

COMPREHENSIVE RESEARCH ON RICE
ANNUAL REPORT

January 1, 1981 - December 31, 1981

PROJECT TITLE: Cooperative Extension Rice Variety Adaptation and
Cultural Practice Research

PROJECT LEADER AND PRINCIPAL UC INVESTIGATORS:

Project Leader: James E. Hill, Extension Agronomist and Associate in
the Experiment Station

Principal UC Investigators: L. A. Post, SRA (UCD) and Farm Advisors
M. L. Campbell (Stanislaus), M. Canevari (San Joaquin),
S. C. Scardaci (Colusa), B. L. Weir (Merced), C. M.
Wick (Butte), J. F. Williams (Sutter), S. D. Wright
(Tulare), D. Munier (Kern), S. W. Kite (Kings), and
Janning Kastler (Butte)

LEVEL OF 1981 FUNDING: \$45,230.00

OBJECTIVES AND EXPERIMENTS CONDUCTED BY LOCATION TO ACCOMPLISH OBJECTIVES:

Objective I

Determine the adaptation of improved experimental rice lines to rice
production areas of California to maximize yield and quality. To test
specific varieties for special purposes such as soil reclamation and double
cropping.

Statewide Uniform Rice Variety Tests

Very Early Maturity Group - Three uniform tests were conducted; at
the Rice Experiment Station (Butte), the Demeter Corporation (Sacramento)
and the Frobose Ranch (Stanislaus). Twenty-four lines were included in
each test.

Early Maturity Group - Four uniform tests were conducted; at the
Rice Experiment Station (Butte), Mohammed Ranch (Yuba), Geer Ranch
(Yolo) and Dennis Ranch (Colusa). Twenty-four lines were included in
each test.

Late Maturity Group - Four uniform tests were conducted; at the
Rice Experiment Station (Butte), Wylie Farming (Glenn), Guisti Ranch
(Sutter) and O'Banion Ranch (Merced). Twenty-six lines were included in
each test.

Objective II

Provide assistance to expedite field research projects of UC rice research project leaders. Maintain a UCD Agronomy Extension-based rice project machinery pool for planting and harvesting field experiments.

Thirty-nine rice field experiments were planted or harvested with the rice equipment. Seventeen of these were directly related to this project (RM-2) of which 11 were variety tests conducted in ten different counties. Others included rice fertilizer and growth regulator tests in cooperation with Dr. Duane Mikkelsen (RB-1) and Carl Wick. Eleven weed control trials in cooperation with Dr. Dave Bayer (RP-1), Jack Williams and Steve Scardaci (RP-1), and a variety test in cooperation with Dr. J. N. Rutger and Dr. M. L. Peterson (RB-3). Harvest assistance was given by Ernie Roncoroni, Associate to Dr. Dave Bayer. Experiments ranged geographically from Nelson (Butte County) to Pixley (Tulare County).

SUMMARY OF 1981 RESEARCH BY OBJECTIVE:

Objective I

Statewide Uniform Rice Variety Tests

A total of 11 uniform rice variety tests were conducted in eight locations ranging from Butte to Merced County. Twenty-four cultivars including currently grown "standards" and experimental lines were planted in each of three maturity classes for a total of 72 varietal entries. Three tests, one of each maturity group, were conducted at the Rice Experiment Station in Biggs by the plant breeders H. Carnahan, C. Johnson and S. T. Tseng. The remaining tests were carried out under a diversity of conditions using the typical cultural practices for the grower and location in order to test agronomic performance in a wide range of production areas. Varietal entries tested were prepared by the CCRRFI-USDA-UC rice genetics and breeding program as a cooperative effort.

Statewide average performance is reported here for each maturity group. The individual location averages will be reported in an agronomy progress report at a later date.

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

Two of the uniform tests were located in cool areas (Natomas, Sacramento County; near Oakdale, Stanislaus County) and one in a warm area (Biggs, Butte County). Agronomic performance of the 24 cultivars are shown in Table 1.

