	85	61	83	53	91	68	88	58
9	102	54	92	46	69	47	86	62	84	54	91	68	85	63
10	91	57	79	52	79	43	85	59	80	53	95	59	89	59
11	92	56	85	40	79	50	83	59	79	53	91	53	89	52
12	91	58	87	45	77	50	79	58	87	52	93	53	89	52
13	88	53	77	47	78	51	89	59	92	53	92	57	95	54
14	86	55	75	49	83	51	91	62	93	56	96	56	97	50
15	90	53	80	47	86	56	87	68	85	63	101	64	102	54
16	92	57	83	44	90	52	89	62	86	56	94	58	87	57
17	86	56	75	51	76	54	92	59	92	55	86	51	80	54
18	92	52	83	45	73	48	90	59	90	56	96	64	96	62
19	91	61	85	49	81	43	87	56	89	54	100	68	101	65
20	86	63	78	52	77	51	80	52	85	54	97	67	100	62
21	77	49	70	45	71	48	87	54	85	54	20	87	62	83
22	73	48	69	42	71	47	91	64	93	62	21	87	60	84
23	67	46	62	37	69	50	96	63	99	54	22	81	59	84
24	69	47	62	37	74	45	95	62	94	59	23	87	63	80
25	68	49	68	47	80	46	84	60	83	59	24	89	58	86
26	77	42	69	35	77	47	83	59	82	58	25	90	54	93
27	81	47	74	41	85	54	86	59	84	56	26	90	56	87
28	87	47	80	40	78	53	79	58	77	53	27	90	55	90
29	86	50	77	45	78	54	72	56	69	53	28	90	56	90
30	76	56	68	46	84	48	75	58	88	55	29	79	56	79
					82	45	81	62	83	59	30	85	54	81
					90	50								

Table 3. Performance summary of the very early rice experimental lines and varieties. Biggs, Butte County, 1989.

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)
20 88Y774	L	11400	15.9	4.6	88	1	34.3
21 88Y775	L	11060	14.9	4.6	89	1	31.4
16 87Y200	M	10700	17.1	4.5	85	56	36.6
22 88Y477	L	10410	15.6	4.7	89	1	34.5
2 88Y165	M	10360	17.3	4.7	86	62	35.0
1 88Y144	M	10340	18.6	4.8	90	39	35.5
4 M-202	M	9980	17.4	4.9	91	67	37.3
5 87Y101	S	9970	15.3	4.8	84	81	34.9
17 88Y175	M	9960	17.6	4.8	89	54	36.4
27 L-202	L	9950	16.6	4.6	94	1	33.0
23 87Y364	L	9940	15.4	4.7	87	36	37.6
18 87Y760	M	9770	14.4	4.9	83	99	36.5
10 88Y143	M	9580	16.1	4.9	83	83	35.4
15 87Y188	M	9520	17.1	4.7	86	87	38.0
13 88Y101	S	9500	17.5	4.7	94	57	35.9
3 88Y133	M	9430	16.5	4.8	83	71	36.6
28 M-201	M	9420	20.2	4.7	95	61	37.3
26 Valencia 87	S	9400	14.2	4.7	86	35	33.6
7 88Y100	S	9380	17.8	4.8	93	40	35.7
11 87Y125	S	9380	15.7	4.8	83	75	35.4
24 87Y384	L	9360	15.9	4.6	86	48	34.9
6 88Y95	S	9280	16.6	4.9	86	78	37.7
29 S-201	S	9260	18.1	4.7	100	18	37.5
9 M-103	M	9250	16.2	4.6	82	87	35.2
25 89Y25	L	8950	15.2	4.6	87	92	35.9
14 89Y14	S	8850	18.3	4.7	94	24	35.4
8 88Y160	M	8740	16.3	5.0	82	50	36.4
12 S-101	S	8410	16.2	4.9	90	70	35.0
19 Calmochi-101	S	8220	16.3	4.7	83	93	36.2
30 M-203	M	7090	16.4	4.8	91	99	38.1
Mean		9560	16.6	4.7	88	56	35.8
CV		8.3	7.6	2.2	1.5	38.7	3.2
LSD (.05)		1120	1.8	0.1	2	30	1.6

Location: Rice Experiment Station, Biggs

Planting date: Replications 1 and 2, May 9, 1989; replications 3 and 4, May 23, 1989.

¹S = short; M = medium; L = long; W = waxy.

²Subjective rating of 1-5 where 1 = poor and 5 = excellent seedling emergence.

³Subjective rating of 1-99 where 1 = none and 99 = 99% lodged.

Table 4. Performance summary of the very early rice experimental lines and varieties. Butte County, 1989.

Entry	Grain ¹ Type	Grain Yield at 14% Moisture (lbs/a)	Grain Moisture at Harvest (%)	Days to 50% Heading	Lodging ² (1-99)	Plant Height (inches)	
20	88Y774	L	9460	15.9	90	33	36.0
2	88Y165	M	9060	16.5	83	86	37.6
4	M-202	M	8840	16.3	90	99	39.0
22	88Y477	L	8780	15.3	93	10	36.6
23	87Y364	L	8540	16.2	89	80	43.2
11	87Y125	S	8410	13.5	82	99	39.2
21	88Y775	L	8350	15.2	94	6	32.6
1	88Y144	M	8340	17.0	86	74	39.8
18	87Y760	S	8330	14.9	81	99	40.0
27	L-202	L	8320	15.8	97	8	34.1
16	87Y200	M	8210	17.5	84	99	36.5
26	Valencia 87	S	8130	13.4	84	85	38.0
8	88Y160	M	8110	14.8	82	99	37.8
3	88Y133	M	8060	16.8	82	99	38.0
12	S-101	S	8030	12.8	86	99	37.7
17	88Y175	M	8000	16.8	84	99	40.2
7	88Y100	S	7980	17.1	89	99	38.8
28	M-201	M	7840	22.6	94	13	37.6
15	87Y188	M	7830	16.6	83	99	38.2
14	89Y14	S	7800	19.6	92	93	37.6
29	S-201	S	7750	18.3	88	99	38.9
10	88Y143	M	7720	16.1	82	99	37.4
24	87Y384	L	7600	14.8	87	99	38.9
6	88Y95	L	7550	16.5	84	99	39.9
5	87Y101	S	7520	15.5	82	99	38.6
19	Calmochi-101	S	7430	14.9	82	99	36.5
13	88Y101	S	6990	18.4	85	99	37.8
25	89Y25	L	6740	16.8	91	99	36.9
9	M-103	M	6520	17.0	81	99	37.0
30	M-203	M	6390	17.2	84	99	39.8
Mean			7950	16.3	86	82	38.0
CV			7.8	9.4	1.3	11.5	4.8
LSD (.05)			870	2.2	2	13	2.6

Location: Durham

Planting date: May 17, 1989

¹S = short; M = medium; L = long; W = waxy.

