84th Annual Research Report

RICE RESEARCH STATION

Crowley, Louisiana

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Louisiana State University Agricultural Center
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INTRODUCTION

Research work at the Rice Research Station, Crowley, Louisiana, is conducted cooperatively by the Louisiana Agricultural Experiment Station and the United States Department of Agriculture, Agricultural Research Service. The 1992 rice research program included breeding, biotechnology, variety testing, production and distribution of foundation seed, fertilization, soil and water management, cultural practices, weed control, insect studies, disease investigations, rice drying, bird control in rice, and physiology studies. A new research program, biological control of rice insects, was initiated in 1992. Forages and crops grown in rotation with rice were evaluated relative to increasing the efficiency of land use. The aquaculture research program places emphasis upon production practices, crawfish forages, and multi-cropping of crawfish with agronomic crops. Although most of the research work was performed by members of the Rice Station staff, several staff members from Baton Rouge conducted research at this station.

The research activities of this station include both fundamental and applied research, although the latter predominates due to the mission of the Rice Research Station. Research accomplishments and general progress of the Rice Station during 1992 are presented in this report representing the 84th Annual Research Report of the Rice Research Station, Louisiana Agricultural Experiment Station, Louisiana State University Agricultural Center.

In addition to research responsibilities of the Rice Research Station staff and cooperators, a large number of farmers, extension personnel, and others were trained and otherwise contacted during 1992. Approximately 700 persons attended the annual Rice Research Station field day to view plots and participate in discussions of research findings. Field days were also conducted in East Carroll, Morehouse, and Vermilion parishes. In addition, the staff participated in industry meetings, both on and off the station, and worked individually with farmers and others in solving immediate problems. Several thousand people received services from the Rice Research Station during 1992.

Projects at this station are conducted under the supervision of research scientists from the Rice Research Station and also by cooperating personnel from certain departments of the Louisiana Agricultural Experiment Station. Following the reports, station personnel and cooperators in 1992 are listed.

MONTHLY RAINFALL DATA
RICE RESEARCH STATION - CROWLEY, LA
1992

DATE	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	YEAR TOTAL
1						.20	2.51	.10			.60		
2						.36		.40	.23		1.90		
3		.87				.90							
4		1.07			.80			.12	.34		.74		
5		.11	.21								.50	.80	
6			.28	1.10	.30								
7						.80		1.30				.20	
8	2.30					.50			.50			.02	
9	1.69					.10				.10			
10			.02			.14						1.31	
11								2.01	.02	1.00	.55		
12	.80	.01				.54		1.51			1.30		
13						.40		.14			.17		
14		.52				.20	.25						
15		2.60		.65	.08		.05						
16				.06			1.75		.04	.40		.70	
17	.01	1.20		.30					.29	.90		.31	
18	1.50		.50	.40			.70						
19	2.20		.12		.04		.20		.20				
20				.10	.55				1.60		1.96		
21						.10							
22	.17		.10				.14		.27		.80	.02	
23	.37	.70						.30	1.12				
24					.80						.13	.40	
25		.09	.02	.70			2.00	.07			.03		
26		.19				1.17	.10	.70	.10			.20	
27	.80				.38	1.00		1.20		.02			
28	1.01				.12		.04	.26					
29	.08		.80		1.68								
30	.10			1.21						.42			
31	.02												
MONTH TOTAL	11.05	7.36	2.05	4.52	4.75	6.41	7.74	8.11	4.71	2.84	8.68	3.96	72.18
1991	11.94	6.40	2.81	8.91	12.14	7.06	7.06	3.90	3.58	5.03	2.70	2.97	74.50

RICE BREEDING

DEVELOPING SUPERIOR RICE VARIETIES FOR LOUISIANA[1]

S.D. Linscombe, F. Jodari, K.F. Carriere, A.P. Fabacher, R.P. Frey,
R.J. Guidry, C.G. Gravot, H.L. Hoffpauir, and R. Pollingue

The primary purpose of the Rice Breeding project is the development of superior rice genotypes for the Louisiana rice industry. Two major types of rice predominate the industry within the state, conventional cooking long- and medium-grain types, and the majority of the efforts in the program are in these types. However, there are a number of special purpose types that are becoming more important as the U.S. rice industry diversifies. Therefore, the Rice Breeding project has placed increasing emphasis on the development of special purpose types to fill these needs.

In addition, the Rice Breeding project conducts numerous research studies directly and indirectly related to varietal improvement. Included here are studies on herbicide tolerance, milling quality, off-type frequency, allelopathy, and others.

The 1992 rice breeding nursery included 36,450 breeding rows, 208 F_1 transplant populations, 195 F_2 bulk populations, and 2441 yield plots (on-station). Off-station testing added another 900 plots to the testing program.

The artificial hybridization program included 257 initial crosses and backcrosses for varietal improvement. Germplasm increase populations of 47 lines were grown for seed increase and purification. Forty-six hundred diverse germplasm lines were evaluated for crawfish forage potential.

Anther culture was used for developing homozygous populations on 102 populations by the tissue culture project in cooperation with Dr. Tim Croughan.

Pest evaluations of promising selections are being conducted by cooperating research projects. Dr. Don Groth (Rice Station Plant Pathologist) rated all on-station yield plots for the major rice diseases blast and sheath blight. Dr. Bill Rice and Mr. George Trahan (USDA-ARS) evaluated all advanced breeding lines for susceptibility to damage by rice water weevil larvae. Progress is being made in attempts to incorporate higher levels of disease resistance into advanced breeding lines. Of particular note are a number of experimentals in various stages of testing

[1] This project is supported in part by funds provided by rice producers through the Louisiana Rice Research Board.

that have high levels of resistance to sheath blight. The source of this resistance is LSBR-5, a somaclone selection from Labelle that displays excellent tolerance to sheath blight. LSBR-5 is a selection from the biotechnology program of Dr. Chuck Rush, plant pathologist in the Department of Plant Pathology and Crop Physiology.

Off-station tests of advanced experimentals were conducted in East Carroll, Morehouse, Rapides, Tensas, and Vermilion parishes. These tests provide needed information on the performance of advanced experimental lines in different environments. Six advanced experimentals were tested in nitrogen rate studies by the Rice Fertilization and Cultural Management project in cooperation with Dr. Pat Bollich. These included two very early, semidwarf long grains (LA 2031 and LA 2215), two early semidwarf medium grains (LA 2168 and LA 2143), one early semidwarf aromatic long grain (LA 2085), and one conventional height early long grain (LA 2146). LA 2031 and LA 2085 will probably be increased in 1993 as potential varietal releases.

COOPERATIVE UNIFORM REGIONAL RICE NURSERY (URN)

Public rice breeders in the United States conduct cooperative yield nurseries in which experimental lines and commercial varieties are grown and evaluated at research locations in Arkansas, Louisiana, Mississippi, Texas, Florida, and California. The nurseries are used to test adaptation of the entries in the diverse rice growing environments of the U.S. The entries in the 1992 nursery included material from Arkansas, California, Louisiana, Mississippi, Texas, and some cultivars from foreign countries. Main and ratoon crop data were generated from the URN at the Rice Research Station and are presented in Tables 1-14. Information on performance characteristics from all states is compiled and stored in the Rice Data Bank by the Department of Experimental Statistics, Louisiana Agricultural Experiment Station, LSU Agricultural Center.

Experiment: Uniform Regional Nursery - Group I

Location: Rice Research Station

Seeding Rate/Date: 150 lb/A, Mar 26, 1992

Planting Method: Water-seeded (pre-germinated seed)

Fertilization: 94-49-49 (lb/A N-P_2O_5-K_2O) preplant incorporated, Mar 23; 21 lb N/A, May 28; 21 lb N/A, June 4; 70 lb N/A, July 31 (ratoon crop)

Plot Size: 4.66 x 18 ft (84 ft^2)

Water Management: Flood, Mar 25; drain, Mar 30; reflood, Apr 2; drain, Apr 19; reflood, Apr 22; harvest drain, July 13; reflood, July 31; drain, Oct 4

Herbicides: Arrosolo (propanil 3 lb ai/A + molinate 3 lb ai/A), Apr 21; Londax (bensulfuron-methyl) 1 oz ai/A, Apr 23

Insecticides: Furadan (carbofuran) .5 lb ai/A, May 3

Harvest: July 30; ratoon crop, Oct 20

Experimental Design: Randomized complete block with four replications

Comments: Yields were generally good, considerable rotten-neck blast in some entries, sheath blight pressure was moderate.

Results: Tables 1 and 2.

Table 1. Agronomic performance of 1992 uniform rice nursery, Group I. Crowley, LA.

1992 entry	Pedigree	Grain type*	Seedling vigor**	Days to 50% heading	Plant height (in)	Lodging (%)	Yield (lb/A @ 12%)	Duncan's test***	Milling % (Whl-Tot)	SB[1]	RN[1]	SV[1]
7	L201/7402003	L	5	85	45	0	8805	A	59 - 70	5	34	3
4	LBNT/9902/3/DAWN/...	L	6	82	36	0	8565	AB	60 - 70	5	50	3
11	L202/LMNT	L	6	83	36	0	8436	ABC	60 - 70	5	48	3
8	MERC/PCOS	M	4	84	35	0	8337	ABC	65 - 71	4	4	1
2	L202/TBNT	L	6	82	34	0	8195	ABCD	58 - 71	5	29	3
20	JKSN	L	4	81	38	3	8081	ABCD	61 - 70	6	60	3
5	LMNT*2/82CAY21	L	5	81	35	0	8062	ABCD	56 - 70	6	35	3
10	LBNT/STBN//NWBT	L	6	84	41	0	8034	ABCD	65 - 71	6	46	3
19	MILL	L	4	82	40	0	7774	BCDE	62 - 71	5	63	3
14	L201//TBNT/BLMT	L	5	78	39	0	7685	CDEF	57 - 68	5	48	3
15	ALAN	L	4	83	39	0	7675	CDEF	60 - 69	5	58	3
13	LBLE/L201//KATY	L	4	84	39	0	7519	DEF	59 - 69	6	54	3
3	RU8003050/CA82Y24	L	7	84	35	0	7444	DEF	66 - 72	5	26	2
6	RU8303116/LMNT	L	5	80	35	0	7119	EFG	60 - 70	6	85	3
18	RSMT	L	6	82	32	0	7034	EFG	57 - 69	6	90	4
12	RU8003050/CA82Y24	L	5	82	35	0	6998	EFG	58 - 70	6	78	4
17	MBLE	L	5	78	37	0	6943	FGH	59 - 69	5	68	3
1	BRAZ/TBNT/3/164986	M	6	80	39	0	6570	GH	63 - 69	6	79	3
9	RU8003050/CA82Y24	L	6	81	34	0	6228	H	64 - 71	5	75	3
16	TXMT	L	7	83	34	0	5231	I	52 - 67	5	95	4
CV			11.2	1.2	2.9	-	6.4		3.2-1.4			

* L = Long grain, M = medium grain.

** Subjective rating 1 to 9, where 1 = excellent, 9 = poor.

*** Numbers followed by the same letter are not significantly different at the 0.05 level.

[1] SB = sheath blight, 0-9 scale; RN = rotten neck blast, % infection; and SV = rotten neck blast severity, 0-9 scale.

Table 2. Yields of main and ratoon crops of 1992 uniform regional nursery, Group I. Crowley, LA.

1992 entry	Pedigree	Ratoon height (in)	Main crop yield	Ratoon crop yield	Total yield	Duncan's test*
			-------(lb/A @ 12%)-------			
4	LBNT/9902/3/DAWN...	32	8565	2517	11082	A
14	L201//TBNT/BLMT	35	7685	3388	11073	A
11	L202/LMNT	30	8436	2437	10873	A
20	JKSN	34	8081	2647	10727	AB
2	L202/TBNT	29	8195	2531	10726	AB
3	RU8003050/CA82Y24	31	7444	2973	10417	ABC
10	LBNT/STBN//NWBT	34	8034	2345	10378	ABC
7	L201/7402003	37	8805	1452	10257	ABC
19	MILL	32	7774	2465	10239	ABC
15	ALAN	31	7675	2534	10209	ABC
13	LBLE/L201//KATY	34	7519	2597	10115	ABC
5	LMNT*2/82CAY21	30	8062	1971	10033	BC
8	MERC/PCOS	28	8337	1372	9708	CD
17	MBLE	30	6943	2687	9630	CD
18	RSMT	27	7034	2584	9618	CD
12	RU8003050/CA82Y24	32	6998	2586	9584	CD
6	RU8303116/LMNT	29	7119	2328	9447	CD
1	BRAZ/TBNT/3/...	32	6570	2353	8923	DE
9	RU8003050/CA82Y24	29	6228	2286	8514	E
16	TXMT	26	5231	2377	7608	F
CV		4.7	6.4	10.3	5.9	

* Numbers followed by the same letter are not significantly different at the 0.05 level.

Experiment: Uniform Regional Nursery - Group II

Location: Rice Research Station

Seeding Rate/Date: 150 lb/A, Mar 27, 1992

Planting Method: Water-seeded (pre-germinated seed)

Fertilization: 94-49-49 (lb/A N-P_2O_5-K_2O) preplant incorporated, Mar 23; 21 lb N/A, May 28; 21 lb N/A, June 4; 70 lb N/A, Aug 6 (ratoon crop)

Plot Size: 4.66 x 18 ft (84 ft^2)

Water Management: Flood, Mar 25; drain, Mar 30; reflood, Apr 2; drain, Apr 19; reflood, Apr 22; harvest drain, July 20; reflood, Aug 6; drain, Oct 14

Herbicides: Arrosolo (propanil 3 lb al/A + molinate 3 lb al/A), Apr 21; Londax (bensulfuron-methyl) 1 oz al/A, Apr 23

Insecticides: Furadan (carbofuran) .5 lb al/A, May 3

Harvest: Aug 4-5; ratoon crop, Oct 28

Experimental Design: Randomized complete block with four replications

Results: Tables 3 and 4.

Table 3. Agronomic performance of 1992 uniform rice nursery, Group II. Crowley, LA.

1992 entry	Pedigree	Grain type*	Seedling vigor**	Days to 50% heading	Plant height (in)	Lodging (%)	Yield (lb/A @ 12%)	Duncan's test***	Milling % (Whl-Tot)	SB[1]	RN[1]	SV[1]
21	MARS/TBNT	L	5	84	40	0	8246	A	66 - 72	5	46	3
27	LBNT/9902/3/DAWN/...	L	6	89	40	0	7924	AB	58 - 70	5	43	2
33	L201//TBNT/BLMT	L	6	84	36	0	7900	AB	50 - 69	5	43	3
25	MERC/RICO	M	4	84	37	3	7722	ABC	68 - 72	4	7	2
37	ORIN	M	4	87	41	0	7711	ABC	66 - 70	4	7	2
22	SMARS/MARS//MARS	M	3	90	36	0	7632	ABCD	67 - 71	4	23	3
24	BN73/NV76//BN73/3/...	L	6	84	42	0	7631	ABCD	52 - 69	6	91	3
30	VSTA/NTAI//LMNT	M	6	87	37	0	7612	ABCDE	69 - 72	5	30	3
34	LMNT/DLLA	L	6	85	38	0	7604	ABCDE	63 - 70	5	41	3
38	BNGL	M	4	90	36	0	7601	ABCDE	66 - 71	5	40	3
36	8203035/GCHW	L	5	86	43	0	7572	BCDE	63 - 70	5	44	3
28	SMARS/MARS//MARS	M	4	90	36	0	7355	BCDE	66 - 69	4	28	3
39	MARS	M	4	89	46	18	7318	BCDE	66 - 70	4	27	3
26	RU8303116/LMNT	L	5	87	38	0	7258	BCDE	62 - 70	6	70	3
32	RU8003050/CA82Y24	L	7	87	39	0	7108	CDEF	63 - 70	5	66	3
29	PCOS/LMNT//GFMT	L	6	85	36	0	6999	DEF	62 - 71	6	83	4
31	LMNT/DLLA (2152)	L	6	86	37	0	6952	EF	65 - 71	6	44	3
23	RU8303116/LMNT	L	6	84	34	0	6614	FG	55 - 69	5	96	3
40	DLMT	L	7	90	37	0	6335	G	63 - 71	6	76	3
35	LBLE-X2-2/BJ-1*F1/...	L	7	89	37	0	5704	H	62 - 69	6	90	3
CV			7.2	0.9	3.0	-	5.4		2.7-1.2			

* L = Long grain, M = medium grain.

** Subjective rating 1 to 9, where 1 = excellent, 9 = poor.

*** Numbers followed by the same letter are not significantly different at the 0.05 level.

[1] SB = sheath blight, 0-9 scale; RN = rotten neck blast, % infection; and SV = rotten neck blast severity, 0-9 scale.

Table 4. Yields of main and ratoon crops of 1992 uniform regional nursery, Group II. Crowley, LA.

1992 entry	Pedigree	Ratoon height (in)	Main crop yield	Ratoon crop yield	Total yield	Duncan's test*
			-------(lb/A @ 12%)-------			
33	L201//TBNT/BLMT	29	7900	3178	11077	A
21	MARS/TBNT	31	8246	2622	10868	A
24	BN73/NV76//BN73/...	34	7631	3236	10867	AB
34	LMNT/DLLA	31	7604	3234	10838	ABC
30	VSTA/NTAI//LMNT	29	7612	3060	10672	ABC
36	8203035/GCHW	30	7572	2891	10462	ABCD
26	RU8303116/LMNT	29	7258	3126	10384	ABCDE
29	PCOS/LMNT//GFMT	27	6999	3207	10206	BCDEF
23	RU8303116/LMNT	27	6614	3583	10197	BCDEF
38	BNGL	27	7601	2540	10141	BCDEF
39	MARS	33	7318	2683	10001	CDEF
32	RU8003050/CA82Y24	31	7108	2712	9820	DEFG
31	LMNT/DLLA (2152)	28	6952	2846	9798	DEFG
27	LBNT/9902/3/DAWN...	29	7924	1868	9792	DEFG
25	MERC/RICO	26	7722	2013	9734	DEFG
37	ORIN	30	7711	1939	9651	DEFG
22	SMARS/MARS//MARS	25	7632	1904	9536	EFG
40	DLMT	27	6335	3156	9491	FG
28	SMARS/MARS//MARS	26	7355	1781	9135	GH
35	LBLE-X2-2/BJ-1*F1/...	29	5704	2703	8407	H
CV		5.4	5.4	11.8	5.1	

* Numbers followed by the same letter are not significantly different at the 0.05 level.

Experiment: Uniform Regional Nursery - Group III

Location: Rice Research Station

Seeding Rate/Date: 150 lb/A, Mar 27, 1992

Planting Method: Water-seeded (pre-germinated seed)

Fertilization: 94-49-49 (lb/A N-P_2O_5-K_2O) preplant incorporated, Mar 23; 21 lb N/A, May 28; 21 lb N/A, June 4; 70 lb N/A, Aug 6 (ratoon crop)

Plot Size: 4.66 x 18 ft (84 ft^2)

Water Management: Flood, Mar 25; drain, Mar 30; reflood, Apr 2; drain, Apr 19; reflooded, Apr 22; harvest drain, July 20; reflood, Aug 6; drain, Oct 14

Herbicides: Arrosolo (propanil 3 lb ai/A + molinate 3 lb ai/A), Apr 21; Londax (bensulfuron-methyl) 1 oz ai/A, Apr 23

Insecticides: Furadan (carbofuran) .5 lb ai/A, May 3

Harvest: Aug 4-5; ratoon crop, Oct 28

Experimental Design: Randomized complete block with four replications

Results: Tables 5 and 6.

Table 5. Agronomic performance of 1992 uniform rice nursery, Group III. Crowley, LA.

1992 entry	Pedigree	Grain type*	Seedling vigor**	Days to 50% heading	Plant height (in)	Lodging (%)	Yield (lb/A @ 12%)	Duncan's test***	Milling % (Whl-Tot)	SB[1]	RN[1]	SV[1]
47	KATY/NWBT	L	5	87	43	0	8359	A	64 - 71	5	14	3
41	KATY/STBN	L	5	87	44	0	8278	A	64 - 71	6	15	3
59	CPRS	L	4	87	34	5	8228	AB	66 - 71	6	13	3
44	KATY/NWBT	L	6	89	43	0	8018	ABC	66 - 71	5	6	2
53	L201//TBNT/BLMT	L	5	86	43	0	7890	ABCD	62 - 71	6	16	3
42	LMNT*2/82CAY21	L	5	87	34	3	7708	ABCD	65 - 71	6	16	3
58	KATY	L	5	87	44	0	7666	ABCD	64 - 70	6	5	2
51	MARS/M201//MARS	M	5	89	37	0	7490	BCDE	67 - 71	4	13	3
45	LMNT*2/8001190	L	6	90	35	3	7409	CDE	66 - 71	6	18	3
50	VSTA/NTAI//LMNT/3/...	L	5	87	37	3	7146	DEF	65 - 69	6	11	3
48	8002610/CICA9	L	6	90	44	0	6820	EFG	61 - 69	5	54	3
57	LCSN	L	6	88	36	0	6769	EFG	62 - 71	7	55	3
55	LMNT	L	6	88	36	3	6441	FG	65 - 72	6	55	3
56	GFMT	L	6	91	36	5	6426	FG	62 - 70	7	40	3
60	NWBT	L	4	90	44	0	6388	FG	61 - 69	6	74	3
54	LMNT/KATY	L	6	92	33	0	6362	G	65 - 71	7	19	3
49	LBLE/RU7802003//...	L	5	86	35	5	6347	G	63 - 70	7	69	3
43	RU8303116/LMNT	L	6	89	38	3	6249	G	62 - 69	6	71	3
52	PCOS/LMNT//GFMT	L	7	88	37	3	6117	G	66 - 72	7	79	3
46	RU8303181/CB801	L	7	90	35	5	6092	G	63 - 70	6	59	3
CV			9.8	0.8	3.0	-	6.7		1.9-1.0			

* L = Long grain, M = medium grain.

** Subjective rating 1 to 9, where 1 = excellent, 9 = poor.

*** Numbers followed by the same letter are not significantly different at the 0.05 level.

[1] SB = sheath blight, 0-9 scale; RN = rotten neck blast, % infection; and SV = rotten neck blast severity, 0-9 scale.

Table 6. Yields of main and ratoon crops of 1992 uniform regional nursery, Group III. Crowley, LA.

1992 entry	Pedigree	Ratoon height (in)	Main crop yield	Ratoon crop yield	Total yield	Duncan's test*
			-------(lb/A @ 12%)-------			
41	KATY/STBN	35	8278	3023	11301	A
47	KATY/NWBT	33	8359	2825	11184	A
59	CPRS	29	8228	2665	10893	AB
42	LMNT*2/82CAY21	28	7708	3070	10778	AB
44	KATY/NWBT	35	8018	2729	10747	ABC
53	L201//TBNT/BLMT	37	7890	2841	10731	ABC
50	VSTA/NTAI//LMNT/...	31	7146	3484	10630	ABC
58	KATY	33	7666	2581	10248	BCD
45	LMNT*2/8001190	28	7409	2765	10174	BCD
57	LCSN	29	6769	3100	9869	CDE
51	MARS/M201//MARS	29	7490	2136	9626	DE
49	LBLE/RU7802003//...	29	6347	3179	9525	DE
55	LMNT	29	6441	3072	9513	DE
46	RU8303181/CB801	28	6092	3371	9463	DE
52	PCOS/LMNT//GFMT	29	6117	3131	9248	EF
48	8002610/CICA9	32	6820	2293	9112	EFG
43	RU8303116/LMNT	30	6249	2830	9079	EFG
60	NWBT	31	6388	2139	8527	FG
56	GFMT	28	6426	1892	8318	G
54	LMNT/KATY	25	6362	1173	7535	H
CV		3.6	6.7	10.1	5.6	

* Numbers followed by the same letter are not significantly different at the 0.05 level.

Experiment: Uniform Regional Nursery - Group IV

Location: Rice Research Station

Seeding Rate/Date: 150 lb/A, Mar 26, 1992

Planting Method: Water-seeded (pre-germinated seed)

Fertilization: 94-49-49 (lb/A N-P_2O_5-K_2O) preplant incorporated, Mar 23; 21 lb N/A, May 28; 21 lb N/A, June 4; 70 lb N/A, Aug 18

Plot Size: 4.66 x 18 ft (84 ft^2)

Water Management: Flood, Mar 25; drain, Mar 30; reflood, Apr 2; drain, Apr 19; reflood, Apr 22; harvest drain, July 23; reflood, Aug 17; drain, Oct 28

Herbicides: Arrosolo (propanil 3 lb al/A + molinate 3 lb al/A), Apr 21; Londax (bensulfuron-methyl) 1 oz al/A, Apr 23

Insecticides: Furadan (carbofuran) .5 lb al/A, May 3

Harvest: Aug 6; ratoon crop, Nov 6

Experimental Design: Randomized complete block with four replications

Results: Tables 7 and 8.

Table 7. Agronomic performance of 1992 uniform rice nursery, Group IV. Crowley, LA.

1992 entry	Pedigree	Grain type*	Seedling vigor**	Days to 50% heading	Plant height (in)	Lodging (%)	Yield (lb/A @ 12%)	Duncan's test***	Milling % (Whl-Tot)	SB[1]	RN[1]	SV[1]
71	LMNT/LBLE SC-5	L	5	90	39	0	8208	A	61 - 71	5	9	2
65	L202/LMNT	L	5	86	38	0	8084	AB	55 - 68	6	25	3
74	MERC/RICO1	M	3	89	40	3	7860	ABC	69 - 73	7	20	3
68	82CAY21/LMNT/80Y50	L	5	90	38	0	7847	ABC	64 - 72	5	19	3
62	NWBT/LMNT//82CAY21/...	L	6	87	37	0	7777	ABC	67 - 71	5	31	3
66	RU8303116/LMNT	L	5	88	38	3	7661	ABC	62 - 70	6	76	3
63	RU8003050/CA82Y24/...	L	5	89	34	0	7539	ABCD	64 - 71	4	21	3
67	NWBT/3/DAWN/9695//...	L	5	92	40	0	7525	ABCD	65 - 72	6	18	3
76	NWBT/3/DAWN/9695//...	L	5	93	42	0	7455	BCDE	64 - 71	4	25	3
77	LMNT/KATY	L	5	89	34	0	7446	BCDE	60 - 72	6	24	3
80	TRO2	L	5	90	43	5	7374	BCDEF	64 - 71	5	18	3
73	LMNT/KATY	L	5	91	37	0	7367	BCDEF	64 - 70	5	26	3
79	RICO	M	5	90	43	53	7125	CDEFG	65 - 70	4	9	3
69	SHORT RICO	M	5	90	43	80	6814	DEFGH	64 - 70	5	9	3
70	LMNT/RA73	L	6	92	40	0	6730	EFGH	65 - 71	5	25	3
61	DAWN//BP87/9902	L	5	98	45	0	6703	FGH	59 - 69	4	16	3
64	BN73*2/NV66//TBNT	L	6	89	44	0	6617	GH	62 - 70	5	15	3
75	DLMT/B8462T3-710...	L	7	92	36	3	6348	HI	61 - 72	6	30	3
72	DLMT/B8462T3-710...	L	7	90	38	3	5928	I	62 - 72	6	24	3
78	DLMT/B8462T3-710...	L	7	91	36	0	5907	I	60 - 71	6	28	3
CV			10.3	1.3	3.4	-	6.2		4.3-1.4			

* L = Long grain, M = medium grain.

** Subjective rating 1 to 9, where 1 = excellent, 9 = poor.

*** Numbers followed by the same letter are not significantly different at the 0.05 level.

[1] SB = sheath blight, 0-9 scale; RN = rotten neck blast, % infection; and SV = rotten neck blast severity, 0-9 scale.

Table 8. Yields of main and ratoon crops of 1992 uniform regional nursery, Group IV. Crowley, LA.

1992 entry	Pedigree	Ratoon height (in)	Main crop yield	Ratoon crop yield	Total yield	Duncan's test*
			-------(lb/A @ 12%)-------			
71	LMNT/LBLE SC-5	30	8208	3551	11759	A
68	82CAY21/LMNT/...	25	7847	2943	10790	B
65	L202/LMNT	25	8084	2624	10707	B
66	RU8303116/LMNT	26	7661	2747	10407	BC
62	NWBT/LMNT//...	24	7777	2510	10287	BC
63	RU8003050/CA82Y24	25	7539	2735	10273	BC
74	MERC/RICO1	26	7860	1747	9607	CD
80	TRO2	28	7374	2152	9525	CDE
64	BN73*2/NV66//TBNT	30	6617	2493	9110	DEF
77	LMNT/KATY	23	7446	1647	9092	DEFG
73	LMNT/KATY	24	7367	1721	9088	DEFG
70	LMNT/RA73	27	6730	2102	8832	DEFG
79	RICO	28	7125	1697	8822	DEFG
67	NWBT/3/DAWN/9695	27	7525	900	8581	EFG
75	DLMT/B8462T3-710	25	6348	2185	8533	EFG
72	DLMT/B8462T3-710	25	5928	2507	8435	FG
69	SHORT RICO	28	6814	1298	8112	FGH
76	NWBT/3/DAWN/9695	25	7455	406	8108	FGH
78	DLMT/B8462T3-710	25	5907	2147	8053	GH
61	DAWN//BP87/9902	29	6703	558	7223	H
CV		4.7	6.2	9.9	5.5	

* Numbers followed by the same letter are not significantly different at the 0.05 level.

Experiment: Uniform Regional Nursery - Group V

Location: Rice Research Station

Seeding Rate/Date: 150 lb/A, Mar 26, 1992

Planting Method: Water-seeded (pre-germinated seed)

Fertilization: 94-49-49 (lb/A N-P_2O_5-K_2O) preplant incorporated, Mar 23; 21 lb N/A, May 28; 21 lb N/A, June 4; 70 lb N/A, July 31 (ratoon crop)

Plot Size: 4.66 x 18 ft (84 ft^2)

Water Management: Flood, Mar 25; drain, Mar 30; reflood, Apr 2; drain, Apr 19; reflood, Apr 22; harvest drain, July 13; reflood, July 31

Herbicides: Arrosolo (propanil 3 lb al/A + molinate 3 lb al/A), Apr 21; Londax (bensulfuron-methyl) 1 oz al/A, Apr 23

Insecticides: Furadan (carbofuran) .5 lb al/A, May 3

Harvest: July 30; ratoon crop, Oct 20

Experimental Design: Randomized complete block with two replications

Results: Tables 9 and 10.

Table 9. Agronomic performance of 1992 uniform rice nursery, Group V. Crowley, LA.

1992 entry	Pedigree	Grain type*	Seedling vigor**	Days to 50% heading	Plant height (in)	Lodging (%)	Yield (lb/A @ 12%)	Duncan's test***	Milling % (Whl-Tot)	SB[1]	RN[1]	SV[1]
84	ALAN/TBNT	L	5	83	44	0	8369	A	58 - 70	6	80	3
94	L202/TBNT	L	5	88	41	0	8313	AB	57 - 68	4	8	2
93	BP87/9902//LBNT/...	L	5	86	42	0	7901	ABC	57 - 68	5	80	3
88	82CAY21/8001190/...	L	5	87	36	0	7795	ABCD	61 - 71	5	28	2
103	82CAY21/LMNT	L	6	91	38	0	7679	ABCDE	65 - 72	5	13	2
97	BLMT/7802192	L	6	89	36	0	7547	ABCDEF	62 - 71	5	35	2
120	TBNT	L	6	85	52	45	7469	ABCDEFG	63 - 72	6	48	3
82	82CAY21/LMNT/80Y50	L	7	93	39	0	7366	ABCDEFG	62 - 72	5	55	3
115	82CAY21/LMNT/80Y50	L	7	92	39	0	7358	ABCDEFG	61 - 71	4	60	3
91	BLMT/7802192	L	7	91	38	0	7349	ABCDEFG	56 - 70	4	50	3
104	RU8003050/CA82Y24/...	L	6	89	37	0	7281	ABCDEFGH	61 - 72	6	60	3
112	MERC/1711X2	M	4	78	33	25	7228	ABCDEFGH	59 - 69	6	18	3
87	BN73*2/NV76//NWRX	L	6	85	42	0	7224	ABCDEFGH	57 - 67	5	83	4
99	LBLE/L201/KATY	L	4	84	42	0	7046	ABCDEFGHI	60 - 68	4	20	3
102	LMNT/RA73	L	8	93	45	0	7010	ABCDEFGHI	60 - 69	4	8	2
109	82CAY21/LMNT/80Y50	L	7	91	37	0	6975	ABCDEFGHI	65 - 72	5	73	3
114	TBNT/BLMT	L	8	88	37	0	6962	ABCDEFGHI	61 - 70	5	40	3
85	80Y50/LBLE//LMNT	L	6	91	36	0	6823	BCDEFGHIJ	64 - 72	5	70	3
118	LBLE	L	6	83	49	0	6737	CDEFGHIJ	61 - 70	5	35	3
111	88365	M	4	91	45	15	6651	CDEFGHIJ	62 - 69	5	35	2
108	V6DW/STTD//L201	L	5	81	40	0	6638	CDEFGHIJ	51 - 68	5	88	4
110	PCOS/LMNT//GFMT	L	8	89	37	0	6581	CDEFGHIJ	62 - 70	6	75	3
90	KATY/NWBT	L	5	87	43	0	6578	CDEFGHIJ	60 - 68	5	80	3
113	GCHW/LMNT//CB801/3/...	L	8	86	36	0	6553	CDEFGHIJ	62 - 71	5	75	3
86	DLMT/B8462T3-710...	L	7	90	36	0	6537	CDEFGHIJ	57 - 69	6	65	3
106	BP87/9902//LMNT*2	L	6	91	35	0	6486	CDEFGHIJ	63 - 72	5	35	2
95	RU8003050/CA82Y24/...	L	8	91	37	0	6344	CDEFGHIJK	56 - 69	6	70	3
92	LBLE-X2-2/BJ-1*F1/...	L	7	91	38	0	6326	DEFGHIJK	66 - 72	6	50	3
89	LBLE-X2-2/BJ-1*F1/...	L	6	87	36	0	6290	DEFGHIJK	59 - 68	6	90	3
117	SKBT	L	7	88	49	20	6192	EFGHIJKL	62 - 70	5	45	3
81	L201/9NRZ	M	6	85	39	0	6173	EFGHIJKL	64 - 69	5	80	3
100	LMNT/IRGA 409	L	6	86	37	0	6106	FGHIJKL	58 - 69	6	95	4
83	LBLE-X2-2/BJ-1*F1/...	L	7	90	36	0	5973	GHIJKL	63 - 70	5	75	4

Continued.

Table 9. Continued.

1992 entry	Pedigree	Grain type*	Seedling vigor**	Days to 50% heading	Plant height (in)	Lodging (%)	Yield (lb/A @ 12%)	Duncan's test***	Milling % (Whl-Tot)	SB[1]	RN[1]	SV[1]
107	NWBT/RU8303181//...	L	9	91	39	0	5750	HIJKL	60 - 69	5	50	3
116	GCHW/LMNT//RXMT/3/...	L	8	92	38	0	5593	IJKL	61 - 69	5	83	3
101	LMNT/CB801	L	8	91	41	0	5403	JKL	57 - 71	5	63	3
119	L203	L	3	79	35	0	4880	KL	42 - 66	5	99	4
98	LBLE/RU7802003//...	L	9	93	41	0	4715	L	53 - 69	4	60	3
96	BRAZ/TBNT/3/164986-4...	L	4	86	40	0	2981	M	50 - 63	6	99	4
105	B737/265116/3/V6DW	L	4	74	-	0	2718	M	54 - 69	-	-	-
CV			8.7	0.9	2.9	-	9.6		4.5-1.7			

* L = Long grain, M = medium grain.
** Subjective rating 1 to 9, where 1 = excellent, 9 = poor.
*** Numbers followed by the same letter are not significantly different at the 0.05 level.
[1] SB = sheath blight, 0-9 scale; RN = rotten neck blast, % infection; and SV = rotten neck blast severity, 0-9 scale.

Table 10. Yields of main and ratoon crops of 1992 uniform regional nursery, Group V. Crowley, LA.

1992 entry	Pedigree	Ratoon height (in)	Main crop yield	Ratoon crop yield	Total yield	Duncan's test*
			-------(lb/A @ 12%)-------			
82	82CAY21/LMNT/...	31	7366	3994	11359	A
115	82CAY21/LMNT/...	29	7358	3876	11234	AB
109	82CAY21/LMNT/...	29	6975	3981	10956	ABC
93	BP87/9902//LBNT/...	33	7901	2859	10759	ABCD
97	BLMT/7802192	29	7547	3211	10757	ABCD
94	L202/TBNT	30	8313	2198	10511	ABCDE
84	ALAN/TBNT	35	8369	2141	10509	ABCDE
99	LBLE/L201/KATY	36	7046	3094	10140	ABCDEF
104	RU8003050/CA82Y24	34	7281	2836	10116	ABCDEF
103	82CAY21/LMNT	27	7679	2410	10089	ABCDEF
87	BN73*2/NV76//NWRX	33	7224	2828	10052	ABCDEF
88	82CAY21/8001190//...	31	7795	2167	9961	ABCDEFG
91	BLMT/7802192	31	7349	2464	9813	BCDEFGH
114	TBNT/BLMT	29	6962	2691	9653	CDEFGHI
120	TBNT	43	7469	2153	9622	CDEFGHI
112	MERC/1711X2	28	7228	2354	9582	CDEFGHIJ
110	PCOS/LMNT//GFMT	31	6581	2888	9469	DEFGHIJ
86	DLMT/B8462T3-710	28	6537	2925	9462	DEFGHIJ
85	80Y50/LBLE//LMNT	29	6823	2465	9287	EFGHIJ
118	LBLE	39	6737	2440	9177	EFGHIJK
108	V6DW/STTD//L201	2	6638	2533	9171	EFGHIJK
90	KATY/NWBT	33	6578	2298	8875	FGHIJK
100	LMNT/IRGA 409	30	6106	2766	8871	FGHIJK
81	L201/9NRZ	28	6173	2648	8820	FGHIJK
113	GCHW/LMNT//CB801	27	6553	2267	8819	FGHIJK
92	LBLE-X2-2/BJ-1*F1...	29	6326	2468	8794	FGHIJK
95	RU8003050/CA82Y24...	30	6344	2384	8728	FGHIJK
117	SKBT	40	6192	2531	8723	FGHIJK
89	LBLE-X2-2/BJ-1*F1...	29	6290	2406	8696	FGHIJK
106	BP87/9902//LMNT*2	29	6486	2058	8544	GHIJK
102	LMNT/RA73	35	7010	1484	8494	HIJK
111	88365	33	6651	1814	8464	HIJK
101	LMNT/CB801	34	5403	2955	8358	HIJK

Continued.

Table 10. Continued.

1992 entry	Pedigree	Ratoon height (in)	Main crop yield	Ratoon crop yield	Total yield	Duncan's test*
			-------(lb/A @ 12%)-------			
83	LBLE-X2-2/BJ-1*F1...	27	5973	2365	8338	IJK
116	GCHW/LMNT//RXMT/...	31	5593	2671	8264	IJK
107	NWBT/RU8303181//...	33	5750	2404	8153	JK
98	LBLE/RU7802003//...	34	4715	3069	7784	K
119	L203	25	4880	1394	6274	L
105	B737/265116/3/...	27	3496	1846	5341	LM
96	BRAZ/TBNT/3/...	28	2981	1171	4152	M
CV		4.0	9.7	13.2	6.5	

* Numbers followed by the same letter are not significantly different at the 0.05 level.

Experiment: Uniform Regional Nursery - Group VI

Location: Rice Research Station

Seeding Rate/Date: 150 lb/A, Mar 27, 1992

Planting Method: Water-seeded (pre-germinated seed)

Fertilization: 94-49-49 (lb/A N-P_2O_5-K_2O) preplant incorporated, Mar 23; 21 lb N/A, May 28; 21 lb N/A, June 4; 70 lb N/A, Aug 6 (ratoon crop)

Plot Size: 4.66 x 18 ft (84 ft^2)

Water Management: Flood, Mar 25; drain, Mar 30; reflood, Apr 2; drain, Apr 19; reflood, Apr 22; harvest drain, July 20; reflood, Aug 6; drain, Oct 14

Herbicides: Arrosolo (propanil 3 lb al/A + molinate 3 lb al/A), Apr 21; Londax (bensulfuron-methyl) 1 oz al/A, Apr 23

Insecticides: Furadan (carbofuran) .5 lb al/A, May 3

Harvest: Aug 4-5; ratoon crop, Oct 28

Experimental Design: Randomized complete block with two replications

Results: Tables 11 and 12.

Table 11. Agronomic performance of 1992 uniform rice nursery, Group VI. Crowley, LA.