Table 1 shows the average yields over all locations of the 24 lines tested including the check varieties S-201, M-9, Earlirose and M-101. In 1981, 11 of the 12 highest yielding entries were short-grain types verifying as in previous years that several short-grain lines perform extremely well in the very early group. 78-Y-119 (81-Y-5) has produced consistently well in this test since 1978 and is a possible candidate

to a become very early short grain variety. This line was down in yield (20th) at Biggs in 1981, however, in the cooler regions, where it would most likely be planted as a variety, it ranked first and second (in Stanislaus and Sacramento County respectively). 78-Y-119 averaged 8490 lbs/A, however, S-201 was the leading entry.

Among the medium-grain types, the two highest yielding were 81-Y-9 and 81-Y-8 consistent with the results from 1980. These averaged 8580 and 8440 lbs/A, respectively whereas the current medium-grain varieties M-9, Earlirose and M-101 yielded 7890, 7830 and 7320 lbs/A, respectively. Thus, improved medium-grain types are apparent in the very early class.

Summary of the Early Rice Variety Tests (90-99 Days to 50% Heading at Biggs)

Agronomic performance of the 24 early cultivars is shown in Table 2. 78-Y-186 (81-Y-34, Table 2) was the leading entry in these tests, yielding 9810 lb/A over four locations. This line has been consistently outstanding over three years and is a candidate to become M-201. Twenty lines yielded more than M-9 although only ten were statistically significantly greater. S-201 ranked third and L-201 eighth. 20 of 23 short-statured (excluding the tall S-6) lines produced greater yields than the most widely grown variety, M-9, indicating that improved varieties are continually being developed.

Summary of the Late Rice Variety Tests (>105 Days to 50% Heading at Biggs)

Agronomic performance of the 24 late cultivars is shown in Table 3 as an average of the four locations tested. M-401, a new variety released in 1981, averaged 9780 lb/A. Although eight varieties produced greater yields, none of these yields were significantly higher statistically. Fifteen experimental lines were improved over M-7.

Specific Variety Tests

A test containing 24 very early maturity experimental lines and varieties provided by the California Cooperative Rice Research Foundation, Biggs, was conducted to determine potential yields and other agronomic characteristics favorable to double cropping in a wheat-rice rotation. This test was conducted in the Sutter Basin in cooperation with Jack Williams on the Leiser Ranch. Two additional variety tests were conducted using primarily commercial varieties. One of these tests was conducted in San Joaquin County in cooperation with Mick Canevari on the Fred Paulus Ranch and the second in Tulare County in cooperation with Steve Wright and Sid Kite on the Charlie Pitigliano Jr. Ranch. The Tulare County test site was a reclamation project where the soil pH was 8.3, the EC 8.2, and the ESP 44.

Summary of the Specific Tests

Agronomic performance of the 24 varieties tested in the Sutter County double crop test are shown in Table 4. This test was planted June 11, 1981 following wheat. The average yield for all 24 varieties was 7880 lbs/A. Among the commercial entries, M-9 ranked fourth at 8250 lb/A, S-201 was eleventh at 7920, whereas M-101 and Earlirose were both significantly

lower in yield at 7630 lbs/A. M-101 reached 50% heading at 75 days approximately one week before the other three commercial entries.

Agronomic performance of the eight varieties tested in San Joaquin County are shown in Table 5. M-9 was the leading variety producing 106 cwt/A and four other varieties were statistically similar although somewhat lower in yield.

Agronomic performance of the eight lines tested in Tulare County are shown in Table 6. Total yield over all varieties was 48 cwt/A, a reflection of the adverse soil conditions. L-201 and Calrose 76 yielded 69 and 57 cwt/A respectively. Although these yields are low by comparison to statewide averages, they are an indication of potential production under marginal soil conditions during soil reclamation in the lower San Joaquin Valley.

Cooperative Program on Thiobencarb (Bolero®) Experimental Use in California

Project RM-2 cooperated with the Chevron Chemical Company in the collection of field data, residue sampling and quality information on the experimental use program of Thiobencarb (Bolero®) in rice for the second straight year. The purpose of this work was to obtain needed information to facilitate the full registration of Bolero® for use in California rice culture.