²Subjective rating of 1-99 where 1 = none and 99 = 99% lodged.

Table 5. Performance summary of the very early rice experimental lines and varieties. San Joaquin County, 1989.

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)
18 87Y760	S	10250	14.9	3.8	97	1	30.0
11 87Y125	S	9820	15.6	3.8	95	1	26.1
9 M-103	M	9370	16.5	3.3	105	1	28.0
19 Calmochi-101	S	9290	15.7	3.8	95	1	29.8
3 88Y133	M	9260	19.2	3.8	96	1	32.6
15 87Y188	M	9240	16.8	3.5	99	1	31.9
2 88Y165	M	9010	18.1	3.0	96	1	29.7
10 88Y143	M	8720	15.8	4.0	95	1	22.5
6 88Y95	S	8570	19.0	4.8	95	1	28.7
16 87Y200	M	8360	19.3	4.3	99	1	27.2
23 87Y364	L	8330	15.9	3.5	101	1	30.2
25 89Y25	L	8080	17.3	4.0	106	1	27.9
8 88Y160	M	8070	16.3	4.3	103	1	31.3
20 88Y774	L	7900	17.8	3.5	105	1	27.0
5 87Y101	S	7650	18.0	3.5	97	1	27.8
13 88Y101	S	7630	23.0	4.0	106	1	29.5
17 88Y175	M	7580	19.4	3.8	104	1	28.8
30 M-203	M	7340	21.6	3.0	106	1	29.9
24 87Y384	L	7190	16.3	3.5	103	1	29.8
12 S-101	S	7050	17.4	4.5	102	1	25.4
29 S-201	S	7020	23.9	2.8	110	1	30.2
4 M-202	M	6880	21.8	3.3	108	1	30.1
22 88Y477	L	6810	16.5	3.8	106	1	24.2
27 L-202	L	6440	18.9	4.3	110	1	23.7
21 88Y775	L	6390	18.3	3.3	106	1	22.1
1 88Y144	M	6170	22.2	3.8	105	1	29.6
7 88Y100	S	5960	23.9	4.0	109	1	29.2
28 M-201	M	5780	23.9	3.5	112	1	30.6
26 Valencia 87	S	5670	17.5	3.3	102	1	27.8
14 89Y14	S	5390	24.2	3.8	110	1	28.3
Mean		7710	18.8	3.7	103	1	28.3
CV		5.7	4.7	14.0	4.0	---	12.1
LSD (.05)		620	1.2	0.7	6	---	4.8

Location: Valley Home

Planting date: May 8, 1989

¹S = short; M = medium; L = long; W = waxy.

²Subjective rating of 1-5 where 1 = poor and 5 = excellent seedling emergence.

³Subjective rating of 1-99 where 1 = none and 99 = 99% lodged.

Table 6. Performance summary of the very early rice experimental lines and varieties. Sutter County, 1989.

Entry	Grain ¹ Type	Grain Yield	Grain	Seedling ²	Days to	Lodging ³	Plant Height
		at 14% Moisture (lbs/a)	Moisture at Harvest (%)	Vigor (1-5)	50% Heading		
4 M-202	M	12320	17.3	4.5	86	26	34.1
11 87Y125	S	12310	13.5	4.0	83	30	34.5
23 87Y364	L	12080	14.6	5.0	81	1	33.7
20 88Y774	L	12050	15.9	4.3	90	1	31.8
24 87Y384	L	11690	14.2	4.3	86	10	33.4
22 88Y477	L	11610	15.6	4.0	91	1	33.3
2 88Y165	M	11610	15.9	3.8	79	1	32.9
21 88Y775	L	11470	15.9	3.5	91	1	28.4
18 87Y760	S	11460	15.3	4.5	81	66	34.3
25 89Y25	L	11400	15.6	4.3	89	1	33.5
3 88Y133	M	11370	16.2	4.8	81	3	34.7
5 87Y101	S	11160	15.4	4.3	82	43	33.0
28 M-201	M	11140	18.8	4.0	94	1	33.6
16 87Y200	M	11100	16.8	3.8	80	3	33.0
19 Calmochi-101	S	11060	15.1	3.8	79	31	32.5
27 L-202	L	11010	16.6	3.8	94	1	29.0
15 87Y188	M	10970	15.0	4.5	85	50	36.7
9 M-103	M	10930	16.3	4.3	81	58	33.4
1 88Y144	M	10810	17.3	4.5	88	1	34.1
10 88Y143	M	10810	15.3	4.8	80	59	33.3
26 Valencia 87	S	10800	13.8	4.5	84	1	33.2
14 89Y14	S	10690	18.1	4.3	93	13	35.4
17 88Y175	M	10680	17.0	4.3	89	44	35.7
6 88Y95	S	10640	15.5	4.8	83	77	34.9
12 S-101	S	10620	14.1	4.5	86	82	36.0
7 88Y100	S	10350	15.8	4.3	93	39	34.1
30 M-203	M	10200	13.2	4.0	88	99	37.0
13 88Y101	S	10180	17.0	4.0	87	85	34.5
29 S-201	S	9870	15.1	4.0	96	78	34.2
8 88Y160	M	9820	14.5	4.5	84	20	35.2
Mean		11070	15.7	4.2	86	31	33.8
CV		4.3	5.0	12.0	1.9	67.5	4.1
LSD (.05)		670	1.1	0.7	2	29	1.9

Location: Natomas

Planting date: May 5, 1989

¹S = short; M = medium; L = long; W = waxy.

²Subjective rating of 1-5 where 1 = poor and 5 = excellent seedling emergence.