1992 entry	Pedigree	Grain type*	Seedling vigor**	Days to 50% heading	Plant height (in)	Lodging (%)	Yield (lb/A @ 12%)	Duncan's test***	Milling % (Whl-Tot)	SB[1]	RN[1]	SV[1]
145	KATY/STBN	L	5	90	44	0	8230	A	62 - 69	6	15	3
149	LBLE SC-5/LMNT	L	5	90	41	0	8044	AB	59 - 68	4	5	2
131	MERC//LMNT/MERC	M	4	88	34	5	7978	AB	67 - 73	6	50	3
128	MERC/RICO1	M	5	90	39	0	7888	ABC	68 - 72	5	3	2
152	MERC//MERC/RICO	M	3	85	38	40	7662	ABCD	66 - 71	6	13	3
127	LBNT/9902/3/DAWN/...	L	6	89	39	0	7628	ABCDE	60 - 70	6	45	3
148	LBNT/9902/3/DAWN/...	L	5	88	39	0	7512	ABCDE	56 - 69	6	65	3
141	RU8303116/LMNT	L	8	89	38	0	7448	ABCDEF	65 - 71	6	33	3
124	LMNT/RA73	L	5	86	42	0	7441	ABCDEF	62 - 70	7	70	3
136	NWBT/KATY	L	5	86	42	0	7411	ABCDEF	60 - 69	6	80	3
135	GCHW/LMNT//CB801	L	7	90	42	0	7298	ABCDEFG	63 - 71	5	35	3
133	LBNT/226187//KATY	L	5	86	35	0	7281	ABCDEFGH	63 - 68	5	50	4
139	LMNT/RA73	L	6	86	43	0	7195	ABCDEFGH	60 - 70	5	60	3
134	MERC/3/NTAI/NVDF//...	M	5	92	38	0	7169	ABCDEFGH	66 - 71	3	5	3
129	TRO2/LMNT	L	6	94	33	0	7089	ABCDEFGHI	64 - 71	6	80	3
151	NWBT/3/DAWN/9695//...	L	7	90	45	0	7057	ABCDEFIGHI	66 - 72	5	20	3
121	LMNT/9902/3/DAWN/...	L	6	90	37	0	6952	ABCDEFGHI	58 - 68	5	50	3
122	LMNT/LBLE SC-5	L	6	93	38	0	6865	ABCDEFGHI	58 - 66	4	5	2
157	MERC	M	4	87	37	0	6830	ABCDEFGHI	67 - 72	5	45	3
146	LBLE SC-5	L	7	97	44	0	6694	BCDEFGHIJ	60 - 67	3	5	3
130	KATY/NWBT	L	5	87	42	0	6657	BCDEFGHIJ	62 - 70	6	90	4
150	87-14693/CB801	L	7	91	39	0	6623	BCDEFGHIJ	58 - 71	6	35	3
143	DMSI/DLLAX2//LMNT/...	L	6	90	46	0	6471	CDEFGHIJK	61 - 71	4	35	3
154	L201//TBNT/BLMT	L	5	92	39	0	6418	DEFGHIJK	59 - 70	5	18	3
125	20001-5/LMNT	L	6	99	39	0	6210	EFGHIJKL	62 - 67	2	0	1
137	DMSI//LMNT/NWBT/3/...	L	4	84	45	65	6057	FGHIJKL	60 - 69	4	25	3
160	LBNT	L	6	88	48	50	5969	GHIJKLM	62 - 71	6	20	3
147	RU8303116/LMNT	L	8	90	34	0	5864	HIJKLMN	64 - 71	6	65	3
138	RU8003050/CA82Y24/...	L	6	85	36	5	5857	HIJKLMN	62 - 70	6	73	4
144	RU8303181/CB801	L	9	91	36	0	5699	IJKLMN	57 - 68	4	60	3
123	DLMT/B8462T3-710...	L	7	90	37	0	5368	JKLMNO	60 - 71	6	75	3
155	SMARS/MARS//MARS	M	4	94	38	0	5284	JKLMNO	65 - 69	4	23	3
132	RU8003050/CA82Y24/...	L	8	92	36	0	5204	KLMNO	62 - 70	4	33	3

Continued.

Table 11. Continued.

1992 entry	Pedigree	Grain type*	Seedling vigor**	Days to 50% heading	Plant height (in)	Lodging (%)	Yield (lb/A @ 12%)	Duncan's test***	Milling % (Whl-Tot)	SB[1]	RN[1]	SV[1]
140	DMSI/DLLAX2//LMNT...	L	5	92	42	50	4964	LMNO	51 - 68	4	13	3
126	DLMT/B8462T3-710...	L	8	97	37	0	4863	LMNO	56 - 69	5	40	3
156	L201//TBNT/BLMT	L	5	92	39	0	4657	MNO	50 - 67	7	80	3
159	DLLA	L	6	95	50	95	4576	MNO	56 - 68	5	30	3
153	LBLE-X2-2/BJ-1*F1/...	L	8	94	39	0	4557	NO	60 - 68	4	60	4
158	RXMT	L	8	94	35	0	4556	NO	55 - 66	4	90	3
142	LMNT/RA73	L	5	98	41	0	4137	O	48 - 64	5	73	4
CV			8.4	1.2	3.1	-	9.1		3.8-1.8			

* L = Long grain, M = medium grain.
** Subjective rating 1 to 9, where 1 = excellent, 9 = poor.
*** Numbers followed by the same letter are not significantly different at the 0.05 level.
[1] SB = sheath blight, 0-9 scale; RN = rotten neck blast, % infection; and SV = rotten neck blast severity, 0-9 scale.

Table 12. Yields of main and ratoon crops of 1992 uniform regional nursery, Group VI. Crowley, LA.

1992 entry	Pedigree	Ratoon height (in)	Main crop yield	Ratoon crop yield	Total yield	Duncan's test*
			-------(lb/A @ 12%)-------			
149	LBLE SC-5/LMNT	27	8044	2526	10570	A
141	RU8303116/LMNT	26	7448	2894	10342	AB
131	MERC//LMNT/MERC	27	7978	2345	10323	AB
122	LMNT/LBLE SC-5	30	6865	3311	10175	ABC
124	LMNT/RA73	32	7441	2527	9968	ABCD
136	NWBT/KATY	31	7411	2528	9939	ABCD
139	LMNT/RA73	30	7195	2578	9772	ABCDE
128	MERC/RICO1	26	7888	1883	9771	ABCDE
129	TRO2/LMNT	27	7089	2653	9741	ABCDE
133	LBNT/226187//KATY	27	7281	2330	9611	ABCDEF
127	LBNT/9902/3/DAWN...	29	7628	1886	9513	ABCDEFG
145	KATY/STBN	33	8230	1155	9385	ABCDEFGH
151	NWBT/3/DAWN/9695...	33	7057	2231	9288	ABCDEFGH
143	DMSI/DLLAX2//LMNT...	37	6471	2778	9249	ABCDEFGHI
146	LBLE SC-5	27	6694	2507	9201	ABCDEFGHI
135	GCHW/LMNT//CB801	29	7298	1886	9184	ABCDEFGHI
130	KATY/NWBT	29	6657	2411	9068	ABCDEFGHI
121	LMNT/9902/3/DAWN...	27	6952	2102	9054	ABCDEFGHI
125	20001-5/LMNT	28	6210	2787	8997	ABCDEFGHI
152	MERC//MERC/RICO	28	7662	1285	8947	ABCDEFGHI
148	LBNT/9902/3/DAWN...	27	7512	1431	8943	ABCDEFGHI
157	MERC	28	6830	1905	8735	BCDEFGHIJ
147	RU8303116/LMNT	25	5864	2825	8689	BCDEFGHIJ
138	RU8003050/CA82Y24	28	5857	2658	8515	CDEFGHIJK
137	DMSI//LMNT/NWBT/...	34	6057	2380	8437	CDEFGHIJK
150	87-14693/CB801	30	6623	1681	8304	DEFGHIJK
134	MERC/3/NTAI/NVDF//...	24	7169	929	8098	EFGHIJKL
144	RU8303181/CB801	29	5699	2232	7931	FGHIJKL
123	DLMT/B8462T3-710	27	5368	2499	7867	FGHIJKLM
126	DLMT/B8462T3-710	27	4863	2905	7768	GHIJKLM
160	LBNT	35	5969	1755	7724	GHIJKLM
132	RU8003050/CA82Y2	24	5204	2393	7597	HIJKLM

Continued.

Table 12. Continued.

1992 entry	Pedigree	Ratoon height (in)	Main crop yield	Ratoon crop yield	Total yield	Duncan's test*
			-------(lb/A @ 12%)-------			
154	L201//TBNT/BLMT	30	6418	1041	7459	IJKLM
153	LBLE-X2-2/BJ-1*F1...	30	4557	2529	7086	JKLMN
156	L201//TBNT/BLMT	30	4657	2399	7056	JKLMN
155	SMARS/MARS//MARS	26	5284	1481	6765	KLMN
158	RXMT	25	4556	1937	6492	LMN
142	LMNT/RA73	28	4137	2011	6148	MNO
140	DMSI/DLLAX2//LMNT	30	4964	667	5630	NO
159	DLLA	36	4576	154	4679	O
CV		4.4	9.1	14.6	8.4	

* Numbers followed by the same letter are not significantly different at the 0.05 level.

Experiment: Uniform Regional Nursery - Group VII

Location: Rice Research Station

Seeding Rate/Date: 150 lb/A, Mar 26, 1992

Planting Method: Water-seeded (pre-germinated seed)

Fertilization: 94-49-49 (lb/A N-P_2O_5-K_2O) preplant incorporated, Mar 23; 21 lb N/A, May 28; 21 lb N/A, June 4; 70 lb N/A, Aug 18

Plot Size: 4.66 x 18 ft (84 ft^2)

Water Management: Flood, Mar 25; drain, Mar 30; reflood, Apr 12; drain, Apr 19; reflood, Apr 22; harvest drain, July 23; reflood, Aug 17; drain, Oct 28

Herbicides: Arrosolo (propanil 3 lb ai/A + molinate 3 lb ai/A), Apr 21; Londax (bensulfuron-methyl) 1 oz ai/A, Apr 23

Insecticides: Furadan (carbofuran) .5 lb ai/A, May 3

Harvest: Aug 13; ratoon crop, Nov 6

Experimental Design: Randomized complete block with two replications

Comments: Entries 163, 166, 169, 175, 178, 181, 184, and 187 had extremely poor vigor and were replanted Apr 9. Stands were very poor for these entries even after replanting.

Results: Tables 13 and 14.

Table 13. Agronomic performance of 1992 uniform rice nursery, Group VII. Crowley, LA.

1992 entry	Pedigree	Grain type*	Seedling vigor**	Days to 50% heading	Plant height (in)	Lodging (%)	Yield (lb/A @ 12%)	Duncan's test***	Milling % (Whl-Tot)	SB[1]	RN[1]	SV[1]
176	NWBT/KATY	L	5	90	46	60	9419	A	66 - 71	5	13	3
192	RAX CLEAR	M	6	100	37	40	9086	AB	66 - 71	3	0	1
199	GCHW	M	7	103	45	50	9074	AB	58 - 73	2	0	1
179	NWBT/KATY	L	5	90	44	50	8730	ABC	62 - 70	7	20	3
191	NWBT/KATY	L	5	88	44	5	8586	ABC	66 - 71	5	18	3
200	TQNG	M	7	104	44	10	8553	ABC	57 - 73	2	0	1
174	MARS*2/L110/3/AKIT...	M	4	88	34	5	8509	ABC	61 - 68	6	25	3
183	LMNT/NWBT//80Y50/...	L	6	87	33	0	8461	ABCD	63 - 71	6	15	3
189	MERC//BRAZ/T487//...	M	4	86	36	25	8249	ABCDE	68 - 71	6	8	3
194	KATY/NWBT	L	5	88	44	5	8064	ABCDE	65 - 70	6	23	3
162	LMNT*2/82CAY83	L	5	101	42	5	7797	ABCDEF	62 - 69	4	8	3
180	LMNT//NWBT/LEAH	L	6	93	37	0	7583	BCDEFG	64 - 71	6	10	3
164	M201/KATY	L	6	89	43	5	7577	BCDEFG	64 - 70	4	15	3
182	NWBT//LBNT/STBN	L	5	90	42	15	7419	BCDEFGH	61 - 70	6	60	3
165	L202//LMNT/LEAH	L	5	95	38	5	7292	CDEFGH	58 - 68	4	10	3
185	LMNT//BN73*2/NV76	L	6	90	40	25	7261	CDEFGH	60 - 71	7	63	3
186	L202/CR1113	L	4	89	45	20	7139	CDEFGHI	60 - 69	6	10	3
167	NWBT//LBNT/STBN	L	5	91	44	5	7099	CDEFGHI	58 - 69	6	15	3
161	L201//VSTA/7901017	L	5	92	45	0	6709	DEFGHI	61 - 69	5	68	3
197	JSMN	L	6	107	43	60	6639	EFGHI	59 - 69	4	0	1
193	IR841-85/NWBT	L	5	91	46	5	6578	EFGHI	59 - 69	5	85	3
196	GCHW/LMNT//RXMT/3/...	L	7	92	39	5	6498	EFGHIJ	66 - 72	5	43	3
170	RA73/LBNT//NWRX	L	5	90	37	30	6219	FGHIJK	61 - 69	8	65	3
190	GCHW/LMNT//RXMT/3/...	L	8	92	39	0	6204	FGHIJK	65 - 71	6	28	3
173	BP87/9902//LBNT/...	L	5	91	39	50	6060	FGHIJKL	57 - 68	6	63	3
177	LMNT/3/BP87/9902//...	L	4	89	34	10	6042	FGHIJKL	62 - 69	7	25	3
168	DMSI/DLLAX2//LMNT...	L	5	90	47	50	5956	GHIJKL	63 - 72	5	12	3
188	STBN/LA110//L201	L	6	92	45	0	5804	GHIJKLM	57 - 68	4	83	3
172	GFMT/86-570	L	7	100	43	5	5729	HIJKLM	57 - 68	6	55	3
184	LMNT*3/JSMN	L	9	110	40	0	5636	HIJKLM	56 - 69	3	0	1
198	A301	L	5	90	40	45	5393	IJKLM	54 - 70	6	75	4
195	DMSI/203/TTEP/...	L	8	88	37	85	4762	JKLMN	59 - 72	7	30	3
171	DMSI//LMNT/NWBT/3/...	L	5	92	49	80	4606	KLMNO	62 - 73	5	3	2

Continued.

Table 13. Continued.

1992 entry	Pedigree	Grain type*	Seedling vigor**	Days to 50% heading	Plant height (in)	Lodging (%)	Yield (lb/A @ 12%)	Duncan's test***	Milling % (Whl-Tot)	SB[1]	RN[1]	SV[1]
166	LMNT*3/JSMN	L	9	108	38	0	4471	KLMNO	50 - 69	3	3	2
178	LMNT*3/JSMN	L	9	118	35	0	4386	LMNO	50 - 68	2	0	1
181	LMNT*3/JSMN	L	9	113	37	0	4355	LMNO	36 - 70	3	0	1
175	LMNT*3/JSMN	L	9	116	36	0	4196	MNO	41 - 67	2	0	1
163	LMNT*3/JSMN	L	9	108	37	0	4055	MNO	47 - 70	2	3	2
169	LMNT*3/JSMN	L	9	115	37	0	3072	NO	36 - 68	3	0	1
187	LMNT*3/JSMN	L	9	115	38	0	2944	O	45 - 70	4	0	1
CV			9.1	1.5	2.6	-	11.2		6.1-1.6			

* L = Long grain, M = medium grain.

** Subjective rating 1 to 9, where 1 = excellent, 9 = poor.

*** Numbers followed by the same letter are not significantly different at the 0.05 level.

[1] SB = sheath blight, 0-9 scale; RN = rotten neck blast, % infection; and SV = rotten neck blast severity, 0-9 scale.

Table 14. Yields of main and ratoon crops of 1992 uniform regional nursery, Group VII. Crowley, LA.

1992 entry	Pedigree	Ratoon height (in)	Main crop yield	Ratoon crop yield	Total yield	Duncan's test*
			-------(lb/A @ 12%)-------			
183	LMNTNWBT//80Y50	23	8461	2239	10699	A
176	NWBT/KATY	27	9419	1175	10594	AB
191	NWBT/KATY	29	8586	1988	10574	AB
192	RAX CLEAR	25	9086	1367	10453	ABC
179	NWBT/KATY	28	8730	1685	10414	ABCD
174	MARS*2/L110/3/...	22	8509	1707	10216	ABCD
194	KATY/NWBT	28	8064	2077	10140	ABCDE
189	MERC//BRAZ/T487/...	24	8249	1677	9926	ABCDEF
167	NWBT//LBNT/STBN	29	7099	2791	9890	ABCDEF
182	NWBT//LBNT/STBN	29	7419	2393	9811	ABCDEF
197	JSMN	27	6639	3077	9716	ABCDEF
165	L202//LMNT/LEAH	25	7292	2226	9518	ABCDEF
180	LMNT//NWBT/LEAH	24	7583	1795	9378	ABCDEF
200	TQNG	26	8553	167	9075	ABCDEF
199	GCHW	--	9074	---	9074	ABCDEF
186	L202/CR1113	28	7139	1600	8739	ABCDEFG
196	GCHW/LMNT//RXMT/...	27	6498	2232	8730	ABCDEFG
164	M201/KATY	27	7577	1107	8684	ABCDEFGH
173	BP87/9902//LBNT/...	29	6060	1763	8681	ABCDEFGH
162	LMNT*2/82CAY83	26	7797	1322	8612	ABCDEFGH
161	L201//VSTA/79010	27	6709	1836	8544	ABCDEFGH
184	LMNT*3/JSMN	27	5636	2831	8466	BCDEFGH
168	DMSI/DLLAX2//LMNT	31	5956	2427	8383	CDEFGH
185	LMNT//BN73*2/NV76	27	7261	1049	8310	CDEFGH
170	RA73/LBNT//NWRX	25	6219	2024	8243	DEFGH
190	GCHW/LMNT//RXMT/...	27	6204	2035	8238	DEFGH
193	IR841-85/NWBT	29	6578	1471	8049	EFGHI
188	STBN/LA110//L201	30	5804	2110	7913	FGHI
172	GFMT/86-570	29	5729	2163	7892	FGHI
177	LMNT/3/BP87/9902	25	6042	1392	6659	GHIJ
195	DMSI/203/TTEP/4*...	29	4762	1836	6598	GHIJ
171	DMSI//LMNT/NWBT/...	35	4606	1937	6542	HIJK
198	A301	25	5393	688	6081	IJK

Continued.

Table 14. Continued.

1992 entry	Pedigree	Ratoon height (in)	Main crop yield	Ratoon crop yield	Total yield	Duncan's test*
			-------(lb/A @ 12%)-------			
166	LMNT*3/JSMN	26	4471	1473	5943	IJK
181	LMNT*3/JSMN	22	4355	612	5774	JKL
163	LMNT*3/JSMN	25	4055	1307	5361	JKL
175	LMNT*3/JSMN	20	4912	1712	5142	JKL
187	LMNT*3/JSMN	25	2944	1562	4506	KL
169	LMNT*3/JSMN	20	3072	969	3896	L
178	LMNT*3/JSMN	17	5639	--	--	---
CV		6.0	11.8	17.9	9.7	

* Numbers followed by the same letter are not significantly different at the 0.05 level.

COMMERCIAL VARIETY TESTS

The Rice Breeding project annually conducts yield trials on commercial rice varieties. Included in the tests are the major commercial varieties and advanced experimentals in the final stages of testing before release from cooperating public and private breeding programs.

These tests were conducted at four locations in Louisiana in 1992. These included the Rice Research Station, the Northeast Research Station at St. Joseph, and on-farm locations in East Carroll and Vermilion parishes. The East Carroll location was carried out in cooperation with the Rice Fertilization and Cultural Management project under the direction of Dr. Pat Bollich. The Northeast Research Station location was conducted cooperatively with Mr. Steve Crawford, weed scientist at that location.

These tests included the following entries:

Entry	Grain Type	Source*
<u>Very Early Group</u>		
Adair	L	AAES, Stuttgart, AR
Alan	L	AAES, Stuttgart, AR
Jackson	L	MAFES, Stoneville, MS
L-202	L	CCRRF, Biggs, CA
L-203	L	CCRRF, Biggs, CA
LA 2031	L	LAES, Crowley, LA
LA 2115	L	LAES, Crowley, LA
Labelle	L	TAES, USDA, Beaumont, TX
LaGrue	L	AAES, Stuttgart, AR
Maybelle	L	TAES, USDA, Beaumont, TX
Millie	L	AAES, Stuttgart, AR
Rosemont	L	TAES, USDA, Beaumont, TX
RT 7015	L	RiceTec, Alvin, TX
Skybonnet	L	TAES, USDA, Beaumont, TX
Tebonnet	L	AAES, Stuttgart, AR
Texmont	L	TAES, USDA, Beaumont, TX

Continued.

Continued.

Entry	Grain Type	Source*
Early Group		
AB 647	M	Busch Ag., Jonesboro, AR
Bengal	M	LAES, Crowley, LA
Cypress	L	"
Della	L (aromatic)	"
Delmont	L (aromatic)	TAES, USDA, Beaumont, TX
Gui Chow	M	LAES, Crowley, LA
Gulfmont	L	TAES, USDA, Beaumont, TX
Jasmine 85	L (low amylose, aromatic)	TAES, USDA, Beaumont, TX
Katy	L	AAES, Stuttgart, AR
LA 2085	L (aromatic)	LAES, Crowley, LA
LA 2146	L	"
LA 2168	M	"
Lacassine	L	"
Lemont	L	TAES, USDA, Beaumont, TX
Mars	M	AAES, Stuttgart, AR
Mercury	M	LAES, Crowley, LA
Newbonnet	L	AAES, Stuttgart, AR
Orion	M	AAES, Stuttgart, AR
Rico 1	M	TAES, USDA, Beaumont, TX
Short Rico	M	TAES, USDA, Beaumont, TX
Toro 2	L (low amylose)	LAES, Crowley, LA
TX 3072	L	TAES, USDA, Beaumont, TX
V-4716	M	RiceTec, Alvin, TX
V-7817	L	RiceTec, Alvin, TX

* AAES = Arkansas Agricultural Experiment Station; MAFES = Mississippi Agricultural & Forestry Experiment Station; CCRRF = California Cooperative Rice Research Foundation; LAES = Louisiana Agricultural Experiment Station; and TAES = Texas Agricultural Experiment Station.

Individual location data are presented in Tables 15- 24 Summary data are presented in Tables 25- 26.

Experiment: Commercial Variety Test - Very Early Group

Location: Rice Research Station

Seeding Rate/Date: 100 lb/A, Mar 31, 1992

Planting Method: Drill-seeded

Fertilization: 58-58-58 (lb/A N-P_2O_5-K_2O) preplant incorporated, Mar 31; 70 lb N/A, Apr 23; 21 lb N/A, May 28; 21 lb N/A, June 4; 70 lb N/A, July 29 (ratoon crop)

Plot Size: 4.66 x 16 ft (74.5 ft^2)

Water Management: Flush, Apr 6; flood, Apr 23; harvest drain, July 16; reflood, July 29

Herbicides: Stam (propanil) 3 lb al/A + Basagran (bentazon) 2 lb al/A, Apr 21; Londax (bensulfuron-methyl) 1 oz al/A, May 8

Insecticides: Furadan (carbofuran) .5 lb al/A, May 12

Harvest: July 28; ratoon crop, Oct 20

Experimental Design: Randomized complete block with four replications

Results: Tables 15 and 16.

Table 15. Agronomic performance of 1992 commercial varieties, very early group. Crowley, LA.

1992 entry	Pedigree	Grain type*	Seedling vigor**	Days to 50% heading	Plant height (in)	Lodging (%)	Yield (lb/A @ 12%)	Duncan's test***	Milling % (Whl-Tot)	SB[1]	RN[1]	SV[1]
312	LA 2031	L	6	81	34	0	8663	A	59 - 68	6	16	2
303	Jackson	L	5	81	38	0	8031	B	61 - 69	6	29	3
310	Maybelle	L	5	77	36	0	7977	B	60 - 68	7	40	3
302	Tebonnet	L	5	80	47	3	7976	B	61 - 69	7	25	3
301	Alan	L	4	82	38	0	7953	B	61 - 68	7	28	3
314	LaGrue	L	5	82	39	0	7686	BC	51 - 68	7	48	3
313	Adair	L	7	84	41	0	7654	BC	59 - 69	6	16	2
315	L-202	L	5	80	36	0	7406	BCD	53 - 68	6	50	3
304	Millie	L	5	81	39	0	7259	CDE	64 - 70	6	13	1
306	RT 7015	L	7	82	35	0	7238	CDE	60 - 68	7	58	3
307	Skybonnet	L	7	83	43	0	6923	DEF	64 - 70	5	10	1
311	LA 2115	L	6	76	32	0	6883	DEF	61 - 70	7	35	2
308	Labelle	L	6	77	43	0	6670	EF	63 - 70	6	8	1
316	L-203	L	4	79	35	0	6429	F	44 - 65	6	83	4
305	Rosemont	L	6	80	31	0	5860	G	54 - 67	6	69	3
309	Texmont	L	7	81	33	0	5675	G	54 - 65	6	74	3
CV			7.0	0.5	2.7	-	5.4		3.4-1.7			

* L = long grain.
** Subjective rating 1 to 9, where 1 = excellent, 9 = poor.
*** Numbers followed by the same letter are not significantly different at the 0.05 level.
[1] SB = sheath blight - 0-9 scale; RN = rotten neck blast - % infection; and SV = rotten neck blast - severity 0-9.

Table 16. Yields of main and ratoon crop of 1992 commercial variety test, very early group, Crowley, LA.

1992 entry	Pedigree	Ratoon height (in)	Main crop yield	Ratoon crop yield	Total yield	Duncan's test*
			-------(lb/A @ 12%)-------			
312	LA 2031	29	8663	2033	10695	A
301	Alan	31	7953	2689	10642	A
313	Adair	33	7628	2978	10606	A
303	Jackson	32	8031	2514	10545	AB
310	Maybelle	30	7977	2516	10492	AB
314	LaGrue	34	7686	2695	10381	ABC
304	Millie	29	7259	3081	10340	ABC
315	L-202	26	7406	2718	10123	ABC
302	Tebonnet	41	7976	1946	9923	ABCD
306	RT 7015	27	7238	2507	9745	BCDE
308	Labelle	37	6670	2902	9571	CDE
307	Skybonnet	36	6923	2247	9170	DEF
311	LA 2115	26	6883	2122	9005	EF
309	Texmont	26	5675	2868	8543	F
305	Rosemont	27	5860	2633	8492	F
316	L-203	25	6429	1324	7752	G
CV		4.6	5.4	9.1	5.2	

* Numbers followed by the same letter are not significantly different at the 0.05 level.

Experiment: Commercial Variety Test - Early Group

Location: Rice Research Station

Seeding Rate/Date: 100 lb/A, Mar 31, 1992

Planting Method: Drill-seeded

Fertilization: 58-58-58 (lb/A N-P_2O_6-K_2O) preplant incorporated, Mar 31; 70 lb N/A, Apr 23; 21 lb N/A, May 28; 21 lb N/A, June 4; 70 lb N/A, Aug 10 (ratoon crop)

Plot Size: 4.66 x 16 ft (74.5 ft^2)

Water Management: Flush, Apr 6; flood, Apr 23; drain, July 23; reflood, Aug 11

Herbicides: Stam (propanil) 3 lb al/A + Basagran (bentazon) 2 lb al/A, Apr 21; Londax (bensulfuron-methyl) 1 oz al/A, May 8

Insecticides: Furadan (carbofuran) .5 lb al/A, May 12

Harvest: Aug 7; ratoon crop, Nov 1

Experimental Design: Randomized complete block with four replications

Results: Tables 17 and 18.

Table 17. Agronomic performance of 1992 commercial varieties, early group. Crowley, LA.

1992 entry	Pedigree	Grain type*	Seedling vigor**	Days to 50% heading	Plant height (in)	Lodging (%)	Yield (lb/A @ 12%)	Duncan's test***	Milling % (Whl-Tot)	SB[1]	RN[1]	SV[1]
344	AB 647	M	6	98	43	0	9977	A	49 - 73	3	0	1
343	Gui Chow	M	6	101	42	0	8477	B	59 - 72	3	2	2
322	Short Rico	M	7	93	39	0	7869	BC	63 - 71	4	5	3
321	Rico	M	7	95	40	0	7820	BC	64 - 71	4	9	2
328	Cypress	L	4	87	35	0	7290	CD	65 - 70	5	19	3
334	V4716	M	6	90	35	0	7133	DE	70 - 72	5	18	3
337	Gulfmont	L	6	88	32	0	6957	DEF	64 - 71	6	48	3
338	Katy	L	5	86	40	0	6838	DEF	62 - 69	4	3	2
327	Orion	M	5	89	37	0	6759	DEF	64 - 70	4	1	2
325	Jasmine 85	L	6	105	45	0	6740	DEFG	57 - 67	2	0	1
324	Mars	M	5	90	40	0	6719	DEFG	66 - 70	4	28	3
323	Bengal	M	5	90	33	0	6602	DEFGH	63 - 71	5	26	3
336	Lemont	L	6	87	33	0	6533	EFGH	64 - 71	6	58	3
330	TX 3072	L	8	87	34	0	6233	FGHI	61 - 70	6	41	3
331	Lacassine	L	6	86	33	0	6024	GHIJ	64 - 71	6	48	3
339	LA 2085	L	7	85	35	0	5975	HIJ	67 - 72	5	38	3
335	V7817	L	8	102	34	0	5945	HIJ	58 - 69	5	13	3
341	Dellmont	L	7	88	33	0	5929	HIJ	65 - 72	6	46	3
342	LA 2168	M	5	88	35	0	5883	HIJ	67 - 71	4	10	3
333	Toro 2	L	8	92	37	0	5859	HIJ	62 - 70	5	31	3
329	LA 2146	L	6	92	40	0	5729	IJ	57 - 67	5	56	3
340	Della	L	6	95	50	0	5602	IJ	59 - 70	4	9	3
332	Newbonnet	L	5	94	41	0	5372	JK	52 - 65	4	78	4
326	Mercury	M	6	88	33	0	4816	K	65 - 71	5	41	3
CV			5.9	0.7	2.2	-	6.8		3.2-1.0			

* L = long grain; M = medium grain.

** Subjective rating 1 to 9, where 1 = excellent, 9 = poor.

*** Numbers followed by the same letter are not significantly different at the 0.05 level.

[1] SB = sheath blight - 0-9 scale; RN = rotten neck blast - % infection; and SV = rotten neck blast - severity 0-9.

Table 18. Yields of main and ratoon crop of 1992 commercial variety test, early group, Crowley, LA.

1992 entry	Pedigree	Ratoon height (in)	Main crop yield	Ratoon crop yield	Total yield	Duncan's test*
			-------(lb/A @ 12%)-------			
344	AB 647	27	9977	2486	12464	A
343	Gui Chow	28	8477	2655	11132	B
325	Jasmine 85	28	6740	4213	10953	B
328	Cypress	29	7290	3159	10449	BC
337	Gulfmont	29	6957	3132	10089	CD
321	Rico	28	7820	2172	9992	CD
322	Short Rico	28	7869	2106	9975	CD
330	3072	28	6233	3683	9916	CDE
334	V4716	27	7133	2436	9569	CDEF
338	Katy	33	6838	2652	9489	DEF
336	Lemont	27	6533	2917	9450	DEF
331	Lacassine	29	6024	3304	9327	DEF
339	LA 2085	28	5975	3352	9326	DEF
327	Orion	27	6759	2479	9238	DEF
324	Mars	31	6719	2393	9112	EF
341	Dellmont	27	5929	3128	9056	FG
323	Bengal	26	6602	2309	8911	FGH
342	LA 2168	26	5883	2431	8314	GHI
329	LA 2146	30	5729	2543	8272	GHI
335	V7817	24	5945	2307	8252	GHI
333	Toro 2	30	5859	2280	8139	HI
332	Newbonnet	29	5372	2578	7951	I
326	Mercury	25	4816	2252	7068	J
340	Della	33	5602	1321	6923	J
CV		6.1	6.8	10.5	5.5	

* Numbers followed by the same letter are not significantly different at the 0.05 level.

Experiment: Commercial Variety Test - Very Early Group

Location: Northeast Research Station, St. Joseph

Seeding Rate/Date: 100 lb/A, Apr 27, 1992

Planting Method: Drill seeded

Fertilization: 39-39-39 (lb/A N-P_2O_5-K_2O) preplant incorporated, Apr 24; 90 lb N/A, May 26, 45 lb N/A, June 10

Plot Size: 4.66 x 16 ft (74.5 ft^2)

Water Management: Flood, May 27; harvest drain, Aug 10

Herbicides: Stam (propanil) 2.0 lb al/A + Facet (quinclorac) 0.75 lb al/A, May 4; Arrosolo (propanil 3.0 lb al/A + molinate 3.0 lb al/A) + Facet 0.5 lb al/A, May 14

Harvest: Aug 19

Experimental Design: Randomized complete block with four replications

Comments: Some bird damage in earliest entries.

Results: Table 19.

Table 19. Agronomic performance of 1992 commercial varieties, very early group. St. Joseph, LA.

1992 entry	Pedigree	Grain type*	Seedling vigor**	Days to 50% heading	Plant height (in)	Lodging (%)	Yield (lb/A @ 12%)	Duncan's test***
313	Adair	L	5	83	41	0	6094	A
312	LA 2031	L	5	82	35	0	6035	A
314	LaGrue	L	5	86	42	0	5302	AB
311	LA 2115	L	6	74	33	0	5235	AB
305	Rosemont	L	6	81	34	0	5230	AB
315	L-202	L	5	80	35	0	4927	AB
301	Alan	L	5	81	38	0	4807	BC
303	Jackson	L	4	79	38	0	4390	BCD
316	L-203	L	6	77	35	0	4359	BCD
309	Texmont	L	6	82	33	0	4202	BCD
304	Millie	L	5	81	38	0	4174	BCD
306	RT 7015	L	7	82	35	0	4085	BCDE
307	Skybonnet	L	6	83	44	0	3714	CDE
310	Maybelle	L	5	76	37	0	3622	CDE
302	Tebonnet	L	4	79	48	0	3205	DE
308	Labelle	L	5	78	48	0	2955	E
CV			10.0	2.0	3.4	-	16.2	

* L = long grain.
** Subjective rating 1 to 9, where 1 = excellent, 9 = poor.
*** Numbers followed by the same letter are not significantly different at the 0.05 level.

Experiment: Commercial Variety Test - Early Group

Location: Northeast Research Station, St. Joseph

Seeding Rate/Date: 100 lb/A, Apr 27, 1992

Planting Method: Drill seeded

Fertilization: 39-39-39 (lb/A N-P_2O_5-K_2O) preplant incorporated, Apr 24; 90 lb N/A, May 26, 45 lb N/A, June 10

Plot Size: 4.66 x 16 ft (74.5 ft^2)

Water Management: Flood, May 27; harvest drain, Aug 17

Herbicides: Stam (propanil) 2.0 lb al/A + Facet (quinclorac) 0.75 lb al/A, May 4; Arrosolo (propanil 3.0 lb al/A + molinate 3.0 lb al/A) + Facet 0.5 lb al/A, May 14

Harvest: Aug 31

Experimental Design: Randomized complete block with four replications

Results: Table 20.

Table 20. Agronomic performance of 1992 commercial varieties, early group. St. Joseph, LA.

1992 entry	Pedigree	Grain type*	Seedling vigor**	Days to 50% heading	Plant height (in)	Lodging (%)	Yield (lb/A @ 12%)	Duncan's test***
344	AB 647	M	5	92	40	38	9531	A
343	Gui Chow	M	5	95	42	43	9049	A
322	Short Rico	M	6	88	41	15	8912	A
323	Bengal	M	5	84	37	0	8735	A
321	Rico	M	6	89	41	8	8433	AB
332	Newbonnet	L	5	90	42	0	7429	BC
324	Mars	M	5	88	44	65	7404	BC
329	LA 2146	L	6	87	42	0	7361	BC
342	LA 2168	M	6	83	39	0	7326	BC
326	Mercury	M	6	88	38	3	7273	BCD
327	Orion	M	5	84	41	25	7039	CDE
331	Lacassine	L	5	87	37	0	6997	CDE
337	Gulfmont	L	6	89	35	0	6833	CDE
328	Cypress	L	5	86	37	0	6778	CDE
334	V4716	M	5	86	36	0	6745	CDE
336	Lemont	L	6	89	37	0	6707	CDE
341	Dellmont	L	6	89	36	0	6329	CDEF
330	TX 3072	L	7	87	36	0	5929	DEF
339	LA 2085	L	5	82	38	13	5839	EF
338	Katy	L	5	87	43	58	5830	EF
325	Jasmine 85	L	5	96	41	3	5039	F
333	Toro 2	L	8	87	41	0	5021	F
340	Della	L	6	90	51	3	3806	G
335	V7817	L	6	95	34	0	3699	G
CV			10.0	1.4	2.5	-	12.1	

* L = long grain, M = medium grain.
** Subjective rating 1 to 9, where 1 = excellent, 9 = poor.
*** Numbers followed by the same letter are not significantly different at the 0.05 level.

Experiment: Commercial Variety Test - Very Early and Early Groups

Location: Epps - Buford Perry Farm, East Carroll Parish

Seeding Rate/Date: 100 lb/A, Apr 30, 1992

Planting Method: Drill-seeded

Fertilization: 13.6 lb Zn/A (preplant incorporated); 120 lb N/A, June 17

Plot Size: 7 x 25 ft (175 ft^2)

Water Management: Flood, June 18; harvest drain, Sept 4

Herbicides: Stam (propanil) 5.0 lb al/A, June 13; Londax (bensulfuron-methyl) 0.6 oz al/A, June 26 and 0.4 oz al/A, July 11; Ordram (molinate) 3.5 lb al/A, June 26

Insecticides: Furadan (carbofuran) 0.6 lb al/A, July 2; Methyl parathion 0.25 lb al/A, Aug 19

Fungicides: Benlate (benomyl) 0.5 lb al/A, Aug 4, Aug 17

Harvest: Sept 19

Experimental Design: Randomized complete block with four replications

Results: Tables 21 and 22.

Table 21. Agronomic performance of 1992 commercial varieties, very early group. East Carroll Parish, LA.

1992 entry	Pedigree	Grain type*	Days to 50% heading	Plant height (in)	Lodging (%)	Yield (lb/A @ 12%)	Duncan's test**	Milling % (Whl-Tot)
312	LA 2031	L	86	39	0	10678	A	57 - 70
314	LaGrue	L	89	48	0	9876	B	59 - 69
303	Jackson	L	85	42	0	9729	BC	61 - 72
313	Adair	L	85	49	15	9716	BC	56 - 71
302	Tebonnet	L	87	57	0	9694	BC	62 - 72
305	Rosemont	L	85	39	0	9680	BC	61 - 72
301	Alan	L	85	44	0	9518	BCD	63 - 72
311	LA 2115	L	74	38	0	9099	CDE	62 - 70
307	Skybonnet	L	88	50	0	9060	CDE	65 - 72
309	Texmont	L	84	36	0	9049	CDE	63 - 74
306	RT 7015	L	85	39	0	8921	DEF	62 - 71
315	L-202	L	83	37	0	8800	EF	57 - 70
304	Millie	L	87	45	0	8520	EF	65 - 74
316	L-203	L	79	39	0	8433	EF	55 - 70
310	Maybelle	L	79	40	0	8374	F	66 - 71
308	Labelle	L	84	52	8	7055	G	66 - 74
CV			0.7	2.7	-	4.6		2.9-0.9

* L = Long grain.

** Numbers followed by the same letter are not significantly different at the 0.05 level.

Table 22. Agronomic performance of 1992 commercial varieties, early group. East Carroll Parish, LA.

1992 entry	Pedigree	Grain type*	Days to 50% heading	Plant height (in)	Lodging (%)	Yield (lb/A @ 12%)	Duncan's test**	Milling % (Whl-Tot)
343	Gui Chow	M	92	43	8	12086	A	64 - 71
344	AB 647	M	89	44	5	11730	AB	63 - 74
321	Rico	M	89	49	0	11680	AB	64 - 70
323	Bengal	M	86	37	0	11017	BC	62 - 70
322	Short Rico	M	89	50	20	10829	BCD	65 - 71
329	LA 2146	L	89	48	0	10304	CDE	62 - 69
342	LA 2168	M	84	43	0	10187	CDEF	67 - 72
336	Lemont	L	93	39	0	9898	DEFG	65 - 73
331	Lacassine	L	91	39	0	9856	EFG	63 - 72
327	Orion	M	85	46	8	9757	EFGH	66 - 70
337	Gulfmont	L	92	37	0	9624	EFGH	62 - 71
328	Cypress	L	89	41	0	9329	EFGHI	61 - 70
330	TX 3072	L	91	39	0	9263	FGHI	57 - 71
325	Jasmine 85	L	95	42	0	9188	GHI	55 - 67
341	Dellmont	L	93	40	0	9155	GHI	62 - 72
333	Toro 2	L	89	48	0	9059	GHI	61 - 72
339	LA 2085	L	87	43	0	8827	HI	65 - 73
332	Newbonnet	L	89	47	0	8595	IJ	63 - 70
338	Katy	L	92	49	0	8464	IJK	53 - 66
335	V7817	L	94	35	0	8327	IJK	59 - 69
334	V4716	M	87	38	0	7686	JKL	71 - 73
324	Mars	M	86	49	65	7572	KL	65 - 70
340	Della	L	89	58	33	7335	L	52 - 69
326	Mercury	M	85	39	0	7005	L	64 - 71
CV			0.7	3.2	-	6.4		3.2-1.6

* L = long grain and M = medium grain.

** Numbers followed by the same letter are not significantly different at the 0.05 level.

Experiment: Commercial Variety Test - Very Early Group

Location: Pine Island - Trahan Farm, Vermilion Parish

Seeding Rate/Date: 100 lb/A, Apr 23, 1992

Planting Method: Drill-seeded

Fertilization: 14-42-42 (lb/A N-P_2O_5-K_2O) preplant incorporated, Apr 23; 50 lb N/A, May 19; 21 lb N/A, June 10

Plot Size: 4.66 x 16 ft (74.5 ft^2)

Water Management: Flush, May 8; flood, May 19; harvest drain, Aug 10

Herbicides: Stam (propanil) 3 lb al/A + Basagran (bentazon) 2 lb al/A, May 11

Insecticides: Furadan (carbofuran) .5 lb al/A, June 3

Harvest: Aug 17

Experimental Design: Randomized complete block with four replications

Comments: Excessive rotten-neck blast and moderate sheath blight.