Objective II

Assistance was provided to other projects and the results are provided elsewhere in this annual report under projects RP-1, RB-1 and RB-3. Several studies on the improvement of cultural practices in rice were conducted by farm advisors directly as a part of this project. These projects included: 1) a study of rice variety by nitrogen rates, Butte County; 2) a study of S-201 by nitrogen rates, Butte County; 3) a comparison of the effects of nitrogen on grain and straw production in S-6 and S-201, Colusa County; 4) a study of rice soil reclamation, Colusa County; 5) a study of calcium peroxide-seed coating, Sutter County, and 6) a study of nitrogen response and tissue analysis, Kern County.

A Study of Rice Variety by Nitrogen Rates - Butte County

This study conducted by C. M. Wick, Farm Advisor, Butte County in cooperation with D. S. Mikkelsen is reported under Project RB-1.

A Study of S-201 by Nitrogen Rates - Butte County

The purpose of this study was to further characterize the differential response of S-201 to rate of nitrogen application. Table 7 shows that response to nitrogen was optimized at 120 to 150 lbs/A actual N and that further increases in N were detrimental to yield. The effect of nitrogen on other agronomic characters are shown as well in Table 7.

A Study of Nitrogen Rates - Kern County

A study of nitrogen fertilization including plant tissue analysis testing was conducted by Doug Munier, Farm Advisor, Kern County in cooperation with Costerisan Farms. The purpose of this test was to determine whether critical levels for nitrogen needed to be adjusted from those established for the Sacramento Valley and to determine optimum nitrogen levels for maximum yield. A significant yield increase was obtained up to 123 lbs of N/A. Critical N levels in this experiment were close although slightly higher than those ranges established for the Sacramento Valley.

A Comparison of the Effects of Nitrogen on Grain and Straw Production in S-6 and S-201 - Colusa County

Studies to determine the relationship between grain and straw production for short and tall stature rices using S-6 as compared to S-201 at different nitrogen rates were conducted in Colusa County.

Results show that grain production peaked at 9240 lbs/A for S-201 at 120 lbs N/acre and at 8660 lbs/A for S-6 at 90 lbs N/acre, whereas straw production did not peak for either variety even at 180 lbs N/acre.

The harvest index (proportion of the upper part of the plant which is grain) for S-201 (short stature) over all nitrogen rates was 0.52, whereas it was 0.47 for S-6 (tall stature). This difference represents a 13% less straw produced by the short stature variety compared to the tall ones representing a significant reduction in straw production.

The harvest index for both short and tall stature varieties decreases linearly as nitrogen rate increases. This coupled with the fact that grain production peaks at a given nitrogen rate suggests that straw production is increased and grain production decreased when excess nitrogen is applied.

Rice Soil Reclamation - Colusa County

In a Colusa County study soil amendments at different rates were added to a high pH, noncalcareous sodic (alkali) Willows clay soil in an attempt to improve the soil. Soil analyses indicated 6 tons of gypsum were required to displace the sodium from the upper 6 inches of soil (ESP 24, pH 8.3, free CaCO_3), while 12 tons were needed to reclaim the upper foot.

Gypsum and ferric sulfate were applied separately at three equivalent rates and in combination in two treatments. Ferric sulfate (FS) was used as a comparison with gypsum, however the FS rates used would not be economical.

Results showed yield to be significantly higher in the gypsum treatments compared to the control (no treatment). The highest rate of gypsum (12 tons/acre) increased yield by 13.4% over the control. High rates of ferric sulfate (13 tons/acre) significantly lower field soil pH, plant height and yield and cause plants to become chlorotic.

Soil samples from each treatment were taken after harvest and additional samples will be taken prior to spring tillage operations to detect changes in the soil. An attempt to follow the treatments next season will be made.

Calcium Peroxide Seed Coating - Sutter County

Recent studies have indicated that calcium peroxide coated seed might provide improved stand establishment in dry-seeded rice. Although greenhouse experiments show considerable promise for this method, results in the field have been erratic. A study was conducted by J. F. Williams, Farm Advisor, Sutter County, to determine whether a new coating process would improve stand establishment of calcium peroxide treated seed. The results are given in Table 8.