³Subjective rating of 1-99 where 1 = none and 99 = 99% lodged.

Table 7. 1989 very early variety trial, four-location summary (Biggs, Butte, San Joaquin, and Sutter Counties).

Entry	Grain ¹ Type	Grain Yield at 14% Moisture (lbs/a)	Grain Moisture at Harvest (%)	Seedling ^{2,4} Vigor (1-5)	Days to 50% Heading	Lodging ³ (1-99)	Plant Height (inches)	
20	88Y774	L	10200	16.4	4.1	93	9	32.3
2	88Y165	M	10010	16.9	3.8	86	38	33.8
11	87Y125	S	9980	14.6	4.2	86	51	33.8
18	87Y760	S	9950	14.9	4.4	85	66	35.2
23	87Y364	L	9720	15.5	4.4	89	30	36.2
16	87Y200	M	9590	17.7	4.2	87	40	33.3
3	88Y133	M	9530	17.2	4.4	85	44	35.5
4	M-202	M	9500	18.2	4.2	94	48	35.1
22	88Y477	L	9400	15.8	4.1	95	3	32.1
15	87Y188	M	9390	16.4	4.2	88	59	36.2
21	88Y775	L	9320	16.1	3.8	95	2	28.6
10	88Y143	M	9210	15.8	4.5	85	60	32.2
5	87Y101	S	9080	16.0	4.2	86	56	33.6
17	88Y175	M	9060	17.7	4.3	91	49	35.3
9	M-103	M	9020	16.5	4.0	87	61	33.4
6	88Y95	S	9010	16.9	4.8	87	64	35.3
19	Calmochi-101	W	9000	15.5	4.1	85	56	33.8
24	87Y384	L	8960	15.3	4.1	90	39	34.3
27	L-202	L	8930	17.0	4.2	99	3	30.0
1	88Y144	M	8920	18.7	4.4	92	29	34.7
25	89Y25	L	8790	16.2	4.3	93	48	33.5
8	88Y160	M	8690	15.5	4.6	88	43	35.2
13	88Y101	S	8570	19.0	4.2	93	61	34.5
28	M-201	M	8540	21.4	4.1	99	19	34.8
12	S-101	S	8530	15.1	4.7	91	63	33.5
26	Valencia 87	S	8500	14.7	4.1	89	30	33.1
29	S-201	S	8480	18.8	3.8	99	49	35.2
7	88Y100	S	8420	18.6	4.3	96	45	34.5
14	89Y14	S	8180	20.1	4.2	97	33	34.2
30	M-203	M	7750	17.1	4.0	92	74	36.2
Mean			9070	16.8	4.2	91	42	34.0
CV			6.6	6.9	10.0	2.6	37.0	6.3
LSD (.05)			420	0.8	0.3	2	11	1.5

¹S = short; M = medium; L = long; W = waxy.

²Subjective rating of 1-5 where 1 = poor and 5 = excellent seedling emergence.

³Subjective rating of 1-99 where 1 = none and 99 = 99% lodged.

⁴Seedling vigor is at three locations only--does not include Butte County.

Table 8. Grain yield summary of the very early experimental lines and varieties by location and years.

Location	Year	S-101	M-103 (84-Y-9)	M-202	Calmochi 101
Butte	1985		10880	10470	9080
	1986	9780	9110	9510	9490
	1987	9990	10210	9510	10350
	1988	9520	8890	9430	9160
	1989	8410	9250	9980	8220
<i>Loc. Mean</i>		9420	9670	9780	9260
Sacramento	1985		8180	8130	9170
	1986	11380	10580	11770	10600
	1987	9700	9000	9270	8940
	1988	7760	6820	8320	7660
	1989	10620	10930	12300	11060
<i>Loc. Mean</i>		9870	9100	9960	9490
San Joaquin	1985				
	1986	7300	9220	9670	10950
	1987	7980	9690	8100	10240
	1988	7280	6820	7560	7300
	1989	7050	9370	6880	9290
<i>Loc. Mean</i>		7400	8780	8050	9450
<i>Loc-Years Mean</i>		8900	9210	9350	9390
Yield % M-103		97	--	102	102
Number of Tests		12	14	14	14

Table 9. Performance summary of the early rice experimental lines and varieties. Butte County, 1989.

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)
37 88Y271	M	10070	18.6	4.8	96	6	35.2
41 88Y240	S	9970	16.8	4.8	96	10	36.4
38 86Y267	S	9750	16.6	4.8	97	14	35.1
43 86Y324	M	9650	17.5	4.8	96	44	36.4
46 88Y317	M	9570	16.0	4.6	92	49	36.0
36 M-201	M	9540	18.4	4.7	95	54	35.3
40 M-202	M	9530	16.9	4.9	94	85	37.3
44 88Y280	M	9270	18.0	4.7	95	43	34.7
32 88Y243	S	9230	14.9	4.8	90	34	36.6
39 87Y238	S	9230	17.0	4.8	97	7	35.6
48 L-202	L	9050	16.4	4.6	96	1	32.1
51 87Y456	L	9040	16.6	4.4	96	3	36.5
54 88Y486	L	9010	15.8	4.7	94	38	34.3
42 88Y242	S	8890	17.0	4.8	96	85	35.0
45 88Y194	M	8860	17.5	4.8	92	80	36.0
31 S-201	S	8820	17.0	4.7	99	31	35.2
50 88Y772	L	8770	14.6	4.6	93	2	33.9
60 M-103	M	8750	15.3	4.7	82	96	35.6
52 88Y494	L	8710	14.9	4.6	93	6	33.5
35 88Y179	M	8710	16.6	4.8	92	60	37.4
53 88Y432	L	8350	14.5	4.7	89	87	32.8
56 Valencia 87	S	8320	14.3	4.7	88	34	33.3
33 88Y345	M	8280	18.5	4.5	95	33	35.6
55 88Y474	L	8160	15.4	4.7	98	1	35.5
47 87Y196	M	8130	15.4	4.9	89	93	35.7
58 Calmochi 101	W	7880	16.3	4.8	83	98	34.7
34 88Y237	S	7830	17.3	4.5	95	4	35.5
59 S-101	S	7530	14.8	4.9	92	23	35.3
49 89Y49	L	7470	13.8	4.8	89	51	36.1
57 M-203	M	7410	16.4	4.8	92	99	39.3
Mean		8790	16.3	4.7	93	42	35.4
CV		8.0	5.1	2.1	1.7	49.5	3.3
LSD (.05)		980	1.2	0.1	2	29	1.7

Location: Rice Experiment Station, Biggs

Planting date: Two replications planted May 10, 1989; two replications planted May 22, 1989. Data is an average of all replications.