Results: Table 23.

Table 23. Agronomic performance of 1992 commercial varieties, very early group. Pine Island, LA.

1992 entry	Pedigree	Grain type*	Seedling vigor**	Days to 50% heading	Plant height (in)	Lodging (%)	Yield (lb/A @ 12%)	Duncan's test***
304	Millie	L	5	80	39	0	3949	A
313	Adair	L	5	80	40	0	3899	A
311	LA 2115	L	6	72	33	0	3889	A
301	Alan	L	5	78	37	0	3816	AB
303	Jackson	L	5	79	35	0	3669	ABC
312	LA 2031	L	5	80	35	0	3483	BCD
310	Maybelle	L	5	73	34	5	3344	CDE
315	L-202	L	5	75	33	20	3301	CDEF
314	LaGrue	L	6	85	40	0	3202	DEF
306	RT 7015	L	6	78	33	0	3134	DEFG
316	L-203	L	4	72	33	0	3087	EFG
302	Tebonnet	L	5	78	44	10	2926	FGH
305	Rosemont	L	6	77	31	0	2767	GHI
308	Labelle	L	6	76	43	58	2663	HI
309	Texmont	L	6	77	31	5	2618	HI
307	Skybonnet	L	6	83	40	0	2412	I
CV			7.7	2.3	4.6	-	7.5	

* L = long grain.
** Subjective rating 1 to 9, where 1 = excellent, 9 = poor.
*** Numbers followed by the same letter are not significantly different at the 0.05 level.

Experiment: Commercial Variety Test - Early Group

Location: Pine Island - Trahan Farm, Vermilion Parish

Seeding Rate/Date: 100 lb/A, Apr 23, 1992

Planting Method: Drill-seeded

Fertilization: 14-42-42 (lb/A N-P_2O_5-K_2O) preplant incorporated, Apr 23; 50 lb N/A, May 19; 21 lb N/A, June 10

Plot Size: 4.66 x 16 ft (74.5 ft^2)

Water Management: Flush, May 8; flood, May 19; harvest drain, Aug 19

Herbicides: Stam (propanil) 3 lb al/A + Basagran (bentazon) 2 lb al/A, May 11

Insecticides: Furadan (carbofuran) .5 lb al/A, June 3

Harvest: Aug 28

Experimental Design: Randomized complete block with four replications

Comments: Excessive rotten-neck blast and sheath blight pressure.

Results: Table 24.

Table 24. Agronomic performance of 1992 commercial varieties, early group. Pine Island, LA.

1992 entry	Pedigree	Grain type*	Seedling vigor**	Days to 50% heading	Plant height (in)	Lodging (%)	Yield (lb/A @ 12%)	Duncan's test***
343	Gui Chow	M	5	94	40	25	5693	A
344	AB 647	M	5	91	38	13	5474	A
321	Rico	M	7	90	39	5	4485	B
322	Short Rico	M	6	88	38	25	4485	B
327	Orion	M	4	84	37	3	4211	BC
325	Jasmine 85	L	5	95	42	3	4210	BC
334	V4716	M	5	84	34	10	3937	C
323	Bengal	M	5	85	31	0	3736	CD
342	LA 2168	M	6	84	32	3	3369	D
324	Mars	M	4	85	37	0	3278	D
338	Katy	L	4	86	38	78	2748	E
333	Toro 2	L	9	88	37	0	2654	EF
339	LA 2085	L	6	84	34	80	2594	EFG
330	TX 3072	L	7	88	35	40	2522	EFGH
335	V7817	L	6	94	31	0	2466	EFGH
326	Mercury	M	5	59	30	0	2392	EFGH
336	Lemont	L	6	88	33	33	2341	EFGH
337	Gulfmont	L	6	87	34	68	2243	EFGH
328	Cypress	L	4	84	34	78	2184	FGH
331	Lacassine	L	6	86	33	60	2118	FGH
340	Della	L	6	88	43	78	2097	GH
341	Dellmont	L	6	90	35	30	1992	H
329	LA 2146	L	6	88	41	10	1389	I
332	Newbonnet	L	5	88	39	13	1285	I
CV			12.2	1.6	4.0	-	10.5	

* L = long grain, M = medium grain.

** Subjective rating 1 to 9, where 1 = excellent, 9 = poor.

*** Numbers followed by the same letter are not significantly different at the 0.05 level.

Table 25. Agronomic and milling performance of 1992 commercial variety tests, very early group. Four location means.

1992 entry	Pedigree	Grain type*	Seedling vigor**	Days to 50% heading	Plant height (in)	Lodging (%)	Yield (lb/A @ 12%)	Duncan's test***	Milling % (Wh-Tot)[1]
312	LA 2031	L	5	82	36	0	7214	A	58 - 69
313	Adair	L	6	83	43	4	6841	AB	58 - 70
301	Alan	L	5	81	39	0	6523	BC	62 - 70
314	LaGrue	L	5	85	42	0	6516	BC	55 - 68
303	Jackson	L	5	81	38	0	6455	BC	61 - 71
311	LA 2115	L	6	74	34	0	6276	CD	61 - 70
315	L-202	L	5	80	35	5	6108	CDE	55 - 69
304	Millie	L	5	82	40	0	5975	CDEF	65 - 72
302	Tebonnet	L	5	81	49	3	5950	CDEFG	61 - 71
305	Rosemont	L	6	81	34	0	5884	DEFG	57 - 69
306	RT 7015	L	6	82	35	0	5844	DEFG	61 - 69
310	Maybelle	L	5	76	37	1	5829	DEFG	63 - 69
316	L-203	L	5	77	36	0	5577	EFG	50 - 67
307	Skybonnet	L	6	84	44	0	5527	FG	65 - 71
309	Texmont	L	6	81	33	1	5386	G	59 - 70
308	Labelle	L	6	79	46	16	4836	H	65 - 72
CV			10.6	2.1	4.5	-	11.8		4.6-2.0

* L = long grain.

** Subjective rating 1 to 9, where 1 = excellent, 9 = poor.

*** Numbers followed by the same letter are not significantly different at the 0.05 level.

[1] Milling data are means of two locations.

Table 26. Agronomic and milling performance of 1992 commercial variety tests, early group. Four location means.

1992 entry	Pedigree	Grain type*	Seedling vigor**	Days to 50% heading	Plant height (in)	Lodging (%)	Yield (lb/A @ 12%)	Duncan's test***	Milling % (Wh-Tot)[1]
344	AB 647	M	5	93	41	14	9178	A	56 - 74
343	Gui Chow	M	5	95	42	19	8826	A	62 - 71
321	Rico	M	6	91	42	3	8104	B	64 - 70
322	Short Rico	M	6	89	42	15	8022	B	64 - 71
323	Bengal	M	5	86	35	0	7523	BC	62 - 70
327	Orion	M	5	86	40	9	6942	CD	65 - 70
342	LA 2168	M	5	85	37	1	6691	DE	67 - 72
337	Gulfmont	L	6	89	35	17	6414	DEF	63 - 71
328	Cypress	L	4	86	37	19	6395	DEF	63 - 70
334	V4716	M	5	87	36	3	6375	DEF	70 - 72
336	Lemont	L	6	89	35	8	6369	DEF	64 - 72
325	Jasmine 85	L	5	97	43	1	6294	DEF	56 - 67
331	Lacassine	L	6	87	36	15	6249	DEF	63 - 72
324	Mars	M	4	87	43	33	6243	DEF	66 - 70
329	LA 2146	L	6	89	43	3	6195	DEF	59 - 68
330	TX 3072	L	7	88	36	10	5987	EFG	59 - 71
338	Katy	L	5	88	42	34	5970	EFG	57 - 68
341	Dellmont	L	6	90	36	8	5851	FG	63 - 72
339	LA 2085	L	6	84	38	23	5809	FGH	66 - 72
332	Newbonnet	L	5	90	42	3	5670	FGH	58 - 67
333	Toro 2	L	8	89	41	0	5648	FGH	61 - 71
326	Mercury	M	6	86	35	1	5372	GHI	64 - 71
335	V7817	L	7	96	34	0	5109	HI	59 - 69
340	Della	L	6	90	50	28	4710	I	56 - 69
CV			10.6	2.5	5.2	-	13.9		5.2-1.5

* L = long grain, M = medium grain.

** Subjective rating 1 to 9, where 1 = excellent, 9 = poor.

*** Numbers followed by the same letter are not significantly different at the 0.05 level.

[1] Milling data are means of two locations.

ADVANCED YIELD TESTS

The Rice Breeding project annually conducts on-farm testing of advanced experimental lines to complement tests conducted on station. The goal of these activities are to sample additional environments in yield testing of new promising selections from the varietal development program. These additional yield evaluations are needed to identify the performance characteristics, strengths, and weaknesses of the test entries. Multi-location and multi-year testing are essential to provide the information needed to make decisions relative to the release of new varieties.

These tests were conducted at the Rice Research Station and four on-farm locations in 1992. The on-farm locations were as follows:

East Carroll Parish (Epps, LA) - Buford Perry Farm
Morehouse Parish (Jones, LA) - Edmund & Kirk Zaunbrecher Farm
Rapides Parish (Cheneyville, LA) - Will Bollich Farm
Vermilion Parish (Gueydan, LA) - Errol Lounsberry Farm

Twenty-four experimentals and six checks were included in the 1992 testing program. Ratoon crop information was generated at the Rice Research Station and at the Vermilion Parish location. These tests were conducted in cooperation with Dr. Pat Bollich and the Rice Fertilization and Cultural Management project.

Individual location data are presented in Tables 27-33. Summary data are presented in Table 34.

Experiment: Advanced Yield Test

Location: Rice Research Station

Seeding Rate/Date: 100 lb/A, Mar 24, 1992

Planting Method: Drill-seeded

Fertilization: 58-58-58 (lb/A N-P_2O_5-K_2O) preplant incorporated, Mar 23; 70 lb N/A, Apr 22; 21 lb N/A, May 28; 21 lb N/A, June 4; 70 lb N/A, Aug 6 (ratoon crop)

Plot Size: 4.66 x 25 ft (116.5 ft^2)

Water Management: Flush, Mar 28; flood, Apr 22; harvest drain, July 20; reflood, Aug 6

Herbicides: Arrosolo (propanil 3 lb al/A + molinate 3 lb al/A) and Basagran (bentazon) 2 lb al/A, Apr 21; Londax (bensulfuron-methyl) 1 oz al/A, May 4

Insecticides: Furadan (carbofuran) .5 lb al/A, May 3

Harvest: Aug 4; ratoon crop, Nov 1

Experimental Design: Randomized complete block with four replications

Results: Tables 27 and 28.

Table 27. Agronomic and milling performance and disease reaction of 1992 advanced yield test. Crowley, LA.

1992 entry	Pedigree	Grain type*	Seedling vigor**	Days to 50% heading	Plant height (in)	Lodging (%)	Yield (lb/A @ 12%)	Duncan's test***	Milling % (Whl-Tot)	SB[1]	RN[1]	SV[1]
218	Rax Clear	M	7	102	36	0	8485	A	63 - 68	2	0	1
230	Rico	M	7	98	42	0	8086	A	60 - 67	3	5	2
204	L202/LMNT	L	5	87	35	0	7356	B	57 - 67	6	29	3
229	CPRS	L	3	90	35	0	7327	BC	65 - 70	5	18	3
203	L202/LMNT	L	7	89	36	0	7250	BC	58 - 69	6	28	3
213	L202/TBNT	L	5	90	37	0	7184	BC	58 - 69	5	19	3
212	82CAY21/LMNT//80Y50...	L	7	94	37	0	7117	BCD	64 - 72	5	46	3
228	BNGL	M	4	96	35	0	7039	BCDE	66 - 70	4	30	3
207	LMNT*2/82CAY21	L	6	92	35	0	7017	BCDE	64 - 70	5	21	3
206	Short Mars/Mars//...	M	5	99	35	0	6917	BCDEF	65 - 68	4	10	3
219	L202/TBNT	L	6	82	33	0	6916	BCDEF	55 - 68	6	24	3
214	MERC/Rico 1	M	4	94	36	0	6830	BCDEFG	68 - 72	4	9	3
225	JKSN	L	4	87	36	0	6759	BCDEFGH	61 - 69	6	56	3
223	MERC/RICO	M	7	92	37	0	6688	CDEFGHI	69 - 73	3	8	3
205	Mars/M201//Mars	M	6	94	34	0	6676	CDEFGHI	62 - 68	4	21	3
221	MERC/Rico 1	M	7	95	35	0	6504	DEFGHI	67 - 72	4	6	2
202	L202//LMNT/Leah	L	6	99	35	0	6455	EFGHIJ	58 - 68	4	30	3
208	Short Mars/Mars//...	M	6	99	33	0	6370	FGHIJK	64 - 68	4	13	3
211	Short Mars/Mars//...	M	5	98	32	0	6335	FGHIJK	67 - 70	4	15	3
216	LMNT/LBLE SC-5	L	7	93	37	0	6327	FGHIJK	57 - 70	3	4	2
201	LMNT*2/8001190	L	8	96	34	0	6313	FGHIJK	63 - 70	6	26	3
226	DLMT	L	8	95	35	0	6189	GHIJK	64 - 71	6	46	3
222	LMNT/DLLA	L	8	92	37	0	6145	HIJK	63 - 71	5	29	3
227	LCSN	L	7	92	34	0	6136	HIJK	62 - 71	6	75	3
220	80Y50/LBLE//LMNT	L	7	93	32	0	6082	IJK	64 - 71	6	44	3
210	LMNT/DLLA(2152)	L	8	93	35	0	5815	JKL	62 - 71	6	28	3
215	LBLE SC-5/LMNT	L	7	95	36	0	5811	JKL	57 - 66	3	1	2
209	8002610/CICA 9	L	6	94	42	0	5772	KL	58 - 67	5	70	3
217	LBLE SC-5	L	7	93	38	0	5728	KL	62 - 67	3	1	1
224	DMSI/DLLAX2//LMNT/...	L	8	94	44	0	5357	L	58 - 70	4	41	3
CV			10.4	0.9	2.7	-	5.9		2.4-1.2			

* L = Long grain, M = medium grain.

** Subjective rating 1 to 9, where 1 = excellent, 9 = poor.

*** Numbers followed by the same letter are not significantly different at the 0.05 level.

[1] SB = sheath blight - 0-9 scale; RN = rotten neck blast - % infection; and SV = rotten neck blast - severity 0-9.

Table 28. Yields of main and ratoon crop of 1992 advanced yield test. Crowley, LA.

1992 entry	Pedigree	Ratoon height (in)	Main crop yield	Ratoon crop yield	Total yield	Duncan's test*
			-------(lb/A @ 12%)-------			
203	L202/LMNT	28	7250	3223	10473	A
216	LMNT/LBLE SC-5	31	6327	4020	10347	AB
204	L202/LMNT	29	7356	2983	10339	AB
229	CPRS	28	7327	2945	10272	ABC
212	82CAY21/LMNT//...	27	7117	3098	10215	ABCD
207	LMNT*2/82CAY21	28	7017	3152	10170	ABCDE
218	Rax Clear	26	8485	1682	10167	ABCDE
230	Rico	31	8086	1674	9760	ABCDEF
221	MERC/Rico 1	27	6504	3229	9732	ABCDEF
219	L202/TBNT	26	6916	2770	9686	ABCDEF
202	L202//LMNT/LEAH	26	6455	3090	9545	BCDEFG
228	BNGL	26	7039	2418	9457	CDEFGH
225	JKSN	30	6759	2618	9377	DEFGH
214	MERC/Rico 1	27	6830	2502	9332	EFGHI
213	L202/TBNT	28	7184	2129	9313	EFGHI
227	LCSN	29	6136	3168	9305	EFGHI
220	80Y50/LBLE//LMNT	26	6082	3058	9140	FGHIJ
223	MERC/Rico	27	6688	2423	9111	FGHIJ
206	Short Mars/Mars//...	25	6917	2185	9102	FGHIJ
222	LMNT/DLLA	30	6145	2951	9096	FGHIJ
201	LMNT*2/8001190	27	6313	2770	9083	FGHIJ
210	LMNT/DLLA(2152)	30	5815	3263	9078	FGHIJ
205	Mars/M201//Mars	26	6676	2240	8916	FGHIJ
226	DLMT	28	6189	2554	8744	GHIJ
211	Short Mars/Mars//...	24	6335	2407	8741	GHIJ
208	Short Mars/Mars//...	25	6370	2218	8588	HIJ
224	DMSI/DLLAX2//LMNT	35	5357	3099	8456	IJ
209	8002610/CICA9	31	5772	2618	8390	J
215	LBLE SC-5/LMNT	27	5811	2577	8388	J
217	LBLE SC-5	28	5728	2644	8371	J
C.V.		4.6	5.9	10.4	5.7	

* Numbers followed by the same letter are not significantly different at the 0.05 level.

Experiment: Advanced Yield Test

Location: Epps - Buford Perry Farm, East Carroll Parish

Seeding Rate/Date: 100 lb/A, Apr 30, 1992

Planting Method: Drill seeded

Fertilization: 13.6 lb zn/A (preplant incorporated); 120 lb N/A, June 17

Plot Size: 7 x 25 ft (175 ft^2)

Water Management: Flood, June 18; harvest drain, Sept 4

Herbicides: Stam (propanil) 5.0 lb ai/A, June 13; Londax (bensulfuron-methyl) 0.6 oz ai/A, June 26 and 0.4 oz ai/A, July 11; Ordram (molinate) 3.5 lb ai/A, June 26

Insecticides: Furadan (carbofuran) 0.6 lb ai/A, July 2; Methyl parathion 0.25 lb ai/A, Aug 9

Fungicides: Benlate (benomyl) 0.5 lb ai/A, Aug 4, Aug 17

Harvest: Sept 19

Experimental Design: Randomized complete block with four replications

Results: Table 29.

Table 29. Agronomic and milling performance of 1992 advanced yield test. East Carroll Parish, LA.

1992 entry	Pedigree	Grain type*	Seedling vigor**	Days to 50% heading	Plant height (in)	Lodging (%)	Yield (lb/A @ 12%)	Duncan's test***	Milling % (Whl-Tot)
230	Rico	M	0	89	49	0	11680	A	64 - 70
228	BNGL	M	0	86	37	0	11017	AB	62 - 70
211	Short Mars/Mars//...	M	0	87	41	0	11014	AB	64 - 69
208	Short Mars/Mars//...	M	0	87	41	0	10756	BC	66 - 69
221	MERC/Rico 1	M	0	88	46	0	10742	BC	68 - 72
218	Rax Clear	M	0	87	40	0	10696	BCD	65 - 69
206	Short Mars/Mars//...	M	0	87	42	0	10676	BCD	62 - 68
204	L202/LMNT	L	0	86	39	0	10666	BCD	57 - 70
209	8002610/CICA 9	L	0	89	48	0	10304	BCDE	62 - 69
223	MERC/Rico	M	0	84	43	0	10200	BCDE	67 - 72
213	L202/TBNT	L	0	89	43	0	10029	CDEF	58 - 70
205	Mars/M201//Mars	M	0	88	42	0	9996	CDEF	63 - 69
214	MERC/Rico 1	M	0	87	44	0	9974	CDEF	65 - 73
227	LCSN	L	0	91	39	0	9874	CDEFG	63 - 72
203	L202/LMNT	L	0	88	39	0	9837	CDEFG	53 - 71
225	JKSN	L	0	85	42	0	9729	DEFGH	61 - 72
220	80Y50/LBLE//LMNT	L	0	92	37	0	9504	EFGHI	58 - 72
210	LMNT/DLLA(2152)	L	0	87	42	0	9425	EFGHI	62 - 74
207	LMNT*2/82CAY21	L	0	88	40	0	9414	EFGHI	61 - 71
202	L202//LMNT/Leah	L	0	89	39	0	9405	EFGHI	57 - 71
212	82CAY21/LMNT//...	L	0	90	40	0	9359	EFGHI	53 - 72
229	CPRS	L	0	89	41	0	9329	EFGHI	61 - 70
226	DLMT	L	0	93	40	0	9155	FGHI	62 - 72
219	L202/TBNT	L	0	74	38	0	9099	FGHIJ	62 - 70
215	LBLE SC-5/LMNT	L	0	93	43	0	8941	GHIJK	57 - 67
222	LMNT/DLLA	L	0	87	43	0	8827	HIJK	65 - 73
201	LMNT*2/8001190	L	0	92	38	0	8733	IJK	60 - 72
217	LBLE SC-5	L	0	91	43	0	8551	IJK	59 - 67
224	DMSI/DLLAX2//LMNT/...	L	0	84	47	0	8204	JK	56 - 73
216	LMNT/LBLE SC-5	L	0	93	41	0	8061	K	52 - 65
CV				0.7	3.2	-	6.0		4.1-1.2

* L = long grain, M = medium grain.

** Subjective rating 1 to 9, where 1 = excellent, 9 = poor.

*** Numbers followed by the same letter are not significantly different at the 0.05 level.

Experiment: Advanced Yield Test

Location: Jones - Zaunbrecher Farm, Morehouse Parish

Seeding Rate/Date: 150 lb/A, May 6, 1992

Planting Method: Water seeded (pregerminated seed)

Fertilization: 13.6 lb zn/A (preplant incorporated); 120 lb N/A, May 12

Plot Size: 7 x 25 ft (175 ft^2)

Water Management: Flood, May 5; drain, May 9; flood, June 19; harvest drain, Aug 28

Herbicides: Stam (propanil) 3.0 lb al/A + Basagran (bentazon) 0.75 lb al/A, May 23; Stam 5.0 lb al/A, June 15; Londax (bensulfuron-methyl) 0.6 oz al/A, June 24 and 0.4 oz al/A, July 17; Ordram (molinate) 3.5 lb al/A, June 26

Insecticides: Furadan (carbofuran) 0.6 lb al/A, July 13; Methyl parathion 0.25 lb al/A, July 20

Fungicides: Benlate (benomyl) 0.5 lb al/A, July 20, Aug 4

Harvest: Sept 16

Experimental Design: Randomized complete block with four replications

Results: Table 30.

Table 30. Agronomic and milling performance of 1992 advanced yield test. Morehouse Parish, LA.

1992 entry	Pedigree	Grain type*	Seedling vigor**	Days to 50% heading	Plant height (in)	Lodging (%)	Yield (lb/A @ 12%)	Duncan's test***	Milling % (Whl-Tot)
218	Rax Clear	M	0	90	35	3	10621	A	61 - 70
208	Short Mars/Mars//...	M	0	91	36	0	9923	AB	62 - 71
206	Short Mars/Mars//...	M	0	91	37	0	9900	ABC	65 - 71
223	MERC/Rico	M	0	90	42	8	9781	ABC	69 - 73
221	MERC/Rico 1	M	0	92	42	5	9577	ABCD	67 - 73
211	Short Mars/Mars//...	M	0	91	35	0	9554	ABCD	61 - 71
230	Rico	M	0	93	45	45	9534	ABCD	62 - 73
228	BNGL	M	0	89	36	0	9529	ABCD	65 - 72
209	8002610/CICA 9	L	0	93	45	0	9417	ABCDE	62 - 70
227	LCSN	L	0	95	37	0	9205	ABCDEF	63 - 72
202	L202//LMNT/Leah	L	0	95	38	0	9042	BCDEF	61 - 70
207	LMNT*2/82CAY21	L	0	91	35	0	9009	BCDEF	65 - 72
220	80Y50/LBLE//LMNT	L	0	96	36	0	8826	BCDEF	64 - 73
213	L202/TBNT	L	0	91	40	0	8776	BCDEF	59 - 69
216	LMNT/LBLE SC-5	L	0	94	42	0	8713	BCDEF	52 - 70
229	CPRS	L	0	94	37	0	8557	BCDEF	64 - 71
210	LMNT/DLLA(2152)	L	0	92	39	0	8533	BCDEF	65 - 74
201	LMNT*2/8001190	L	0	96	38	0	8514	BCDEF	64 - 72
225	JKSN	L	0	89	39	0	8455	CDEF	62 - 72
203	L202/LMNT	L	0	85	34	0	8268	DEF	58 - 70
222	LMNT/DLLA	L	0	92	39	0	8255	DEF	64 - 72
214	MERC/Rico 1	M	0	91	41	0	8254	DEF	68 - 74
226	DLMT	L	0	96	37	0	8189	DEF	63 - 73
215	LBLE SC-5/LMNT	L	0	96	39	0	8054	EF	57 - 68
204	L202/LMNT	L	0	83	34	0	7973	EFG	55 - 66
205	Mars/M201//Mars	M	0	92	38	0	7938	FG	45 - 70
212	82CAY21/LMNT//...	L	0	91	37	0	7861	FG	59 - 71
224	DMSI/DLLAX2//LMNT/...	L	0	88	43	0	6718	GH	48 - 73
219	L202/TBNT	L	0	70	33	0	6510	H	64 - 72
217	LBLE SC-5/LMNT	L	0	93	41	0	6373	H	52 - 65
CV				1.6	4.3	-	9.8		4.2-1.4

* L = long grain, M = medium grain.

** Subjective rating 1 to 9, where 1 = excellent, 9 = poor.

*** Numbers followed by the same letter are not significantly different at the 0.05 level.

Experiment: Advanced Yield Test

Location: Cheneyville - Will Bollich Farm, Rapides Parish

Seeding Rate/Date: 100 lb/A, May 8, 1992

Planting Method: Drill seeded

Fertilization: 120 lb N/A, June 17

Plot Size: 7 x 25 ft (175 ft^2)

Water Management: Flood, June 18; harvest drain, Aug 28

Herbicides: Stam (propanil) 4.0 lb al/A, May 30; Londax (bensulfuron-methyl) 0.6 oz al/A, June 24; Ordram (molinate) 3.5 lb al/A, June 26; Londax 0.3 oz al/A, July 14

Insecticides: Furadan (carbofuran) 0.6 lb al/A, July 14; Methyl parathion 0.25 lb al/A, Aug 19

Fungicides: Rovral (iprodione) 0.5 lb al/A, Aug 4

Harvest: Sept 14

Experimental Design: Randomized complete block with four replications

Results: Table 31.

Table 31. Agronomic and milling performance of 1992 advanced yield test. Rapides Parish, LA.

1992 entry	Pedigree	Grain type*	Seedling vigor**	Days to 50% heading	Plant height (in)	Lodging (%)	Yield (lb/A @ 12%)	Duncan's test***	Milling % (Whl-Tot)
230	Rico	M	8	86	42	38	9721	A	63 - 69
228	BNGL	M	5	82	38	0	9119	AB	65 - 70
218	Rax Clear	M	6	88	38	0	8564	BC	64 - 68
221	MERC/Rico 1	M	7	85	43	0	8495	BCD	66 - 71
214	MERC/Rico 1	M	6	85	42	0	8101	CDE	65 - 72
223	MERC/Rico	M	7	81	42	10	8097	CDE	67 - 72
204	L202/LMNT	L	5	84	40	0	8006	CDE	60 - 68
211	Short Mars/Mars//...	M	4	83	35	0	7986	CDEF	65 - 70
208	Short Mars/Mars//...	M	5	83	35	0	7884	CDEFG	64 - 70
209	8002610/Cica 9	L	6	86	45	0	7811	CDEFGH	63 - 69
229	CPRS	L	4	89	40	0	7709	DEFGHI	60 - 68
205	Mars/M201//Mars	M	6	85	38	0	7673	EFGHI	60 - 67
206	Short Mars/Mars//...	M	5	85	37	0	7662	EFGHI	66 - 69
212	82CAY21/LMNT//...	L	8	90	41	0	7550	EFGHIJ	63 - 71
207	LMNT*2/82CAY21	L	5	88	40	0	7545	EFGHIJ	62 - 69
213	L202/TBNT	L	5	86	42	0	7517	EFGHIJ	60 - 69
225	JKSN	L	6	84	41	0	7383	EFGHIJK	61 - 70
215	LBLE SC-5/LMNT	L	6	91	40	0	7353	EFGHIJK	56 - 66
220	80Y50/LBLE//LMNT	L	7	90	34	0	7170	FGHIJK	64 - 72
203	L202/LMNT	L	6	85	39	0	7143	GHIJK	58 - 70
222	LMNT/DLLA	L	8	86	41	0	7036	HIJKL	65 - 72
227	LCSN	L	7	89	38	0	6987	IJKLM	60 - 70
226	DLMT	L	8	90	37	0	6844	JKLM	59 - 69
210	LMNT/DLLA(2152)	L	8	89	40	0	6716	KLMN	64 - 72
202	L202//LMNT/Leah	L	6	88	38	0	6658	KLMN	62 - 71
224	DMSI/DLLAX2//LMNT/...	L	6	83	44	68	6306	LMN	52 - 70
219	L202/TBNT	L	7	73	37	0	6276	LMN	63 - 71
201	LMNT*2/8001190	L	7	90	36	0	6220	MN	65 - 71
217	LBLE SC-5	L	8	90	41	0	6011	N	60 - 66
216	LMNT/LBLE SC-5	L	7	91	41	0	5970	N	49 - 64
CV			11.8	0.9	3.4	-	6.5		3.2-1.6

* L = long grain, M = medium grain.

** Subjective rating 1 to 9, where 1 = excellent, 9 = poor.

*** Numbers followed by the same letter are not significantly different at the 0.05 level.

Experiment: Advanced Yield Test

Location: Gueydan - Errol Lounsberry Farm, Vermilion Parish

Seeding Rate/Date: 150 lb/A, Mar 25, 1992

Planting Method: Water seeded (pregerminated seed)

Fertilization: 90-45-45 (lb/A N-P_2O_5-K_2O) preplant incorporated, Mar 25

Plot Size: 7 x 25 ft (175 ft^2)

Water Management: Flood, Mar 26; drain, Mar 30; flood, Apr 3; harvest drain, July 13; flood (ratoon crop), July 31; harvest drain, Sept 28

Herbicides: Londax (bensulfuron-methyl) 1.0 oz al/A, Apr 23; Ordram (molinate) 3.5 lb al/A, May 15

Insecticides: Furadan (carbofuran) 0.6 lb al/A, May 8; Methyl parathion 0.25 lb al/A, June 25

Fungicides: Benlate (benomyl) 0.5 lb al/A, June 15, June 25

Harvest: July 28; ratoon crop, Oct 12

Experimental Design: Randomized complete block with four replications

Results: Tables 32 and 33.

Table 32. Agronomic and milling performance of 1992 advanced yield test. Vermilion Parish, LA.

1992 entry	Pedigree	Grain type*	Seedling vigor**	Days to 50% heading	Plant height (in)	Lodging (%)	Yield (lb/A @ 12%)	Duncan's test***	Milling % (Whl-Tot)
218	Rax Clear	M	6	91	37	0	9466	A	63 - 67
230	Rico	M	7	90	44	0	9375	A	66 - 71
228	BNGL	M	4	88	35	0	8503	B	67 - 70
223	MERC/Rico	M	4	85	39	0	8228	BC	69 - 72
214	MERC/Rico 1	M	5	88	38	0	8100	BCD	70 - 72
221	MERC/Rico 1	M	6	90	39	0	7851	BCDE	66 - 71
203	L202/LMNT	L	6	84	36	0	7779	BCDEF	53 - 67
204	L202/LMNT	L	5	81	36	0	7768	BCDEF	58 - 67
213	L202/TBNT	L	5	87	38	0	7704	CDEFG	58 - 68
229	CPRS	L	4	87	36	0	7549	CDEFGH	65 - 70
225	JKSN	L	4	82	38	0	7440	DEFGH	61 - 68
211	Short Mars/Mars//...	M	4	89	34	0	7365	DEFGHI	67 - 69
206	Short Mars/Mars//...	M	5	91	37	0	7318	DEFGHI	66 - 69
205	Mars/M201//Mars	M	5	88	36	0	7238	EFGHI	64 - 68
227	LCSN	L	7	88	38	0	7226	EFGHI	62 - 70
216	LMNT/LBLE SC-5	L	7	90	41	0	7181	EFGHIJ	54 - 68
208	Short Mars/Mars//...	M	4	90	35	0	7172	EFGHIJ	64 - 68
201	LMNT*2/8001190	L	7	89	37	0	7144	EFGHIJ	66 - 70
207	LMNT*2/82CAY21	L	5	88	35	0	7066	EFGHIJ	62 - 70
219	L202/TBNT	L	5	74	34	0	6996	FGHIJ	54 - 70
210	LMNT/DLLA(2152)	L	7	87	38	0	6923	GHIJ	64 - 71
220	80Y50/LBLE//LMNT	L	6	88	33	0	6912	GHIJ	64 - 71
226	DLMT	L	7	89	36	0	6862	HIJ	63 - 71
209	8002610/CICA 9	L	6	89	44	0	6757	HIJ	61 - 68
222	LMNT/DLLA	L	6	85	40	0	6620	IJ	65 - 70
215	LBLE SC-5/LMNT	L	7	90	38	0	6599	IJ	61 - 68
212	82CAY21/LMNT//...	L	7	89	38	0	6395	J	55 - 70
202	L202//LMNT/Leah	L	5	92	36	0	5907	K	58 - 68
224	DMSI/DLLAX2//LMNT/...	L	6	88	47	0	5715	L	56 - 69
217	LBLE SC-5	L	8	91	40	0	4809	M	60 - 66
CV			9.9	0.8	3.0		6.6		5.1-1.6

* L = long grain, M = medium grain.

** Subjective rating 1 to 9, where 1 = excellent, 9 = poor.

*** Numbers followed by the same letter are not significantly different at the 0.05 level.

Table 33. Main and ratoon crop yields of 1992 advanced yield test. Vermilion Parish, LA.

1992 entry	Pedigree	Main crop yield	Ratoon crop yield	Total yield	Duncan's test*
		-------(lb/A @ 12%)-------			
230	Rico	9375	1876	11251	A
218	Rax Clear	9466	1693	11159	A
228	BNGL	8477	1841	10318	B
214	MERC/Rico 1	8100	2151	10250	B
223	MERC/Rico	8228	1981	10209	BC
216	LMNT/LBLE SC-5	7181	2953	10134	BCD
203	L202/LMNT	7779	2251	10030	BCDE
221	MERC/Rico 1	7851	2174	10025	BCDE
229	CPRS	7549	2246	9795	BCDEF
213	L202/TBNT	7704	2021	9725	BCDEF
206	Short Mars/Mars//...	7318	2392	9710	BCDEF
204	L202/LMNT	7768	1875	9643	BCDEFG
227	LCSN	7226	2318	9544	BCDEFGH
207	LMNT*2/82CAY21	7066	2361	9427	BCDEFGHI
222	LMNT/DLLA	6620	2749	9369	BCDEFGHI
205	Mars/M201//Mars	7238	2095	9333	BCDEFGHI
225	JKSN	7440	1813	9253	CDEFGHIJ
210	LMNT/DLLA(2152)	6923	2305	9228	CDEFGHIJ
211	Short Mars/Mars//...	7365	1851	9216	CDEFGHIJ
201	LMNT*2/8001190	7144	2043	9187	DEFGHIJ
219	L202/TBNT	6996	2088	9084	EFGHIJ
212	82CAY21/LMNT//...	6395	2672	9067	EFGHIJ
208	Short Mars/Mars//...	7172	1879	9051	EFGHIJ
215	LBLE SC-5/LMNT	6599	2315	8914	FGHIJ
220	80Y50/LBLE//LMNT	6912	1755	8666	GHIJ
226	DLMT	6862	1751	8613	HIJ
202	L202//LMNT/Leah	5907	2661	8567	HIJ
209	8002610/CICA9	6765	1722	8487	IJ
224	DMSI/DLLAX2//LMNT	5715	2583	8298	J
217	LBLE SC-5	4809	2277	7086	K
CV		6.6	12.7	6.2	

* Numbers followed by the same letter are not significantly different at the 0.05 level.

Table 34. Agronomic and milling performance of 1992 advanced yield test. Five location mean, LA.

1992 entry	Pedigree	Grain type*	Seedling vigor**	Days to 50% heading	Plant height (in)	Lodging (%)	Yield (lb/A @ 12%)	Duncan's test***	Milling % (Whl-Tot)
230	Rico	M	4	91	44	17	9679	A	63 - 70
218	Rax Clear	M	4	92	37	1	9566	A	63 - 68
228	BNGL	M	3	88	36	0	9041	B	65 - 71
221	MERC/Rico 1	M	4	90	41	1	8634	BC	67 - 72
223	MERC/Rico	M	4	86	41	4	8599	BCD	68 - 72
206	Short Mars/Mars//...	M	3	91	38	0	8494	CDE	65 - 69
211	Short Mars/Mars//...	M	3	89	36	0	8451	CDEF	65 - 70
208	Short Mars/Mars//...	M	3	90	36	0	8421	CDEFG	64 - 70
204	L202/LMNT	L	3	84	37	0	8354	CDEFGH	57 - 68
214	MERC/Rico 1	M	3	89	40	0	8252	CDEFGH	67 - 72
213	L202/TBNT	L	3	88	40	0	8242	CDEFGH	59 - 69
229	CPRS	L	2	90	38	0	8094	DEFGHI	63 - 70
203	L202/LMNT	L	4	86	37	0	8055	EFGHI	56 - 69
209	8002610/CICA 9	L	4	90	45	0	8012	EFGHI	61 - 69
207	LMNT*2/82CAY21	L	3	89	37	0	8010	EFGHI	63 - 70
225	JKSN	L	3	85	39	0	7953	FGHIJ	61 - 70
205	Mars/M201//Mars	M	3	90	38	0	7904	GHIJ	59 - 69
227	LCSN	L	4	91	37	0	7886	HIJK	62 - 71
220	80Y50/LBLE//LMNT	L	4	92	35	0	7699	IJKL	63 - 72
212	82CAY21/LMNT//...	L	4	91	38	0	7656	IJKLM	59 - 71
202	L202//LMNT/Leah	L	3	92	37	0	7493	JKLM	59 - 70
210	LMNT/DLLA(2152)	L	5	89	39	0	7482	JKLM	64 - 72
226	DLMT	L	5	92	37	0	7448	JKLM	62 - 71
201	LMNT*2/8001190	L	4	92	36	0	7385	KLM	64 - 71
222	LMNT/DLLA	L	4	88	40	0	7376	KLM	64 - 72
215	LBLE SC-5/LMNT	L	4	93	39	0	7351	LM	58 - 67
216	LMNT/LBLE SC-5	L	4	92	40	0	7250	LM	53 - 67
219	L202/TBNT	L	4	75	35	0	7159	M	60 - 70
224	DMSI/DLLAX2//LMNT/...	L	4	87	45	14	6460	N	54 - 71
217	LBLE SC-5	L	5	92	41	0	6294	N	58 - 66
CV			-	2.5	4.6	-	8.9		5.3-1.9

* L = long grain, M = medium grain.

** Subjective rating 1 to 9, where 1 = excellent, 9 = poor.

*** Numbers followed by the same letter are not significantly different at the 0.05 level.

PRELIMINARY YIELD TESTS

The preliminary yield tests provide the first stage of replicated testing of promising experimental lines in field plots. The 1992 testing program included 463 experimentals, as well as representative checks in 20 groups. The more promising selections will be advanced for further testing. Entries 901 - 1000 were returned from the Spring 1992 nursery in Puerto Rico.

Experiment: Preliminary Yield Test - Entries 501-900

Location: Rice Research Station

Seeding Rate/Date: 100 lb/A, May 8, 1992

Planting Method: Drill-seeded

Fertilization: 50-50-50 (lb/A N-P_2O_6-K_2O) preplant incorporated, May 7; 63 lb N/A, June 4; 21 lb N/A, July 1

Plot Size: 4.66 x 16 ft (74.5 ft^2)

Water Management: Flush, May 19; flood, June 5; drain (entries 501-600), Aug 20; drain (entries 601-900), Aug 24

Herbicides: Arrosolo (propanil 3 lb al/A + molinate 3 lb al/A), June 3; Londax (bensulfuron-methyl) 1 oz al/A, June 9

Harvest: Entries 501-600, Aug 27-28; entries 601-825, Aug 29; entries 826-900, Sept 2

Experimental Design: Randomized complete block with two replications

Comments: Rotten neck blast pressure was severe while sheath blight was moderate.

Results: Tables 35 - 50.

Table 35. Agronomic and milling performance and disease reactions of 1992 preliminary yield tests, Group XI, very early special purpose. Rice Research Station, Crowley, LA.