PUBLICATIONS OR REPORTS:

The following publications resulted from this project. Information from this project has been used in popular articles in magazines and newspapers and for radio reports, and was presented to rice growers at winter meetings and field days. Information from this project was also presented at the Rice Technical Working Group.

1. Hill, J. E., L. A. Post, M. Canevari, M. L. Campbell, S. C. Scardaci, C. M. Wick, J. F. Williams, B. L. Weir and S. D. Wright. Comprehensive Research on Rice, Annual Report 1980, 48-56.
2. Brandon, D. M., H. L. Carnahan, J. N. Rutger, S. T. Tseng, C. W. Johnson, J. F. Williams, C. M. Wick, W. M. Canevari, S. C. Scardaci, and J. E. Hill. California Rice Varieties: Description, Performance and Management. Div. of Agric. Sciences, Univ. of California Special Publication 3271, August 1981.
3. Carnahan, H. L., C. W. Johnson, S. T. Tseng and D. M. Brandon. Registration of 'M-401' Rice. Crop Science. (In Press)
4. Johnson, C. W., H. L. Carnahan, S. T. Tseng and J. E. Hill. Registration of 'M-302' Rice. Crop Science. (In Press)
5. Wick, C. M., Janning Kastler, Lynn Horel and Patricia Thomas. Sample Costs - Rice Production - Butte County. August 1981.

GENERAL SUMMARY OF 1980 RESEARCH RESULTS:

Eleven uniform rice variety tests were conducted in eight counties in 1980. Seventy-two (72) experimental or commercial entries were tested in cooperation with CCRRFI, USDA and UC farm advisors.

In the very early variety test 11 of the 12 highest yielding entries were short-grain and short-stature lines. Over three years short-grain lines have performed better relative to medium-grain lines in this test.

In the early maturity variety test 20 out of 24 entries (including S-201 and L-201) yielded greater than M-9 indicating that potentials for higher yield exceed those of the most widely grown variety in 1981, M-9.

In the late maturity variety test several entries produced significantly higher yields than M-7. The new variety M-401 ranked ninth at 9780 lb/A, whereas the highest yielding experimental yielded 9990 lb/A.

Several other tests were conducted including fertilization, soil reclamation, grain-straw production and calcium peroxide seed coating for dry seeding. The results of these experiments are given in this report.

Table 1. 1981 Very Early Rice Variety Trial

1981 entry no.	Cultivar description	Grain type ¹	Grain yield @ 14% moisture lbs/acre	Duncan's test ²	Grain moisture @ harvest %	Seedling vigor 1-5 ³	Days to 50% heading	Plant height cm	Lodging 1-99 ⁴
3	S-201 CK	S	9290	a	22.3	4.4	94	84	16
19	80-Y-157	S	9110	ab	22.5	4.8	93	81	30
4	80-Y-37	S	9000	ab	22.6	4.1	96	84	20
20	80-Y-229	S	8670	abc	20.3	4.1	92	84	18
18	80-Y-139	S	8600	abcd	21.3	4.4	90	82	32
9	80-Y-17	M	8580	abcd	21.4	4.4	91	82	28
17	80-Y-138	S	8580	abcd	19.8	4.2	89	84	40
10	80-Y-23	S	8530	bcd	19.9	4.6	91	84	33
15	80-Y-128	S	8510	bcd	21.0	4.7	91	83	33
5	80-Y-8	S	8490	bcd	19.9	4.3	87	87	34
11	80-Y-24	S	8460	bcd	20.0	4.3	88	84	33
8	80-Y-15	M	8440	bcd	21.0	4.3	86	90	35
14	80-Y-126	M	8400	bcde	21.3	4.4	91	82	32
22	80-Y-321	L	8170	cdef	20.9	3.7	95	90	15
7	80-Y-11	S	8060	cdefg	19.8	4.5	85	87	35
16	80-Y-132	L	7950	cdefg	22.2	4.5	91	82	29
6	M-9 CK	M	7890	cdefg	22.5	4.5	92	87	34
2	Earlirose CK	M	7830	defgh	19.2	4.8	91	114	77
21	80-Y-251	L	7670	efgh	19.2	4.5	93	82	18
24	80-H-3888	L	7540	fgh	18.8	4.9	91	94	21
12	80-Y-106	S	7530	fgh	19.1	4.3	83	79	35
13	80-Y-119	M	7490	fgh	21.4	4.3	92	81	29
1	M-101 CK	M	7320	gh	18.9	4.4	86	85	34
23	80-Y-351	L	7130	h	18.0	4.7	94	81	1
GRAND MEAN			8220		20.5	4.4	91	85	30
CV			9.7		4.5	12.4	2.3	5.6	50.7
LSD (.05)			644		0.7	0.44	1.6	3.9	12.1