¹S = short; M = medium; L = long; W = waxy.

²Subjective rating of 1-5 where 1 = poor and 5 = excellent seedling emergence.

³Subjective rating of 1-99 where 1 = none and 99 = 99% lodged.

Table 10. Performance summary of the early rice experimental lines and varieties.
Glenn County, 1989.

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)	
37	88Y271	M	10570	16.2	4.0	102	1	38.4
46	88Y317	M	10440	14.3	4.0	100	1	36.3
44	88Y280	M	10200	14.8	3.8	97	1	36.5
35	88Y179	M	10170	14.6	4.2	99	12	39.9
33	88Y345	M	10000	17.2	3.7	99	1	38.8
40	M-202	M	9900	14.6	4.1	96	43	37.3
38	86Y267	S	9790	16.5	4.1	101	3	37.0
41	88Y240	S	9760	18.6	4.1	102	1	38.3
60A	ECP	S	9640	12.2	4.1	89	11	38.3
36	M-201	M	9640	16.9	4.0	101	1	36.7
43	86Y324	M	9590	16.3	3.8	101	3	40.3
31	S-201	S	9540	19.1	4.1	107	23	41.2
45	88Y194	M	9450	16.4	4.1	99	26	37.5
32	88Y243	S	9400	14.1	4.2	94	1	37.7
39	87Y238	S	9300	18.0	4.2	104	1	38.7
59	S-101	S	9300	13.3	4.1	93	28	35.7
54	88Y486	L	9160	13.9	4.1	97	1	35.3
58	Calmochi-101	W	8830	13.4	3.9	83	97	35.7
47	87Y196	M	8830	13.5	4.3	91	92	37.4
42	88Y242	S	8800	20.9	4.2	102	68	36.7
50	88Y772	L	8720	13.8	3.8	95	1	35.9
34	88Y237	S	8700	19.4	4.0	98	1	38.5
60B	S-2	S	8560	12.9	4.2	92	1	36.2
52	88Y494	L	8550	13.5	3.8	97	1	34.2
51	87Y456	L	8540	14.1	3.8	97	1	36.4
60	M-103	M	8500	14.8	3.9	83	97	35.2
57	M-203	M	8410	14.8	3.9	98	99	37.0
48	L-202	L	8300	14.5	3.8	99	1	31.8
53	88Y432	L	8290	14.5	3.7	92	77	34.8
56	Valencia 87	S	8220	12.8	4.2	91	6	35.8
49	89Y49	L	7760	13.4	4.2	89	8	38.2
55	88Y474	L	6700	14.4	4.0	100	1	34.8
Mean			9110	15.2	4.0	96	22	37.0
CV			4.8	5.1	4.2	1.8	83.6	4.6
LSD (.05)			610	1.1	0.2	2	26	2.4

Location: Glenn

Planting date: May 3, 1989

¹S = short; M = medium; L = long; W = waxy.

²Subjective rating of 1-5 where 1 = poor and 5 = excellent seedling emergence.

³Subjective rating of 1-99 where 1 = none and 99 = 99% lodged.

Table 11. Performance summary of the early rice experimental lines and varieties. Yolo County, 1989.

Entry	Grain ¹ Type	Grain Yield	Grain	Seedling ² Vigor	Days to		Plant Height	
		at 14% Moisture (lbs/a)	Moisture at Harvest (%)		50% Heading	Lodging ³ (1-99)		
44	88Y280	M	10100	21.9	4.4	98	1	39.6
47	87Y196	M	10060	13.9	4.4	94	1	41.0
54	88Y486	L	9990	17.4	4.3	92	1	35.7
38	86Y267	S	9860	22.1	4.3	99	1	39.9
46	88Y317	M	9840	20.7	4.3	101	1	39.8
60A	ECP	S	9750	15.4	4.5	90	1	41.5
57	M-203	M	9670	21.2	4.4	99	1	41.1
37	88Y271	M	9630	22.8	4.3	103	1	39.8
45	88Y194	M	9610	19.2	4.5	99	1	39.4
40	M-202	M	9600	20.3	4.4	98	1	39.7
59	S-101	S	9590	16.8	4.3	91	1	38.0
42	88Y242	S	9570	24.7	4.3	102	1	41.1
43	86Y324	M	9480	22.2	4.2	102	1	42.5
53	88Y432	L	9470	15.9	3.7	93	1	35.6
50	88Y772	L	9340	17.1	4.2	93	1	35.6
58	Calmochi-101	W	9250	15.9	4.5	85	1	36.3
33	88Y345	M	9200	22.2	4.1	103	1	38.0
36	M-201	M	9170	22.0	4.2	102	1	40.3
56	Valencia 87	S	9120	15.6	4.4	95	1	39.7
35	88Y179	M	8990	21.4	4.3	98	1	42.4
48	L-202	L	8990	17.9	4.0	97	1	33.6
51	87Y456	L	8930	17.9	4.1	98	1	39.9
60B	S-2	S	8610	16.4	4.3	94	1	38.9
32	88Y243	S	8520	19.4	4.2	96	1	39.9
49	89Y49	L	8500	15.1	4.2	92	1	38.9
39	87Y238	S	8500	24.5	4.4	104	1	42.3
41	88Y240	S	8480	25.3	4.3	104	1	40.8
60	M-103	M	8400	16.1	4.3	85	1	37.1
31	S-201	S	8360	25.6	4.4	105	1	41.2
52	88Y494	L	8300	17.8	4.1	95	1	36.8
34	88Y237	S	8040	22.8	4.2	96	1	40.5
55	88Y474	L	7840	19.5	4.1	104	1	37.3
Mean			9150	19.6	4.3	97	1	39.2
CV			5.2	4.5	3.8	2.5	--	4.3
LSD (.05)			660	1.2	0.2	3	--	2.3

Location: District 108

Planting date: May 8, 1989

¹S = short; M = medium; L = long; W = waxy.