1992 entry	Pedigree	Grain type*	Seedling vigor**	Days to 50% heading	Plant height (in)	Lodging (%)	Yield (lb/A @ 12%)	Duncan's test***	Milling % (Whl-Tot)	SB[1]	RN[1]	SV[1]
504	90 JSMN X2	L	5	70	43	90	6409	A	62 - 70	4	0	0
501	90 JSMN X2	L	5	68	39	90	6118	AB	60 - 67	3	0	0
510	JSMN/3/92CAY21//...	L	6	74	41	80	5729	ABC	63 - 70	4	0	0
503	90 JSMN X2	L	6	70	42	90	5721	ABC	59 - 67	4	5	1
502	90 JSMN X2	L	5	69	39	90	5669	ABCD	58 - 67	3	3	1
515	MERC/DLLA//MERC	M	5	78	42	20	5665	ABCD	60 - 67	3	55	2
514	MERC/DLLA//MERC	M	5	75	40	70	5554	ABCDE	63 - 68	4	85	2
513	MERC/DLLA//MERC	M	6	76	40	0	5488	ABCDEF	66 - 69	4	65	2
511	JSMN/3/92CAY21//...	L	5	78	41	0	5187	BCDEFG	66 - 70	3	0	0
519	LMNT/DLLA//AS3510	L	6	79	38	0	4694	CDEFGH	45 - 65	4	40	2
505	DMSI//LMNT/NWBT/3/...	L	7	74	43	40	4650	DEFGH	53 - 70	4	35	2
506	DMSI//LMNT/NWBT/3/...	L	7	72	46	55	4556	EFGHI	49 - 69	4	20	3
512	MERC/DLLA//MERC	M	5	73	42	20	4515	FGHI	65 - 71	3	35	1
517	DMSI//LMNT/NWBT/3/...	L	7	75	44	75	4418	GHIJ	55 - 69	4	20	2
522	LMNT/DLLA	L	6	75	38	0	4259	GHIJ	55 - 68	4	60	1
525	MBLE	L	4	66	36	0	4154	GHIJ	56 - 67	5	99	2
518	DMSI//LMNT/NWBT/3/...	L	6	71	45	30	4104	HIJ	52 - 71	4	45	2
520	LMNT/DLLA//AS3510	L	6	69	33	0	3909	HIJ	52 - 65	5	85	2
521	DMSI/203//TTEP/...	L	6	75	41	30	3852	HIJ	37 - 66	5	60	2
507	DMSI/DLLAX2//LMNT/...	L	7	79	45	0	3743	HIJ	47 - 68	4	60	2
516	DMSI//LMNT/NWBT/3/...	L	6	79	43	0	3710	HIJ	32 - 62	3	90	3
509	A301//LMNT/DLLA	L	8	78	36	0	3626	HIJ	52 - 69	4	80	2
508	DMSI/203/TTEP//...	L	7	78	41	35	3570	IJ	37 - 69	4	80	3
523	DMSI/203//TTEP/...	L	6	75	42	65	3400	J	32 - 66	4	70	3
524	DMSI/203//TTEP/...	L	6	75	42	40	3393	J	37 - 69	4	85	3
CV			6.1	1.1	4.2	-	9.5		4.4-1.4			

* L = long grain, M = medium grain.

** Subjective rating 1 to 9, where 1 = excellent, 9 = poor.

*** Numbers followed by the same letter are not significantly different at the 0.05 level.

[1] SB = sheath blight - 0-9 scale; RN = rotten neck blast - % infection; and SV = rotten neck blast - severity 0-9.

Table 36. Agronomic and milling performance and disease reactions of 1992 preliminary yield tests, Group XII, very early long grains. Rice Research Station, Crowley, LA.

1992 entry	Pedigree	Seedling vigor*	Days to 50% heading	Plant height (in)	Lodging (%)	Yield (lb/A @ 12%)	Duncan's test**	Milling % (Whl-Tot)	SB[1]	RN[1]	SV[1]
544	2207//LMNTX2/CR1113	5	73	40	5	5874	A	54 - 66	4	55	2
543	2207//LMNTX2/CR1113	5	74	39	35	5741	AB	56 - 68	4	70	2
542	2207//LMNTX2/CR1113	5	74	37	0	5634	AB	54 - 67	5	70	2
546	2207//LBNT/L201	5	74	43	5	5454	ABC	56 - 68	5	75	2
548	82CA421/LMNT//LMNT	5	76	37	0	5164	BCD	49 - 66	4	75	3
545	2207//LBNT/L201	5	73	42	0	5097	BCDE	53 - 67	4	75	2
534	LBLE/L201//MBLE	5	65	34	0	4803	CDEF	60 - 69	4	99	2
547	2207//LBNT/L201	6	73	45	20	4782	CDEF	58 - 69	3	45	2
536	LBLE/L201//MBLE	5	69	37	0	4660	DEF	56 - 68	4	93	2
539	LBLE/L201//MBLE	5	66	37	0	4584	DEFG	61 - 71	4	88	2
528	LBLE/MBLE	5	74	40	0	4563	DEFG	48 - 64	5	90	2
532	LBLE/MBLE	6	73	39	0	4559	DEFG	47 - 64	4	90	2
533	LBLE/L201//MBLE	4	67	39	0	4528	DEFG	55 - 66	4	99	2
530	LBLE/MBLE	5	74	35	0	4514	DEFG	50 - 65	5	75	2
537	LBLE/L201//MBLE	5	66	36	0	4439	DEFGH	61 - 69	4	92	2
550	JKSN	4	73	37	0	4386	EFGH	53 - 67	6	90	2
531	LBLE/MBLE	7	75	40	0	4269	FGH	45 - 64	4	65	2
538	LBLE/L201//MBLE	6	67	40	0	4212	FGH	54 - 66	5	95	2
540	LBLE/L201//MBLE	6	70	38	0	4173	FGH	56 - 68	4	95	2
549	MBLE	4	66	36	0	4077	FGH	56 - 67	5	99	3
529	LBLE/MBLE	6	71	41	0	3885	GHI	59 - 68	4	87	2
527	90 TBNT X2 (20KR)	6	73	37	0	3708	HIJ	60 - 69	5	99	3
526	90 TBNT X2 (20KR)	6	72	37	0	3308	IJ	58 - 69	6	99	3
541	LBLE/L201//MBLE	6	72	38	0	3226	IJ	54 - 67	5	90	3
535	LBLE/L201//MBLE	6	69	40	0	3072	J	52 - 65	5	99	2
CV		7.8	7.8	3.1	-	6.8		3.5-1.5			

* Subjective rating 1 to 9, where 1 = excellent, 9 = poor.

** Numbers followed by the same letter are not significantly different at the 0.05 level.

[1] SB = sheath blight - 0-9 scale; RN = rotten neck blast - % infection; and SV = rotten neck blast - severity 0-9.

Table 37. Agronomic and milling performance and disease reactions of 1992 preliminary yield tests, Group XIII, very early long grains. Rice Research Station, Crowley, LA.

1992 entry	Pedigree	Seedling vigor*	Days to 50% heading	Plant height (in)	Lodging (%)	Yield (lb/A @ 12%)	Duncan's test**	Milling % (Whl-Tot)	SB[1]	RN[1]	SV[1]
570	LMNT/NWBT//TBNT	5	78	33	0	6299	A	49 - 67	6	75	2
555	V7817/L202	6	74	41	0	5571	B	46 - 64	2	85	2
558	2207//8002610/CICA 9	5	73	32	0	5372	BC	58 - 69	5	85	2
575	2031	4	73	36	5	5333	BCD	45 - 64	5	80	2
561	V7817//82CAY82/TBNT	6	78	31	0	5222	BCD	52 - 69	5	60	1
571	LMNT/NWBT//TBNT	5	76	35	0	5182	BCD	60 - 69	4	75	2
552	2207//8002610/CICA 9	5	72	42	0	5102	BCDE	53 - 67	5	99	2
569	TBNT//LMNT*2/CR1113	5	76	34	0	4916	CDEF	63 - 71	5	45	1
572	JKSN	5	73	36	0	4866	CDEF	53 - 67	4	99	2
573	NWBT/LMNT/3/V6DW/...	6	75	35	0	4822	CDEF	50 - 68	5	97	3
562	V7817//82CAY82/TBNT	6	76	32	0	4794	DEF	53 - 69	5	80	1
574	NWBT/LMNT//82CAY21	6	71	34	5	4625	EF	54 - 68	7	99	2
565	LBNT//9881/331581/...	5	79	46	80	4558	EFG	41 - 63	6	70	2
551	2207//LBNT/L201	6	74	42	0	4394	FG	55 - 67	3	55	1
563	V7817/Leah	5	76	42	10	4075	GH	45 - 65	3	50	2
554	9881/331581//L201/...	5	71	40	5	3865	HI	52 - 66	5	99	3
559	9881/331581//L201/...	5	73	36	0	3863	HI	34 - 62	5	95	3
553	9881/331581//L201/...	5	73	37	0	3842	HI	44 - 64	4	99	3
566	TTEP/5*LMNT//L202	5	66	39	0	3713	HIJ	53 - 66	4	97	2
567	TTEP/5*LMNT//L202	6	67	40	0	3657	IJK	49 - 64	2	99	2
557	2207//8002610/CICA 9	6	72	41	0	3510	IJK	53 - 66	3	85	3
564	Leah/GFMT	6	72	43	0	3455	IJK	51 - 65	3	99	2
560	9881/331581//L201/...	5	74	39	0	3246	JK	36 - 58	5	99	2
568	LMNT/AS3510	5	61	37	0	3223	JK	56 - 71	8	99	1
556	V7817/L202	6	74	42	0	3139	K	34 - 64	3	99	3
CV		8.2	1.1	2.9	-	5.3		4.8-1.0			

* Subjective rating 1 to 9, where 1 = excellent, 9 = poor.

** Numbers followed by the same letter are not significantly different at the 0.05 level.

[1] SB = sheath blight - 0-9 scale; RN = rotten neck blast - % infection; and SV = rotten neck blast - severity 0-9.

Table 38. Agronomic and milling performance and disease reactions of 1992 preliminary yield tests, Group XIV, very early medium grains. Rice Research Station, Crowley, LA.

1992 entry	Pedigree	Seedling vigor*	Days to 50% heading	Plant height (in)	Lodging (%)	Yield (lb/A @ 12%)	Duncan's test**	Milling % (Whl-Tot)	SB[1]	RN[1]	SV[1]
599	Rico	7	80	45	35	6870	A	54 - 66	3	30	2
581	MERC/Koshihikari//...	6	77	39	0	6745	AB	62 - 69	3	50	1
589	MERC//MERC/Namgho	5	75	39	45	6655	ABC	66 - 70	4	8	2
588	MERC//MERC/Namgho	5	76	38	60	6580	ABC	66 - 70	5	10	1
586	1711X2/Mars//MERC	5	74	42	60	6164	ABCD	66 - 70	3	5	1
594	MERC/AS3058	5	78	41	0	6149	ABCD	64 - 68	4	60	1
597	MERC?????/V4716	5	78	35	0	6140	ABCD	62 - 68	5	55	2
587	MERC/Rico 1	5	76	47	55	5907	BCDE	60 - 70	3	18	2
595	MERC/AS3058	5	74	43	5	5874	BCDE	69 - 74	4	40	1
600	BNGL	5	77	38	0	5842	BCDE	57 - 67	3	65	3
592	MERC//MERC/GCHW//...	5	75	39	0	5772	CDEF	61 - 68	3	75	2
590	V4916/Mars	5	75	47	95	5748	CDEF	65 - 68	4	20	1
593	MERC//MERC/GCHW//...	5	76	40	0	5746	CDEF	53 - 64	3	99	2
583	MERC//MERC/Koshihikari	5	72	41	10	5623	DEF	65 - 70	4	40	1
579	Radiated MERC/MERC	6	77	39	0	5555	DEF	55 - 65	4	93	2
598	Mars	4	79	45	30	5515	DEF	61 - 67	3	50	2
578	Radiated MERC/MERC	5	77	37	0	5435	DEF	57 - 66	5	80	2
591	MERC//MERC/GCHW//...	5	75	39	0	5354	DEF	63 - 68	4	80	2
577	Radiated MERC/MERC	6	77	37	0	5352	DEF	58 - 67	4	85	2
580	Radiated MERC/MERC	5	77	38	0	5331	DEF	60 - 67	5	85	2
585	MERC/1711X2	5	73	41	95	5150	EF	66 - 70	4	10	1
582	Radiated MERC/MERC	5	77	34	0	5077	EFG	57 - 65	6	88	2
596	MERC/AS3058	5	76	36	0	5003	EFG	67 - 73	3	45	1
576	Radiated MERC/MERC	6	76	38	5	4836	FG	54 - 64	4	97	3
584	MERC//M401/NTAI	6	70	39	0	4233	G	65 - 69	3	97	2
CV		9.0	0.6	2.6	-	6.8		2.7-2.0			

* Subjective rating 1 to 9, where 1 = excellent, 9 = poor.

** Numbers followed by the same letter are not significantly different at the 0.05 level.

[1] SB = sheath blight - 0-9 scale; RN = rotten neck blast - % infection; and SV = rotten neck blast - severity 0-9.

Table 39. Agronomic and milling performance and disease reactions of 1992 preliminary yield tests, Group XV, early long grains. Rice Research Station, Crowley, LA.

1992 entry	Pedigree	Seedling vigor*	Days to 50% heading	Plant height (in)	Lodging (%)	Yield (lb/A @ 12%)	Duncan's test**	Milling % (Whl-Tot)	SB[1]	RN[1]	SV[1]
620	82CAY21/LMNT//Katy	6	80	41	0	7246	A	52 - 66	5	40	2
619	82CAY21/LMNT//Katy	6	80	40	0	6989	AB	55 - 68	4	50	2
610	LMNT/3/82CAY21//...	7	85	35	0	6915	ABC	52 - 68	4	35	1
611	LMNT/3/BP87/9902//...	5	80	32	0	6773	ABCD	62 - 71	4	35	1
614	NWBT/LMNT//80Y50/...	5	75	35	0	6753	ABCD	54 - 67	4	90	1
606	82CAY21//LMNT/Leah	6	76	40	0	6623	ABCDE	49 - 66	4	85	2
625	CPRS	4	78	38	0	6590	ABCDEF	58 - 69	4	20	1
605	LMNT//80Y50/LBLE(...	6	81	39	0	6522	ABCDEFG	49 - 64	3	85	2
616	RXMT//80Y50/LBLE	8	79	36	0	6470	BCDEFGH	52 - 67	3	60	2
623	NWBT/LMNT//TBNT/3/...	6	79	34	0	6468	BCDEFGH	52 - 67	5	55	2
617	RXMT//80Y50/LBLE	8	80	36	0	6275	BCDEFGH	54 - 68	3	30	1
604	LMNT//80Y50/LBLE(...	6	80	38	5	6203	CDEFGHI	49 - 65	5	90	2
607	82CAY80/TBNT//LMNT	6	75	34	0	6150	DEFGHI	59 - 70	7	40	1
618	80Y50/LBLE//TBNT	6	76	38	0	6031	DEFGHI	54 - 66	5	35	2
609	LMNT/NWBT//82CAY21	6	77	36	0	5912	EFGHI	51 - 67	5	90	2
622	NWBT/LMNT//TBNT/3/...	7	81	34	0	5856	FGHI	52 - 67	5	60	2
621	NWBT/LMNT//TBNT/3/...	6	79	35	0	5836	GHI	54 - 68	4	88	1
612	LMNT/NWBT/3/BP87/...	6	81	36	0	5767	HIJ	48 - 64	5	93	2
613	NWBT//82CAY21/LMNT	6	80	35	0	5747	HIJ	55 - 70	4	55	2
601	82CAY21/LMNT/...	6	78	41	0	5515	IJ	56 - 67	3	99	2
624	LCSN	6	80	36	0	5098	JK	42 - 65	6	95	3
603	LMNT*2/CR1113//...	6	77	38	0	5088	JK	47 - 66	5	99	2
615	NWBT/LMNT/3/82CAY21	6	82	35	0	4721	KL	42 - 65	3	65	1
602	82CAY21/LMNT(...	7	79	40	0	4401	LM	49 - 64	3	99	3
608	GFMT//82CAY21/LMNT	7	78	35	0	4006	M	43 - 64	4	99	3
CV		8.6	0.9	2.8	-	5.1		6.6-1.5			

* Subjective rating 1 to 9, where 1 = excellent, 9 = poor.

** Numbers followed by the same letter are not significantly different at the 0.05 level.

[1] SB = sheath blight - 0-9 scale; RN = rotten neck blast - % infection; and SV = rotten neck blast - severity 0-9.

Table 40. Agronomic and milling performance and disease reactions of 1992 preliminary yield tests, Group XVI, early long grains. Rice Research Station, Crowley, LA.

1992 entry	Pedigree	Seedling vigor*	Days to 50% heading	Plant height (in)	Lodging (%)	Yield (lb/A @ 12%)	Duncan's test**	Milling % (Whl-Tot)	SB[1]	RN[1]	SV[1]
645	Katy/2207	5	81	36	0	7262	A	63 - 70	6	5	1
638	2201/Katy	5	81	49	10	7228	A	62 - 70	3	5	1
626	2207//LMNTX2/CR1113	5	77	38	0	7119	AB	59 - 68	4	20	1
644	Katy/2207	5	82	37	0	7070	ABC	65 - 72	4	10	1
628	2207//LMNTX2/CR1113	5	78	39	0	7037	ABCD	60 - 68	5	45	2
627	2207//LMNTX2/CR1113	5	76	39	0	6717	ABCDE	52 - 66	4	65	2
642	Katy/2207	4	80	47	25	6669	ABCDE	63 - 69	3	5	1
637	2201/Katy	5	78	44	80	6551	ABCDE	62 - 70	5	10	1
643	Katy/2207	5	80	43	25	6534	ABCDE	62 - 69	4	20	1
641	Katy/2207	5	79	48	85	6522	ABCDE	65 - 69	3	0	0
648	82CAY21/LMNT//Katy	5	79	38	0	6510	ABCDE	53 - 68	4	35	2
647	Katy/2207	5	81	46	25	6464	ABCDE	64 - 71	4	0	0
631	2207//LBNT/L201	6	77	37	0	6313	ABCDEF	60 - 68	6	70	2
636	2201/3/82CAY21//TTEP/...	5	76	38	0	6235	ABCDEF	52 - 66	6	80	2
633	LMNT*2/82CAY83//Leah	6	79	39	0	6151	BCDEFG	57 - 69	5	90	2
635	82CAY21/LMNT/3/NWBT	6	75	33	0	6058	CDEFG	51 - 68	4	75	2
639	2201/Katy	6	79	47	25	5983	DEFG	65 - 71	4	0	0
630	2207//LBNT/L201	5	76	42	0	5916	EFGH	59 - 67	4	23	2
646	Katy/2207	5	80	47	25	5896	EFGH	64 - 70	3	5	1
640	2201/Katy	5	78	43	40	5717	EFGH	57 - 67	3	15	1
634	82CAY21/LMNT/3/NWBT	5	76	34	0	5702	EFGH	43 - 65	5	85	2
629	2207//LBNT/L201	5	75	33	0	5395	FGH	60 - 69	3	35	1
650	LMNT	6	81	37	0	5132	GH	52 - 66	4	70	2
632	2207//LBNT/L201	5	72	42	5	4927	G	58 - 69	3	45	2
649	2146	6	82	43	0	3252	I	30 - 58	4	99	3
CV		12.8	0.9	4.3	-	7.0		5.4-2.0			

* Subjective rating 1 to 9, where 1 = excellent, 9 = poor.

** Numbers followed by the same letter are not significantly different at the 0.05 level.

[1] SB = sheath blight - 0-9 scale; RN = rotten neck blast - % infection; and SV = rotten neck blast - severity 0-9.

Table 41. Agronomic and milling performance and disease reactions of 1992 preliminary yield tests, Group XVII, early long grains. Rice Research Station, Crowley, LA.

1992 entry	Pedigree	Seedling vigor*	Days to 50% heading	Plant height (in)	Lodging (%)	Yield (lb/A @ 12%)	Duncan's test**	Milling % (Whl-Tot)	SB[1]	RN[1]	SV[1]
660	LMNT*2/CR1113//BP87	5	78	41	45	6794	A	55 - 70	3	50	2
662	2201//LMNT*2/82CAY83	4	77	33	5	6725	AB	62 - 71	7	75	2
674	Katy	4	80	44	40	6602	ABC	64 - 69	3	0	0
651	82CAY21/LMNT//Katy	5	79	37	5	6586	ABC	58 - 69	7	30	2
663	2201//LMNT*2/82CAY83	5	79	33	0	6536	ABCD	54 - 66	5	55	1
658	80Y50/LBLE//SLBL/...	5	83	34	0	6494	ABCD	53 - 69	3	20	1
654	82CAY21/LMNT//Katy	5	79	38	0	6349	ABCD	59 - 70	5	40	1
653	82CAY21/LMNT//Katy	5	79	38	5	6234	ABCDE	58 - 69	6	40	2
652	82CAY21/LMNT//Katy	6	79	39	0	6095	ABCDEF	57 - 69	4	55	2
665	2201/Katy	4	80	34	0	6064	ABCDEFG	68 - 73	4	0	0
673	V7817//82CAY82/TBNT	5	81	32	0	6054	ABCDEFG	56 - 68	5	65	2
667	Katy/2207	5	80	33	0	5983	BCDEFG	64 - 71	4	0	0
666	2201/Katy	5	79	33	0	5959	CDEFG	65 - 72	5	10	1
657	80Y50/LBLE//SLBL/...	5	79	35	0	5917	CDEFG	49 - 68	3	90	2
672	V7817//82CAY82/TBNT	5	80	33	0	5887	CDEFG	54 - 68	6	65	1
659	LMNT*2/CR1113//BP87	5	79	31	0	5809	DEFG	55 - 68	5	40	1
661	L201//TBNT/BLMT/3/...	5	76	37	0	5555	EFG	53 - 68	4	65	2
671	9881/331581//L201/...	7	80	37	0	5435	FG	57 - 68	4	70	2
664	2201//LMNT*2/82CAY83	5	79	32	0	5331	G	46 - 65	5	90	2
655	9881/331581//L201/...	5	76	36	0	4230	H	35 - 61	5	99	3
670	9881/331581//L201/...	6	76	37	0	4032	H	32 - 62	3	99	3
668	GFMT/Katy	6	78	36	0	3972	HI	42 - 63	4	99	3
669	9881/331581//L201/...	6	76	38	0	3749	HI	43 - 64	5	99	4
675	NWBT	5	83	43	0	3704	HI	37 - 62	3	99	4
656	V7817/L202	6	72	36	0	3298	I	44 - 62	3	99	3
CV		14.8	1.2	3.7	-	5.7		6.0-1.8			

* Subjective rating 1 to 9, where 1 = excellent, 9 = poor.

** Numbers followed by the same letter are not significantly different at the 0.05 level.

[1] SB = sheath blight - 0-9 scale; RN = rotten neck blast - % infection; and SV = rotten neck blast - severity 0-9.

Table 42. Agronomic and milling performance and disease reactions of 1992 preliminary yield tests, Group XVIII, early long grains. Rice Research Station, Crowley, LA.

1992 entry	Pedigree	Seedling vigor*	Days to 50% heading	Plant height (in)	Lodging (%)	Yield (lb/A @ 12%)	Duncan's test**	Milling % (Whl-Tot)	SB[1]	RN[1]	SV[1]
692	82CAY80/TBNT//LMNT	6	81	38	0	6642	A	59 - 70	5	55	2
698	82CAY21/LMNT//L202	6	77	38	0	6640	A	54 - 66	3	55	2
684	LMNT R2/L202	4	77	33	0	6618	A	62 - 71	6	15	1
686	LMNT R2/L202	5	76	32	0	6536	AB	61 - 70	7	15	1
687	LMNT/NWBT//TBNT	5	77	32	0	6511	AB	57 - 69	5	35	2
676	V7817//82CAY82/TBNT	6	79	33	0	6160	ABC	53 - 68	6	50	1
685	LMNT R2/L202	4	77	31	0	6082	ABCD	61 - 70	5	20	1
681	7702008*2/LBLE//2207	5	78	36	0	6047	BCD	52 - 64	4	60	2
693	82CAY80/TBNT//LMNT	5	74	38	0	5858	CD	51 - 67	3	99	3
678	2207/LMNT	5	80	35	0	5824	CD	59 - 68	3	30	1
682	LBNT//9881/331581/...	5	78	36	5	5818	CD	46 - 64	7	70	2
680	2207/LMNT	5	80	36	5	5765	CD	57 - 68	6	35	2
679	2207/LMNT	6	81	38	10	5672	CDE	53 - 66	5	55	2
691	82CAY80/TBNT//LMNT	5	77	35	0	5546	DE	58 - 70	7	90	2
690	82CAY80/TBNT//LMNT	7	78	33	0	5175	EF	66 - 72	5	35	2
689	2201/Katy	4	75	47	95	4999	FG	64 - 72	4	5	1
683	LBNT//9881/32158/..	5	77	29	0	4925	FGH	41 - 65	4	65	2
677	LMNT*2/8001190	5	80	34	0	4669	FGHI	49 - 66	4	99	2
699	LCSN	6	79	36	0	4471	GHI	49 - 66	3	95	2
688	82CAY21/LMNT//GFMT	5	75	37	5	4428	HI	50 - 67	5	90	3
695	V7713//80Y50/LBLE	6	73	33	0	4212	IJ	55 - 69	3	99	3
694	V7713//80Y50/LBLE	5	73	35	0	3895	JK	42 - 64	2	95	3
700	NWBT	4	83	45	0	3436	KL	27 - 58	3	99	4
697	V7713//80Y50/LBLE	5	72	34	0	3263	L	49 - 67	3	99	3
696	V7713//80Y50/LBLE	5	70	36	0	3029	L	58 - 68	5	99	4
CV		10.8	1.1	2.6	-	4.5		5.7-1.6			

* Subjective rating 1 to 9, where 1 = excellent, 9 = poor.

** Numbers followed by the same letter are not significantly different at the 0.05 level.

[1] SB = sheath blight - 0-9 scale; RN = rotten neck blast - % infection; and SV = rotten neck blast - severity 0-9.

Table 43. Agronomic and milling performance and disease reactions of 1992 preliminary yield tests, Group XIX, early long grains. Rice Research Station, Crowley, LA.

1992 entry	Pedigree	Seedling vigor*	Days to 50% heading	Plant height (in)	Lodging (%)	Yield (lb/A @ 12%)	Duncan's test**	Milling % (Whl-Tot)	SB[1]	RN[1]	SV[1]
725	Katy	4	80	44	10	6964	A	61 - 68	3	0	0
713	86-20001-5 X Lemont	6	80	40	0	6190	AB	49 - 64	3	10	1
718	86-20001-5 X Lemont	5	85	43	0	6119	AB	54 - 67	4	20	3
708	TXMT/3/LBNT//9881/...	4	78	32	0	6039	BC	52 - 66	4	30	1
711	Labelle X 86-20001...	6	80	39	0	6038	BC	50 - 62	3	0	0
702	82CAY21/LMNT//L202	5	76	38	0	5953	BCD	50 - 66	3	40	2
716	86-20001-5 X Lemont	6	79	40	0	5827	BCDE	56 - 67	3	0	0
701	82CAY21/LMNT//L202	5	77	37	0	5749	BCDEF	53 - 67	4	20	1
709	TXMT/3/LBNT//9881/...	5	79	32	0	5743	BCDEF	51 - 66	5	50	2
707	TXMT/3/LBNT//9881/...	5	80	32	0	5729	BCDEF	50 - 67	5	30	2
720	86-20001-5 X Lemont	5	80	40	0	5673	BCDEFG	60 - 68	3	5	1
715	86-20001-5 X Lemont	6	81	44	0	5483	BCDEFG	45 - 60	3	10	1
717	86-20001-5 X Lemont	6	84	40	0	5427	BCDEFGH	52 - 66	2	15	2
723	86-20001-5 X Lemont	7	81	43	0	5116	CDEFGHI	46 - 62	3	30	2
722	86-20001-5 X Lemont	5	82	41	0	5106	CDEFGHI	47 - 63	3	25	3
721	86-20001-5 X Lemont	6	85	38	0	5033	DEFGHI	51 - 63	3	28	3
712	Labelle X 86-20001-5	5	80	38	0	5017	DEFGHI	60 - 65	2	5	1
710	Labelle X 86-20001-5	6	75	37	0	4906	EFGHI	62 - 68	2	50	2
724	CPRS	5	78	36	0	4900	EFGHI	39 - 64	5	99	3
714	86-20001-5 X Lemont	6	81	41	0	4860	FGHIJ	48 - 63	3	10	1
706	TBNT/3/LMNT//82CAY21/...	6	80	37	0	4750	GHIJ	35 - 64	6	99	2
719	86-20001-5 X Lemont	7	85	40	0	4526	HIJK	54 - 67	3	25	3
703	LMNT/AS3510	5	69	37	0	4224	IJK	55 - 68	4	90	2
704	LMNT/NWBT//TBNT	5	74	33	0	3978	JK	46 - 66	4	99	3
705	TBNT/3/LMNT//82CAY21/...	5	81	37	0	3648	K	26 - 56	3	99	3
CV		8.4	0.9	3.5	-	7.4		6.6-2.4			

* Subjective rating 1 to 9, where 1 = excellent, 9 = poor.

** Numbers followed by the same letter are not significantly different at the 0.05 level.

[1] SB = sheath blight - 0-9 scale; RN = rotten neck blast - % infection; and SV = rotten neck blast - severity 0-9.

Table 44. Agronomic and milling performance and disease reactions of 1992 preliminary yield tests, Group XX, early long grains. Rice Research Station, Crowley, LA.

1992 entry	Pedigree	Seedling vigor*	Days to 50% heading	Plant height (in)	Lodging (%)	Yield (lb/A @ 12%)	Duncan's test**	Milling % (Whl-Tot)	SB[1]	RN[1]	SV[1]
731	Lemont X 86-20001-5	6	80	38	0	6732	A	54 - 66	3	0	0
741	LMNT/82CAY81	5	81	34	0	6592	AB	54 - 67	6	65	2
732	86-20001-5 X Lemont	5	80	40	0	6302	ABC	58 - 67	3	5	1
728	86-20001-5 X Lemont	6	84	38	0	6292	ABC	49 - 65	3	20	2
744	LMNT//NWBT/Leah	5	80	36	0	6275	ABCD	65 - 71	4	50	2
735	BLMT/7802192(851...)//...	5	78	35	0	6223	ABCDE	53 - 69	5	35	2
729	Lemont X 86-20001-5	6	83	44	0	5978	BCDEF	51 - 64	2	5	1
740	LMNT//BLMT/7802192	5	78	34	0	5950	BCDEFG	56 - 70	5	75	2
743	LMNT//NWBT/Leah	5	80	35	0	5906	CDEFG	56 - 67	5	50	2
739	LMNT/NWBT//80Y50/LBLE	5	75	32	0	5856	CDEFG	53 - 68	6	50	2
742	LMNT//NWBT/Leah	5	80	33	0	5778	CDEFGH	61 - 70	6	50	2
734	M101/LBLE*2/3/BP87	4	75	36	0	5772	CDEFGH	50 - 64	3	80	3
733	M101/LBLE*2//80Y50	4	78	33	0	5758	CDEFGH	61 - 69	6	20	2
727	86-20001-5 X Lemont	5	80	41	0	5748	CDEFGH	55 - 67	3	70	3
736	BLMT/7802192(851...)//...	6	80	34	0	5733	CDEFGH	48 - 67	6	80	2
730	Lemont X 86-20001-5	6	85	44	0	5679	CDEFGH	44 - 61	1	0	0
747	80Y50/LBLE//LMNT	5	80	32	0	5595	DEFGHI	52 - 67	6	90	3
737	82CAY21/LMNT(851...)//...	5	77	32	0	5571	EFGHI	49 - 66	5	85	2
726	86-20001-5 X Lemont	6	81	41	0	5550	EFGHI	52 - 63	3	45	2
745	Leah/SKBT//TTEP/5*LMNT	5	77	36	5	5351	FGHI	38 - 65	6	95	2
746	80Y50/LBLE//LMNT	6	81	32	0	5290	GHI	51 - 67	6	90	2
738	LMNT//NWBT/LMNT	5	80	34	0	5172	HI	53 - 67	6	93	2
748	80Y50/LBLE//LMNT	6	80	34	0	4944	I	47 - 65	4	99	2
750	NWBT	4	84	43	0	3831	J	24 - 54	3	99	4
749	2146	5	82	45	0	3434	J	33 - 60	5	99	4
CV		6.4	0.7	3.2	-	5.0		4.5-1.5			

* Subjective rating 1 to 9, where 1 = excellent, 9 = poor.

** Numbers followed by the same letter are not significantly different at the 0.05 level.

[1] SB = sheath blight - 0-9 scale; RN = rotten neck blast - % infection; and SV = rotten neck blast - severity 0-9.

Table 45. Agronomic and milling performance and disease reactions of 1992 preliminary yield tests, Group XXI, early long and medium grains. Rice Research Station, Crowley, LA.

1992 entry	Pedigree	Seedling vigor*	Days to 50% heading	Plant height (in)	Lodging (%)	Yield (lb/A @ 12%)	Duncan's test**	Milling % (Whl-Tot)	SB[1]	RN[1]	SV[1]
775	ORIN	5	78	41	0	7241	A	67 - 70	3	10	1
766	90 2207 X2 (25KR)	5	78	38	0	7182	A	63 - 70	6	40	2
773	MERC//MERC/Koshihikari	6	74	37	0	6783	AB	66 - 70	4	20	1
765	90 2207 X2 (25KR)	6	79	38	0	6661	AB	61 - 69	5	60	2
756		6	76	42	0	6473	BC	62 - 68	4	15	1
755		4	76	42	0	6390	BCD	61 - 66	2	0	0
767	90 2207 X2 (25KR)	5	78	38	0	6389	BCD	65 - 70	5	40	1
751	82CAY21/8001190/LMNT	5	76	36	0	6196	BCDE	55 - 69	5	45	2
771	Radiated MERC/MERC	5	78	34	0	6161	BCDE	69 - 72	5	55	2
757		5	81	40	0	6140	BCDE	58 - 67	2	0	0
759		5	80	40	0	5892	CDEF	54 - 69	2	0	0
770	Radiated MERC/MERC	5	77	34	0	5817	CDEFG	69 - 72	5	30	2
752	82CAY21/LMNT/80Y50	4	76	35	0	5785	CDEFGH	40 - 66	4	85	2
754		5	81	39	0	5746	DEFGHI	57 - 65	2	0	0
764	M101/LBLE*2//80Y50	4	80	33	0	5648	EFGHI	64 - 70	6	30	2
769	Radiated MERC/MERC	6	75	35	0	5615	EFGHI	66 - 70	3	60	2
761		5	76	40	0	5530	EFGHIJ	57 - 66	4	10	1
760		5	82	37	0	5353	FGHIJK	56 - 63	2	0	0
758		7	79	34	0	5164	GHIJK	62 - 71	2	5	1
772	SMARS/Mars//Mars/3	5	76	38	0	5098	HIJK	57 - 66	4	99	3
762		5	80	38	0	5051	IJK	59 - 66	3	0	0
774	LCSN	6	79	35	0	4869	JKL	38 - 65	6	99	3
763		5	74	36	0	4825	KL	62 - 68	2	15	2
753	L202//LMNT*2/CR1113	5	70	34	0	4657	KL	52 - 68	4	99	3
768	9881/331581//L201/...	6	76	38	0	4349	L	41 - 64	4	99	3
CV		9.5	1.1	2.8	-	5.1		3.8-1.7			

* Subjective rating 1 to 9, where 1 = excellent, 9 = poor.

** Numbers followed by the same letter are not significantly different at the 0.05 level.

[1] SB = sheath blight - 0-9 scale; RN = rotten neck blast - % infection; and SV = rotten neck blast - severity 0-9.

Table 46. Agronomic and milling performance and disease reactions of 1992 preliminary yield tests, Group XXII, early medium grains. Rice Research Station, Crowley, LA.

1992 entry	Pedigree	Seedling vigor*	Days to 50% heading	Plant height (in)	Lodging (%)	Yield (lb/A @ 12%)	Duncan's test**	Milling % (Whl-Tot)	SB[1]	RN[1]	SV[1]
791	SMARS/Mars//PCOS	5	74	38	20	7357		66 - 69	7	10	1
790	SMARS/Mars//PCOS	5	74	37	10	7109		67 - 70	5	15	1
795	MERC/CAM9/Mars	6	77	41	40	6874		69 - 71	6	0	0
777	MERC//MERC/Koshihikari	5	73	39	0	6792		69 - 72	4	10	1
782	MERC/Nanghu//MERC	6	74	36	15	6558		70 - 74	5	10	1
785	MERC/PCOS//MERC	5	74	43	45	6420		67 - 71	3	5	1
794	MERC/CAM9/Mars	5	77	39	5	6380		68 - 71	6	25	2
799	BNGL	4	76	38	0	6307		62 - 68	4	95	3
778	MERC//M401/NTAI	5	70	39	80	6200		65 - 70	4	15	1
781	MERC/Koshihikari	5	76	37	0	6189		65 - 69	4	90	2
800	ORIN	4	78	42	10	6040		68 - 70	4	5	1
776	MERC//MERC/Koshihikari	5	73	39	0	6023		70 - 71	4	5	1
784	MERC/Nanghu//MERC	6	77	37	0	5574		63 - 69	4	90	2
783	MERC/Nanghu//MERC	7	74	37	0	5510		69 - 73	5	10	1
780	MERC/CB848	5	77	34	0	5431		64 - 67	5	90	2
789	SMARS/Mars//PCOS	6	75	34	0	5189		69 - 70	3	10	1
787	SMARS/Mars//Mars/325893	5	75	37	0	5185		58 - 66	4	99	3
786	MERC/PCOS//MERC	5	76	34	0	5103		65 - 70	4	35	2
792	SMARS/Mars//PCOS	5	73	36	0	5072		68 - 70	4	15	1
793	MERC/CAM9/Mars	5	75	40	0	5061		60 - 66	3	70	1
779	MERC/Mars*2/L110/...	5	76	36	0	5004		58 - 66	4	99	2
788	SMARS/Mars//Mars/325893	6	76	38	0	4683		62 - 67	3	99	3
798	MERC/Chao Lang #1	6	73	45	15	4086		72 - 75	3	5	1
796	MERC/Chao Lang #1	6	75	34	0	3590		70 - 72	3	0	0
797	MERC/Chao Lang #1	6	75	32	0	3247		71 - 73	3	0	0
CV		6.5	0.7	2.5	-	10.0		1.9-1.2			

* Subjective rating 1 to 9, where 1 = excellent, 9 = poor.

** Numbers followed by the same letter are not significantly different at the 0.05 level.

[1] SB = sheath blight - 0-9 scale; RN = rotten neck blast - % infection; and SV = rotten neck blast - severity 0-9.

Table 47. Agronomic and milling performance and disease reactions of 1992 preliminary yield tests, Group XXIII, early medium grains. Rice Research Station, Crowley, LA.

1992 entry	Pedigree	Seedling vigor*	Days to 50% heading	Plant height (in)	Lodging (%)	Yield (lb/A @ 12%)	Duncan's test**	Milling % (Whl-Tot)	SB[1]	RN[1]	SV[1]
824	Rico	5	81	43	10	7331	A	63 - 71	4	10	2
818	MERC//MERC/Nanghu(...	5	76	38	5	6598	AB	64 - 71	4	10	1
806	MERC/Rico 1	6	79	38	0	6471	ABC	64 - 71	4	0	0
822	90 Rico X2 (25KR)	5	81	42	0	6402	ABCD	62 - 70	2	25	3
803	MERC/Rico 1	6	78	36	0	6368	ABCDE	64 - 70	4	15	1
809	NWBT/BLMT//Mars/S201	5	73	35	0	6218	ABCDEF	64 - 68	5	35	2
808	MERC/PCOS	5	74	37	0	6210	ABCDEF	68 - 71	4	5	1
819	MERC/Guichow	5	87	40	0	6161	ABCDEF	58 - 67	4	35	3
804	MERC/Rico 1	6	80	36	0	6154	ABCDEF	60 - 66	3	0	0
825	BNGL	4	77	37	0	5987	BCDEF	62 - 69	4	70	2
805	MERC/Rico 1	5	80	34	0	5940	BCDEF	60 - 65	4	15	2
823	90 Rico X2 (20KR)	6	74	34	0	5494	BCDEFG	66 - 71	3	15	1
810	LMNT/MERC/4/MERC/3/...	5	76	34	0	5420	BCDEFG	68 - 71	4	15	1
807	MERC/PCOS	6	74	38	0	5330	BCDEFG	67 - 72	4	10	1
820	MERC/Guichow	4	77	38	0	5226	CDEFG	66 - 70	5	15	2
811	LMNT/MERC/4/MERC/3/...	5	78	35	0	5221	CDEFG	68 - 71	4	30	1
813	NWBT/BLMT//Mars/S201	5	76	37	0	5100	DEFG	66 - 69	4	45	2
816	MERC/Akihikari	6	74	39	0	5034	EFG	69 - 72	3	10	2
815	MERC/NTAI/NDVF//M401	5	76	37	0	4981	FG	63 - 68	5	35	2
812	NWBT/BLMT//Mars/S201	6	75	35	0	4909	FG	63 - 69	3	10	1
817	MERC/Akihikari	6	75	39	0	4905	FG	69 - 73	4	10	1
821	MERC/V4716	6	77	36	0	4899	FG	69 - 73	6	30	2
801	MERC/Chao Lang #1	6	70	40	10	4344	G	71 - 73	2	5	1
814	MERCX2/MERC (BP)	5	76	37	0	4274	G	67 - 71	4	10	1
802	MERC/Hunan E Dwarf	7	69	36	0	2266	H	69 - 72	2	10	1
CV		11.1	0.7	3.5	-	10.0		2.8-3.3			

* Subjective rating 1 to 9, where 1 = excellent, 9 = poor.

** Numbers followed by the same letter are not significantly different at the 0.05 level.

[1] SB = sheath blight - 0-9 scale; RN = rotten neck blast - % infection; and SV = rotten neck blast - severity 0-9.

Table 48. Agronomic and milling performance and disease reactions of 1992 preliminary yield tests, Group XXIV, early medium grains. Rice Research Station, Crowley, LA.