¹S = short; M = medium; L = long.

²Yield weights followed by the same letter do not differ at the 5% level of significance.

³Subjective rating of 1-5 where 1 = poor and 5 = excellent seedling emergence at 28 days after planting.

⁴Subjective rating of 1-99 where 1 = 1% lodging and 99 = 99% lodging.

Table 2. 1981 Early Rice Variety Trial

1981 entry no.	Cultivar description	Grain type ¹	Grain yield @ 14% moisture lbs/acre	Duncan's test ²	Grain moisture @ harvest %	Seedling vigor 1-53	Days to 50% heading	Plant height cm	Lodging 1-99 ⁴
6	80-Y-39 M-201	M	9810	a	22.4	4.6	91	88	12
13	80-Y-136	S	9350	ab	21.8	4.5	93	95	38
2	S-201 CK	S	9330	abc	20.6	4.2	93	90	29
19	80-Y-237	S	9290	abcd	18.5	4.4	92	94	53
3	80-Y-37	S	9290	abcd	20.8	4.0	92	92	32
22	80-Y-51	L	9140	bcde	17.7	4.1	90	108	44
11	80-Y-47	S	9120	bcde	23.1	4.3	95	96	40
21	L-201 CK	L	9070	bcdef	18.5	4.3	91	102	32
20	80-Y-239	S	9060	bcdef	24.3	4.2	96	96	27
18	80-Y-215	S	8950	bcdefg	22.6	4.4	95	97	31
15	80-Y-154	S	8910	bcdefg	18.2	4.2	90	89	57
16	80-Y-175	S	8800	bcdefg	21.1	4.4	92	92	42
1	80-Y-8	S	8710	cdefg	19.7	4.3	87	97	40
14	80-Y-137	M	8700	defg	21.8	4.5	93	96	48
23	80-Y-305	L	8670	defg	18.0	4.0	90	92	7
10	80-Y-38	M	8640	efg	24.3	4.3	97	99	34
8	80-Y-22	S	8620	efg	23.0	4.8	95	95	45
9	80-Y-35	M	8590	efg	22.9	4.4	92	96	34
17	80-Y-209	M	8560	efg	20.8	4.4	92	96	47
7	80-Y-17	M	8450	fgh	20.9	4.3	89	91	35
5	M-9 CK	M	8420	gh	22.0	4.3	90	97	64
12	80-Y-126	M	8400	gh	20.9	4.2	88	91	50
202	Calmochi	WXY	8340	gh	23.4	3.8	95	98	47
24	S-6	S	7880	h	23.7	4.2	96	126	70
GRAND MEAN			8840		21.3	4.3	92	96	40
CV			8.5		5.9	7.8	1.6	3.9	52.4
LSD (.05)			523		0.9	0.27	1.0	2.6	14.5

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

²Yield weights followed by the same letter do not differ at the 5% level of significance.

³Subjective rating of 1-5 where 1 = poor and 5 = excellent seedling emergence at 28 days after planting.

⁴Subjective rating of 1-99 where 1 = 1% lodging and 99 = 99% lodging.