²Subjective rating of 1-5 where 1 = poor and 5 = excellent seedling emergence.

³Subjective rating of 1-99 where 1 = none and 99 = 99% lodged.

Table 12. Performance summary of the early rice experimental lines and varieties. Yuba County, 1989.

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)	
37	88Y271	M	10600	24.5	2.5	100	1	39.5
39	87Y238	P	10390	22.9	3.3	94	1	39.9
46	88Y317	M	10250	24.3	2.8	97	1	38.2
44	88Y280	M	9880	24.3	3.0	96	1	38.1
35	88Y179	M	9780	20.8	3.3	92	21	40.9
36	M-201	M	9640	24.2	3.3	99	1	40.5
56	Valencia 87	S	9610	17.0	3.5	89	1	38.2
60A	ECP	S	9590	16.6	3.3	87	6	39.9
54	88Y486	L	9570	19.5	3.5	95	1	36.6
31	S-201	S	9560	24.5	3.0	98	1	39.7
32	88Y243	S	9480	20.1	3.3	90	11	39.9
50	88Y772	L	9420	18.6	3.0	94	1	36.6
52	88Y494	L	9390	17.6	2.3	93	1	36.0
38	86Y267	S	9350	22.3	3.0	92	2	38.5
60B	S-2	S	9190	17.7	3.0	90	1	37.1
51	87Y456	L	9190	19.6	2.0	98	1	38.0
41	88Y240	S	9180	23.0	2.5	96	1	39.9
43	86Y324	M	9040	26.5	2.8	99	1	42.0
48	L-202	L	8960	19.4	3.3	96	1	34.7
40	M-202	M	8960	26.7	3.8	93	39	42.3
49	89Y49	L	8780	16.1	3.5	93	2	37.9
45	88Y194	M	8760	23.8	3.3	95	48	39.6
59	S-101	S	8730	20.5	2.8	89	29	37.9
60	M-103	M	8440	23.3	2.8	86	84	35.8
55	88Y474	L	8380	20.8	2.5	100	1	38.9
33	88Y345	M	8320	25.2	3.0	99	1	39.4
53	88Y432	L	8310	19.4	3.3	93	63	36.4
58	Calmochi-101	W	8250	19.7	3.5	86	82	37.2
34	88Y237	S	8210	24.5	2.3	90	1	38.3
47	87Y196	M	8090	22.9	4.0	91	91	40.3
42	88Y242	S	7970	30.0	3.3	96	64	38.3
57	M-203	M	5520	31.0	3.3	92	99	41.9
Mean			9020	22.1	3.0	94	21	38.7
CV			7.6	6.8	19.1	1.9	84.9	4.1
LSD (.05)			970	2.1	0.8	3	25	2.2

Location: District 10

Planting date: May 10, 1989

¹S = short; M = medium; L = long; W = waxy.

²Subjective rating of 1-5 where 1 = poor and 5 = excellent seedling emergence.

³Subjective rating of 1-99 where 1 = none and 99 = 99% lodged.

Table 13. 1989 early variety trial, four-location summary (Butte, Glenn, Yolo, Yuba counties).

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)	
37	88Y271	M	10210	20.5	3.9	100	2	38.2
46	88Y317	M	10020	18.8	3.9	98	13	37.6
44	88Y280	M	9860	19.7	4.0	96	11	37.2
38	86Y267	S	9690	19.4	4.0	97	5	37.6
40	M-202	M	9500	19.6	4.3	95	42	39.2
36	M-201	M	9500	20.4	4.0	99	14	38.2
43	86Y324	M	9440	20.6	3.9	99	12	40.3
54	88Y486	L	9430	16.6	4.1	94	10	35.5
35	88Y179	M	9410	18.3	4.1	95	24	40.2
39	87Y238	S	9350	20.6	4.2	100	2	39.1
41	88Y240	S	9350	20.9	3.9	99	3	38.8
45	88Y194	M	9170	19.2	4.2	96	39	38.1
32	88Y243	S	9160	17.1	4.1	93	12	38.5
31	S-201	S	9070	21.6	4.1	102	14	39.3
50	88Y772	L	9060	16.1	3.9	94	1	35.5
33	88Y345	M	8950	20.8	3.8	99	9	37.9
51	87Y456	L	8930	17.0	3.6	97	1	37.7
48	L-202	L	8820	17.0	3.9	97	1	33.0
56	Valencia 87	S	8820	14.9	4.2	91	10	36.7
42	88Y242	S	8810	23.1	4.1	99	54	37.8
59	S-101	S	8790	16.3	4.0	91	20	36.7
47	87Y196	M	8780	16.4	4.4	91	69	38.6
52	88Y494	L	8740	15.9	3.7	95	2	35.1
53	88Y432	L	8600	16.1	3.8	91	57	34.9
58	Calmochi-101	W	8550	16.3	4.2	84	69	36.0
60	M-103	M	8520	17.4	3.9	84	70	36.0
34	88Y237	S	8200	21.0	3.7	95	2	38.2
49	89Y49	L	8130	14.6	4.2	91	15	37.8
55	88Y474	L	7770	17.5	3.8	100	1	36.6
57	M-203	M	7750	20.8	4.1	95	75	39.8
Mean			9010	18.5	4.0	95	22	37.5
CV			6.6	5.7	7.9	2.0	75.8	4.2
LSD (.05)			410	0.7	0.2	1	12	1.1

¹S = short; M = medium; L = long; W = waxy.

²Subjective rating of 1-5 where 1 = poor and 5 = excellent seedling emergence.

³Subjective rating of 1-99 where 1 = none and 99 = 99% lodged.

Table 14. Grain yield summary of the early experimental lines and varieties by location and year.