1992 entry	Pedigree	Seedling vigor*	Days to 50% heading	Plant height (in)	Lodging (%)	Yield (lb/A @ 12%)	Duncan's test**	Milling % (Whl-Tot)	SB[1]	RN[1]	SV[1]
839	Rico 1/MERC	6	76	44	5	7823	A	66 - 69	3	10	1
841	Rico 1/MERC	6	85	40	0	7129	AB	65 - 69	3	10	1
838	Rice X Grass Bulke	7	89	50	0	7111	AB	66 - 72	1	10	3
840	Rico 1/MERC	7	78	44	10	6743	BC	65 - 69	3	10	2
826	90 Rico X2 (20KR)	6	75	39	0	6572	BCD	59 - 68	3	45	2
843	MERC/3/NTAI/NVDF//...	6	77	38	0	6351	BCD	65 - 70	7	10	1
845	MERC//CAM9/Mars	6	79	36	0	6346	BCD	68 - 71	4	10	1
833	MERC//MERC/GCHW//...	5	79	39	0	6210	BCDE	63 - 68	3	75	2
844	MERC//LMNT/MERC	6	80	40	0	6122	CDE	68 - 71	4	10	1
829	V4916/MARS	6	76	44	15	6095	CDE	66 - 69	5	25	2
827	90 Rico X2 (20KR)	6	81	42	0	6059	CDE	48 - 65	4	40	2
832	MarsX2/V4716	5	78	41	0	5913	CDE	65 - 70	6	40	2
846	MERC//BRAZ/T487/...	5	84	39	0	5764	DEF	62 - 67	4	60	2
830	Radiated MERC/MERC	6	81	37	0	5674	EF	68 - 70	4	20	1
848	MERC//M401/NTAI/...	5	76	41	0	5312	EFG	64 - 69	4	85	2
834	MERC//MERC/GCHW//...	5	81	37	0	5274	EFG	63 - 69	4	55	2
837	MERC????/V4716	5	82	35	0	4835	FGH	61 - 65	4	85	2
842	MERC/CAM9/Mars	6	73	38	0	4806	FGH	62 - 68	3	55	2
849	MERC//M401/NTAI/...	5	70	37	0	4681	GH	62 - 67	4	99	3
835	MERC/Akihikari	5	77	38	0	4610	GH	55 - 64	4	95	3
831	MarsX2/V4716	5	77	45	80	4406	GH	61 - 68	4	20	2
847	MERC//M401/NTAI/...	6	69	38	0	4326	H	61 - 67	4	99	3
836	MERC/Akihikari	5	77	38	0	4209	H	55 - 65	4	99	3
828	V4916/Mars	5	76	41	90	4204	H	63 - 68	4	10	1
850	MERC//M401/NTAI/...	5	68	35	0	3249	I	61 - 67	6	99	4
CV		8.3	0.9	3.6	-	7.1		3.3-1.9			

* Subjective rating 1 to 9, where 1 = excellent, 9 = poor.

** Numbers followed by the same letter are not significantly different at the 0.05 level.

[1] SB = sheath blight - 0-9 scale; RN = rotten neck blast - % infection; and SV = rotten neck blast - severity 0-9.

Table 49. Agronomic and milling performance and disease reactions of 1992 preliminary yield tests, Group XXV, early special purpose. Rice Research Station, Crowley, LA.

1992 entry	Pedigree	Seedling vigor*	Days to 50% heading	Plant height (in)	Lodging (%)	Yield (lb/A @ 12%)	Duncan's test**	Milling % (Whl-Tot)	SB[1]	RN[1]	SV[1]
873	JSMN	6	92	44	85	7520	A	61 - 68	2	0	0
859	90 JSMN X2	5	71	45	80	6655	AB	61 - 67	6	5	1
864	A301/JSMN	6	84	43	5	6626	AB	43 - 67	3	25	2
875	CPRS	5	79	39	0	6476	ABC	60 - 68	5	30	2
865	JSMN/3/92CAY21//LMNT	7	79	38	10	6195	BCD	54 - 66	4	25	2
852	TRO2/85Y44	5	77	40	0	5985	BCDE	54 - 67	3	80	2
860	90 JSMN X2	5	70	46	65	5967	BCDE	58 - 65	4	10	1
866	JSMN/3/92CAY21//LMNT	6	80	44	85	5746	BCDEF	62 - 68	3	5	1
874	TOR2	6	82	41	0	5593	BCDEF	57 - 68	4	30	2
863	DMSI//LMNT/NWBT/3/...	6	78	52	55	5365	CDEF	61 - 70	5	5	1
851	TRO2/85Y44	6	78	41	0	5350	CDEF	49 - 64	4	50	2
869	LBNTX2/3/82CAY21//...	6	89	36	0	5223	DEFG	53 - 66	5	30	2
871	LBNTX2/3/82CAY21//...	7	89	36	0	5201	DEFG	60 - 66	4	25	2
870	DMSI//LMNT/NWBT/3/...	5	78	54	80	5151	DEFG	61 - 72	4	10	1
857	MERC/DLLA//MERC	5	78	40	0	5098	DEFG	56 - 66	4	99	3
854	DMSI/DLLAX2//A301	6	83	37	0	5040	DEFGH	46 - 67	6	25	2
855	LMNT/DLLA	6	81	38	0	5034	DEFGH	53 - 67	4	40	2
872	LBNTX2/3/82CAY21//...	7	89	36	0	4974	EFGH	63 - 67	5	20	2
858	MERC/DLLA//MERC	6	77	41	0	4940	EFGH	57 - 66	4	99	2
856	MERC/DLLA//MERC	5	78	40	0	4688	FGH	52 - 64	4	99	3
861	LBNT/3/82CAY21//LMNT	7	88	36	0	4564	FGH	60 - 66	4	20	2
868	DMSI/DLLAX2//A301	7	81	42	20	4060	GHI	49 - 69	3	25	2
853	DMSI/DLLAX2//A301	7	78	37	0	3868	HI	47 - 69	3	70	2
867	MERC/DLLA//MERC	6	81	46	5	3394	I	55 - 64	3	80	2
862	DMSI//LMNT/NWBT/3/...	8	75	45	20	2965	I	50 - 69	3	5	1
CV		8.4	1.5	3.8	-	9.5		3.9-1.7			

* Subjective rating 1 to 9, where 1 = excellent, 9 = poor.

** Numbers followed by the same letter are not significantly different at the 0.05 level.

[1] SB = sheath blight - 0-9 scale; RN = rotten neck blast - % infection; and SV = rotten neck blast - severity 0-9.

Table 50. Agronomic and milling performance and disease reactions of 1992 preliminary yield tests, Group XXVI, early special purpose. Rice Research Station, Crowley, LA.

1992 entry	Pedigree	Seedling vigor*	Days to 50% heading	Plant height (in)	Lodging (%)	Yield (lb/A @ 12%)	Duncan's test**	Milling % (Whl-Tot)	SB[1]	RN[1]	SV[1]
886	24D Bulked F4 - RE	5	93	42	0	7729	A	60 - 67	2	0	0
888	22D-12 Panicle Row	6	90	42	70	6767	AB	66 - 71	2	0	0
879	SKBT/Toro 2	5	87	38	0	6240	BC	58 - 66	4	35	3
884	20D Bulked F4 - RE	5	87	55	65	6203	BC	58 - 68	2	10	3
887	24D Bulked F4 - RE	6	88	39	0	5988	BCD	59 - 71	2	10	3
883	20D Bulked F4 - RE	5	88	51	0	5693	BCDE	62 - 67	2	5	2
894	A301/JSMN	6	84	43	40	5672	BCDE	53 - 68	3	10	2
885	20D Bulked F4 - RE	5	88	52	0	5654	BCDE	45 - 62	2	20	3
881	Leah/DLLA	5	86	46	45	5348	CDEF	56 - 68	3	20	2
882	Leah/DLLA	6	84	46	0	5333	CDEF	50 - 68	3	60	2
877	A301/JSMN	6	81	40	5	5287	CDEF	56 - 67	3	25	2
893	A301/JSMN	6	84	47	65	5206	CDEF	58 - 69	2	30	3
900	DLMT	6	81	37	0	4966	DEF	40 - 63	4	99	3
898	LMNT/DLLA	6	77	39	0	4854	DEFG	51 - 66	5	95	3
890	DMSI//LMNT/NWBT	6	77	46	60	4851	DEFG	63 - 69	5	25	2
896	82CAY21/LMNT//DLLA	6	78	44	0	4687	EFG	53 - 66	4	80	3
897	LMNT/DLLA	6	76	39	0	4631	EFG	44 - 66	6	95	3
899	LMNT/DLLA	6	76	37	0	4614	EFG	43 - 66	7	99	2
895	A301/JSMN	6	84	46	45	4595	EFG	56 - 69	3	10	2
891	DMSI/DLLAX2//LMNT/DLLA	6	78	42	90	4573	EFG	54 - 66	3	30	2
878	SKBT/Toro 2	7	79	36	0	4288	FGH	56 - 67	3	45	2
889	DMSI//LMNT/NWBT	6	77	44	60	4231	FGH	63 - 69	3	0	0
892	DMSI/DLLAX2//LMNT/DLLA	6	81	45	40	4208	FGH	46 - 68	3	35	3
880	MERC/DLLA	6	81	37	0	3793	GH	45 - 61	5	99	3
876	DMSI/DLLAX2//LMNT/...	7	80	44	0	3273	H	47 - 67	3	40	2
CV		7.5	0.8	3.2	-	9.4		5.5-1.5			

* Subjective rating 1 to 9, where 1 = excellent, 9 = poor.

** Numbers followed by the same letter are not significantly different at the 0.05 level.

[1] SB = sheath blight - 0-9 scale; RN = rotten neck blast - % infection; and SV = rotten neck blast - severity 0-9.

Experiment: Preliminary Yield Test - Entries 901-1000

Location: Rice Research Station

Seeding Rate/Date: 100 lb/A, June 16, 1992

Planting Method: Drill-seeded

Fertilization: 21-63-63 (lb/A N-P_2O_5-K_2O) preplant incorporated, June 16; 70 lb N/A, July 1; 21 lb N/A, July 27

Plot Size: 4.66 x 16 ft (74.5 ft^2)

Water Management: Flush, June 18; flood, July 1; drain, Sept 18

Herbicides: Stam (propanil) 3 lb ai/A, July 1

Harvest: Oct 3

Experimental Design: Randomized complete block with two replications

Comments: Rotten neck blast pressure was severe while sheath blight was light.

Results: Tables 51 - 54.

Table 51. Agronomic and milling performance and disease reactions of 1992 preliminary yield tests, Group XXIV, Puerto Rico entries. Rice Research Station, Crowley, LA.

1992 entry	Pedigree	Grain type*	Seedling vigor**	Days to 50% heading	Plant height (in)	Lodging (%)	Yield (lb/A @ 12%)	Duncan's test***	Milling % (Whl-Tot)	RN[1]	SV[1]
917	82CAY21/LMNT(87...)//...	L	6	75	33	0	5632	A	59 - 67	10	2
920	82CAY21/LMNT(87...)//...	L	6	77	39	0	5596	AB	60 - 68	20	2
910	SKBT//82CAY21/TBNT	L	7	74	30	0	5364	ABC	58 - 67	15	2
924	CPRS	L	4	76	38	0	5319	ABCD	57 - 65	35	2
918	82CAY21/LMNT(87...)//...	L	6	74	37	0	5303	ABCD	50 - 65	30	2
901	LMNT//LMNT*2/CR1113	L	6	77	36	0	5172	ABCDE	50 - 62	48	2
908	SKBT//82CAY21/TBNT	L	5	76	37	0	5153	ABCDE	58 - 65	25	2
904	82CAY21//TBNT//...	L	6	73	33	0	5135	ABCDE	52 - 64	43	2
922	82CAY21/LMNT(87...)//...	L	6	73	35	0	5093	ABCDE	57 - 66	20	2
919	82CAY21/LMNT(87...)//...	L	7	75	36	0	5069	ABCDE	52 - 66	23	1
925	2031	L	5	71	34	0	5006	ABCDEF	48 - 63	60	3
902	LMNT//82CAY21/TBNT	L	6	76	36	0	4916	ABCDEFG	51 - 62	20	2
921	82CAY21/LMNT(87022	L	6	74	35	0	4882	ABCDEFG	54 - 66	20	2
909	SKBT//82CAY21/TBNT	L	6	69	31	0	4827	ABCDEFG	58 - 68	30	2
905	82CAY21/TBNT/3/...	L	6	74	34	0	4736	BCDEFGH	47 - 63	75	2
903	TBNT//NWBT/LMNT	L	5	73	44	0	4606	CDEFGHI	55 - 66	58	3
923	MILL	L	4	70	35	0	4569	CDEFGHI	54 - 66	60	3
913	MERC/Koshihikari/...	M	7	72	35	0	4455	DEFGHI	57 - 69	30	2
907	LMNT*2/CR1113//L202	L	5	71	36	0	4311	EFGHI	48 - 63	55	3
906	LMNT*2/CR1113//L202	L	6	71	32	0	4159	FGHI	51 - 64	60	2
911	SKBT//82CAY21/TBNT	L	7	72	30	0	4084	GHI	50 - 64	65	3
914	Radiated MERC/MERC	M	6	71	32	0	3951	HI	53 - 63	60	2
912	Radiated MERC/MERC	M	6	73	34	0	3872	I	52 - 62	65	3
915	82CAY21/LMNT(87...)//...	L	6	78	38	0	3867	I	47 - 61	55	3
916	82CAY21/LMNT(87...)//...	L	5	78	39	0	3857	I	46 - 60	75	2
CV			11.7	1.7	3.7	-	7.5		5.5-2.2		

* L = long grain, M = medium grain.

** Subjective rating 1 to 9, where 1 = excellent, 9 = poor.

*** Numbers followed by the same letter are not significantly different at the 0.05 level.

[1] RN = rotten neck blast - % infection, SV = rotten neck blast - severity 0-9.

Table 52. Agronomic and milling performance and disease reactions of 1992 preliminary yield tests, Group XXV, Puerto Rico entries. Rice Research Station, Crowley, LA.

1992 entry	Pedigree	Grain type*	Seedling vigor**	Days to 50% heading	Plant height (in)	Lodging (%)	Yield (lb/A @ 12%)	Duncan's test***	Milling % (Whl-Tot)	RN[1]	SV[1]
944	Katy/2207	L	5	76	34	0	5759	A	64 - 71	10	1
946	Mars/M201//Mars/3/...	M	6	70	35	0	5593	AB	62 - 68	10	2
926	82CAY21/LMNT(...	L	6	75	37	0	5117	ABC	54 - 64	30	2
942	2207//LBNT/L201	L	5	75	27	0	5086	ABCD	57 - 66	20	2
941	2207//LBNT/L201	L	6	71	29	0	4935	BCDE	56 - 66	45	2
940	2207//LMNTX2/CR1113	L	6	73	35	0	4894	BCDEF	52 - 63	45	3
934	NWBT/LMNT//80Y50/LBLE	L	5	74	33	0	4871	BCDEF	53 - 65	40	2
939	2201//LMNTX2/CR1113	L	5	73	38	0	4818	CDEF	43 - 58	40	3
935	NWBT/LMNT//80Y50/...	L	6	75	33	0	4754	CDEF	52 - 65	35	2
931	SMARS/Mars//PCOS	M	6	69	31	0	4745	CDEF	64 - 67	35	2
937	2207//LMNTX2/CR1113	L	4	71	35	0	4625	CDEFG	51 - 63	55	2
930	SMARS/Mars//PCOS	M	6	71	32	0	4582	CDEFG	69 - 72	10	1
938	2207//LMNTX2/CR1113	L	5	74	37	0	4544	CDEFG	48 - 61	35	2
943	Katy/2207	L	6	78	40	0	4477	CDEFGH	50 - 62	35	2
932	82CAY21/TBNT//LMNT	L	6	71	30	0	4467	CDEFGH	51 - 67	45	3
945	Mars/M201//Mars/3/...	M	7	74	32	0	4329	DEFGH	64 - 70	35	2
929	MERC/CB848	M	7	73	32	0	4304	DEFGH	63 - 68	20	2
947	Mars/M201//Mars/3/...	M	5	71	41	0	4208	EFGH	55 - 69	15	2
933	M101/LBLE*2//80Y50	L	6	68	29	0	4115	FGH	48 - 63	80	3
948	BNGL	M	5	75	36	0	3956	GHI	53 - 62	40	3
949	Mars	M	4	75	44	0	3724	HIJ	55 - 63	60	3
950	LCSN	L	7	78	35	0	3722	HIJ	38 - 59	45	3
927	MERC//MERC/Koshihikari	M	5	67	36	0	3267	IJ	59 - 65	80	4
928	MERC//MERC/Koshihikari	M	5	68	36	0	3210	J	61 - 65	80	4
936	LBLE/L201//MBLE	L	5	65	33	0	2434	K	51 - 62	90	5
CV			9.9	1.4	3.4	-	7.3		4.1-2.0		

* L = long grain, M = medium grain.

** Subjective rating 1 to 9, where 1 = excellent, 9 = poor.

*** Numbers followed by the same letter are not significantly different at the 0.05 level.

[1] RN = rotten neck blast - % infection, SV = rotten neck blast - severity 0-9.

Table 53. Agronomic and milling performance and disease reactions of 1992 preliminary yield tests, Group XXVI, Puerto Rico entries. Rice Research Station, Crowley, LA.

1992 entry	Pedigree	Grain type*	Seedling vigor**	Days to 50% heading	Plant height (in)	Lodging (%)	Yield (lb/A @ 12%)	Duncan's test***	Milling % (Whl-Tot)	RN[1]	SV[1]
960	V7817/L202	L	5	78	37	0	5499	A	50 - 61	25	2
954	V4716/Rico 1	M	6	75	38	0	5395	AB	54 - 67	15	2
963	2201/GCHW	L	5	79	36	0	5381	AB	59 - 68	10	2
959	V7817/L202	L	5	74	36	0	5352	AB	55 - 65	25	2
958	V7817/L202	L	5	75	36	0	5224	ABC	53 - 63	45	2
965	82CAY80/TBNT//LMNT	L	5	75	31	0	5182	ABCD	58 - 68	30	2
964	2201/GCHW	L	6	79	36	0	5117	ABCD	60 - 67	15	1
971	82CAY21/LMNT//L202	L	6	74	35	0	5064	ABCDE	52 - 64	25	2
957	V7817/L202	L	6	75	36	0	4939	ABCDEF	53 - 62	30	3
952	V4716/Rico 1	M	5	77	40	0	4891	ABCDEF	54 - 64	10	1
968	82CAY21/LMNT//L202	L	5	73	36	0	4875	ABCDEF	52 - 63	50	2
956	V4716/Rico 1	L	6	75	38	0	4865	ABCDEF	52 - 65	35	3
967	82CAY21/LMNT//L202	L	4	74	35	0	4836	ABCDEF	50 - 63	45	3
953	V4716/Rico 1	M	5	77	40	0	4810	ABCDEF	54 - 65	20	2
973	TXMT/3/LBNT//9881/...	L	7	80	33	0	4790	ABCDEF	47 - 61	15	1
970	82CAY21/LMNT//L202	L	5	74	37	0	4787	ABCDEF	48 - 60	60	2
951	V4716/Rico 1	M	5	77	41	0	4684	ABCDEF	52 - 63	10	2
969	82CAY21/LMNT//L202	L	5	76	37	0	4614	ABCDEF	50 - 62	30	3
974	MBLE	L	5	66	33	0	4496	BCDEF	55 - 64	75	3
961	V7817/L202	L	5	68	36	0	4440	CDEFG	54 - 65	80	3
972	NWBT/LMNT//82CAY21	L	6	77	34	0	4389	CDEFG	48 - 64	40	2
962	V7817/L202	L	4	68	36	0	4294	DEFG	55 - 66	85	4
955	V4716/Rico 1	L	5	75	37	0	4179	EFG	48 - 64	50	3
966	V7713//80Y50/LBLE	L	6	69	32	0	4091	FG	52 - 64	60	3
975	2146	L	6	77	41	0	3616	G	32 - 53	60	3
CV			10.2	0.9	3.1	-	7.7		3.3-2.5		

* L = long grain, M = medium grain.

** Subjective rating 1 to 9, where 1 = excellent, 9 = poor.

*** Numbers followed by the same letter are not significantly different at the 0.05 level.

[1] RN = rotten neck blast - % infection, SV = rotten neck blast - severity 0-9.

Table 54. Agronomic and milling performance and disease reactions of 1992 preliminary yield tests, Group XXVII, Puerto Rico special purpose entries. Rice Research Station, Crowley, LA.

1992 entry	Pedigree	Grain type*	Seedling vigor**	Days to 50% heading	Plant height (in)	Lodging (%)	Yield (lb/A @ 12%)	Duncan's test***	Milling % (Whl-Tot)	RN[1]	SV[1]
992	A301/JSMN	L	7	79	38	0	5601	A	51 - 64	10	2
998	A301/JSMN	L	7	80	38	0	5485	AB	48 - 65	15	1
996	A301/JSMN	L	7	84	41	0	5485	AB	36 - 65	5	1
993	A301/JSMN	L	7	77	36	0	5309	ABC	57 - 70	15	2
997	A301/JSMN	L	7	80	39	0	5197	ABCD	54 - 67	10	2
999	JSMN	L	4	88	43	0	5116	ABCD	51 - 65	0	0
995	A301/JSMN	L	7	79	43	25	5062	ABCDE	50 - 69	10	2
994	A301/JSMN	L	6	76	36	0	5037	ABCDEF	52 - 71	15	1
981	JSMN/3/92CAY21//LM...	L	6	84	35	0	4654	BCDEFG	58 - 68	8	1
980	A301/JSMN	L	6	77	37	0	4627	BCDEFG	50 - 65	15	2
982	JSMN/3/92CAY21//LM...	L	8	80	36	0	4584	CDEFG	59 - 65	10	1
987	DMSI//LMNT/NWBT	L	7	77	40	10	4519	CDEFG	46 - 67	8	1
978	LBNTX2/3/82CAY21//...	L	7	86	33	0	4502	CDEFGH	53 - 64	10	3
990	DMSI/DLLAX2//...	L	6	74	38	0	4497	CDEFGH	49 - 69	15	2
984	DMSI/DLLAX2//A301	L	6	76	37	0	4473	CDEFGH	44 - 67	15	1
979	LBNTX2/3/82CAY21//...	L	8	84	35	0	4462	DEFGH	55 - 65	10	2
977	LBNTX2/3/82CAY21//	L	8	84	34	0	4342	EFGH	48 - 62	10	2
1000	DLMT	L	7	78	36	0	4187	EFGH	43 - 62	40	2
985	DMSI/DLLAX2//A301	L	6	75	37	0	4187	EFGH	47 - 66	15	2
983	DMSI//LMNT/NWBT/3/...	L	8	81	36	0	4155	FGH	58 - 68	10	1
991	DMSI/DLLAX2//...	L	7	76	37	0	4139	GH	48 - 69	15	2
976	LBNTX2/3/82CAY21//	L	7	89	35	0	4063	GH	54 - 64	10	2
989	DMSI/DLLAX2//...	L	6	75	40	0	3943	GH	42 - 60	35	3
986	DMSI/203/TTEP/4*LM...	L	8	78	35	0	3931	GH	32 - 65	15	1
988	DMSI/203/TTEP/...	L	8	79	36	0	3625	H	32 - 62	10	2
CV			8.8	1.4	2.6	-	7.9		5.1-1.8		

* L = long grain.

** Subjective rating 1 to 9, where 1 = excellent, 9 = poor.

*** Numbers followed by the same letter are not significantly different at the 0.05 level.

[1] RN = rotten neck blast - % infection, SV = rotten neck blast - severity 0-9.

TOLERANCE OF RICE VARIETIES AND EXPERIMENTAL LINES TO RICE HERBICIDES

D.E. Sanders, S.D. Linscombe, F. Jodari, and A.P. Fabacher

Some of the newer rice varieties have displayed susceptibility to damage from some labelled and developmental rice herbicides. These studies were designed to provide information on which rice line/herbicide combinations may display sufficient phytotoxicity, delay in maturity, and/or yield reduction to warrant non-recommendation.

Experiment: Herbicide Tolerance - Molinate Drill-Seeded Study

Location: Rice Research Station

Seeding Rate/Date: 100 lb/A, Apr 22, 1992

Fertilization: 45-45-45 (lb/A N-P_2O_5-K_2O) preplant incorporated, Apr 21; 70 lb N/A, June 5

Plot Size: 4.66 x 12 ft (56 ft^2)

Water Management: Flush, Apr 24; flush, May 20; flood, June 5; harvest drain, Aug 3

Varieties: Alan, Jackson, Maybelle, Millie, and Tebonnet

Treatments:

1. Molinate 4 lb ai/A PPI (Ordram 8 EC)
   Propanil 4 lb ai/A post (preflood) (Stam 4 EC)

2. Propanil 4 lb ai/A post (early) (Stam 4 EC)
   Propanil 4 lb ai/A post (preflood) (Stam 4 EC)

3. Propanil 3 lb ai/A + Molinate 3 lb ai/A post (early) (Arrosolo 6 EC)
   Propanil 3 lb ai/A + Molinate 3 lb ai/A post (preflood) (Arrosolo 6 EC)

4. Thiobencarb 4 lb ai/A delayed pre (Bolero 8 EC)
   Propanil 4 lb ai/A post (preflood) (Stam 4 EC)

5. Propanil 3 lb ai/A + Molinate 3 lb ai/A post (preflood) (Arrosolo 6 EC)
   Molinate 5 lb ai/A postflood (early) (Ordram 15 GR)

6. **Propanil 3 lb ai/A + Molinate 3 lb ai/A post (preflood) (Arrosolo 6 EC) Molinate 5 lb ai/A postflood (late) (Ordram 15 GR)**

7. **Propanil 4 lb ai/A post (preflood) (Stam 4 EC) Molinate 5 lb ai/A postflood (early) (Ordram 15 GR)**

8. **Propanil 4 lb ai/A post (preflood) (Stam 4 EC) Molinate 5 lb ai/A postflood (late) (Ordram 15 GR)**

9. **Control - Untreated (weed-free)**

Harvest: Aug 17

Experimental Design: Randomized complete block with a factorial arrangement of treatments (variety x herbicides), three replications

Comments: Results are presented in Table 1. The yield of Millie was significantly reduced (compared with the untreated weed-free check) by the PPI Ordram treatment (1), Arrosolo followed by Ordram early (5), Arrosolo followed by Ordram late (6), and Stam followed by Ordram late (8). Both Alan and Jackson displayed significant yield reductions where Arrosolo was followed by Ordram late (6), and Stam was followed by Ordram late (8). There were no significant differences among the herbicide treatments for either Maybelle or Tebonnet.

Table 1. Effect of herbicide treatments on grain yield of rice varieties. Rice Research Station, Crowley, LA. 1992.

Herbicide treatment	Grain Yield*				
	Millie	Alan	Jackson	Maybelle	Tebonnet
	(lb/A at 12%)				
Ordram 8 EC 4 Stam 4 EC 4	4693.0 bc	6069.0 abc	5825.7 abc	5830.7 a	6304.0 a
Stam 4 EC 4 Stam 4 EC 4	5326.0 ab	6096.7 abc	5656.7 abc	5515.0 a	6688.0 a
Arrosolo 6 EC 6 Arrosolo 6 EC 6	5533.0 a	6485.3 a	6102.0 ab	5579.3 a	6128.7 a
Bolero 8 EC 4 Stam 4 EC 4	5513.0 a	6338.3 ab	6209.0 a	5706.0 a	6260.7 a
Arrosolo 6 EC 6 Ordram 15 GR 5	4593.0 bc	6025.0 abc	5532.0 abc	5510.7 a	6636.3 a
Arrosolo 6 EC 6 Ordram 15 GR 5	4342.7 c	5796.7 bc	5405.7 bc	5366.3 a	6250.3 a
Stam 4 EC 4 Ordram 15 GR 5	5322.3 ab	6021.3 abc	5595.7 abc	5380.7 a	6322.0 a
Stam 4 EC 4 Ordram 15 GR 5	4483.3 c	5721.0 c	5187.7 c	5480.7 a	6296.0 a
Untreated	5481.3 a	6510.7 a	5802.0 abc	5740.7 a	6282.0 a
CV	8.12	4.72	6.86	6.73	5.26

* Means within varieties followed by same letter do not significantly differ (Duncan's MRT, P=.05).

Experiment: Herbicide Tolerance - Triclopyr and Propanil Drill-Seeded Study

Location: Rice Research Station

Seeding Rate/Date: 100 lb/A, Apr 22, 1992

Fertilization: 45-45-45 (lb/A N-P_2O_5-K_2O) preplant incorporated, Apr 21;
70 lb N/A, June 5

Plot Size: 4.66 x 12 ft (56 ft^2)

Water Management: Flush, Apr 24; flush, May 20; flood, June 5;
harvest drain, Aug 3

Varieties: Gulfmont, Katy, L-201, Lacassine, Lebonnet, Lemont, Millie, and Skybonnet

Treatments:

1. Propanil 4 lb ai/A post (preflood) (Stam 4 EC)
2. Triclopyr .38 lb ai/A post (preflood) (Grandstand 3 EC)
3. Propanil 4 lb ai/A post (preflood) (Stam 4 EC)
   Triclopyr .38 lb ai/A post (preflood) (Grandstand 3 EC)
4. Control - Untreated (weed-free)

Harvest: Aug 18

Comments: The grain yield of Millie was significantly reduced (compared with the untreated check) by treatments containing triclopyr (2 and 3). There were no significant differences among herbicide treatments for the other varieties (Table 2).

Table 2. Effect of herbicide treatments on grain yield of rice varieties. Rice Research Station, Crowley, LA. 1992.

Herbicide Treatment	Grain yield*							
	Skybonnet	Millie	Lebonnet	Lacassine	Gulfmont	Lemont	L201	Katy
	(lb/A at 12%)							
Stam 4 EC 4	5680.3 a	5160.7 a	6622.0 a	5955.3 a	5889.3 a	5759.3 a	5880.7 a	6244 a
Grandstand 3 EC .38	5724.3 a	4415.7 b	6143.3 a	5614.3 a	5730.3 a	5858.7 a	5178.7 a	6301 a
Stam 4 EC 4 Grandstand 3 EC .38	5324.7 a	4423.7 b	6384.0 a	5484.7 a	5921.0 a	5920.7 a	5826.3 a	6332 a
Untreated	5979.0 a	4936.3 a	6562.3 a	6100.0 a	6020.3 a	6296.7 a	5484.7 a	6524 a
CV	7.25	4.64	5.88	7.63	5.61	5.57	6.14	9.60

* Means within varieties followed by same letter do not significantly differ (Duncan's MRT, P = .05).

Experiment: Herbicide Tolerance - Molinate Water-Seeded Study

Location: Rice Research Station

Seeding Rate/Date: 150 lb/A, Apr 25, 1992

Fertilization: 45-45-45 (lb/A N-P_2O_5-K_2O) preplant incorporated, Apr 21;
70 lb N/A, June 5

Plot Size: 4.66 x 12 ft (56 ft^2)

Water Management: Flood, Apr 22; drain, Apr 25; flood, Apr 28; drain, May 12; flood, May 16; harvest drain, Aug 3

Varieties: Alan, Jackson, Maybelle, Millie, Rosemont, and Tebonnet

Treatments:

1. Molinate 4 lb ai/A PPI (Ordram 8 EC)

2. Molinate 4 lb ai/A PPI (Ordram 8 EC)
   Propanil 3 lb ai/A + Molinate 3 lb ai/A (post) (Arrosolo 6 EC)

Harvest: Aug 18

Experimental Design: Randomized complete block with a factorial arrangement of treatments (varieties x herbicide treatments), two replications

Comments: There were no significant differences within any of the six varieties between the two herbicide treatments (Table 3).

Table 3. Effect of herbicide treatments on rice varieties. Rice Research Station, Crowley, LA. 1992.

Herbicide Treatment	Grain yield*					
	Rosemont	Millie	Alan	Maybelle	Jackson	Tebonnet
	(lb/A at 12%)					
Ordram 8 EC 4	5988.7 a	5603.3 a	7016.3 a	7352.3 a	7962.3 a	4826.3 a
Ordram 8 EC 4 Arrosolo 6 EC 6	5755.7 a	5878.3 a	7211.3 a	7134.3 a	7988.3 a	5810.7 a
CV	6.18	5.25	4.39	8.29	1.43	12.14

* Means followed by same letter do not significantly differ (Duncan's MRT, P = .05).

MULTIPLE GENERATION RICE BREEDING NURSERY[1,2]

S.D. Linscombe, F. Jodari, A.P. Fabacher, and L. Aviles

A winter nursery facility is an essential and integral feature of a modern rice breeding program. The nursery allows the production of additional generations of breeding material per year, thus decreasing the amount of time required to develop new varieties.

The agricultural experiment stations of Arkansas, Louisiana, Texas, and Puerto Rico have a cooperative agreement to operate a year-round rice nursery on the University of Puerto Rico Experiment Station located at Lajas for the purpose of advancement, selection, and seed increase of breeding lines. This cooperative venture facilitates efficient utilization of nursery area, equipment, and labor and is allowing these breeding programs to grow a large number of breeding lines to expedite the development and release of improved rice varieties for the southern U.S. rice growing area.

1992 Activities

A nursery planted in September 1991 was harvested in January 1992. This nursery contained 3000 rows and included primarily F_2 populations and some advanced panicle rows. A January nursery was planted (4400) and included turnover material of the previous nursery and some additional lines from the Rice Research Station. This nursery was harvested in May and the seed returned to Crowley for planting.

The fall 1992 nursery was planted on September 2. This was the earliest this nursery has ever been planted. The nursery contained 3100 rows and included F_2 populations, advanced generation panicle rows, and several seed increases of promising lines. This nursery was harvested in early January 1993, and the spring 1993 nursery was planted on January 7. This nursery contained 4300 rows and was primarily F_3 populations turned over from the previous nursery.

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[1] Cooperative investigators, Louisiana Agricultural Experiment Station, Crowley, LA; University of Puerto Rico Agricultural Experiment Station, Lajas, PR; Texas Agricultural Experiment Station and USDA-ARS, Beaumont, TX; and Arkansas Agricultural Experiment Station, Stuttgart, AR

[2] This research is supported in part by funding provided by rice producers through the Louisiana Rice Research Board.

SPECIAL PURPOSE RICE BREEDING[1]

F. Jodari, S.D. Linscombe, K. Cadwallader, and C. Grimm

Demand for certain special purpose rice varieties is increasing as the consumption and market for these types in the US continues to expand. Part of the objectives of LAES project 2925, which was initiated in January 1992, is to develop specialty rice varieties that are adapted to Louisiana's environment and possess superior agronomic, milling, cooking, and specific specialty characters. The major emphasis is being placed on breeding for Jasmine, Della, Basmati, and waxy types.

During 1992, a number of new introductions, including some Jasmine types, was added to the hybridization block and used in the crossing program. A total of 68 crosses with at least one specialty parent was made in the summer of 1992. The early generation specialty nursery included 56 F_1 populations, 23 F_2 populations, 6000 progeny rows, and 800 anther culture-derived breeding rows.

The preliminary yield trials included 100 specialty lines. Twenty-five of these lines were selections from the 1992 spring nursery in Puerto Rico. The agronomic practices used for preliminary yield trials were similar to other drill-seeded trials explained earlier in the general breeding section. The results are reported in Tables 35, 49, 50, and 54, pages 68, 82, 83, and 88. A combination of various specialty and cooking types was included in these trials. A number of mutants and crosses with Jasmine 85 has shown significant improvements in yield and milling potential, earliness, and disease resistance. Their cooking types and grain characteristics and shape closely match the imported Thai Jasmine rice. Improvements, however, are needed in their grain color (whiteness) and straw strength. Detailed aroma analysis and evaluations are being made simultaneously on these types.

In addition to Jasmine types, a number of aromatic and non-aromatic elongating basmati lines was tested and advanced to the uniform regional nursery trials in 1992. Several Della type aromatic lines, medium-grain aromatic, Toro-type, long-grain waxy, brown and red bran color lines were also evaluated in the preliminary yield trials. Eight entries in the uniform regional nursery and three entries in the advanced yield tests were also evaluated.

Headrows of Della-type aromatic experimental line 9102085 were grown in Puerto Rico winter nursery and in Crowley. A 2-acre increase of this line will be planted in 1993. Detailed aroma analysis and evaluation of this line is currently being made by the LSU Food Science cooperators and the sensory panel of the USDA Regional Lab in New Orleans.

[1] This project is support in part by funds provided by the rice producers through the Louisiana Rice Research Board.

The cooperative work between the breeding program and LSU Food Science Department and USDA Regional Lab was further expanded for rice aroma quantification and analysis. A new addition to this research was aroma evaluation of six experimental lines by a trained sensory panel from the USDA Regional Lab. This data will be correlated with the chemical analysis results from the same department. Uniform cooking tests and screening procedures were further refined and are being routinely used in the breeding lab for preliminary screening and selection of breeding lines.

GRAIN FISSURING AND MILLING YIELDS OF CURRENT RICE VARIETIES AS AFFECTED BY HARVEST MOISTURE

F. Jodari and S.D. Linscombe

Milling qualities of newly released rice varieties, advanced experimentals, and breeding lines are being continuously evaluated at the Rice Research Station. This is part of the objectives of the newly established state project 2925. Part of the information generated from these studies are used for screening and selecting breeding lines with superior milling qualities. The objectives of this study were to determine the relationships between grain fissuring and head rice yield for each variety at decreasing harvest moistures.

Twelve entries were tested in 1992. A randomized complete block design experiment with four replications was used. Varieties included 'Maybelle,' 'L-202,' 'Tebonnet,' 'Lacassine,' 'Cypress,' 'Leah,' 'Lemont,' 'Bengal.' Experimental lines were 'LA 031,' 'LA 146,' 'LA 085,' and 'LA 115.' Entries were drill seeded at a 100 lb/A rate. Experimental plots were 5 ft wide and 25 ft long. All agronomic practices used were similar to preliminary yield trials described earlier for 1992.

Prior to maturity, a 3 x 4 square foot area of each plot was harvested for milling and fissuring measurements at time intervals. Sampling was initiated when grain moisture had reached 28%. Subsequent samples were taken at 2- to 3-day intervals until grain moisture decreased to about 12%.

Samples were threshed in the field and taken to the lab for harvest moisture measurements. After slowly drying rough rice to 12% moisture, milling yields were determined using standard milling procedures. One hundred mature rough rice kernels were hand shelled at each harvest to determine the percentage of fissured grain. Fissured grain counts after milling were also measured. Relative humidity and temperature was continuously monitored during the sampling period using hygrothermograph located adjacent to the plots. Hourly rainfall data during the test period was also recorded.

Data analysis have not been completed at this time. Regression, correlation, and covariance analysis will be carried out for varieties individually and combined and results will be reported in 1993 reports.

CEREAL CROPS AND COASTAL EROSION CONTROL BIOTECHNOLOGY RESEARCH

RICE AND WHEAT IMPROVEMENT THROUGH BIOTECHNOLOGY[1]

T.P. Croughan, S.S. Croughan, Q.J. Xie, M.P. Braverman, R.P. Regan, X.H. Wang, M.M. Meche, D.B. Trumps, H.X. Cao, S.A. Harrison, S.D. Linscombe, J.M. Jaynes, and R.T. Dunand

An objective of the biotechnology project is to help expedite the production of improved varieties for Louisiana's producers. Anther culture is utilized to produce genetically stabilized breeding lines in a few months, rather than the few years required to achieve this necessary stabilization using conventional breeding techniques.

Losses to red rice are very significant in U.S. rice production. Providing an effective method for controlling red rice during the commercial rice crop production would help alleviate these significant losses. Developing a herbicide-resistant rice variety would allow Louisiana growers to spray herbicides on the rice crop to effectively control red rice.

Developing the capability to conduct effective in vitro screening, using both suspension cells and protoplasts, provides an excellent tool for developing useful new germplasm for varietal development purposes. Developing more nutritious rice through this approach could give U.S. rice producers a marketing edge in international trade. Protoplasts can further be used for genetic engineering of plants with introduced characteristics of breeding value. Overall, genetic engineering technology offers the opportunity to develop plants with characteristics unobtainable by traditional plant breeding techniques. The capability to conduct such work with rice germplasm adapted to Louisiana's conditions offers the potential of direct benefits to Louisiana producers from this new technology.

In collaboration with the Louisiana rice and wheat breeding programs, a total of 900,400 anthers were plated from rice and wheat breeding program lines in 1992. Approximately 6,000 new anther culture-derived rice lines, which produced seed over the winter in the greenhouse, were planted in the field by this project for evaluation in 1992. The breeding project selected 175 promising lines from this material for further evaluation. Mr. Cao, a visiting rice breeder from China who is working in the project, selected an additional 127 lines that our project will plant next year.

[1] **This research is supported in part with funds from the Louisiana Rice Research Board and the Louisiana Soybean and Grain Research and Promotion Board.**

Utilizing both greenhouse and field-grown lines, several thousand new anther culture-derived plants were developed in 1992 from rice and wheat breeding program lines. Regenerated plants were transferred to the greenhouse to produce seed. This material was derived from both F_1 and F_2 crosses. This material will be field evaluated in 1993.

A total of 4,605 wheat somaclones were produced. Varieties used were Florida 302, Florida 303, Florida 304, Wakefield, and Madison, along with eight advanced breeding lines from the Louisiana wheat breeding program. The best 1,655 of these somaclones were transplanted to the field in October. Other biotechnology-derived wheat lines planted in the field by this project from lines showing promise in previous testing included 1,438 lines planted in rows and 84 lines planted in replicated yield plots. Seventy-four new wheat anther culture lines were developed in 1992, and the best 43 of these were transplanted to the field. As anther culture- and somaculture-derived plants mature in the spring of 1993, they will be evaluated for improvements, and seed from superior individuals will be collected for further testing.