Table 3. 1981 Late Rice Variety Trial

1981 entry no.	Cultivar description	Grain type ¹	Grain yield @ 14% moisture lbs/acre	Duncan's test ²	Grain moisture @ harvest %	Seedling vigor 1-53	Days to 50% heading	Plant height cm	Lodging 1-99 ⁴
	80-Y-455	M	9990	a	21.0	4.6	112	106	59
	80-Y-426	M	9920	ab	19.6	4.4	108	101	15
	80-Y-443	M	9920	ab	19.8	4.3	112	100	11
	80-Y-76	M	9910	ab	19.8	4.6	112	98	6
	80-Y-448	M	9870	abc	20.7	4.5	111	99	11
	80-Y-393	M	9870	abc	20.3	4.5	110	100	23
	80-Y-74	M	9820	abc	20.3	4.4	113	100	14
	80-Y-432	M	9820	abc	19.7	4.4	112	96	4
	M-401 CK	M	9780	abc	20.5	4.3	112	100	40
	80-Y-66	M	9750	abc	21.2	4.4	111	100	12
	80-Y-79	M	9670	abcd	20.2	4.5	110	98	13
	80-Y-80	S	9550	abcde	21.4	4.4	115	93	1
	80-Y-82	L	9370	bcdef	17.2	4.3	107	86	1
	80-Y-73	M	9360	bcdef	20.6	4.6	109	97	2
	Calrose 76 C	M	9300	cdef	18.7	4.2	114	97	2
	80-Y-186	M	9190	defg	18.3	4.5	104	94	22
	80-Y-394	M	9170	defgh	20.7	4.4	110	102	30
	M-7 CK	M	9150	defgh	20.1	4.2	114	97	1
	M-302 CK	M	9080	efgh	19.1	4.3	105	96	17
	80-Y-373	M	9000	efgh	19.6	4.3	102	94	38
	80-Y-384	M	8970	fgh	19.0	4.7	113	96	2
	80-Y-483	L	8930	fgh	16.3	4.2	103	89	2
	80-Y-84-1	L	8720	gh	16.6	4.1	103	94	2
	80-Y-307-1	L	8620	h	15.4	4.0	101	85	3
GRAND MEAN			9450		19.4	4.4	109	97	14
CV			7.4		4.5	6.8	1.2	4.1	126.6
LSD (.05)			486		0.6	0.24	1.0	2.7	12.2

¹S = short; M = medium; L = long.²Yield weights followed by the same letter do not differ at the 5% level of significance.³Subjective rating of 1-5 where 1 = poor and 5 = excellent seedling emergence at 28 days after planting.⁴Subjective rating of 1-99 where 1 = 1% lodging and 99 = 99% lodging.

Table 4. 1981 Double Crop Variety Trial - Sutter Basin

1981 entry no.	Cultivar description	Grain type ¹	Grain yield @ 14% moisture lbs/acre	Duncan's test ²	Grain moisture @ harvest %	Seedling vigor 1-5 ³	Days to 50% heading	Plant height cm	Lodging 1-99 ⁴
469		S	8380	a	22.8	3.8	72	74	1
458		M	8300	ab	24.5	4.5	75	87	1
460		S	8270	ab	25.0	3.5	80	79	1
M-9		M	8250	abc	25.5	4.3	81	88	1
459		S	8200	abc	24.7	3.8	78	77	1
455		S	8200	abc	23.4	4.3	74	86	1
454		S	8190	abc	24.0	4.3	80	88	1
474		S	8170	abcd	23.3	4.3	81	86	2
461		S	8070	abcde	23.4	3.3	77	81	2
471		S	7990	abcdef	24.7	4.3	76	78	3
S-201		S	7920	abcdefg	26.5	3.8	81	81	1
470		S	7890	abcdefg	25.5	3.0	79	79	1
473		S	7870	abcdefg	23.9	3.8	77	76	8
457		S	7870	abcdefg	24.2	3.8	72	84	4
467		S	7780	bcdefgh	23.7	3.8	75	80	1
464		S	7710	cdefgh	23.6	3.8	78	79	3
472		S	7640	defgh	23.4	4.3	73	77	1
M-101		S	7630	defgh	24.2	3.5	75	84	1
Earlirose		M	7630	defgh	22.9	5.0	80	112	63
466		S	7600	efgh	22.3	4.5	73	79	3
465		S	7490	fgh	24.1	4.3	76	76	5
468		S	7450	fgh	25.5	3.8	80	77	1
463		S	7420	gh	23.7	4.3	70	78	2
462		S	7250	h	23.3	3.8	69	80	2
GRAND MEAN			7880		24.1	4.0	76	82	5
CV			4.1		2.6	13.3	1.0	2.8	61.0
LSD (.05)			459		0.9	0.74	1.1	3.3	3.9

¹S = short; M = medium; L = long.²Yield weights followed by the same letter do not differ at the 5% level of significance.³Subjective rating of 1-5 where 1 = poor and 5 = excellent seedling emergence at 28 days after planting.⁴Subjective rating of 1-99 where 1 = 1% lodging and 99 = 99% lodging.