Location	Year	S-201	M-201	L-202	M-202	M-203 (86-Y-35)
Butte	1985	8590	8400	7920	9280	
	1986	10490	10390	10130	10270	8690
	1987	9590	8640	9760	9720	8330
	1988	9830	10740	9980	9350	7990
	1989	8820	9540	9050	9530	7410
<i>Loc. Mean</i>		9460	9540	9370	9630	8340
Colusa/Glenn	1985	10450	10680	9580	10890	
	1986	8460	8430	7900	9530	7500
	1987	11080	7320	9980	10880	9510
	1988	6990	9710	8860	8190	6130
	1989	9540	9640	8300	9900	8410
<i>Loc. Mean</i>		9300	9160	8920	9880	7890
Yolo	1985	9540	10060	10080	10070	
	1986	9690	9120	9600	10150	8440
	1987	10820	11220	10530	12050	9980
	1988	8300	8140	8830	7990	7190
	1989	8360	9170	8990	9600	9670
<i>Loc. Mean</i>		9340	9540	9610	9970	8820
Yuba	1985	8640	8730	6900	9240	
	1986	9710	8960	6800	10100	9940
	1987	6850	4360	7760	7140	5870
	1988	8170	9490	9120	8480	6490
	1989	9560	9640	8960	8960	5520
<i>Loc. Mean</i>		8590	8240	7910	8780	6960
<i>Loc-Years Mean</i>		9170	9120	8950	9570	7940
Yield % M-201		101	---	98	105	88
Number of Tests		20	20	20	20	16

Table 15. Performance summary of the intermediate and late rice experimental lines and varieties. Butte County, 1989.

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)	
68	86Y516	M	11650	18.5	4.6	104	1	37.9
79	88Y595	S	11450	18.7	4.6	105	5	38.5
67	88Y211	M	11240	17.9	4.6	101	2	39.3
82	88Y620	L	11020	17.0	4.4	103	1	33.7
69	85Y502	S	10890	19.0	4.6	105	6	38.4
81	88Y49	L	10870	16.7	4.3	102	1	31.7
70	86Y519	S	10820	19.8	4.7	109	19	38.7
76	88Y606	S	10810	18.4	4.4	103	8	35.4
74	88Y605	S	10790	18.6	4.5	106	8	38.6
84	88Y636	L	10700	16.1	4.3	101	3	37.5
80	88Y227	S	10580	18.1	4.6	103	27	35.4
66	87Y488	M	10540	17.8	4.6	101	1	39.9
65	88Y594	S	10300	18.4	4.7	106	27	39.5
83	A-301	L	10040	17.7	4.4	106	1	32.1
73	88Y601	S	9910	18.3	4.4	103	17	38.9
62	M-302	M	9820	18.6	4.8	105	26	39.4
61	M7	M	9760	21.3	4.7	115	1	37.9
75	88Y560	M	9730	18.3	5.0	108	7	37.5
72	88Y563	M	9700	17.5	4.8	102	22	36.4
71	88Y558	M	9550	19.3	4.6	103	81	37.1
78	88Y557	M	9500	19.3	4.7	105	55	38.5
64	88Y64	M	9110	18.2	4.8	107	2	38.2
63	M-401	M	9070	20.8	4.8	110	74	40.1
77	88Y545	M	9000	18.4	4.9	104	58	40.2
Mean			10290	18.4	4.6	105	19	37.5
CV			8.8	3.1	2.8	1.3	137.4	3.6
LSD (.05)			1270	0.8	0.2	2	36	1.9

Location: Rice Experiment Station, Biggs
 Planting date: May 8, 1989

¹S = short; M = medium; L = long; W = waxy.

²Subjective rating of 1-5 where 1 = poor and 5 = excellent seedling emergence.

³Subjective rating of 1-99 where 1 = none and 99 = 99% lodged.

Table 16. Performance summary of the intermediate and late rice experimental lines and varieties. Glenn County, 1989.

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)	
66	87Y488	M	9600	15.6	4.2	110	1	41.0
76	88Y606	S	9340	17.4	4.0	113	9	37.4
69	85Y502	S	9310	17.5	4.1	114	4	39.6
79	88Y595	S	9130	17.6	4.2	113	3	40.5
68	86Y516	S	9130	17.0	3.8	112	1	39.0
71	88Y558	M	9050	16.5	4.0	113	31	39.9
67	88Y211	M	9040	15.1	3.8	113	1	40.7
80	88Y227	S	9030	17.6	4.1	109	4	39.6
78	88Y557	M	8830	16.3	4.1	113	10	40.8
70	86Y519	S	8810	18.2	4.0	116	1	41.5
63	M-401	M	8780	16.1	4.1	116	7	41.7
65	88Y594	S	8720	17.5	4.1	112	4	42.1
83	A-301	L	8660	14.8	3.8	115	1	35.8
72	88Y563	M	8580	15.6	4.3	114	1	38.8
82	88Y620	L	8540	14.9	3.9	109	1	34.3
73	88Y601	S	8470	16.9	4.0	108	18	39.2
81	88Y49	L	8440	14.2	3.5	111	1	33.7
74	88Y605	S	8380	17.9	4.0	114	1	41.0
61	M7	M	8270	17.8	4.1	120	1	41.2
62	M-302	M	8220	15.3	4.1	112	2	40.8
84	88Y636	L	8040	13.9	4.0	109	2	38.7
77	88Y545	M	7660	16.4	4.1	113	9	41.8
75	88Y560	M	7620	14.8	4.3	115	1	39.8
64	88Y64	M	7510	14.5	4.2	116	1	42.0
Mean			8630	16.2	4.0	113	5	39.6
CV			4.5	4.2	3.8	1.0	101.8	2.6
LSD (.05)			560	1.0	0.2	2	7	1.5

Location: Norman Road
Planting date: April 24, 1989

¹S = short; M = medium; L = long; W = waxy.

²Subjective rating of 1-5 where 1 = poor and 5 = excellent seedling emergence.

³Subjective rating of 1-99 where 1 = none and 99 = 99% lodged.

Table 17. Performance summary of the intermediate and late rice experimental lines and varieties. Sutter County, 1989.