Approximately 13,000 rows of rice tissue culture lines were planted and sprayed with herbicides in 1992 to screen for herbicide resistance. To further test a herbicide-resistant rice line developed by the project in 1991, an evaluation was conducted in 1992 utilizing 112 yield plots. The test consisted of the herbicide-resistant line and nine check varieties for comparison. The four herbicides Pursuit, Scepter, Beacon, and Accent were applied to two replicate plots of each entry at full field strength. The herbicide-resistant line showed superior resistance to all herbicides.

An additional test of the herbicide-resistant line involved 60 plots and four check varieties. This test included half and full strength applications of Pursuit herbicide using four replications, and also showed the herbicide-resistant line to be more resistant to both levels of treatment. Another herbicide test involved treating older rice with herbicides. Full strength treatments of Accent and Pursuit were applied to four replicate plots of the herbicide-resistant line and four check varieties. Older rice was generally more resistant, but the herbicide resistant line was again the most resistant.

Additional herbicide tests were conducted utilizing a red rice infested area at the South Farm facility of the Rice Research Station. A total of 13 herbicides were sprayed on four replicate plots of red rice at the 5-leaf stage to determine the effectiveness of AHAS-inhibiting herbicides on red rice at this maturity. Several herbicides were identified as effective. Replicate plots of more mature red rice (at the green ring stage) were sprayed with the same herbicides. While older red rice was more resistant, several treatments prevented seed production by the red rice.

A total of 400 plots were planted into red rice infested soil to further test the herbicide resistant line's performance with herbicide treatments in the presence of red rice. Thirteen herbicides were utilized with three replications. Plots containing rows of five check varieties and the herbicide resistant line were treated at three different stages of maturity with 0.5x, 1.0x, and 2.0x treatments of herbicide. Several sequential combinations of treatment were also evaluated. The herbicide resistant line showed superior resistance to several herbicides which effectively controlled red rice and other weeds.

A total of 121 crosses and backcrosses were made utilizing the herbicide resistant line. Over 1,000 F_1 seeds have been collected from these crosses. Progeny of previous crosses with the herbicide resistant line made over the winter were transplanted to the field for seed increase purposes. Seed was collected from a total of 210 F_1 individuals and 32 F_2 populations.

The genetics of the herbicide resistance trait was evaluated by transplanting 1,369 F_1 plants to the field from reciprocal crosses between the resistant line and Lemont, Maybelle, and Lacassine. Plants were split in two, and one of each pair was treated with Pursuit herbicide at 1.5X. Results of the study indicate that the resistance trait is heritable. Seed was collected for further studies next year.

To produce additional mutated rice to screen for herbicide resistance, 10 leading varieties of rice were treated with three different levels of the chemical mutagen EMS. M2 seed of each variety was harvested to use for herbicide screening in 1993. Gamma irradiation produced by the Cobalt-60 source on the LSU Baton Rouge campus was also used to mutate 10 lb lots of each of 10 rice varieties. Several hundred pounds of M2 rice was harvested for herbicide screening in 1993 after growing this material to maturity in the field in 1992. A seed increase of the herbicide resistant line was also carried out, producing 415 pounds of clean seed for further testing.

Genetic engineering experiments in the laboratory have utilized six different plasmids obtained from Dr. Jesse Jaynes in an attempt to introduce a lytic peptide gene into rice. Introduction of this gene may confer disease resistance. A total of 1322 plants have been regenerated from treated calli. Of this group, 384 have set seed in the greenhouse, and preparations for screening this seed for kanamycin resistance are underway.

Media modifications were used to improve suspension culture capabilities using the cultivars Mercury, Maybelle, Lacassine, and Cypress. Protoplast systems were subsequently developed for these cultivars. This makes possible the use of PEG and electroporation to genetically engineering these varieties.

Three plasmids (pGL2, pROB5, and pROB1) were obtained from Dr. Potrykus in Switzerland. These plasmids contain a gene for hygromycin resistance, a marker which is preferable to kanamycin for rice transformations. E. coli have been transformed with these plasmids, and large quantities of the new plasmids have been cloned. These new constructs are significantly better than our previous plasmids, since they not only contain the hygromycin (instead of kanamycin) resistance gene, but are also significantly smaller and therefore more effective for transformation use.

BIOTECHNOLOGY APPLICATIONS TO COASTAL EROSION CONTROL

T.P. Croughan, H.X. Cao, X.H. Wang, R.P. Regan, M.M. Meche,
Q.J. Xie, D.B. Trumps, and M.D. Materne

Coastal erosion causes losses of as much as 40 to 50 square miles a year in Louisiana. Applying biotechnology to improve the ability to utilize vegetation as a biological erosion control measure offers the potential to reduce this serious loss.

Research during 1992 was conducted on applying biotechnology to coastal erosion control in collaboration with the U.S.D.A. Soil Conservation Service. Earlier research in this project resulted in the regeneration of several Spartina alterniflora (smooth cordgrass) plants. Regeneration rates previous to 1992, however, remained relatively low. Media modifications developed during 1992 resulted in the production of 2,871 regenerated Spartina alterniflora plants, representing an over 100-fold increase in regeneration efficiency. Four hundred regenerated smooth cordgrass plants were supplied to the Soil Conservation Service in 1992. Plant Materials Service personnel are currently conducting greenhouse and field evaluations to identify superior lines within this population.

Other research with Spartina alterniflora has resulted in the development of a promising protoplast system for this species. Colony formation by protoplasts has been obtained at high frequencies, and plantlets were obtained from protoplast-derived calli. A highly regenerable protoplast system for Spartina alterniflora provides a possible system for developing artificial seed, and permits the application of genetic engineering technology to this important marsh species.

RICE FERTILIZATION AND CULTURAL MANAGEMENT[1]

EFFECT OF N RATE AND TIMING ON AGRONOMIC PERFORMANCE OF SELECTED RICE VARIETIES AND EXPERIMENTAL LINES IN LOUISIANA RICE PRODUCING AREAS

P.K. Bollich, Xiaohui Sun, W.J. Leonards, Jr.,
G.R. Romero, and D.M. Walker

INTRODUCTION

Fertilizer nitrogen (N) is required on virtually all of the rice acreage in Louisiana for optimum production. Efficiency and uptake of applied N are influenced by factors such as placement, rate, and timing in relation to water management. Growing a suitable rice variety coupled with management practices that conserve applied N generally increase the chance of profitable rice production.

The placement and timing of fertilizer N are dependent upon the cultural system used. In Louisiana, rice is grown in water- and dry-seeded cultural systems. In the water-seeded, permanently flooded system, the optimum N rate should be placed 2 to 3 inches below the soil surface within 5 to 7 days of establishing the flood. In the dry-seeded system, the optimum N rate should be broadcast onto a dry soil surface prior to establishing the permanent flood. There is generally no advantage to applying multiple applications of fertilizer N in either cultural system provided there is precision in N application and placement and sound water management. Split applications may be desirable if the optimum N rate is not known, if the farmer is unfamiliar with a field, or if a variety is susceptible to lodging. When split applications are applied, it is important to apply an adequate amount of basal N to maintain the rice plant through tillering and into early reproductive growth. Generally, a split application consists of two-thirds of the estimated total N requirement applied preplant in water-seeded rice and preflood in dry-seeded rice, followed by a topdressing of the remaining one-third at either panicle initiation, panicle differentiation, or when deficiency symptoms appear.

Rice varieties may differ in their response to the amount and timing of applied N. Maximum or optimum yields of many varieties may occur over a wide range of N rates, depending on such factors as lodging, disease susceptibility, and inherent N utilization efficiency. Environmental influences, such as soil type, growing conditions, pest pressure, and weather, may affect varietal performance. Conducting field research in the major rice producing areas of Louisiana provides valuable information for developing fertilization and management strategies for new varieties.

[1] This research supported in part by funds provided by rice producers through the Louisiana Rice Research Board.

The objectives of these variety evaluations are to 1) determine yield potential and agronomic performance of new rice varieties and advanced experimental lines in different environments and 2) determine the optimum N rate for each variety.

MATERIALS AND METHODS

Twenty rice varieties and/or advanced experimental lines were grouped by maturity for testing. Each entry is followed by a short agronomic description and its origination.

The very early entries were:

Tebonnet (TBNT)- tall, long-grain Arkansas variety with good yield potential, poor seedling vigor when compared with other varieties in this group, susceptible to lodging and straighthead, average ratoon potential.

Maybelle (MBLE)- short statured, long-grain Texas variety with very good yield potential, good straw strength, excellent ratoon potential, moderately resistant to straighthead, matures 8 to 10 days earlier than Tebonnet.

Alan- tall, long-grain Arkansas variety with good yield potential in the main and ratoon crop, moderately resistant to lodging, moderately susceptible to straighthead, 2 to 3 days earlier in maturity than Tebonnet.

Jackson (JKSN)- long-grain Texas variety very similar to Maybelle in yield potential, slightly taller and 7 to 10 days later in maturity than Maybelle, moderately resistant to lodging, moderately resistant to straighthead.

RT 7015 (7015)- long-grain, semidwarf Rice Tec variety, good yield potential in the main and ratoon crop, resistant to lodging, moderately resistant to straighthead.

2031- long-grain, semidwarf Louisiana line with excellent yield potential in the main and ratoon crop, resistant to lodging, susceptible to straighthead in preliminary testing.

2115- long-grain, semidwarf Louisiana line being tested in variety by N trials for the first time.

Adair (ADAR)- tall, long-grain Arkansas entry being tested in variety by N trials for the first time.

The early entries were:

Lemont (LMNT)- long-grain, semidwarf Texas variety with very good main crop and average ratoon crop potential, poor seedling vigor, resistant to lodging, moderately susceptible to straighthead.

Mars- tall, medium-grain Arkansas variety with good yield potential in the main and ratoon crop, good seedling vigor, moderately susceptible to lodging, susceptible to straighthead.

Lacassine (LCSN)- long-grain, semidwarf Louisiana variety with very good main crop and good ratoon crop potential, poor seedling vigor, resistant to lodging, moderately susceptible to straighthead.

Orion (ORIN)- tall, medium-grain Arkansas variety similar in yield potential to Mars, moderately susceptible to lodging, susceptible to straighthead.

Cypress (CPRS)- long-grain, semidwarf Louisiana variety with excellent yield potential in the main and ratoon crop, good seedling vigor, resistant to lodging, moderately susceptible to straighthead.

Bengal (BNGL)- medium-grain, semidwarf Louisiana variety with excellent main crop and good ratoon crop potential, resistant to lodging, susceptible to straighthead.

2146- tall, long-grain Louisiana entry that typically yields better when tested in North LA, good resistance to lodging, moderately susceptible to straighthead.

2168- medium-grain semidwarf Louisiana entry in its initial year of testing in variety by N trials.

LaGrue (LGRU)- tall, long-grain Arkansas entry in its initial year of testing in variety by N trials.

2143- medium-grain, semidwarf Louisiana entry in its initial year of testing in variety by N trials.

Dellmont (DLMT)- long-grain, semidwarf, aromatic Texas variety with good yield potential, resistant to lodging, moderately susceptible to straighthead.

2085- long-grain, semidwarf, aromatic Louisiana entry in its initial year of testing in a variety by N trial.

Varieties and advanced experimental lines in the very early and early maturity groups were tested in five different locations. The aromatic variety Dellmont and the experimental line 2085 were tested at the Rice Research Station in a separate variety trial. Lemont was included in this evaluation for comparison purposes. Experiments at the Rice Research Station and in Vermilion Parish were water seeded in a pinpoint flood cultural system. The trials in Morehouse Parish were water seeded in a delayed flood cultural system. Evaluations in East Carroll and Rapides parishes were drill seeded. Entries were tested at four N rates, ranging from 60 to 150 lb/A in 30 lb/A increments, with N being applied as single applications.

Fertilizer N as ammonium sulfate was banded approximately 2 inches deep 1 to 2 days prior to flooding in the water-seeded, pinpoint flood experiments. On soils requiring P and K, approximately 45 lb/A P_2O_5 and K_2O were also banded. In drill-seeded experiments and in the water-seeded, delayed flood experiment, basal N treatments were applied as a single broadcast application prior to establishment of the permanent flood.

Water-seeded experiments were seeded at the rate of 150 lb/A with presoaked seed. After 3 to 4 days, the experiments were drained briefly to promote seedling anchorage. A permanent flood was established 2 to 4 days after drainage, never allowing the soil to dry. In the water-seeded, delayed flood experiment, the entries were seeded at a rate of 150 lb/A with presoaked seed, drained after 4 days, and flushed periodically until permanent flood establishment. In drill-seeded experiments, varieties were seeded at 100 lb/A and flushed periodically until the permanent flood was established (4 to 5 weeks after planting).

Pest control (weeds, insects, disease) was practiced when necessary. Individual whole plots were combine-harvested at field maturity. Days to 50% heading, plant height, lodging, grain moisture, and grain yield were measured.

Second crop data were generated in the Vermilion Parish and Rice Research Station variety evaluations. Following main crop harvest, 75 lb N/A were broadcast into the dry stubble, and a shallow flood was established within 2 to 3 days after N application. Individual whole plots were combine-harvested at field maturity. Grain moisture and grain yield were determined.

Sixty entries were screened in 1992 for reaction to arsenic (As)-induced straighthead. Included in the nursery were 33 commercial varieties, both public and private, and 23, 2, and 2 advanced experimental lines from the rice varietal development programs of Louisiana, Texas, and Arkansas, respectively.

The nursery was established on a Crowley silt loam soil. Approximately 120 lb N/A and 60 lb/A P_2O_5 and K_2O were banded 2 inches deep prior to planting. Arsenic as MSMA (monosodium salt of methylarsonic acid) was surface applied at the rate of 4 lb As/A, and the test area was flooded. The test was water seeded in a pinpoint flood cultural system. Evaluation for straighthead reaction was made at maturity, with each entry being rated on a scale of 0 to 9, based on the estimated percentage of normal grain yield. A rating of 0 indicated that there was no damage or apparent symptoms present and was considered to be highly resistant. A rating of 9 indicated that no grain was produced due to severe damage and was considered to be highly susceptible. Results of the evaluation are shown in Table 17.

Plant growth stages were determined for all varieties at each location for use in updating or establishing predictions in the DD50 Rice Management Program (Tables 18-22).

Experiment: Very early variety x nitrogen trial

Location: Rice Research Station

Soil Type/Analysis: Crowley silt loam; pH: 6.9; O.M.: 1.04%; extractable nutrients (mg/kg): P-60, Na-51, K-83, Ca-1350, Mg-198, Zn-0.53, S-, As-, Fe-49.70

Variety/Seeding Rate: TBNT, MBLE, ALAN, JKSN, RT 7015, 2031, 2115, ADAR, 150 lb/A

Planting Method/Date: Water-seeded, Mar 27

Fertilization: 45 lb/A P_2O_5 and K_2O ppi; N source, ammonium sulfate; second crop, 75 lb N/A

Plot Size: 7 x 25 ft (175 ft^2)

Emergence Date: ALAN, Apr 5; MBLE, Apr 6; 2031, JKSN, RT 7015, 2115, ADAR, Apr 7; TBNT, Apr 8

Water Management: Flooded, Mar 25; drained, Mar 30; reflooded, Apr 2; harvest drainage, July 13; second crop flooded, July 31; harvest drainage, Oct 6

Herbicides: 0.6 oz ai/A Londax (bensulfuron-methyl), Apr 14; 3.5 lb ai/A Ordram (molinate), May 15; 0.2 oz ai/A Londax, May 26, June 9

Insecticides: 0.6 lb ai/A Furadan (carbofuran), Apr 24

Fungicides: 0.5 lb ai/A Benlate (benomyl), June 9, June 23

Harvest: Main crop, July 30; second crop, Oct 20

Experimental Design: Split plot in a randomized complete block with four replications, N assigned to main plots and varieties to subplots

Comments: ALAN and MBLE displayed very good seedling vigor. TBNT lodged significantly at high N rates with little influence on grain yield. Main crop yields overall were very good, with most entries requiring 120 lb N/A (Table 1). Second crop grain yields were excellent for all entries except TBNT (Table 2). Total yields of lines 2031 and ADAR were over 11,000 lb/A.

Table 1. Effect of N rate on agronomic performance of water-seeded very early rice varieties and advanced experimental lines. Rice Research Station, Crowley, LA. 1992.

	N rate (lb/A)																			
	Days to 50% heading					Plant height					% Lodging/type*				Grain yield at 12% moisture					
Variety	60	90	120	150	Mean	60	90	120	150	Mean	60	90	120	150	60	90	120	150	Mean	
						(cm)									(lb/A)					
Tebonnet	83	85	86	87	85	107	118	123	122	118	18/2	38/2	53/4	83/4	7677	8748	8606	8111	8285	
Maybelle	80	80	81	81	80	81	87	92	95	89	0/0	0/0	0/0	38/3	6890	8159	8591	7378	7755	
Alan	83	84	85	86	85	80	86	95	96	90	0/0	0/0	0/0	0/0	7334	8649	8993	8990	8492	
Jackson	82	82	84	85	83	79	89	91	95	89	0/0	0/0	0/0	0/0	7157	8467	8540	8680	8211	
RT 7015	82	82	83	84	83	71	76	78	81	77	0/0	0/0	0/0	0/0	7035	8278	8740	8567	8155	
2031	83	83	85	86	84	74	78	83	84	80	0/0	0/0	0/0	0/0	7951	9193	9284	9744	9043	
2115	79	78	80	81	79	72	73	76	78	75	0/0	0/0	0/0	0/0	8463	7379	7886	8018	7437	
Adair	84	85	86	87	86	88	97	102	107	99	0/0	0/0	10/1	48/3	7329	8652	9111	8909	8500	
N																				
Mean	82	82	84	85		82	88	93	95						7230	8441	8719	8550		
C.V., %			0.86					3.50									5.02			
LSD (0.01):																				
Nitrogen			1					3									328			
Variety			1					3									385			
V within N			-					-									244			
V across N			-					-									789			

* Lodging rate in percent/lodging type on a scale of 1 to 5, where 1 = leaning and 5 = complete.

Table 2. Effect of N rate in main crop on grain yields of water-seeded very early rice varieties and advanced experimental lines. Rice Research Station, Crowley, LA. 1992.

Variety	Main crop grain yield at 12% moisture					Second crop grain yield at 12% moisture					Total grain yield at 12% moisture				
	60	90	120	150	Mean	60	90	120	150	Mean	60	90	120	150	Mean
	(lb/A)														
Tebonnet	7677	8748	8606	8111	8285	1842	1915	1819	1756	1833	9519	10662	10424	9867	10118
Maybelle	6890	8159	8591	7378	7755	2344	2396	2427	2513	2420	9235	10555	11018	9892	10175
Alan	7334	8649	8993	8990	8492	2350	2192	2492	2421	2364	9684	10841	11486	11412	10856
Jackson	7157	8467	8540	8680	8211	2303	2692	2582	2536	2528	9460	11159	11122	11216	10739
RT 7015	7035	8278	8740	8567	8155	1870	2147	2262	2268	2137	8906	10425	11003	10835	10292
2031	7951	9193	9284	9744	9043	2037	2302	2377	2776	2373	9989	11496	11661	12520	11416
2115	6463	7379	7886	8018	7437	2542	2727	2717	2842	2707	9005	10106	10603	10861	10144
Adair	7329	8652	9111	8909	8500	2783	2781	2879	2452	2724	10112	11433	11990	11360	11224
N															
Mean	7230	8441	8719	8550		2259	2394	2444	2445		9489	10835	11163	10995	
C.V., %			5.02					12.88					5.73		
LSD (0.01):															
Nitrogen			326					ns					606		
Variety			385					286					567		
V within N			244					572					1134		
V across N			789					698					1217		

Experiment: Early variety x nitrogen trial

Location: Rice Research Station

Soil Type/Analysis: Crowley silt loam; pH: 6.2; O.M.: 1.08%; extractable nutrients (mg/kg): P-69, Na-64, K-86, Ca-1143, Mg-223, Zn-0.42, S-8.54, As-5.68, Fe-56.75

Variety/Seeding Rate: LMNT, MARS, LCSN, ORIN, CPRS, BNGL, 2146, 2168, LGRU, 2143, 150 lb/A

Planting Method/Date: Water-seeded, Mar 26

Fertilization: 45 lb/A P_2O_5 and K_2O ppl; N source, ammonium sulfate; second crop, 75 lb N/A

Plot Size: 7 x 25 ft (175 ft^2)

Emergence Date: MARS, Apr 5; CPRS, BNGL, Apr 6; ORIN, 2168, 2143, Apr 7; LCSN, LMNT, LGRU, 2146, Apr 8

Water Management: Flooded, Mar 25; drained, Mar 30; reflooded, Apr 2; harvest drainage, July 16; second crop flooded, Aug 3; harvest drainage, Oct 8

Herbicides: 0.6 oz ai/A Londax (bensulfuron-methyl), Apr 14; 3.5 lb al/A Ordram (molinate), May 15; 0.2 oz al/A Londax, May 26, June 9

Insecticides: 0.6 lb al/A Furadan (carbofuran), Apr 24

Fungicides: 0.5 lb al/A Benlate (benomyl), June 9, June 23

Harvest: Main crop, Aug 1; second crop, Oct 22

Experimental Design: Split plot in a randomized complete block with four replications, N assigned to main plots and varieties to subplots

Comments: All entries emerged over a 4-day period with MARS, BNGL, and CPRS displaying the most vigor. Lodging was severe for MARS and ORIN at high rates of N (Table 3). Yields in the main and second crops were good to excellent (Table 4).

Table 3. Effect of N rate on agronomic performance of water-seeded early rice varieties and advanced experimental lines. Rice Research Station, Crowley, LA. 1992.

	N rate (lb/A)																			
	Days to 50% heading					Plant height					% Lodging/type*				Grain yield at 12% moisture					
Variety	60	90	120	150	Mean	60	90	120	150	Mean	60	90	120	150	60	90	120	150	Mean	
						----------(cm)----------									----------(lb/A)----------					
Lemont	95	94	98	97	96	76	82	87	88	83	0/0	0/0	0/0	0/0	7968	8049	8014	7631	7915	
Mars	91	91	92	93	92	96	105	108	111	105	10/1	28/3	10/1	38/4	7338	7016	7471	5728	6888	
Lacassine	94	93	95	96	94	77	86	86	90	85	0/0	0/0	0/0	0/0	7728	8267	8220	8113	8082	
Orion	90	91	91	92	91	88	96	98	102	96	20/2	18/1	40/4	58/4	7958	7753	7908	6042	7415	
Cypress	90	90	92	92	91	77	82	84	87	83	0/0	0/0	0/0	0/0	7834	8766	8271	8606	8369	
Bengal	91	92	93	93	92	76	82	84	88	83	0/0	0/0	0/0	0/0	7854	8860	8407	8202	8331	
2146	93	93	95	95	94	95	100	105	107	102	0/0	0/0	0/0	0/0	7294	7748	7484	7262	7447	
2168	89	89	90	91	90	83	93	94	98	92	5/1	0/0	0/0	8/2	8041	8649	9011	8648	8587	
LaGrue	91	92	92	96	93	98	104	105	112	105	0/0	18/1	0/0	0/0	7739	8221	8162	7627	7937	
2143	92	92	93	93	93	79	84	88	90	85	0/0	0/0	0/0	0/0	8202	8658	8211	8716	8447	
N																				
Mean	92	92	93	94		85	92	94	97						7796	8199	8116	7657		
C.V., %			1.30					2.78									7.81			
LSD (0.01):																				
Nitrogen			ns					7									441			
Variety			1					2									575			
V within N			-					-									1151			
V across N			-					-									1057			

* Lodging rate in percent/lodging type on a scale of 1 to 5, where 1 = leaning and 5 = complete.

Table 4. Effect of N rate in main crop on grain yields of water-seeded early rice varieties and advanced experimental lines. Rice Research Station, Crowley, LA. 1992.

Variety	Main crop grain yield at 12% moisture					Second crop grain yield at 12% moisture					Total grain yield at 12% moisture				
	60	90	120	150	Mean	60	90	120	150	Mean	60	90	120	150	Mean
	(lb/A)														
Lemont	7968	8049	8014	7631	7915	2048	2065	1874	1967	1989	10016	10115	9888	9598	9904
Mars	7338	7016	7471	5728	6888	2573	2438	2432	2634	2519	9911	9454	9903	8362	9407
Lacassine	7728	8267	8220	8113	8082	2635	2579	2724	2701	2660	10363	10846	10944	10814	10742
Orion	7958	7753	7908	6042	7415	2535	2286	2196	2027	2261	10493	10039	10104	8069	9676
Cypress	7834	8766	8271	8606	8369	2532	2512	2394	2485	2481	10367	11278	10665	11090	10850
Bengal	7854	8860	8407	8202	8331	2452	2595	2687	2658	2598	10305	11454	11094	10860	10928
2146	7294	7748	7484	7262	7447	2162	2142	2087	2259	2162	9456	9890	9571	9521	9609
2168	8041	8649	9011	8648	8587	2287	2430	2654	2704	2519	10328	11079	11665	11352	11106
LaGrue	7739	8221	8162	7627	7937	2419	2618	3008	2668	2678	10158	10839	11170	10295	10615
2143	8202	8658	8211	8716	8447	2337	2490	2448	2651	2482	10540	11148	10659	11368	10929
N															
Mean	7796	8199	8116	7657		2398	2416	2450	2475		10194	10614	10566	10133	
C.V., %			7.81					10.61					6.79		
LSD (0.01):															
Nitrogen			441					ns					371		
Variety			575					239					653		
V within N			1151					480					1309		
V across N			1057					519					1294		

Experiment: Aromatic variety x nitrogen trial

Location: Rice Research Station

Soil Type/Analysis: Crowley silt loam; pH: 5.8; O.M.: 1.05%; extractable nutrients (mg/kg): P-67, Na-57, K-89, Ca-958, Mg-197, Zn-0.54, S-8.59, As-3.79, Fe-77.42

Variety/Seeding Rate: LMNT, DLMT, 2085, 150 lb/A

Planting Method/Date: Water-seeded, Mar 26

Fertilization: 45 lb/A P_2O_5 and K_2O ppl; N source, ammonium sulfate; second crop, 75 lb N/A

Plot Size: 7 x 25 ft (175 ft^2)

Emergence Date: LMNT, DLMT, 2085, Apr 8

Water Management: Flooded, Mar 25; drained, Mar 30; reflooded, Apr 2; harvest drainage, July 16; second crop flooded, Aug 3; harvest drainage, Oct 8

Herbicides: 0.6 oz al/A Londax (bensulfuron-methyl), Apr 14; 3.5 lb al/A Ordram (molinate), May 15; 0.2 oz al/A Londax, May 26, June 9

Insecticides: 0.6 lb al/A Furadan (carbofuran), Apr 24

Fungicides: 0.5 lb al/A Benlate (benomyl), June 9, June 23

Harvest: Main crop, July 31; second crop, Oct 22

Experimental Design: Split plot in a randomized complete block with four replications, N assigned to main plots and varieties to subplots

Comments: Emergence was good for all entries. There was no main crop response to N rate (Table 5). Both aromatic entries significantly outyielded Lemont in the ratoon crop (Table 6). Total grain yield of 2085 was 1000 lb/A higher than either LMNT or DLMT.

Table 5. Effect of N rate on agronomic performance of water-seeded aromatic rice varieties and advanced experimental lines. Rice Research Station, Crowley, LA. 1992.

	N rate (lb/A)																			
	Days to 50% heading					Plant height					% Lodging/type*				Grain yield at 12% moisture				
Variety	60	90	120	150	Mean	60	90	120	150	Mean	60	90	120	150	60	90	120	150	Mean
						(cm)									(lb/A)				
Lemont	92	93	94	96	94	77	79	86	85	82	0/0	0/0	0/0	0/0	7897	8156	7692	7786	7883
Dellmont	92	93	94	96	94	76	80	87	87	83	0/0	0/0	0/0	0/0	7637	7958	7544	7709	7712
2085	88	89	91	91	90	83	91	98	98	93	0/0	0/0	0/0	0/0	7811	8327	7822	8309	8067
N																			
Mean	90	92	93	94		79	83	91	90						7782	8147	7686	7934	
C.V., %			0.76					2.87									4.76		
LSD (0.01):																			
Nitrogen			2					4									ns		
Variety			1					2									371		
V within N			-					-									ns		
V across N			-					-									761		

* Lodging rate in percent/lodging type on a scale of 1 to 5, where 1 = leaning and 5 = complete.

Table 6. Effect of N rate in main crop on grain yields of water-seeded aromatic rice varieties and advanced experimental lines. Rice Research Station, Crowley, LA. 1992.

	Main crop grain yield at 12% moisture					Second crop grain yield at 12% moisture					Total grain yield at 12% moisture				
Variety	60	90	120	150	Mean	60	90	120	150	Mean	60	90	120	150	Mean
	(lb/A)														
Lemont	7897	8156	7692	7786	7883	2362	2294	2445	2298	2350	10259	10450	10137	10085	10233
Dellmont	7637	7958	7544	7709	7712	2653	2663	2696	2558	2642	10290	10620	10240	10267	10354
2085	7811	8327	7822	8309	8067	3453	3144	3232	3221	3263	11264	11471	11054	11529	11330
N															
Mean	7782	8147	7686	7934		2823	2700	2791	2693		10604	10847	10477	10627	
C.V., %			4.76					9.16					4.79		
LSD (0.01):															
Nitrogen			ns					ns					ns		
Variety			371					249					503		
V within N			ns					499					1007		
V across N			761					487					921		

Experiment: Very early variety x nitrogen trial

Location: East Carroll Parish, Buford Perry Farm

Soil Type/Analysis: Sharkey clay; pH: 6.7; O.M.: 3.89%; extractable nutrients (mg/kg): P-365, Na-60, K-545, Ca-6670, Mg-1397, Zn-3.23, S-5.62, As-10.27, Fe-96.72

Variety/Seeding Rate: TBNT, MBLE, ALAN, JKSN, RT 7015, 2031, 2115, ADAR, 100 lb/A

Planting Method/Date: Drill-seeded, Apr 30

Fertilization: N source, ammonium sulfate; 13.6 lb/A zinc (preplant incorporated); 0.54 lb/A zinc (foliar), June 5

Plot Size: 7 x 25 ft (175 ft^2)

Emergence Date: ALAN, 2031, TBNT, MBLE, JKSN, RT 7015, 2115, ADAR, May 19

Water Management: Flushed, May 13, May 18; flooded, June 18; harvest drainage, Sep 4

Herbicides: 5.0 lb al/A Stam (propanil) June 13; 0.6 oz al/A Londax (bensulfuron-methyl), June 26; 3.5 lb al/A Ordram (molinate), June 26; 0.4 oz al/A Londax, July 11

Insecticides: 0.6 lb al/A Furadan (carbofuran), July 2; 0.25 lb al/A methyl parathion, Aug 19

Fungicides: 0.5 lb al/A Benlate (benomyl), Aug 4, Aug 17

Harvest: Sep 19

Experimental Design: Split plot in a randomized complete block with four replications, N assigned to main plots and varieties to subplots

Comments: All entries emerged 6 days after the initial flush. The highest rate of fertilizer N was required for optimum grain yields (Table 7). Experimental lines 2031 and ADAR significantly outyielded the other entries. Yields of RT 7015 and 2115 were considerably lower.

Table 7. Effect of N rate on agronomic performance of drill-seeded very early rice varieties and advanced experimental lines. Buford Perry Farm, East Carroll Parish, LA. 1992.

	N rate (lb/A)																			
	Days to 50% heading					Plant height					% Lodging/type*				Grain yield at 12% moisture					
Variety	60	90	120	150	Mean	60	90	120	150	Mean	60	90	120	150	60	90	120	150	Mean	
						(cm)									(lb/A)					
Tebonnet	85	86	88	89	87	109	122	126	132	122	0/0	0/0	0/0	0/0	6910	7733	8304	8931	7969	
Maybelle	76	77	78	79	78	79	84	88	89	85	0/0	0/0	0/0	0/0	6110	7398	8072	8916	7624	
Alan	84	85	86	87	86	88	91	99	102	95	0/0	0/0	0/0	0/0	6809	7738	8665	9074	8071	
Jackson	83	84	87	87	85	83	86	91	100	90	0/0	0/0	0/0	0/0	7135	7403	8031	8517	7772	
RT 7015	82	83	84	86	84	77	83	83	88	83	0/0	0/0	0/0	0/0	6171	7252	7059	8073	7139	
2031	84	85	87	88	86	81	86	89	95	88	0/0	0/0	0/0	0/0	7729	8738	9115	9367	8737	
2115	72	73	74	75	74	74	79	79	82	79	0/0	0/0	0/0	0/0	5689	6670	7285	7971	6904	
Adair	83	84	85	86	85	93	101	106	110	103	0/0	0/0	0/0	0/0	7408	8372	9057	9948	8697	
N																				
Mean	81	82	84	85		85	92	95	100						6745	7663	8198	8850		
C.V., %			0.67					3.62									3.92			
LSD (0.01):																				
Nitrogen			1					4									640			
Variety			1					3									287			
V within N			-					-									574			
V across N			-					-									831			

* Lodging rate in percent/lodging type on a scale of 1 to 5, where 1 = leaning and 5 = complete.

Experiment: Early variety x nitrogen trial

Location: East Carroll Parish, Buford Perry Farm

Soil Type/Analysis: Sharkey clay; pH: 6.7; O.M.: 3.82%; extractable nutrients (mg/kg): P-353, Na-68, K-500, Ca-6263, Mg-1397, Zn-5.40, S-, As-10.03, Fe-95.95

Variety/Seeding Rate: LMNT, MARS, LCSN, ORIN, CPRS, BNGL, 2146, 2168, LGRU, 2143, 100 lb/A

Planting Method/Date: Drill-seeded, Apr 30

Fertilization: N source, ammonium sulfate; 13.6 lb/A zinc (preplant incorporated); 0.54 lb/A zinc (foliar), June 5

Plot Size: 7 x 25 ft (175 ft^2)

Emergence Date: MARS, May 18; CPRS, ORIN, BNGL, LGRU, 2143, May 19; LCSN, LMNT, 2146, 2168, May 20

Water Management: Flushed, May 13, May 18; flooded, June 18; harvest drainage, Sep 4

Herbicides: 5.0 lb ai/A Stam (propanil), June 13; 0.6 oz al/A Londax (bensulfuron-methyl), June 26; 3.5 lb al/A Ordram (molinate), June 26; 0.4 oz al/A Londax, July 11

Insecticides: 0.6 lb ai/A Furadan (carbofuran), July 2; 0.25 lb al/A methyl parathion, Aug 19

Fungicides: 0.5 lb al/A Benlate (benomyl), Aug 4, Aug 17

Harvest: Sep 19

Experimental Design: Split plot in a randomized complete block with four replications, N assigned to main plots and varieties to subplots

Comments: Most entries emerged after the second flush. Emergence was slow for LMNT, LCSN, 2168, and 2146. MARS lodged at the highest rate of fertilizer N although yield was unaffected. The highest rate of N was required for optimum yields of all other entries (Table 8). Yields were good to excellent for the medium-grain entries. Yields were generally lower for the semidwarf long grains.

Table 8. Effect of N rate on agronomic performance of drill-seeded early rice varieties and advanced experimental lines. Buford Perry Farm, East Carroll Parish, LA. 1992.

	N rate (lb/A)																			
	Days to 50% heading					Plant height					% Lodging/type*				Grain yield at 12% moisture					
Variety	60	90	120	150	Mean	60	90	120	150	Mean	60	90	120	150	60	90	120	150	Mean	
						(cm)									(lb/A)					
Lemont	91	92	94	95	93	75	79	81	83	79	0/0	0/0	0/0	0/0	6799	7245	7223	7962	7308	
Mars	84	85	85	86	85	95	103	106	112	104	0/0	3/1	10/1	53/4	7723	8628	8669	8817	8460	
Lacassine	90	90	93	92	92	75	82	82	85	81	0/0	0/0	0/0	0/0	6073	7277	7062	8184	7149	
Orion	83	85	85	86	85	87	97	96	105	96	0/0	0/0	0/0	0/0	7346	7954	7969	8626	7974	
Cypress	89	89	91	92	90	80	85	85	90	85	0/0	0/0	0/0	0/0	6626	7272	7739	8242	7470	
Bengal	84	85	87	87	86	77	83	85	88	83	0/0	0/0	0/0	0/0	8060	9002	9342	9940	9086	
2146	88	89	89	89	89	94	100	102	105	100	0/0	0/0	0/0	0/0	7271	7874	8533	8962	8160	
2168	83	84	85	85	84	85	94	95	102	94	0/0	0/0	0/0	0/0	6724	7481	7961	8874	7760	
LaGrue	87	88	90	91	89	93	99	104	108	101	0/0	0/0	0/0	0/0	7356	8076	8459	9160	8263	
2143	86	86	87	88	87	76	84	84	91	84	0/0	0/0	0/0	0/0	7355	8704	8696	9672	8607	
N																				
Mean	87	88	89	89		84	91	92	97						7133	7951	8165	8844		
C.V., %			0.81					2.53									4.48			
LSD (0.01):																				
Nitrogen			1					4									682			
Variety			1					2									334			
V within N			-					-									668			
V across N			-					-									926			

* Lodging rate in percent/lodging type on a scale of 1 to 5, where 1 = leaning and 5 = complete.

Experiment: Very early variety x nitrogen trial

Location: Vermilion Parish, Errol Lounsberry Farm

Soil Type/Analysis: Crowley silt loam; pH: 5.2; O.M.: 1.01%; extractable nutrients (mg/kg): P-74, Na-36, K-60, Ca-711, Mg-164, Zn-3.66, S-14.21, As-2.61, Fe-88.49

Variety/Seeding Rate: TBNT, MBLE, ALAN, JKSN, RT 7015, 2031, 2115, ADAR, 150 lb/A

Planting Method/Date: Water-seeded, Mar 28

Fertilization: 45 lb/A P_2O_5 and K_2O ppl; N source, ammonium sulfate; 0.54 lb/A zinc (foliar), Apr 1; second crop, 75 lb N/A

Plot Size: 7 x 25 ft (175 ft^2)

Emergence Date: ALAN, 2115, Apr 6; MBLE, RT 7015, JKSN, TBNT, ADAR, Apr 7; 2031, Apr 8

Water Management: Flooded, Mar 26; drained, Mar 30; reflooded, Apr 3; harvest drainage, July 13; second crop flooded, July 31; harvest drainage, Sep 28

Herbicides: 1.0 oz ai/A Londax (bensulfuron-methyl), Apr 23;
3.5 lb ai/A Ordram (molinate), May 15

Insecticides: 0.6 lb al/A Furadan (carbofuran), May 8;
0.25 lb ai/A methyl parathion, June 25

Fungicides: 0.5 lb al/A Benlate (benomyl), June 15, June 25

Harvest: Main crop, July 28; second crop, Oct 12

Experimental Design: Split plot in a randomized complete block with four replications, N assigned to main plots and varieties to subplots

Comments: All entries displayed good to fair seedling vigor. TBNT lodged significantly at 150 lb N/A (Table 9) and grain yield was reduced. All entries required 90 to 120 lb N/A for optimum yields. Unlike previous years, disease problems were minimal and overall grain yields were much higher than normal. Ratoon yields of experimental lines ADAR and 2115 were over 2300 lb/A (Table 10). Total grain yields for TBNT and RT 7015 were significantly lower than the other entries.

Table 9. Effect of N rate on agronomic performance of water-seeded very early rice varieties and advanced experimental lines. Errol Loumsberry Farm, Vermilion Parish, LA. 1992.

	N rate (lb/A)																			
	Days to 50% heading					Plant height					% Lodging/type*				Grain yield at 12% moisture					
Variety	60	90	120	150	Mean	60	90	120	150	Mean	60	90	120	150	60	90	120	150	Mean	
						(cm)									(lb/A)					
Tebonnet	80	81	82	83	82	110	117	118	121	117	0/0	0/0	3/1	45/5	7408	7689	7728	6137	7241	
Maybelle	76	76	77	78	77	83	87	91	94	89	0/0	0/0	0/0	0/0	7260	7966	8447	7913	7896	
Alan	81	81	82	82	82	85	90	95	97	92	0/0	0/0	0/0	0/0	7744	7774	8114	8337	7992	
Jackson	79	80	81	81	80	83	92	92	96	91	0/0	0/0	0/0	0/0	7641	7950	8216	8044	7963	
RT 7015	80	80	81	82	81	76	79	79	85	80	0/0	0/0	0/0	0/0	6731	7358	7762	7508	7340	
2031	80	80	82	82	81	80	81	82	86	82	0/0	0/0	0/0	0/0	7806	8044	7393	7894	7784	
2115	75	75	75	75	75	75	78	79	85	79	0/0	0/0	0/0	0/0	6194	7732	7578	7605	7277	
Adair	83	83	84	84	84	95	101	102	108	101	0/0	0/0	0/0	0/0	7449	8166	7919	7825	7840	
N																				
Mean	79	80	81	81		86	91	92	96						7279	7835	7895	7658		
C.V., %			0.76					2.80									4.48			
LSD (0.01):																				
Nitrogen			1					3									453			
Variety			1					2									320			
V within N			-					-									640			
V across N			-					-									747			

* Lodging rate in percent/lodging type on a scale of 1 to 5, where 1 = leaning and 5 = complete.

Table 10. Effect of N rate in main crop on grain yields of water-seeded very early rice varieties and advanced experimental lines. Errol Lounsberry Farm, Vermilion Parish, LA. 1992.