Table 5. 1981 performance of commercial varieties in San Joaquin County.

Cultivar	Grain type ¹	Grain yield at 14% moisture lb/A	Duncan's test ²	Grain moisture at harvest	Seedling vigor 1-53	Days to 50% heading	Plant height (cm)	Lodging 1-99 ⁴
M-9	M	10680	a	19.0	3.5	100	82	1
78-Y-43	S	10380	ab	17.9	3.0	104	81	1
Earlirose	M	10310	ab	14.6	5.0	104	113	54
M-101	M	9920	ab	14.5	5.0	94	88	1
S-201	S	9530	abc	16.9	3.8	107	80	16
Calpearl	S	9260	bc	13.0	4.8	98	78	1
L-201	L	9160	bc	14.3	4.5	103	83	1
California Belle	L	8400	c	14.2	3.8	96	88	1
LSD .05		125.2		1.8	0.8	1.9	6.9	25.4
CV		8.8		5.8	13.0	1.3	5.4	183

¹S = short; M = medium; L = long.

²Yields followed by the same letter do not differ at the 5% significance level.

³Subjective ratings of 1-5 where 1 = poor and 5 = excellent seedling emergence at approximately 28 days after planting.

⁴Subjective rating of 1-99 where 1 = 1% lodging and 99 = 99% lodging.

Table 6. 1981 performance of commercial varieties in Tulare County.

Variety	Grain type ¹	Grain yield @ 14% moisture lbs/A	Grain moisture %	Days to 50% heading	Plant height cm	Lodging %
L-201	L	5929	23.1	73	84	.1
Calrose 76	M	5723	25.8	76	81	50.0
M-301	M	4800	26.6	72	74	17.5
S-201	S	4669	23.9	74	71	46.0
Calpearl	S	4645	23.7	73	76	12.0
NFD-76-5	M	4430	23.8	75	78	2.5
M-101	M	4311	24.3	68	65	0.3
M-9	M	4221	27.2	73	76	15.0
LSD .05		893	1.44	2.17	2.56	20.76
CV %		12.5	6.06	2.03	8.94	131.7

¹ S = short; M = medium; L = long.

Table 7. The effect of nitrogen application on yield and other agronomic characters of S-201.

N application lb/A	Grain yield @ 14% moisture	Grain moisture @ harvest	Plant height (cm)	Lodging 1-99
150	9020	24.1	91	7
120	8980	24.4	94	4
90	8660	23.0	88	1
60	8270	22.3	86	1
180	8250	25.5	96	20
0	5860	18.1	74	1
LSD .05	666	1.6	6.9	6.5
CV	5.4	4.7	5.2	15.8

1 = 1% lodging; 99 = 99% lodging.

Table 8. Calcium peroxide coated rice seed trial.

Treatment	Yield- lbs/acre	Panicles per ft ²	Weight per panicle- grams	Stand at harvest- plants per foot ²	Panicles per plant	Plant height-cm	Moisture %
100 lbs/acre coated, covered	6050	31.0	3.660	3.19	9.71	84	17.56
150 lbs/acre coated, covered	8581	28.8	3.587	3.56	8.14	90	17.46
100 lbs/acre coated, surface	6218	28.3	3.559	3.5	8.58	89.5	17.26
150 lbs/acre untreated, water sown	9769	49.5	2.448	7.13	6.95	86.8	17.36
LSD .05	1214	8.45	.660	1.14	ns	ns	ns
CV %	10.6	15.4	12.5	16.5	22.0	3.8	1.2

1Moisture at harvest.