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)	
75	88Y560	M	8720	16.1	4.3	106	2	37.9
63	M-401	M	8340	19.7	4.3	111	7	40.5
84	88Y636	L	8280	15.4	3.5	94	52	38.2
81	88Y49	L	8230	14.8	3.5	95	1	34.3
72	88Y563	M	8010	16.4	5.0	105	1	36.5
66	87Y488	M	7990	16.2	4.5	101	1	37.3
71	88Y558	M	7980	15.5	4.5	100	11	37.1
76	88Y606	S	7890	17.3	3.8	96	1	36.5
67	88Y211	M	7870	15.0	5.0	93	6	37.4
82	88Y620	L	7860	15.4	3.8	96	1	33.2
83	A-301	L	7730	15.2	3.0	98	1	34.0
78	88Y557	M	7590	16.9	4.5	102	1	36.6
65	88Y594	S	7510	17.5	4.0	101	1	39.7
74	88Y605	S	7500	18.0	3.8	103	1	37.9
61	M7	M	7480	20.0	4.5	111	1	42.1
70	86Y519	S	7470	18.5	4.0	105	1	39.2
73	88Y601	S	7440	17.9	3.5	101	1	37.5
64	88Y64	M	7390	15.1	5.0	106	1	41.7
69	85Y502	S	7380	18.0	4.3	101	1	37.8
62	M-302	M	7330	15.1	4.3	102	1	38.4
68	86Y516	S	7280	17.4	3.8	101	1	36.9
79	88Y595	S	7260	18.1	3.5	102	1	37.9
80	88Y227	S	6870	17.5	4.3	91	2	32.6
77	88Y545	M	6770	16.9	4.8	101	1	38.3
Mean			7670	16.8	4.1	101	4	37.5
CV			6.4	4.8	12.7	1.3	208.1	5.7
LSD (.05)			690	1.1	0.7	2	12	3.0

Location: Sutter

Planting date: April 28, 1989

¹S = short; M = medium; L = long; W = waxy.

²Subjective rating of 1-5 where 1 = poor and 5 = excellent seedling emergence.

³Subjective rating of 1-99 where 1 = none and 99 = 99% lodged.

Table 18. 1989 intermediate and late variety trial, three-location summary (Butte, Colusa, Sutter counties).

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)	
67	88Y211	M	9380	16.0	4.5	102	3	39.1
66	87Y488	M	9380	16.5	4.4	104	1	39.4
68	86Y516	S	9350	17.6	4.1	106	1	37.9
76	88Y606	S	9350	17.7	4.1	104	6	36.5
79	88Y595	S	9280	18.1	4.1	107	3	39.0
69	85Y502	S	9190	18.2	4.3	106	4	38.6
81	88Y49	L	9180	15.2	3.8	103	1	33.2
82	88Y620	L	9140	15.7	4.0	103	1	33.7
70	86Y519	S	9030	18.8	4.2	110	7	39.8
84	88Y636	L	9010	15.1	4.0	101	19	38.1
74	88Y605	S	8890	18.1	4.1	107	3	39.2
71	88Y558	M	8860	17.1	4.4	105	41	38.0
65	88Y594	S	8840	17.8	4.3	106	11	40.4
80	88Y227	S	8830	17.8	4.3	101	11	35.9
83	A-301	L	8810	15.9	3.7	106	1	34.0
72	88Y563	M	8760	16.5	4.7	107	8	37.2
63	M-401	M	8730	18.9	4.4	112	29	40.8
75	88Y560	M	8690	16.4	4.5	109	3	38.4
78	88Y557	M	8640	17.5	4.4	107	22	38.6
73	88Y601	S	8610	17.7	4.0	104	12	38.5
61	M7	M	8500	19.7	4.4	115	1	40.4
62	M-302	M	8460	16.3	4.4	106	9	39.5
64	88Y64	M	8000	15.9	4.7	110	1	40.7
77	88Y545	M	7810	17.2	4.6	106	23	40.1
Mean			8860	17.2	4.3	106	9	38.2
CV			7.2	4.0	7.6	1.2	173.1	4.1
LSD (.05)			510	0.6	0.3	1	13	1.3

¹S = short; M = medium; L = long; W = waxy.

²Subjective rating of 1-5 where 1 = poor and 5 = excellent seedling emergence.

³Subjective rating of 1-99 where 1 = none and 99 = 99% lodged.

Table 19. Grain yield summary of the intermediate and late experimental lines and varieties by location and years.

Location	Year	M-7	M-302	M-401	A-301 (83-Y-414)
Butte	1985	9450	10640	10720	8940
	1986	9230	9380	10040	9520
	1987	9210	9230	9890	3410
	1988	8780	9400	9330	9520
	1989	9760	9820	9070	10040
<i>Loc. Mean</i>		9300	9690	9810	8290
Glenn/Colusa	1985	7370	7150	8620	4170
	1986				
	1987	6570	6960	8690	6390
	1988	6760	5220	6270	5890
	1989	8270	8220	8780	8660
<i>Loc. Mean</i>		7240	6900	8090	6280
Sutter	1985	9940	10980	9650	8940
	1986	6980	7060	8340	5110
	1987	7230	7700	8070	7640
	1988	7540	6970	7560	6050
	1989	7480	7330	8340	7730
<i>Loc. Mean</i>		7830	8010	8390	7090
<i>Loc-Years Mean</i>		8190	8290	8810	7290
Yield % M-7		--	101	108	89
Number of Tests		14	14	14	14

Table 20. Performance summary of the short and medium grain rice experimental lines and varieties. Butte County, 1989.

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)	
766	88Y324	M	9940	19.5	4.5	95	50	35.8
759	88Y192	M	9660	17.5	4.8	92	96	35.8
756	88Y176	M	9570	16.3	4.8	87	99	37.8
769	88Y576	S	9430	18.9	4.7	100	23	36.0
761	88Y361	M	9400	18.6	4.8	91	71	38.4
752	M-103	M	9150	16.9	4.8	82	99	35.8
754	S-101	S	9120	15.7	4.8	91	52	35.8
764	88Y333	M	9090	18.0	4.7	92	74	36.0
775	88Y270	M	9040	19.5	4.7	94	69	36.0
768	88Y575	S	9010	19.0	4.8	100	94	38.1
772	89Y772	S	8990	17.6	4.8	94	49	35.9
765	88Y198	M	8980	18.1	4.8	92	87	36.5
757	88Y289	M	8970	18.9	5.0	93	97	38.2
762	88Y527	M	8960	20.8	4.7	95	83	37.9
758	88Y274	M	8950	18.3	4.7	93	69	33.6
753	M-202	M	8760	19.2	4.9	93	97	37.0
770	88Y587	S	8640	18.8	4.8	100	2	36.6
755	88Y205	M	8600	20.6	5.0	94	96	39.7
773	89Y773	S	8530	18.1	4.6	97	81	39.0
767	88Y765	S	8240	20.0	4.9	100	31	36.6
771	88Y245	S	8130	19.0	4.8	99	59	39.2
751	S-201	S	8130	18.8	4.8	101	14	37.1
763	88Y149	M	7960	17.2	4.8	90	97	37.8
774	89Y774	S	7830	19.6	4.7	99	83	38.6
760	88Y338	M	7150	20.7	4.7	93	97	37.2
Mean			8810	18.6	4.8	94	71	37.1
CV			8.8	8.2	2.2	1.4	29.9	2.9
LSD (.05)			1090	2.2	0.2	2	30	1.5

Location: Rice Experiment Station, Biggs

Planting date: Two replications planted May 10, 1989; two replications planted May 24, 1989.