Variety	Main crop grain yield at 12% moisture					Second crop grain yield at 12% moisture					Total grain yield at 12% moisture				
	60	90	120	150	Mean	60	90	120	150	Mean	60	90	120	150	Mean
	(lb/A)														
Tebonnet	7408	7689	7728	6137	7241	2034	1778	1905	1907	1906	9442	9467	9633	8044	9147
Maybelle	7260	7966	8447	7913	7896	1973	2051	2095	1907	2006	9232	10016	10542	9820	9903
Alan	7744	7774	8114	8337	7992	2255	1721	1562	1842	1845	9999	9495	9676	10179	9837
Jackson	7641	7950	8216	8044	7963	2104	1866	1677	2014	1916	9746	9816	9893	10058	9878
RT 7015	6731	7358	7762	7508	7340	2012	1876	1872	1930	1922	8743	9233	9634	9438	9262
2031	7806	8044	7393	7894	7784	1949	1980	1873	1928	1933	9755	10024	9266	9822	9717
2115	6194	7732	7578	7605	7277	2288	2186	2308	2478	2315	8482	9918	9886	10083	9592
Adair	7449	8166	7919	7825	7840	2656	2147	2223	2282	2327	10105	10314	10142	10107	10167
N															
Mean	7279	7835	7895	7658		2159	1951	1939	2036		9438	9785	9834	9694	
C.V., %			4.48					12.78					4.43		
LSD (0.01):															
Nitrogen			453					ns					ns		
Variety			320					241					399		
V within N			640					481					799		
V across N			747					569					899		

Experiment: Early variety x nitrogen trial

Location: Vermilion Parish, Errol Lounsberry Farm

Soil Type/Analysis: Crowley silt loam; pH: 5.4; O.M.: 0.98%; extractable nutrients (mg/kg): P-73, Na-48, K-56, Ca-723, Mg-170, Zn-3.21, S-13.03, As-2.52, Fe-90.95

Variety/Seeding Rate: LMNT, MARS, LCSN, ORIN, CPRS, BNGL, 2146, 2168, LGRU, 2143, 150 lb/A

Planting Method/Date: Water-seeded, Mar 27

Fertilization: 45 lb/A P_2O_5 and K_2O ppl; N source, ammonium sulfate; 0.54 lb/A zinc (foliar), Apr 1; second crop, 75 lb N/A

Plot Size: 7 x 25 ft (175 ft^2)

Emergence Date: CPRS, Apr 5; ORIN, MARS, LGRU, Apr 6; 2143, LCSN, BNGL, 2168, Apr 7; 2146, Apr 8; LMNT, Apr 9

Water Management: Flooded, Mar 26; drained, Mar 30; reflooded, Apr 3; harvest drainage, July 13; second crop flooded, July 31; harvest drainage, Sep 28

Herbicides: 1.0 oz al/A Londax (bensulfuron-methyl), Apr 23; 3.5 lb al/A Ordram (molinate), May 15

Insecticides: 0.6 lb al/A Furadan (carbofuran), May 8; 0.25 lb al/A methyl parathion, June 25

Fungicides: 0.5 lb al/A Benlate (benomyl), June 15, June 25

Harvest: Main crop, July 28; second crop, Oct 12

Experimental Design: Split plot in a randomized complete block with four replications, N assigned to main plots and varieties to subplots

Comments: Emergence was fair to good with MARS, ORIN, CPRS, and LGRU displaying the most vigor. Some lodging occurred when MARS, ORIN, and BNGL were fertilized with high N and as a result some yield reduction occurred (Table 11). Most entries required 90 to 120 lb N/A for optimum yield. Second crop yields were fair to good for all entries except LMNT (Table 12). Total grain yields were lowest for LMNT and 2146.

Table 11. Effect of N rate on agronomic performance of water-seeded early rice varieties and advanced experimental lines. Errol Lounsberry Farm, Vermilion Parish, LA. 1992.

	N rate (lb/A)																			
	Days to 50% heading					Plant height					% Lodging/type*				Grain yield at 12% moisture					
Variety	60	90	120	150	Mean	60	90	120	150	Mean	60	90	120	150	60	90	120	150	Mean	
						(cm)									(lb/A)					
Lemont	88	89	89	92	90	74	83	83	87	82	0/0	0/0	0/0	0/0	6630	7274	7025	6979	6977	
Mars	88	88	89	91	89	95	99	107	106	102	5/1	0/0	3/1	20/2	7353	7677	7884	6853	7442	
Lacassine	87	87	88	88	87	77	82	87	87	83	0/0	0/0	0/0	0/0	7249	7504	7794	7788	7583	
Orion	89	88	88	89	88	85	89	95	94	91	0/0	5/1	13/3	40/3	7138	7111	7863	6737	7212	
Cypress	85	86	87	87	86	75	78	83	85	80	0/0	0/0	0/0	0/0	7041	7123	7339	6771	7069	
Bengal	89	89	90	91	90	73	80	82	85	80	0/0	8/3	18/4	15/1	7896	8188	7723	7735	7885	
2146	90	90	91	92	91	93	100	104	103	100	0/0	0/0	0/0	0/0	6441	6565	7075	7134	6804	
2168	84	84	86	87	85	82	87	94	95	89	0/0	0/0	0/0	0/0	7227	7785	8124	8400	7884	
LaGrue	84	86	87	88	86	95	100	104	106	101	0/0	0/0	0/0	0/0	7379	7697	8241	8002	7830	
2143	91	91	92	92	92	74	78	83	85	80	0/0	5/1	0/0	0/0	6901	7375	8036	8055	7592	
N																				
Mean	88	88	89	90		82	87	92	94						7126	7430	7710	7445		
C.V., %			1.04					2.86									7.25			
LSD (0.01):																				
Nitrogen			1					4									ns			
Variety			1					2									500			
V within N			-					-									1001			
V across N			-					-									1105			

* Lodging rate in percent/lodging type on a scale of 1 to 5, where 1 = leaning and 5 = complete.

Table 12. Effect of N rate in main crop on grain yields of water-seeded early rice varieties and advanced experimental lines. Errol Lounsberry Farm, Vermilion Parish, LA. 1992.

Variety	Main crop grain yield at 12% moisture					Second crop grain yield at 12% moisture					Total grain yield at 12% moisture				
	60	90	120	150	Mean	60	90	120	150	Mean	60	90	120	150	Mean
	(lb/A)														
Lemont	6630	7274	7025	6979	6977	1406	1270	1945	1093	1428	8036	8544	8970	8072	8405
Mars	7353	7677	7884	6853	7442	2311	2077	1817	1877	2020	9664	9754	9701	8730	9462
Lacassine	7249	7504	7794	7788	7583	2104	2246	1939	2120	2102	9353	9750	9732	9908	9686
Orion	7138	7111	7863	6737	7212	2348	1793	2054	1695	1973	9486	8905	9917	8432	9185
Cypress	7041	7123	7339	6771	7069	2332	1999	2009	2174	2128	9373	9121	9348	8946	9197
Bengal	7896	8188	7723	7735	7885	1857	1688	1487	1976	1752	9753	9876	9209	9711	9637
2146	6441	6565	7075	7134	6804	1969	1753	1716	1642	1770	8410	8318	8791	8776	8574
2168	7227	7785	8124	8400	7884	2180	2093	2159	1922	2148	9407	9878	10283	10560	10032
LaGrue	7379	7697	8241	8002	7830	1922	1931	2029	2367	2062	9302	9628	10270	10369	9892
2143	6901	7375	8036	8055	7592	2203	1877	1946	1722	1937	9104	9252	9983	9777	9529
N															
Mean	7126	7430	7710	7445		2063	1873	1910	1883		9189	9303	9620	9328	
C.V., %			7.25					15.50					7.09		
LSD (0.01):															
Nitrogen			ns					ns					ns		
Variety			500					278					615		
V within N			1001					556					1062		
V across N			1105					569					1370		

Experiment: Very early variety x nitrogen trial

Location: Rapides Parish, Will Bollich Farm

Soil Type/Analysis: Moreland clay; pH: 6.3; O.M.: 3.11%; extractable nutrients (mg/kg): P-308, Na-26, K-431, Ca-3994, Mg-1353, Zn-3.26, S-10.94, As-10.56, Fe-140.1

Variety/Seeding Rate: TBNT, MBLE, ALAN, JKSN, RT 7015, 2031, 2115, ADAR, 100 lb/A

Planting Method/Date: Drill-seeded, May 8

Fertilization: N source, ammonium sulfate; 13.6 lb/A zinc (preplant incorporated)

Plot Size: 7 x 25 ft (175 ft^2)

Emergence Date: JKSN, May 21; 2031, TBNT, MBLE, ALAN, ADAR, May 22; 2115, RT 7015, May 23

Water Management: Flushed, May 14, June 11; flooded, June 18; harvest drainage, Aug 28

Herbicides: 4.0 lb ai/A Stam (propanil) May 30; 0.6 oz ai/A Londax (bensulfuron-methyl), June 24; 3.5 lb ai/A Ordram (molinate), June 26; 0.3 oz ai/A Londax, July 14

Insecticides: 0.6 lb al/A Furadan (carbofuran), July 14; 0.25 lb ai/A methyl parathion, Aug 19

Fungicides: 0.5 lb ai/A Rovral (iprodione), Aug 4

Harvest: Sep 14

Experimental Design: Split plot in a randomized complete block with four replications, N assigned to main plots and varieties to subplots

Comments: All entries emerged within 9 days after the initial flush. Stand density was less than optimum and was due to waterlogging and poor seed placement. The highest rate of fertilizer N was required for optimum grain yields of all entries (Table 13). Experimental lines 2031 and ADAR and ALAN significantly outyielded the other entries. Yield of 2115 was considerably lower.

Table 13. Effect of N rate on agronomic performance of drill-seeded very early rice varieties and advanced experimental lines. Will Bollich Farm, Rapides Parish, LA. 1992.

	N rate (lb/A)																			
	Days to 50% heading					Plant height					% Lodging/type*				Grain yield at 12% moisture					
Variety	60	90	120	150	Mean	60	90	120	150	Mean	60	90	120	150	60	90	120	150	Mean	
						(cm)									(lb/A)					
Tebonnet	84	83	84	85	84	108	114	123	125	117	0/0	0/0	0/0	0/0	5291	5838	6735	6975	6210	
Maybelle	77	78	78	78	78	82	87	92	96	89	0/0	0/0	0/0	0/0	4817	5547	6835	7068	6067	
Alan	82	83	83	84	83	88	93	96	102	95	0/0	0/0	0/0	0/0	5501	6612	7365	7755	6808	
Jackson	82	82	83	83	83	84	90	96	98	92	0/0	0/0	0/0	0/0	5479	6257	6985	7582	6576	
RT 7015	80	81	82	82	81	81	87	88	90	87	0/0	0/0	0/0	0/0	5148	5872	6731	7095	6211	
2031	83	83	84	84	83	84	88	92	95	90	0/0	0/0	0/0	0/0	5762	6939	7518	8037	7064	
2115	73	72	74	73	73	75	80	83	86	81	0/0	0/0	0/0	0/0	4332	5172	5896	6338	5434	
Adair	82	82	83	82	82	97	102	103	110	103	0/0	0/0	0/0	0/0	6012	6951	7438	7807	7052	
N																				
Mean	80	81	81	81		87	93	97	100						5293	6148	6938	7332		
C.V., %			1.47					2.41									4.10			
LSD (0.01):																				
Nitrogen			ns					1									398			
Variety			1					2									245			
V within N			-					-									491			
V across N			-					-									605			

* Lodging rate in percent/lodging type on a scale of 1 to 5, where 1 = leaning and 5 = complete.

Experiment: Early variety x nitrogen trial

Location: Rapides Parish, Will Bollich Farm

Soil Type/Analysis: Moreland clay; pH: 6.5; O.M.: 2.82%; extractable nutrients (mg/kg): P-321, Na-29, K-419, Ca-4382, Mg-1449, Zn-3.43, S-10.59, As-10.69, Fe-104.6

Variety/Seeding Rate: LMNT, MARS, LCSN, ORIN, CPRS, BNGL, 2146, 2168, LGRU, 2143, 100 lb/A

Planting Method/Date: Drill-seeded, May 3

Fertilization: N source, ammonium sulfate; 13.6 lb/A zinc (preplant incorporated)

Plot Size: 7 x 25 ft (175 ft^2)

Emergence Date: MARS, LGRU, May 19; CPRS, 2146, 2143, May 20; BNGL, LCSN, ORIN, May 21; LMNT, 2168, May 22

Water Management: Flushed, May 14, June 11; flooded, June 18; harvest drainage, Sep 2

Herbicides: 4.0 lb al/A Stam (propanil), May 30; 0.6 oz ai/A Londax (bensulfuron-methyl), June 24; 3.5 lb ai/A Ordram (molinate), June 26; 0.3 oz al/A Londax, July 14

Insecticides: 0.6 lb al/A Furadan (carbofuran), July 14

Fungicides: 0.5 lb al/A Rovral (iprodione), Aug 4

Harvest: Sep 14

Experimental Design: Split plot in a randomized complete block with four replications, N assigned to main plots and varieties to subplots

Comments: Entries emerged within 8 days of the initial flush. MARS lodged significantly at high N but no yield loss occurred. Reduced plant height of all entries indicated inefficient utilization of fertilizer N. Grain yields were generally lower at this location, and the highest rate of N was required for optimum yields of all entries (Table 14). Yields of the medium-grain entries were somewhat higher than most of the long grains.

Table 14. Effect of N rate on agronomic performance of drill-seeded early rice varieties and advanced experimental lines. Will Bollich Farm, Rapides Parish, LA. 1992.

	N rate (lb/A)																			
	Days to 50% heading					Plant height					% Lodging/type*				Grain yield at 12% moisture					
Variety	60	90	120	150	Mean	60	90	120	150	Mean	60	90	120	150	60	90	120	150	Mean	
						(cm)									(lb/A)					
Lemont	90	90	92	92	91	73	78	78	80	77	0/0	0/0	0/0	0/0	4482	5657	5726	6276	5535	
Mars	81	81	82	83	82	86	91	97	101	94	0/0	5/1	38/3	83/5	5437	6207	6919	7436	6500	
Lacassine	89	88	89	90	89	75	80	82	81	80	0/0	0/0	0/0	0/0	4333	5497	5890	6401	5530	
Orion	82	82	82	82	82	80	85	91	93	87	0/0	0/0	0/0	13/2	4862	5928	6480	7005	6069	
Cypress	86	86	87	88	87	80	82	85	86	83	0/0	0/0	0/0	0/0	4914	6198	6423	7023	6139	
Bengal	81	82	82	83	82	74	79	81	85	80	0/0	0/0	0/0	0/0	5568	7007	7324	7858	6939	
2146	86	87	86	87	87	89	94	97	103	96	0/0	0/0	0/0	0/0	4633	5965	6483	7188	6067	
2168	80	80	81	82	81	75	79	86	88	82	0/0	0/0	0/0	0/0	4660	5673	6171	7231	5934	
LaGrue	84	85	86	89	86	86	96	101	103	96	0/0	0/0	0/0	0/0	4819	6032	6546	7240	6159	
2143	83	83	83	84	83	71	71	75	77	74	0/0	0/0	0/0	0/0	5009	5997	6552	7244	6200	
N																				
Mean	84	84	85	86		79	83	87	90						4872	6016	6451	7090		
C.V., %			1.10					2.81									5.09			
LSD (0.01):																				
Nitrogen			1					3									801			
Variety			1					2									288			
V within N			-					-									577			
V across N			-					-									965			

* Lodging rate in percent/lodging type on a scale of 1 to 5, where 1 = leaning and 5 = complete.

Experiment: Very early variety x nitrogen trial

Location: Morehouse Parish, Zaunbrecher Farm

Soil Type/Analysis: Hebert silty clay; pH: 5.9; O.M.: 2.20%; extractable nutrients (mg/kg): P-229, Na-125, K-325, Ca-3072, Mg-866, Zn-2.80, S-6.27, As-8.55, Fe-151.8

Variety/Seeding Rate: TBNT, MBLE, ALAN, JKSN, RT 7015, 2031, 2115, ADAR, 150 lb/A

Planting Method/Date: Water-seeded, May 6

Fertilization: N source, ammonium sulfate; 13.6 lb/A zinc (preplant incorporated)

Plot Size: 7 x 25 ft (175 ft^2)

Emergence Date: ALAN, May 13; 2031, TBNT, MBLE, JKSN, ADAR, 2115, RT 7015, May 14

Water Management: Flooded, May 5; drained, May 9; flushed, May 13; flooded, June 19; harvest drainage, Aug 28

Herbicides: 3.0 lb ai/A Stam (propanil) + .75 lb ai/A Basagran (bentazon), May 23; 5.0 lb al/A Stam, June 15; 0.6 oz ai/A Londax (bensulfuron-methyl), June 24; 3.5 lb ai/A Ordram (molinate), June 26; 0.4 oz ai/A Londax, July 17

Insecticides: 0.6 lb ai/A Furadan (carbofuran), July 13; 0.25 lb ai/A methyl parathion, July 20

Fungicides: 0.5 lb ai/A Benlate (benomyl), July 20, Aug 4

Harvest: Sep 16

Experimental Design: Spiit plot in a randomized complete block with four replications, N assigned to main plots and varieties to subplots

Comments: All entries emerged within 8 days of water seeding. ALAN and 2031 required 90 lb N/A for optimum yield (Table 15). All other entries required 150 lb N/A. Yield of TBNT was highest while MBLE yielded significantly lower than all other entries.

Table 15. Effect of N rate on agronomic performance of water-seeded very early rice varieties and advanced experimental lines. Zaumbrecher Farm, Morehouse Parish, LA. 1992.

	N rate (lb/A)																			
	Days to 50% heading					Plant height					% Lodging/type*				Grain yield at 12% moisture					
Variety	60	90	120	150	Mean	60	90	120	150	Mean	60	90	120	150	60	90	120	150	Mean	
						(cm)									(lb/A)					
Tebonnet	85	86	88	90	87	107	114	115	127	116	0/0	0/0	0/0	33/3	7699	8208	8281	8564	8188	
Maybelle	78	80	81	80	80	68	72	72	76	72	0/0	0/0	0/0	0/0	5984	6751	6818	7577	6783	
Alan	87	88	90	90	89	78	82	84	90	84	0/0	0/0	0/0	0/0	6995	7669	7470	7560	7423	
Jackson	87	90	90	91	90	76	76	79	84	79	0/0	0/0	0/0	0/0	6705	7150	7366	7917	7285	
RT 7015	85	87	88	88	87	70	71	70	75	72	0/0	0/0	0/0	0/0	7021	6877	6690	7229	6954	
2031	86	87	91	90	89	70	74	73	75	73	0/0	0/0	0/0	0/0	6689	7235	7060	7093	7019	
2115	71	71	71	71	71	69	67	70	75	70	0/0	0/0	0/0	0/0	7009	7095	7241	7969	7329	
Adair	86	87	89	89	88	85	89	95	98	92	0/0	0/0	0/0	0/0	7039	7648	7662	8121	7618	
N																				
Mean	83	85	86	86		78	81	82	88						6893	7329	7324	7754		
C.V., %			1.44					4.18									5.45			
LSD (0.01):																				
Nitrogen			2					8									727			
Variety			1					3									372			
V within N			-					-									1051			
V across N			-					-									1001			

* Lodging rate in percent/lodging type on a scale of 1 to 5, where 1 = leaning and 5 = complete.

Experiment: Early variety x nitrogen trial

Location: Morehouse Parish, Zaunbrecher Farm

Soil Type/Analysis: Hebert silty clay; pH: 6.0; O.M.: 2.25%; extractable nutrients (mg/kg): P-221, Na-126, K-319, Ca-3080, Mg-892, Zn-2.77, S-6.28, As-8.12, Fe-154.8

Variety/Seeding Rate: LMNT, MARS, LCSN, ORIN, CPRS, BNGL, 2146, 2168, LGRU, 2143, 150 lb/A

Planting Method/Date: Water-seeded, May 5

Fertilization: N source, ammonium sulfate; 13.6 lb/A zinc (preplant incorporated)

Plot Size: 7 x 25 ft (175 ft^2)

Emergence Date: MARS, CPRS, May 13; ORIN, 2146, 2143, BNGL, 2168, LGRU, May 14; LCSN, LMNT, May 15

Water Management: Flooded, May 5, drained, May 9; flushed, May 13; flooded, June 19; harvest drainage, Sep 1

Herbicides: 3.0 lb al/A Stam (propanil) + .75 lb al/A Basagran (bentazon), May 23; 5.0 lb ai/A Stam, June 15; 0.6 oz al/A Londax (bensulfuron-methyl), June 24; 3.5 lb al/A Ordram (molinate), June 26; 0.4 oz al/A Londax, July 17

Insecticides: 0.6 lb al/A Furadan (carbofuran), July 13; 0.25 lb al/A methyl parathion, July 20

Fungicides: 0.5 lb ai/A Benlate (benomyl), July 20, Aug 4

Harvest: Sep 16

Experimental Design: Split plot in a randomized complete block with four replications, N assigned to main plots and varieties to subplots

Comments: Entries emerged within 10 days of the initial flush. MARS and ORIN lodged significantly at high N and yields were decreased (Table 16). Some lodging also occurred in 2168 but yield reduction was minimal. Yields were very good to excellent for all entries when fertilized with optimum N. Approximately 60 to 90 lb N/A were required for optimum yields.

Table 16. Effect of N rate on agronomic performance of water-seeded early rice varieties and advanced experimental lines. Zaumbrecher Farm, Morehouse Parish, LA. 1992.

	N rate (lb/A)																			
	Days to 50% heading					Plant height					% Lodging/type*				Grain yield at 12% moisture				
Variety	60	90	120	150	Mean	60	90	120	150	Mean	60	90	120	150	60	90	120	150	Mean
						(cm)									(lb/A)				
Lemont	94	96	97	98	96	78	83	85	88	84	0/0	0/0	0/0	0/0	8234	8464	8700	8336	8434
Mars	88	89	89	91	89	99	102	106	110	104	43/4	60/5	70/5	80/5	9109	8178	8081	6155	7881
Lacassine	92	94	95	96	94	81	86	88	89	86	0/0	0/0	0/0	0/0	8707	8711	8735	8649	8701
Orion	87	88	88	90	88	91	96	97	102	97	40/4	63/4	63/4	85/5	8403	8107	8385	7519	8104
Cypress	91	92	94	94	93	79	82	83	89	83	0/0	0/0	0/0	13/2	8335	8650	8594	8023	8400
Bengal	87	88	89	90	89	77	84	83	89	84	0/0	0/0	0/0	40/2	9300	9030	9740	9180	9313
2146	91	92	93	93	92	96	104	106	109	104	0/0	0/0	0/0	0/0	8732	9309	9294	8728	9016
2168	88	89	90	90	89	90	97	101	99	97	0/0	5/1	10/1	38/5	9065	9358	9475	9105	9251
LaGrue	89	90	93	94	92	97	104	108	111	105	0/0	0/0	0/0	13/1	9313	10263	10534	9564	9919
2143	89	90	91	91	90	81	83	86	91	85	0/0	0/0	0/0	0/0	9274	9403	9426	9723	9457
N																			
Mean	90	91	92	93		87	92	94	98						8847	8947	9096	8498	
C.V., %			1.10					3.67									6.71		
LSD (0.01):																			
Nitrogen			2					ns									562		
Variety			1					3									551		
V within N			-					-									1103		
V across N			-					-									1184		

* Lodging rate in percent/lodging type on a scale of 1 to 5, where 1 = leaning and 5 = complete.

Table 17. Straighthead evaluation for commercial rice varieties and advanced experimental lines. Rice Research Station, Crowley, LA. 1992.

Entry	Grain type*	Rating**
Jasmine 85	L	8.0
V7817	L	8.0
Toro 2	L	8.0
8902192	M	7.7
Orion	M	7.3
9002155	M	7.3
V4716	M	7.3
Guichow	L	7.3
Taiquing	L	7.3
Della	L	7.0
A301	L	7.0
AB647	M	7.0
Adair	L	7.0
9002022	M	7.0
Skybonnet	L	7.0
9002143	M	7.0
9102094	L	7.0
8902031	L	7.0
Mars	M	7.0
9202143	L	6.7
Katy	L	6.7
Bengal	M	6.7
Millie	L	6.7
Tebonnet	L	6.7
Texmont	L	6.3
L203	L	6.3
9002115	L	6.0
9102165	L	6.0
9002177	M	5.7
9102065	L	5.3
9002128	L	5.3
Gulfmont	L	5.3
Mercury	M	5.3
9202149	L	5.0
9202074	M	4.7
Newbonnet	L	4.7
Dellmont	L	4.7
9102168	M	4.3
8902146	L	4.3
Lacassine	L	4.0
Alan	L	4.0
Lemont	L	4.0
8803072	L	4.0
LaGrue	L	4.0

Continued.

Table 17. Continued.

Entry	Grain type*	Rating**
9202031	L	3.7
9102146	L	3.7
9202085	L	3.7
Jackson	L	3.7
9202128	M	3.3
Cypress	L	3.0
9102085	L	2.7
RT 7015	L	2.7
9202042	L	2.0
L202	L	2.0
Rico 1	M	1.7
9103069	M	1.3
Maybelle	L	1.3
Rosemont	L	1.0
9202068	L	1.0
Labelle	L	1.0

* L = long grain, M = medium grain.
** Rating based on a scale from 0 to 9, where 0 = resistant and 9 = highly susceptible.

Table 18. Growth stage information for the DD-50 Rice Management Program. Water-seeded rice varieties and advanced experimental lines. Rice Research Station, Crowley, LA. 1992.

Variety	Emergence date	First tiller	Green ring	Panicle 2 mm	Date of 50% heading
Very Early					
Tebonnet	4-08	4-23	5-20	5-28	6-20
Maybelle	4-06	4-23	5-18	5-24	6-15
Alan	4-05	4-21	5-20	5-26	6-20
Jackson	4-07	4-23	5-21	5-27	6-18
RT 7015	4-07	4-23	5-20	5-27	6-18
2031	4-07	4-22	5-20	5-27	6-19
2115	4-07	4-23	5-20	5-26	6-14
Adair	4-07	4-23	5-21	5-30	6-21
Early					
Lemont	4-08	4-24	5-24	6-07	6-30
Mars	4-05	4-24	5-24	6-02	6-26
Lacassine	4-08	4-24	5-26	6-07	6-28
Orion	4-07	4-23	5-25	6-04	6-25
Cypress	4-06	4-23	5-22	5-30	6-25
Bengal	4-06	4-23	5-27	6-04	6-26
2146	4-08	4-24	5-26	6-07	6-28
2168	4-07	4-23	5-27	6-05	6-24
LaGrue	4-08	4-24	5-24	6-07	6-27
2143	4-07	4-23	5-26	6-06	6-27
Aromatic					
Lemont	4-08	4-24	5-24	6-06	6-28
Dellmont	4-08	4-24	5-25	6-06	6-28
2085	4-08	4-24	5-24	6-03	6-24

Table 19. Growth stage information for the DD-50 Rice Management Program. Drill-seeded rice varieties and advanced experimental lines. Buford Perry Farm, East Carroll Parish, LA. 1992.

Variety	Emergence date	First tiller	Green ring	Panicle 2 mm	Date of 50% heading
Very Early					
Tebonnet	5-19	6-13	7-06	7-18	8-08
Maybelle	5-19	6-12	7-05	7-11	7-31
Alan	5-19	6-12	7-06	7-16	8-07
Jackson	5-19	6-11	7-09	7-16	8-06
RT 7015	5-19	6-11	7-06	7-16	8-05
2031	5-19	6-12	7-06	7-17	8-07
2115	5-19	6-12	7-01	7-08	7-27
Adair	5-19	6-11	7-08	7-17	8-06
Early					
Lemont	5-20	6-09	7-10	7-25	8-14
Mars	5-18	6-12	7-09	7-21	8-06
Lacassine	5-20	6-09	7-10	7-24	8-13
Orion	5-19	6-07	7-14	7-20	8-06
Cypress	5-19	6-09	7-06	7-25	8-11
Bengal	5-19	6-11	7-10	7-19	8-07
2146	5-20	6-12	7-11	7-24	8-10
2168	5-20	6-11	7-14	7-18	8-05
LaGrue	5-19	6-10	7-10	7-24	8-10
2143	5-19	6-10	7-12	7-20	8-08

Table 20. Growth stage information for the DD-50 Rice Management Program. Water-seeded rice varieties and advanced experimental lines. Errol Lounsberry Farm, Vermilion Parish, LA. 1992.

Variety	Emergence date	First tiller	Green ring	Panicle 2 mm	Date of 50% heading
Very Early					
Tebonnet	4-07	4-23	5-22	5-27	6-18
Maybelle	4-07	4-23	5-18	5-23	6-13
Alan	4-06	4-23	5-21	5-27	6-18
Jackson	4-07	4-23	5-22	5-29	6-16
RT 7015	4-07	4-22	5-19	5-27	6-17
2031	4-08	4-23	5-18	5-28	6-17
2115	4-06	4-21	5-19	5-23	6-11
Adair	4-07	4-24	5-22	5-29	6-20
Early					
Lemont	4-09	4-23	5-22	5-31	6-25
Mars	4-06	4-22	5-20	6-03	6-24
Lacassine	4-07	4-23	5-20	5-28	6-22
Orion	4-06	4-23	5-24	5-31	6-23
Cypress	4-05	4-23	5-18	5-28	6-21
Bengal	4-07	4-23	5-22	6-02	6-25
2146	4-08	4-23	5-26	6-04	6-26
2168	4-07	4-23	5-24	5-29	6-20
LaGrue	4-06	4-23	5-22	5-29	6-21
2143	4-07	4-23	5-26	6-04	6-27

Table 21. Growth stage information for the DD-50 Rice Management Program. Drill-seeded rice varieties and advanced experimental lines. Will Bollich Farm, Rapides Parish, LA. 1992.

Variety	Emergence date	First tiller	Green ring	Panicle 2 mm	Date of 50% heading
Very Early					
Tebonnet	5-22	6-16	7-04	7-15	8-06
Maybelle	5-22	6-13	7-04	7-13	7-31
Alan	5-22	6-14	7-06	7-16	8-05
Jackson	5-21	6-12	7-05	7-16	8-05
RT 7015	5-23	6-13	7-08	7-16	8-03
2031	5-22	6-12	7-04	7-14	8-05
2115	5-23	6-11	--	7-01	7-26
Adair	5-22	6-13	7-07	7-16	8-04
Early					
Lemont	5-22	6-13	7-07	7-16	8-13
Mars	5-19	6-16	7-09	7-17	8-04
Lacassine	5-21	6-15	7-09	7-17	8-11
Orion	5-21	6-15	7-12	7-21	8-04
Cypress	5-20	6-14	7-05	7-14	8-09
Bengal	5-21	6-14	7-09	7-18	8-04
2146	5-20	6-16	7-12	7-21	8-09
2168	5-22	6-14	7-11	7-18	8-03
LaGrue	5-19	6-15	7-09	7-17	8-08
2143	5-20	6-14	7-11	7-18	8-05

Table 22. Growth stage information for the DD-50 Rice Management Program. Water-seeded rice varieties and advanced experimental lines. Zaunbrecher Farm, Morehouse Parish, LA. 1992.

Variety	Emergence date	First tiller	Green ring	Panicle 2 mm	Date of 50% heading
Very Early					
Tebonnet	5-14	6-01	6-30	7-14	8-01
Maybelle	5-14	5-29	6-30	7-11	7-25
Alan	5-13	5-29	7-01	7-15	8-03
Jackson	5-14	5-30	7-04	7-15	8-04
RT 7015	5-14	5-29	6-30	7-13	8-01
2031	5-14	5-30	6-30	7-14	8-03
2115	5-14	5-30	6-25	7-02	7-16
Adair	5-14	5-31	7-02	7-13	8-02
Early					
Lemont	5-15	5-30	6-30	7-19	8-09
Mars	5-13	5-30	7-02	7-14	8-02
Lacassine	5-15	5-31	6-30	7-17	8-07
Orion	5-14	5-26	7-03	7-12	8-01
Cypress	5-13	5-26	6-30	7-15	8-06
Bengal	5-14	5-26	7-03	7-13	8-02
2146	5-14	5-31	7-04	7-17	8-05
2168	5-14	5-30	7-03	7-14	8-02
LaGrue	5-14	5-31	6-29	7-16	8-05
2143	5-14	5-29	7-06	7-15	8-03

RICE NUTRITION AND CULTURAL MANAGEMENT STUDIES

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A series of studies was conducted to evaluate various aspects of N management in drill-seeded rice. All studies were conducted at the Rice Research Station on a Crowley silt loam. Approximately 45 lb/A P_2O_5 and K_2O were preplant incorporated in each study. Urea was used as the N source, and in studies where N recovery was determined, a 2-atom % ^{15}N urea was used.

Three studies were conducted to compare the effectiveness of various methods of N management. In the Lemont-Tebonnet split application study, begun in 1991, an application of 120 lb N/A was applied in either a single preflood (PF) application, in a two-way split consisting of 90 lb N/A preflood and the remaining 30 lb at panicle initiation (PI), or in a three-way split consisting of 60 lb N/A PF, 30 lb at PI, and 30 lb at PI + 10 days. In the Lacassine study, 0, 60, and 120 lb N/A were applied PF. At midseason (MS), N was applied at either PI or panicle differentiation (PD) in a single 60 lb/A application or was split into two 30-lb applications and applied at either PI and PI + 10 days or PD and PD + 10 days. In the third study with the variety Lacassine, either 60 or 120 lb N/A were applied PF and were followed by an additional 30 lb N/A applied to a series of treatments over time. This midseason N was applied beginning at PD and at 5-day intervals up to 25 days after PD.

A study was continued from 1991 to evaluate the effectiveness of a controlled-release urea fertilizer when applied preplant (PP) in drill-seeded rice. Meister urea was developed by the Chisso Corporation and is currently used in a number of crops grown in Japan. Various timed-release formulations of Meister were applied as a single PP application in drill-seeded Lemont rice. The formulations included Meister 10, 15, and 20, which correspond to 100-, 150-, and 200-day release properties, respectively. These formulations were compared with urea applied in split applications according to currently recommended practices. All sources of N were applied at rates of 0, 50, 100, 150, and 200 lb/A. Meister formulations were applied as single PP applications.

The Meister formulations were surface applied and the test area was drill-seeded. At least 50% of the Meister urea was incorporated during the planting operation. There was no movement of any of the material remaining on the soil surface during flush irrigations prior to permanent flood establishment.

The urea fertilizer was applied in split applications with the exception of the 50 lb/A rate, which was applied as a single PF application. The 100 lb/A rate was split 70-30 with the initial amount being applied PF and the remainder at PI. The 150 lb/A rate was applied as a 90-30-30 split (PF + PI + PD), and the 200 lb/A rate as a 120-40-40 split in a similar fashion.

Plant samples (3 ft^2) were collected at 50% heading in the ^{15}N studies for N recovery. An additional sample was taken at maturity to determine total N uptake in the Lacassine study. These samples were partitioned into two components, grain and stems and leaves, to determine uptake. Whole plant samples were also taken in the controlled-release urea study at 50% heading for determining total N uptake and biomass. Milling yields were determined in the midseason PD application study only. Plant height, days to 50% heading, and grain yield in the main and ratoon crops were determined in all studies.

A ratoon study was conducted to compare single and split N applications. The variety Maybelle and experimental line 2031 were cultured in a water-seeded, pinpoint flood system. The main crop was fertilized with 120 lb N/A preplant incorporated. After harvest, N was applied at rates of 30, 60, 90, and 120 lb/A in either single applications prior to reflooding or applied in a 50-50 split with the second application being applied 3 weeks after the PF N. In addition to plant growth measurements and yield determinations, second crop tiller production and yield components were evaluated.

A seeding rate by N rate by variety study was conducted in Vermilion Parish to determine the influence of stand density and fertilizer N on disease development. The varieties Lacassine and Cypress were cultured in a water-seeded, pinpoint flood system with N being incorporated PP. Rates of both N and seed included 60, 90, 120, and 150 lb/A. Plant growth measurements, main and second crop grain yields, and disease incidence were determined.

P and K rate studies were conducted at the Rice Research Station and in East Carroll, Rapides, and Morehouse parishes. Each nutrient was applied at planting at 0, 20, 40, 60, and 80 lb/A in all possible combinations. The studies at the Rice Research Station and in East Carroll and Rapides were drill seeded. The study in Morehouse was cultured in a water-seeded, delayed flood system. Plant growth and grain yield measurements were determined at each location. Leaf samples were collected at PI for determining nutrient content. The nutrient analyses will be performed and reported on at a later date.

A row spacing and orientation study was conducted to evaluate the influence of row arrangement on plant growth, grain yields, and yield components of Cypress and Bengal. The study was drill-seeded at 100 lb seed/A, regardless of row orientation. Rice was seeded at constant 7- or 14-inch spacings or in a two- or three-row arrangement alternating with a 7-inch skip.

Experiment: N time and method of application

Location: Rice Research Station

Soil Type/Analysis: Crowley silt loam; pH: 5.9; O.M.: 1.03%; extractable nutrients (mg/kg): P-72, Na-61, K-76, Ca-1029, Mg-208, Zn-0.46, S-7.21, As-2.21, Fe-66.34

Variety/Seeding Rate: LMNT, TBNT, 100 lb/A

Planting Method/Date: Drill-seeded, Mar 20

Fertilization: 45 lb/A P_2O_5 and K_2O ppl, Mar 20; preflood N treatments, Apr 28; MS splits according to growth stage

Plot Size: 7 x 25 ft (175 ft^2)

Emergence Date: TBNT, Apr 4; LMNT, Apr 7

Water Management: Flushed, Apr 2, Apr 10, Apr 16, Apr 23; permanent flood, Apr 29; harvest drainage, July 20; ratoon flooded, Aug 5; harvest drainage, Oct 8

Herbicides: 3.0 lb ai/A Stam (propanil) + 1.0 lb ai/A Basagran (bentazon), Apr 21; 3.0 lb al/A Ordram (molinate), 0.8 oz al/A Londax (bensulfuron-methyl), May 15; 0.2 oz ai/A Londax, June 9

Insecticides: 0.6 lb al/A Furadan (carbofuran), June 4

Fungicides: 0.5 lb al/A Benlate (benomyl), June 23

Harvest: Aug 4, Oct 21

Experimental Design: Randomized complete block with four replications, factorial arrangement of variety and N application

Comments: Fertilizer N management significantly influenced grain yield of both varieties (Table 1). Highest grain yields occurred with a single application of 120 lb N/A. Yields decreased when N was applied in a two- and three-way split. N deficiency was evident before MS N was applied, especially with the three-way split. Either N deficiency was too severe prior to the topdress N application or the N was poorly utilized for such a significant yield reduction to occur. Second crop grain yields were not affected by N management.

Recovery of fertilizer N was greater for TBNT each year (Table 2). There were no differences in N recovery due to method of application.

Table 1. Influence of midseason N timing on agronomic performance of drill-seeded Lemont and Tebonnet rice. Rice Research Station, Crowley, LA. 1992.

Variety	Time and rate*	Days to 50% heading	Plant height	Grain yield at 12% moisture: Main crop	Second crop	Total	Whole plant weight
	(lb/A)		(cm)	(lb/A)			($g/3ft^2$)
Lemont	120 PF	93	73	6805	1771	8575	307
Tebonnet	120 PF	84	109	7844	1613	9457	383
Lemont	90PF¦30PI	91	71	6407	1840	8246	320
Tebonnet	90PF¦30PI	83	107	7266	1551	8817	376
Lemont	60PF¦30PI¦30PD	91	71	6000	1791	7791	303
Tebonnet	60PF¦30PI¦30PD	81	100	6567	1504	8071	338
C.V., %		1.10	3.58	5.33	13.98	4.79	8.84
				Main effects			
Variety:							
Lemont		92	72	6404	1800	8204	310
Tebonnet		83	105	7226	1556	8782	366
LSD (0.05)		1	3	316	204	354	26
Time and rate:							
Single pf		89	91	7324	1692	9016	345
Two-way		87	89	6836	1695	8532	348
Three-way		86	85	6283	1647	7931	321
LSD (0.05)		1	3	387	ns	434	ns

* PF = preflood, PI = panicle initiation, PD = panicle differentiation.

Table 2. Influence of midseason N timing on N recovery of drill-seeded Lemont and Tebonnet rice. Rice Research Station, Crowley, LA. 1992.

Variety	Time and rate*	Nitrogen Recovery 1991	1992
	(lb/A)	---------(%)---------	
Lemont	120 PF	29.6	38.8
Tebonnet	120 PF	37.7	46.6
Lemont	90PF¦30PI	31.8	42.4
Tebonnet	90PF¦30PI	33.5	47.1
Lemont	60PF¦30PI¦30PD	31.2	44.4
Tebonnet	60PF¦30PI¦30PD	33.2	48.1
C.V., %		12.29	7.08
		Main effects	
Variety:			
Lemont		30.9	41.9
Tebonnet		34.8	47.3
LSD (0.05)		3.5	2.7
Time and rate:			
Single pf		33.6	42.7
Two-way		32.6	44.8
Three-way		32.2	46.2
LSD (0.05)		ns	ns

* PF = preflood, PI = panicle initiation, PD = panicle differentiation.