¹S = short; M = medium; L = long; W = waxy.

²Subjective rating of 1-5 where 1 = poor and 5 = excellent seedling emergence.

³Subjective rating of 1-99 where 1 = none and 99 = 99% lodged.

Table 21. Performance summary of the short and medium grain rice experimental lines and varieties. Colusa County, 1989.

Entry	Grain ¹ Type	Grain Yield	Grain	Seedling ² Vigor	Days to	Lodging ³	Plant Height
		at 14% Moisture	Moisture at Harvest		50% Heading		
		(lbs/a)	(%)	(1-5)		(1-99)	(Inches)
753 M-202	M	11470	19.7	4.1	93	31	40.8
759 88Y192	M	11370	18.0	4.3	91	11	38.7
755 88Y205	M	11260	18.6	4.2	96	19	47.0
756 88Y176	M	11050	16.1	4.2	88	3	41.0
761 88Y361	M	11000	19.0	4.0	90	1	41.8
766 88Y324	M	11000	20.2	3.9	97	1	39.8
760 88Y338	M	10970	18.0	3.7	95	5	43.1
776 M-201	M	10960	19.4	3.8	97	1	39.1
762 88Y527	M	10810	19.9	3.8	96	1	40.8
770 88Y587	S	10760	19.5	4.2	99	2	37.5
763 88Y149	M	10750	15.7	4.1	91	23	43.0
764 88Y333	M	10700	17.6	3.8	91	15	40.1
769 88Y576	S	10620	18.8	4.1	98	13	39.8
751 S-201	S	10600	19.6	4.2	100	4	40.0
754 S-101	S	10520	15.5	3.9	87	36	39.2
775 88Y270	M	10460	21.6	4.0	97	1	40.1
771 88Y245	S	10380	17.4	4.0	100	12	42.4
779 Calmochi-101	W	10310	16.4	4.2	83	35	38.2
772 89Y772	S	10240	17.6	4.2	90	25	39.5
757 88Y289	M	10160	20.8	4.2	92	52	41.7
765 88Y198	M	10120	17.3	4.1	90	16	40.9
768 88Y575	S	10050	17.9	4.0	96	46	43.1
778 L-202	L	10020	17.5	4.0	99	1	35.2
780 Valencia 87	S	10020	14.6	4.1	88	1	39.0
767 88Y765	S	9630	19.1	4.2	95	15	41.0
777 M-203	M	9620	18.5	4.1	91	97	41.2
773 89Y773	S	9520	18.8	4.1	95	39	41.3
774 89Y774	S	9320	19.6	4.1	96	12	41.6
758 88Y274	M	9310	19.0	3.9	95	1	39.3
752 M-103	M	9150	17.8	3.9	84	60	37.5
Mean		10410	18.3	4.0	93	19	40.5
CV		5.6	6.9	4.4	2.1	101.6	4.0
LSD (.05)		820	1.8	0.2	3	27	2.3

Location: Grimes

Planting date: May 1, 1989

¹S = short; M = medium; L = long; W = waxy.

²Subjective rating of 1-5 where 1 = poor and 5 = excellent seedling emergence.

³Subjective rating of 1-99 where 1 = none and 99 = 99% lodged.

Table 22. 1989 short and medium grain trial, two-location summary.

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)	
759	88Y192	M	10510	17.7	4.5	91	54	37.3
766	88Y324	M	10470	19.8	4.2	96	26	37.8
756	88Y176	M	10310	16.2	4.5	87	51	39.4
761	88Y361	M	10200	18.8	4.3	90	36	40.1
753	M-202	M	10110	19.5	4.5	93	64	38.9
769	88Y576	S	10020	18.8	4.4	99	18	37.9
755	88Y205	M	9930	19.6	4.6	95	58	43.4
764	88Y333	M	9890	17.8	4.3	92	44	38.0
762	88Y527	M	9880	20.3	4.2	95	42	39.4
754	S-101	S	9820	15.6	4.3	89	44	37.5
775	88Y270	M	9750	20.5	4.3	95	35	38.0
770	88Y587	S	9700	19.1	4.5	99	2	37.1
772	89Y772	S	9620	17.6	4.5	92	37	37.7
757	88Y289	M	9560	19.8	4.6	93	74	40.0
765	88Y198	M	9550	17.7	4.4	91	51	38.7
768	88Y575	M	9530	18.5	4.4	98	70	40.6
751	S-201	S	9370	19.2	4.4	100	9	38.5
763	88Y149	M	9360	16.5	4.4	91	60	40.4
771	88Y245	S	9260	18.2	4.3	100	36	40.8
752	M-103	M	9150	17.4	4.4	83	80	36.7
758	88Y274	M	9130	18.6	4.3	94	35	36.4
760	88Y338	M	9060	19.4	4.2	94	51	40.2
773	89Y773	S	9020	18.4	4.4	96	60	40.2
767	88Y765	S	8930	19.6	4.6	97	23	38.8
774	89Y774	S	8570	19.6	4.4	97	47	40.1
Mean			9630	18.6	4.4	94	44	39.0
CV			7.2	7.4	3.3	1.8	47.5	3.6
LSD (.05)			680	1.4	0.1	2	21	1.4

¹S = short; M = medium; L = long; W = waxy.

²Subjective rating of 1-5 where 1 = poor and 5 = excellent seedling emergence.

³Subjective rating of 1-99 where 1 = none and 99 = 99% lodged.