Experiment: Midseason N time of application

Location: Rice Research Station

Soil Type/Analysis: Crowley silt loam; pH: 6.1; O.M.: 1.12%; extractable nutrients (mg/kg): P-65, Na-53, K-84, Ca-1224, Mg-227, Zn-0.42, S-6.73, As-3.51, Fe-54.20

Variety/Seeding Rate: LCSN, 100 lb/A

Planting Method/Date: Drill-seeded, Mar 20

Fertilization: 45 lb/A P_2O_5 and K_2O ppl, Mar 20; preflood N treatments, Apr 28; MS splits according to growth stage

Plot Size: 7 x 25 ft (175 ft^2)

Emergence Date: Apr 6

Water Management: Flushed, Apr 2, Apr 10, Apr 16, Apr 23; permanent flood, Apr 29; harvest drainage, July 17; ratoon flooded, Aug 5; harvest drainage, Oct 8

Herbicides: 3.0 lb ai/A Stam (propanil) + 1.0 lb ai/A Basagran (bentazon), Apr 21; 3.0 lb ai/A Ordram (molinate), 0.8 oz al/A Londax (bensulfuron-methyl), May 15; 0.2 oz al/A Londax, June 9

Insecticides: 0.6 lb al/A Furadan (carbofuran), June 4

Fungicides: 0.5 lb al/A Benlate (benomyl), June 23

Harvest: Aug 3, Oct 20

Experimental Design: Randomized complete block with four replications, factorial arrangement of PF and MS N

Comments: Visual response to PF urea treatments occurred within 5 days. During the later tillering stages, severe N deficiency was observed in the 0 N PF treatments. Plant growth and grain yield were significantly reduced with 0 PF N (Table 3). Midseason N increased grain yield where no PF N was applied but yields where significantly lower than in the 60 and 120 PF N treatments. Midseason N increased grain yield in all instances. There was no difference with respect to the timing or method of application of the MS N. Second crop grain yields were not affected by PF or MS N. Whole plant weight at 50% heading was significantly increased by both PF and MS N (Table 4). Timing or method of MS N application had no influence on plant weight. Preflood N significantly influenced uptake of midseason N whereas timing of midseason N had no effect.

Table 3. Influence of two midseason N timings on agronomic performance of drill-seeded Lacassine rice. Rice Research Station, Crowley, LA. 1992.

Preflood N	Midseason N timing*	Days to 50% heading	Plant height	Grain yield at 12% moisture: Main crop	Second crop	Total
(lb/A)			(cm)	----------(lb/A)----------		
0	PI	86	59	3876	1752	5627
0	PD	86	63	4149	1785	5934
0	PI¦PI + 10	87	59	3804	1836	5640
0	PD¦PD + 10	87	61	3825	1631	5456
0	0	86	59	3431	1764	5195
60	PI	84	66	6037	1853	7890
60	PD	84	67	5812	1976	7788
60	PI¦PI + 10	84	66	6002	1880	7883
60	PD¦PD + 10	84	65	6277	1842	8120
60	0	84	64	5618	1833	7451
120	PI	88	74	7650	1796	9446
120	PD	86	73	7516	1890	9406
120	PI¦PI + 10	87	71	7345	1714	9059
120	PD¦PD + 10	86	74	7891	1740	9630
120	0	87	72	7479	1705	9184
C.V., %		1.01	3.31	6.05	12.14	6.51
				Main effects		
Preflood N:						
0		86	60	3817	1754	5571
60		84	66	5949	1877	7826
120		87	73	7576	1769	9345
LSD (0.05)		1	1	223	ns	315
Midseason N:						
PI		86	67	5854	1800	7654
PD		85	68	5826	1884	7709
PI¦PI + 10		86	65	5717	1810	7527
PD¦PD + 10		86	67	5998	1738	7735
0		86	65	5509	1767	7277
LSD (0.05)		ns	2	288	ns	ns

* PI = panicle initiation, PD = panicle differentiation with a total of 60 lb N/A applied. Where midseason N was split, two applications of 30 lb/A each were applied 10 days apart.

Table 4. Influence of two midseason N timings on N recovery and total N uptake in drill-seeded Lacassine rice. Rice Research Station, Crowley, LA. 1992.

Preflood N	Midseason N timing*	Whole plant weight at 50% heading	^{15}N recovery	^{15}N uptake	Total N	
					Grain	Straw
(lb/A)			-(lb/A)-	-(%)-	------(lb/A)------	
0	PI	117	26	43	57	21
0	PD	100	19	32	58	21
0	PI|PI + 10	96	18	30	56	17
0	PD|PD + 10	98	20	33	54	19
0	0	73	--	--	43	18
60	PI	201	33	56	82	30
60	PD	200	36	59	86	31
60	PI|PI + 10	218	41	69	77	32
60	PD|PD + 10	195	30	51	83	36
60	0	192	--	--	76	29
120	PI	260	43	71	109	47
120	PD	254	45	75	114	46
120	PI|PI + 10	275	44	73	112	49
120	PD|PD + 10	260	46	77	117	52
120	0	215	--	--	105	50
C.V., %		13.50	25.24	25.14	12.31	19.10
			Main effects			
Preflood N:						
0		97	21	34	54	19
60		201	35	59	81	31
120		253	45	74	111	49
LSD (0.05)		16	6	10	6	4
Midseason N:						
PI		193	34	57	83	33
PD		185	34	56	86	32
PI|PI + 10		197	34	57	82	32
PD|PD + 10		185	32	54	85	36
0		160	--	--	75	32
LSD (0.05)		20	ns	ns	ns	ns

* PI = panicle initiation, PD = panicle differentiation with a total of 60 lb N/A applied. Where midseason N was split, two applications of 30 lb/A each were applied 10 days apart.

Experiment: N timing at PD

Location: Rice Research Station

Soil Type/Analysis: Crowley silt loam; pH: 5.9; O.M.: 0.98%; extractable nutrients (mg/kg): P-72, Na-59, K-85, Ca-1092, Mg-207, Zn-0.81, S-6.49, As-3.14, Fe-65.45

Variety/Seeding Rate: LCSN, 100 lb/A

Planting Method/Date: Drill-seeded, Mar 20

Fertilization: 45 lb/A P_2O_5 and K_2O ppl, Mar 20; preflood N treatments, Apr 28; PD N according to timing schedule

Plot Size: 7 x 25 ft (175 ft^2)

Emergence Date: Apr 6

Water Management: Flushed, Apr 2, Apr 10, Apr 16, Apr 23; permanent flood, Apr 29; harvest drainage, July 20; ratoon flooded, Aug 5; harvest drainage, Oct 8

Herbicides: 3.0 lb ai/A Stam (propanil) + 1.0 lb ai/A Basagran (bentazon), Apr 21; 3.0 lb ai/A Ordram (molinate), 0.8 oz ai/A Londax (bensulfuron-methyl), May 15; 0.2 oz ai/A Londax, June 9

Insecticides: 0.6 lb al/A Furadan (carbofuran), June 4

Fungicides: 0.5 lb al/A Benlate (benomyl), June 23

Harvest: Aug 4, Oct 21

Experimental Design: Randomized complete block with four replications, factorial arrangement of PF and PD N.

Comments: Visual response to PF urea treatments occurred within 5 days. Plant growth and grain yield were reduced with only 60 lb N PF (Table 5). There was no response to any PD application of N. Neither PF nor PD N influenced milling yield.

Table 5. Influence of midseason N timing on agronomic performance of drill-seeded Lacassine rice. Rice Research Station, Crowley, LA. 1992.

Preflood N	Midseason N timing*	Days to 50% heading	Plant height	Grain yield at 12% moisture: Main crop	Second crop	Total	% Milling yield**
(lb/A)			(cm)	----------(lb/A)----------			(head-total)
60	PD	85	69	6446	2063	8509	61-71
60	PD + 5	84	71	6401	1844	8245	61-71
60	PD + 10	85	70	6348	1861	8209	62-71
60	PD + 15	85	68	6180	1922	8102	62-71
60	PD + 20	85	69	6410	1960	8371	61-71
60	PD + 25	84	69	6120	1998	8119	61-72
60	0	85	67	6218	1993	8211	62-72
120	PD +	86	75	7790	2024	9814	64-71
120	PD + 5	86	75	7672	1861	9533	61-70
120	PD + 10	86	75	7478	1864	9342	61-70
120	PD + 15	86	72	7560	2032	9591	62-71
120	PD + 20	86	75	7667	1999	9666	64-72
120	PD + 25	86	75	7587	1995	9582	62-70
120	0	85	76	7732	1995	9727	64-71
C.V., %		0.92	2.95	4.08	8.24	3.62	2.47-1.35
				Main effects			
Preflood N:							
60		85	69	6303	1949	8252	62-71
120		86	75	7641	1967	9608	63-71
LSD (0.05)		1	1	154	ns	175	ns-ns
Midseason N:							
PD		86	72	7118	2044	9162	63-71
PD + 5		85	73	7036	1853	8889	61-71
PD + 10		85	73	6913	1862	8775	62-71
PD + 15		86	70	6870	1977	8847	62-71
PD + 20		85	72	7039	1980	9018	63-71
PD + 25		85	72	6854	1996	8850	61-71
0		85	71	6975	1994	8969	63-71
LSD (0.05)		ns	ns	ns	ns	ns	ns-ns

* PD = panicle differentiation with 30 lb N/A applied beginning at PD and continuing at 5-day intervals for 25 days.

** Milling yield is expressed as % head - % total.

Experiment: Controlled-release urea study

Location: Rice Research Station

Soil Type/Analysis: Crowley silt loam; pH: 6.1; O.M.: 1.10%; extractable nutrients (mg/kg): P-72, Na-72, K-80, Ca-1045, Mg-206, Zn-0.72, S-6.90, As-3.20, Fe-63.72

Variety/Seeding Rate: LMNT, 100 lb/A

Planting Method/Date: Drill-seeded, Mar 20

Fertilization: 45 lb/A P_2O_6 and K_2O, Mar 20; Meister treatments, Mar 20; PF urea treatments, Apr 28; MS splits according to growth stage

Plot Size: 7 x 25 ft (175 ft^2)

Emergence Date: Apr 7

Water Management: Flushed, Apr 2, Apr 10, Apr 16, Apr 23; permanent flood, Apr 29; harvest drainage, July 20; ratoon flooded, Aug 5; harvest drainage, Oct 8

Herbicides: 3.0 lb al/A Stam (propanil) + 1.0 lb ai/A Basagran (bentazon), Apr 21; 3.0 lb al/A Ordram (molinate), 0.8 oz al/A Londax (bensulfuron-methyl), May 15; 0.2 oz al/A Londax, June 9

Insecticides: 0.6 lb al/A Furadan (carbofuran), June 4

Fungicides: 0.5 lb al/A Benlate (benomyl), June 23

Harvest: Aug 4, Oct 21

Experimental Design: Randomized complete block with four replications, N rate assigned to main plot and source to subplot

Comments: A visual response to the preplant Meister treatments was observed 2 weeks after emergence. Visual response to PF urea occurred within 5 days. During later tillering stages, N deficiency was first observed where only 50 lb urea-N/A were applied PF. The Meister formulations also displayed mild N deficiency at the lower rates of application. Overall growth and color were obviously better at higher rates of N for all sources. Delayed heading occurred where no N was applied (Table 6). The Meister formulations did not influence heading, regardless of rate. A urea application of 200 lb N/A delayed heading.

Plant height was not influenced by source of N, but height did increase as rate of N increased. Biomass increased as rate of N increased for all sources. Urea and Meister 10 produced significantly more biomass than did Meister 15 and 20.

A significant source by N rate interaction occurred for main crop and total grain yield. The response to rate of N was variable with respect to source. Optimum grain yield occurred at a N rate of 200 lb/A for all sources. When only 50 lb N/A were applied, urea significantly outyielded all Meister treatments. The Meister 15 formulation outyielded all other sources when applied at rates of 100, 150, and 200 lb/A. An application of 150 lb Meister 15/A was comparable with 200 lb urea-N/A.

Ratoon yields were not influenced by rate of main crop N (Table 7). Source of main crop N did influence yield. Grain yields increased as N increased with Meister 20. This indicates a slight carryover of main crop N into the ratoon, possibly due to the extended release property of Meister 20. Yields tended to increase with the Meister 20 formulation as N increased to 200 lb/A.

There were no differences in total yield due to source of N. Total yields increased significantly as main crop N increased, although most of the increase is reflective of main crop yields.

Differences in effectiveness of the Meister formulations for increasing total N uptake are presented in Table 8 (data for 1991 and 1992). N concentration and total N uptake increased significantly when rate of N increased. Highest N concentrations resulted from the Meister formulations. There was also a significant increase in % N with Meister 20. No difference in total N uptake occurred among the Meister formulations. Total N uptake resulting from urea was significantly lower than all Meister formulations in 1991 but not in 1992.

There appears to be potential for use of a urea formulation where release of N can be controlled as with this Meister product. It will be important for the N release to be synchronized with plant growth for maximum benefit, especially where ratoon production is not practiced and carryover N may be undesirable. In this particular study, the Meister 15 formulation appeared to best fit into traditional fertilizer N management in drill-seeded rice. Meister 15 applied at a rate of 150 lb/A and urea applied at 200 lb/A were similar with respect to grain yield. The overall differences due to source of N were also generally small and indicate the potential for applying Meister-formulated urea as a single preplant application in drill-seeded rice.

Table 6. Effect of N source and rate on agronomic performance of drill-seeded Lemont rice. Rice Research Station, Crowley, LA. 1992.

	N source																			
	Days to 50% heading					Plant height					Whole plant					Grain yield at 12% moisture				
N rate	M10	M15	M20	Urea	N Mean	M10	M15	M20	Urea	N Mean	M10	M15	M20	Urea	N Mean	M10	M15	M20	Urea	N Mean
(lb/A)						----------(cm)----------					----------(g/3 ft²)---------					----------(lb/A)----------				
0	91	91	91	91	91	62	61	58	59	60	127	123	121	128	125	3807	3683	3598	3722	3703
50	88	89	89	89	89	63	63	65	68	65	210	188	179	235	203	5373	5323	5161	5793	5413
100	87	88	89	90	88	68	69	68	67	68	273	235	221	251	245	6438	6725	6121	6369	6413
150	87	87	88	89	88	71	74	69	70	71	264	279	243	289	269	7057	7404	7152	7041	7163
200	87	88	89	92	89	73	74	77	75	75	303	322	321	307	313	7871	8248	7578	7555	7813
Source Mean	88	88	89	90		67	68	67	68		235	229	217	242		6109	6277	5922	6096	
C.V., %			0.72					4.91					10.21					4.65		
LSD (0.05):																				
Nitrogen			1					1					24					230		
Source			1					ns					15					181		
S within N			-					-					-					404		
S across N			-					-					-					419		

Table 7. Effect of main crop N source and rate on the ratoon production of drill-seeded Lemont rice. Rice Research Station, Crowley, LA. 1992.

	N source														
	Main crop grain yield at 12% moisture					Ratoon crop grain yield at 12% moisture					Total grain yield at 12% moisture				
N rate	M10	M15	M20	Urea	N Mean	M10	M15	M20	Urea	N Mean	M10	M15	M20	Urea	N Mean
(lb/A)	(lb/A)														
0	3807	3683	3598	3722	3703	2149	2029	2092	1921	2048	5918	5676	5653	5608	5714
50	5373	5323	5161	5793	5413	2105	2068	2099	2251	2131	7441	7354	7222	8004	7505
100	6438	6725	6121	6369	6413	1997	2027	2254	1958	2059	8399	8716	8335	8293	8436
150	7057	7404	7152	7041	7163	2341	2144	2207	2149	2211	9356	9510	9319	9151	9334
200	7871	8248	7578	7555	7813	2167	2102	2470	1866	2151	9999	10313	10003	9388	9926
Source Mean	6109	6277	5922	6096		2152	2074	2224	2029		8223	8314	8106	8089	
C.V., %			4.65					10.55					4.33		
LSD (0.05):															
Nitrogen			230					ns					424		
Source			181					142					ns		
S within N			404					319					505		
S across N			419					415					609		

Table 8. Effect of N source and rate on N efficiency in drill-seeded Lemont rice. Rice Research Station, Crowley, LA. 1991-1992.

	N source - 1991										N source - 1992									
	N concentration					Total N uptake					N concentration					Total N uptake				
N rate	M10	M15	M20	Urea	N Mean	M10	M15	M20	Urea	N Mean	M10	M15	M20	Urea	N Mean	M10	M15	M20	Urea	N Mean
(lb/A)	(%)					(lb/A)					(%)					(lb/A)				
0	.71	.67	.70	.71	.70	62	58	51	60	58	.81	.77	.80	.82	.80	33	30	31	33	32
50	.73	.71	.86	.73	.76	98	94	111	96	100	.80	.84	.92	.79	.84	54	51	53	59	54
100	.81	.80	.88	.74	.81	116	140	149	100	126	.91	.87	1.06	.87	.93	79	66	75	70	72
150	.90	.88	1.00	.81	.90	158	156	168	133	154	.93	.96	1.08	.93	.97	78	85	84	86	83
200	.96	1.01	1.04	.89	.98	178	189	183	145	174	.98	1.09	1.22	1.00	1.07	96	113	125	99	108
Source Mean	.82	.81	.90	.78		122	127	132	107		.89	.91	1.02	.88		68	69	74	69	
C.V., %			9.52					18.07					7.94					13.81		
LSD (0.05):																				
Nitrogen			.04					15					.04					9		
Source			.05					14					.05					ns		

Experiment: Second crop variety x N management

Location: Rice Research Station

Soil Type/Analysis: Crowley silt loam; pH: 6.0; O.M.: .99%; extractable nutrients (mg/kg): P-63, Na-59, K-68, Ca-1060, Mg-192, Zn-0.71, S-7.26, As-2.77, Fe-59.34

Variety/Seeding Rate: MBLE, 2031, 150 lb/A

Planting Method/Date: Water-seeded, Mar 27

Fertilization: 45 lb/A P_2O_5 and K_2O ppl; N source, ammonium sulfate; second crop, variable rates and timings

Plot Size: 7 x 25 ft (175 ft^2)

Emergence Date: MBLE, Apr 6; 2031, Apr 7

Water Management: Flooded, Mar 25; drained, Mar 30; reflooded, Apr 2; harvest drainage, July 13; second crop flooded, July 31; harvest drainage, Oct 6

Herbicides: 0.6 oz al/A Londax (bensulfuron-methyl), Apr 14; 3.5 lb ai/A Ordram (molinate), May 15; 0.2 oz al/A Londax, May 26, June 9

Insecticides: 0.6 lb al/A Furadan (carbofuran), Apr 24

Fungicides: 0.5 lb al/A Benlate (benomyl), June 9, June 23

Harvest: Main crop, July 30; second crop, Oct 20

Experimental Design: Randomized complete block with four replications, factorial arrangement of varieties and N

Comments: Main crop grain yield of 2031 was 1000 lb/A greater than MBLE (Table 9). There was no difference in second crop tiller production or grain yield between the two varieties. Second crop grain yields increased significantly as rate of N increased. There was no advantage in applying N in a split application. Panicle number and grains per panicle were the only yield components significantly different with respect to variety (Table 10). Whole plant weight, panicle number, grain weight, and grain number increased significantly with as little as 30 lb N/A. There was no difference between a single or split application of N with any yield component.

Table 9. Effect of ratoon crop N management on grain yields. Rice Research Station, Crowley, LA. 1992.

Ratoon N*	Main crop days to 50% heading			Main crop plant height			Main crop grain yield at 12% moisture			Second crop grain yield at 12% moisture			Total grain yield at 12% moisture			Second crop tillers		
	MBLE	2031	N Mean	MBLE	2031	N Mean	MBLE	2031	N Mean	MBLE	2031	N Mean	MBLE	2031	N Mean	MBLE	2031	N Mean
				------(cm)------			----------(lb/A)----------									----(no/ft²)----		
0	81	85	83	93	84	88	8551	9567	9059	1893	1834	1863	10444	11401	10922	42	36	39
15 PF + 15 MS	81	85	83	91	83	87	8687	9628	9157	2347	2257	2302	11034	11885	11459	46	47	46
30 PF	81	85	83	94	86	90	8426	9408	8917	2122	1952	2037	10548	11361	10954	46	41	43
30 PF + 30 MS	81	85	83	93	85	89	8453	9360	8907	2704	2680	2692	11158	12041	11599	46	42	44
60 PF	81	85	83	94	83	89	8668	9714	9191	2678	2709	2694	11347	12422	11885	50	45	47
45 PF + 45 MS	81	85	83	93	85	89	8481	9474	8978	3009	2494	2751	11490	11968	11729	48	44	46
90 PF	81	85	83	94	85	90	8423	9845	9134	2509	2769	2639	10932	12614	11773	49	48	49
60 PF + 60 MS	81	85	83	94	85	89	8516	9495	9006	2904	2988	2946	11420	12483	11952	48	45	46
120 PF	81	86	83	91	84	87	8406	9893	9149	2598	3042	2820	11003	12935	11969	46	46	46
Variety mean	81	85		93	84		8512	9598		2529	2525		11042	12123		47	44	
C.V., %											10.74			4.38			11.49	
LSD (0.01):																		
Variety											ns			320			ns	
Nitrogen											363			679			7	
Contrast:																		
Single vs split N											ns			ns			ns	

* PF application is N applied after main crop harvest and prior to second crop floodup. MS split applied 3 weeks after PF application.

Table 10. Effect of ratoon crop N management on grain yields. Rice Research Station, Crowley, LA. 1992.

	Whole plant weight			Panicle number			Grain weight			Grain number			Grains per panicle		
Ratoon N*	MBLE	2031	N Mean	MBLE	2031	N Mean	MBLE	2031	N Mean	MBLE	2031	N Mean	MBLE	2031	N Mean
	-------(g/3 ft²)------			--------(3 ft²)-------			------(g/3 ft²)-------			--------(3 ft²)-------					
0	259	250	255	209	163	186	74	64	69	3552	2752	3152	18	17	17
15 PF + 15 MS	303	299	301	192	255	223	97	87	92	4687	3778	4233	25	15	20
30 PF	300	320	310	204	274	239	83	91	87	4092	4025	4059	21	15	18
30 PF + 30 MS	327	366	347	189	277	233	94	108	101	4524	4724	4624	24	18	21
60 PF	341	330	336	186	217	202	88	92	90	4438	4092	4265	24	19	21
45 PF + 45 MS	355	348	352	227	262	245	96	105	101	4709	4622	4665	22	18	20
90 PF	345	393	369	216	270	243	95	108	102	4805	4991	4898	23	18	21
60 PF + 60 MS	354	384	369	218	320	269	95	110	102	4630	4902	4766	22	15	19
120 PF	353	421	387	232	295	263	85	115	100	4309	5519	4914	20	19	20
Variety mean	326	346		208	259		90	98		4416	4378		22	17	
C.V., %		9.79			19.68			14.12			13.25			19.70	
LSD (0.01):															
Variety		ns			29			ns			ns			2	
Nitrogen		44			61			18			780			ns	
Contrast:															
Single vs split N		ns			ns			ns			ns			ns	

* PF application is N applied after main crop harvest and prior to second crop floodup. MS split applied 3 weeks after PF application.

Experiment: Seeding rate x variety x nitrogen rate trial

Location: Vermilion Parish, Errol Lounsberry Farm

Soil Type/Analysis: Crowley silt loam; pH: 5.4; O.M.: 0.98%; extractable nutrients (mg/kg): P-73, Na-48, K-56, Ca-723, Mg-170, Zn-3.21, S-13.03, As-2.52, Fe-90.95

Variety/Seeding Rate: CPRS, LCSN, 60, 90, 120, 150 lb N/A

Planting Method/Date: Water-seeded, Mar 28

Fertilization: 45 lb/A P_2O_6 and K_2O ppl; N source, ammonium sulfate, 60, 90, 120, 150 lb N/A; 0.54 lb/A zinc (foliar), Apr 1; second crop, 75 lb N/A

Plot Size: 7 x 25 ft (175 ft^2)

Emergence Date: CPRS, Apr 5; LCSN, Apr 7

Water Management: Flooded, Mar 26; drained, Mar 30; reflooded, Apr 3; harvest drainage, July 13; second crop flooded, July 31; harvest drainage, Sep 28

Herbicides: 1.0 oz ai/A Londax (bensulfuron-methyl), Apr 23; 3.5 lb al/A Ordram (molinate), May 15

Insecticides: 0.6 lb al/A Furadan (carbofuran), May 8; 0.25 lb al/A methyl parathion, June 25

Fungicides: 0.5 lb al/A Benlate (benomyl), June 15, June 25

Harvest: Main crop, July 28; second crop, Oct 12

Experimental Design: Factorial arrangement of variety, seeding rate, and N rate in a randomized complete block with four replications

Comments: Stand densities of CPRS were much higher than those of LCSN (Table 11). Grain yield of Cypress was significantly higher than that of LCSN also. Main and second crop yields were not influenced by N rate or seeding rate (Table 12). Disease pressure was relatively low compared with previous years. Disease reactions were significantly different for CPRS and LCSN (Table 13). More sheath blight occurred in CPRS than in LCSN although the the disease probably had little effect on yield. Blast and brown spot were more prevalent in LCSN than in CPRS.

Table 11. Influence of N rate and seeding rate on performance and grain yields of water-seeded Cypress and Lacassine rice. Errol Loumaberry Farm, Vermilion Parish, LA. 1992.

Rate		Stand density		Days to 50% heading		Plant height		Grain yield at 12% moisture	
Nitrogen	Seed	Cypress	Lacassine	Cypress	Lacassine	Cypress	Lacassine	Cypress	Lacassine
----(lb/A)----		----(plants/ft²)---				--------(cm)--------		-------(lb/A)------	
60	60	21	12	86	93	83	82	7183	6961
60	90	29	16	87	91	78	82	7494	6893
60	120	40	16	86	89	76	82	7410	6888
60	150	46	22	86	87	76	79	7287	6685
90	60	20	12	86	93	86	85	6565	7424
90	90	33	20	87	90	81	86	6837	6844
90	120	48	24	87	89	81	85	7292	6869
90	150	49	27	86	87	79	81	7458	6680
120	60	25	12	90	94	89	89	6932	7283
120	90	30	16	88	91	88	87	7284	7177
120	120	32	22	87	90	85	86	6746	6910
120	150	52	25	87	88	83	87	7078	7041
150	60	21	9	90	93	86	89	7304	7359
150	90	27	17	89	93	88	89	7376	6706
150	120	45	23	88	91	88	86	7507	6241
150	150	55	39	88	91	86	87	7493	6761
Variety Mean		36	20	88	91	83	85	7202	6920
C.V., %		25.14		1.26		2.50		9.27	
LSD (0.05):									
Variety		2		1		1		230	
Nitrogen mean									
60		25		89		80		7078	
90		29		89		83		6996	
120		27		89		86		7056	
150		30		90		88		7093	
LSD (0.05):		ns		1		1		ns	
Seed rate mean									
60		16		91		86		7124	
90		24		90		85		7076	
120		31		89		84		7060	
150		40		86		82		6983	
LSD (0.05):		3		1		1		ns	
N rate x seed rate		*		ns		ns		ns	

Table 12. Influence of N rate and seeding rate in the main crop on grain yields of water-seeded Cypress and Lacassine rice. Errol Lounsberry Farm, Vermilion Parish, LA. 1992.

Rate		Main crop grain yield at 12% moisture		Second crop grain yield at 12% moisture		Total grain yield at 12% moisture	
Nitrogen	Seed	Cypress	Lacassine	Cypress	Lacassine	Cypress	Lacassine
----------	----------	----------	----------	----------	----------	----------	----------
				(lb/A)			
60	60	7163	6961	1906	2403	9069	9363
60	90	7494	6893	2057	2211	9550	9104
60	120	7410	6888	2168	2097	9577	8985
60	150	7287	6685	1811	1949	9098	8633
90	60	6565	7424	2168	2000	8732	9423
90	90	6837	6844	2146	2147	8983	8990
90	120	7292	6869	1981	2146	9273	9015
90	150	7458	6680	1848	1775	9306	8454
120	60	8932	7283	2050	2515	8982	9798
120	90	7284	7177	2000	1920	9284	9166
120	120	6746	6910	1641	2142	8387	9052
120	150	7078	7041	1834	2031	8912	9071
150	60	7304	7359	2127	2354	9430	9712
150	90	7376	6706	1846	2288	9222	8993
150	120	7507	6241	2123	1860	9630	8100
150	150	7493	6761	1928	1915	9419	8675
Variety Mean		7202	6920	1977	2114	9178	9033
C.V., %		9.27		15.34		7.84	
LSD (0.05):							
Variety		230		110		ns	
Nitrogen mean							
60		7078		2075		9172	
90		6996		2026		9022	
120		7056		2025		9082	
150		7093		2055		9148	
LSD (0.05):		ns		ns		ns	
Seed rate mean							
60		7124		2190		9314	
90		7076		2086		9162	
120		7060		2020		9002	
150		8983		1886		8948	
LSD (0.05):		ns		156		ns	
N rate x seed rate		ns		ns		ns	

Table 13. Influence of N rate and seeding rate on disease reactions of water-seeded Cypress and Lacassine rice. Errol Loumsberry Farm, Vermilion Parish, LA. 1992.

Rate		Sheath blight (tiller infection)		Sheath blight*		Blast		Brown spot*	
Nitrogen	Seed	Cypress	Lacassine	Cypress	Lacassine	Cypress	Lacassine	Cypress	Lacassine
----(lb/A)----		--------(%)--------				--------(%)--------			
60	60	0.7	0.0	5.7	4.7	6.2	18.7	2.5	4.5
60	90	2.5	0.2	6.0	5.5	5.0	17.5	2.7	4.7
60	120	4.0	2.7	6.7	5.7	3.7	18.7	3.2	4.5
60	150	5.5	3.2	5.7	5.7	5.7	22.5	3.2	5.0
90	60	1.0	1.0	5.7	6.0	3.7	27.5	3.0	4.0
90	90	3.7	1.2	6.2	5.5	8.7	17.5	2.7	4.0
90	120	2.0	1.2	5.7	5.0	10.0	13.0	1.5	4.7
90	150	5.2	1.7	7.0	6.0	13.7	12.5	2.2	4.5
120	60	1.0	0.2	6.0	5.5	8.7	20.0	2.2	3.5
120	90	2.2	4.2	6.5	6.0	8.7	23.7	2.5	3.0
120	120	1.7	0.5	6.7	5.7	8.7	15.0	2.5	3.2
120	150	2.2	9.0	6.5	5.5	8.7	18.7	2.2	3.5
150	60	3.7	1.0	5.7	5.2	5.0	15.0	2.2	3.2
150	90	10.0	3.0	7.0	5.7	7.5	7.5	2.7	4.0
150	120	7.5	4.5	6.7	6.0	8.7	18.7	2.2	3.0
150	150	11.0	3.0	7.2	5.5	11.2	13.7	2.2	3.2
Variety Mean		4.0	2.3	6.3	5.6	7.8	17.5	2.5	3.9
C.V., %		147.51		12.95		61.77		23.02	
LSD (0.05):									
Variety		1.6		0.3		2.7		0.3	
Nitrogen mean									
60		2.4		5.7		12.3		3.8	
90		2.2		5.9		13.3		3.3	
120		2.7		6.1		14.1		2.8	
150		5.5		6.2		10.9		2.9	
LSD (0.05):		2.3		ns		0.4		0.4	
Seed rate mean									
60		1.1		5.6		13.1		3.2	
90		3.4		6.1		12.0		3.3	
120		3.0		6.1		12.1		3.1	
150		5.1		6.2		13.4		3.3	
LSD (0.05):		2.3		0.4		ns		ns	
N rate x seed rate		ns		ns		ns		ns	

* Ratings based on 0-9 scale where 0 = no disease (immune) and 9 = maximum disease (very susceptible).

Experiment: P and K rate study

Location: Rice Research Station

Soil Type/Analysis: Crowley silt loam; pH: 6.1; O.M.: 1.00%; extractable nutrients (mg/kg): P-73, Na-53, K-94, Ca-1248, Mg-229, Zn-0.40, S-6.38, As-3.97, Fe-54.14

Variety/Seeding Rate: MBLE, 100 lb/A

Planting Method/Date: Drill-seeded, Apr 10

Fertilization: Variable rates of P and K, Mar 20; 20 lb N/A preflush, Apr 23; 135 lb N/A preflood as ammonium sulfate, Apr 28

Plot Size: 7 x 25 ft (175 ft^2)

Emergence Date: Apr 17

Water Management: Flushed, Apr 10, Apr 16, Apr 23; permanent flood, Apr 29; harvest drainage, July 17; ratoon flooded, Aug 5; harvest drainage, Oct 8

Herbicides: 3.0 lb al/A Stam (propanil) + 1.0 lb al/A Basagran (bentazon), Apr 21; 3.0 lb al/A Ordram (molinate), 0.8 oz al/A Londax (bensulfuron-methyl), May 15; 0.2 oz al/A Londax, June 9

Insecticides: 0.6 lb al/A Furadan (carbofuran), June 4

Fungicides: 0.5 lb al/A Benlate (benomyl), June 23

Harvest: Aug 3, Oct 21

Experimental Design: Randomized complete block with four replications, factorial arrangement of P and K

Comments: Grain yield increased with an application of 20 lb P/A (Table 14). There was no response to additional P. There was no response to K.

Table 14. Influence of variable rates of phosphorus and potassium on drill-seeded Maybelle rice. Rice Research Station, Crowley, LA. 1992.

Phosphorus rate	Potassium rate	Days to 50% heading	Plant height	Grain yield at 12% moisture
--------(lb/A)--------			-(cm)-	----(lb/A)----
0	0	78	85	7782
0	20	79	84	7972
0	40	80	87	7494
0	60	79	86	7922
0	80	78	86	7797
20	0	77	84	8054
20	20	77	87	8211
20	40	77	84	8134
20	60	77	88	8279
20	80	77	86	8051
40	0	78	86	7554
40	20	76	87	8013
40	40	77	87	8120
40	60	77	85	7978
40	80	76	87	8075
60	0	77	85	7883
60	20	77	85	7883
60	40	76	87	8189
60	60	76	84	7797
60	80	76	86	8081
80	0	77	83	7698
80	20	76	86	7953
80	40	77	86	8031
80	60	77	86	7958
80	80	77	84	7750
C.V., %		1.53	2.87	4.41
		Main effects		
Phosphorus:				
0		79	85	7793
20		77	86	8146
40		77	86	7948
60		76	86	7966
80		77	85	7878
LSD (0.05)		1	ns	221
Potassium:				
0		77	85	7794
20		77	86	8006
40		77	86	7994
60		77	86	7987
80		77	86	7951
LSD (0.05)		ns	ns	ns

Experiment: P and K rate study

Location: East Carroll Parish, Buford Perry Farm

Soil Type/Analysis: Sharkey clay; pH: 6.6; O.M.: 3.83%; extractable nutrients (mg/kg): P-377, Na-57, K-558, Ca-6492, Mg-1421, Zn-3.24, S-6.08, As-10.64, Fe-106.3

Variety/Seeding Rate: MBLE, 100 lb/A

Planting Method/Date: Drill-seeded, Apr 30

Fertilization: Variable rates of P and K, 13.6 lb/A zinc (preplant incorporated), Apr 30; 0.54 lb/A zinc (foliar), June 5; 135 lb N/A PF as ammonium sulfate, June 17

Plot Size: 7 x 25 ft (175 ft^2)

Emergence Date: May 19

Water Management: Flushed, May 13, May 18; flooded, June 18; harvest drainage, Sep 4

Herbicides: 5.0 lb ai/A Stam (propanil) June 13; 0.6 oz ai/A Londax (bensulfuron-methyl), June 26; 3.5 lb ai/A Ordram (molinate), June 26; 0.4 oz ai/A Londax, July 11

Insecticides: 0.6 lb ai/A Furadan (carbofuran), July 2; 0.25 lb ai/A methyl parathion, Aug 19

Fungicides: 0.5 lb ai/A Benlate (benomyl), Aug 4, Aug 17

Harvest: Sep 18

Experimental Design: Randomized complete block with four replications, factorial arrangement of P and K

Comments: No response to P or K was measured (Table 15).

Table 15. Influence of variable rates of phosphorus and potassium on drill-seeded Maybelle rice. Buford Perry Farm, East Carroll Parish, LA. 1992.

Phosphorus rate	Potassium rate	Days to 50% heading	Plant height	Grain yield at 12% moisture
--------(lb/A)--------			-(cm)-	----(lb/A)----
0	0	77	87	8178
0	20	78	85	8234
0	40	78	87	8155
0	60	78	88	8352
0	80	77	87	8472
20	0	77	88	8013
20	20	77	85	7989
20	40	77	86	8393
20	60	77	87	8420
20	80	78	88	8285
40	0	78	87	8295
40	20	77	88	8220
40	40	77	88	8555
40	60	78	89	8291
40	80	77	85	8224
60	0	78	86	8140
60	20	78	86	8312
60	40	78	88	8574
60	60	78	89	8337
60	80	78	87	8367
80	0	77	88	8419
80	20	78	87	8113
80	40	78	85	8135
80	60	77	91	8486
80	80	78	87	8209
C.V., %		0.91	2.92	4.76
		Main effects		
Phosphorus:				
0		78	87	8278
20		78	87	8220
40		77	87	8317
60		78	87	8346
80		78	88	8272
LSD (0.05)		ns	ns	ns
Potassium:				
0		78	87	8209
20		78	86	8174
40		78	87	8363
60		78	89	8377
80		78	87	8311
LSD (0.05)		ns	2	ns

Experiment: P and K rate study

Location: Rapides Parish, Will Bollich Farm

Soil Type/Analysis: Moreland clay; pH: 6.4; O.M.: 3.06%; extractable nutrients (mg/kg): P-319, Na-26, K-420, Ca-4226, Mg-1366, Zn-3.39, S-10.71, As-11.42, Fe-123.6

Variety/Seeding Rate: MBLE, 100 lb/A

Planting Method/Date: Drill-seeded, May 8

Fertilization: Variable rates of P and K, May 8; 13.6 lb/A zinc (preplant incorporated); 150 lb N/A PF as ammonium sulfate, June 16

Plot Size: 7 x 25 ft (175 ft^2)

Emergence Date: MBLE, May 21

Water Management: Flushed, May 14, June 11; flooded, June 18; harvest drainage, Aug 28

Herbicides: 4.0 lb al/A Stam (propanil) May 30; 0.6 oz al/A Londax (bensulfuron-methyl), June 24; 3.5 lb al/A Ordram (molinate), June 26; 0.3 oz al/A Londax, July 14

Insecticides: 0.6 lb al/A Furadan (carbofuran), July 14; 0.25 lb al/A methyl parathion, Aug 19

Fungicides: 0.5 lb al/A Rovral (iprodione), Aug 4

Harvest: Sep 14

Experimental Design: Randomized complete block with four replications, factorial arrangement of P and K

Comments: There was no response to P or K (Table 16).

Table 16. Influence of variable rates of phosphorus and potassium on drill-seeded Maybelle rice. Will Bollich Farm, Rapides Parish, LA. 1992.

Phosphorus rate	Potassium rate	Days to 50% heading	Plant height	Grain yield at 12% moisture
--------(lb/A)--------			-(cm)-	----(lb/A)----
0	0	79	93	6683
0	20	79	92	6328
0	40	79	92	6634
0	60	79	91	6454
0	80	79	92	6262
20	0	79	91	6473
20	20	78	94	6695
20	40	79	93	6829
20	60	78	92	6645
20	80	79	92	6115
40	0	79	92	6454
40	20	79	92	6415
40	40	78	91	6371
40	60	79	91	6444
40	80	78	92	6426
60	0	78	91	6287
60	20	79	93	6551
60	40	79	92	6605
60	60	79	91	6088
60	80	79	94	6817
80	0	78	93	6487
80	20	79	92	6394
80	40	79	93	6300
80	60	78	93	6592
80	80	78	93	6621
C.V., %		1.17	2.45	7.12
		Main effects		
Phosphorus:				
0		79	92	6472
20		79	92	6552
40		78	92	6422
60		79	92	6469
80		79	93	6479
LSD (0.05)		ns	ns	ns
Potassium:				
0		79	92	6477
20		79	93	6476
40		79	92	6548
60		79	92	6445
80		79	93	6448
LSD (0.05)		ns	ns	ns

Experiment: P and K rate study

Location: Morehouse Parish, Zaunbrecher Farm

Soil Type/Analysis: Hebert silty clay; pH: 6.0; O.M.: 2.24%; extractable nutrients (mg/kg): P-154, Na-141, K-317, Ca-3277, Mg-945, Zn-2.63, S-6.67, As-8.32, Fe-129.2

Variety/Seeding Rate: MBLE, 150 lb/A

Planting Method/Date: Dry broadcast seeded, May 5

Fertilization: Variable rates of P and K, 13.6 lb/A zinc (preplant incorporated), May 5; 120 lb N/A PF as ammonium sulfate, June 17

Plot Size: 7 x 25 ft (175 ft^2)

Emergence Date: May 17

Water Management: Flooded, May 5; drained, May 9; flushed, May 13; flooded, June 19; harvest drainage, Aug 28

Herbicides: 3.0 lb al/A Stam (propanil) + .75 lb al/A Basagran (bentazon), May 23; 5.0 lb al/A Stam, June 15; 0.6 oz al/A Londax (bensulfuron-methyl), June 24; 3.5 lb ai/A Ordram (molinate), June 26; 0.4 oz al/A Londax, July 17

Insecticides: 0.6 lb al/A Furadan (carbofuran), July 13; 0.25 lb al/A methyl parathion, July 20

Fungicides: 0.5 lb al/A Benlate (benomyl), July 20, Aug 4

Harvest: Sep 16

Experimental Design: Randomized complete block with four replications, factorial arrangement of P and K

Comments: There was no response to P or K (Table 17).

Table 17. Influence of variable rates of phosphorus and potassium on dry-broadcast seeded Maybelle rice. Zaunbrecher Farm, Morehouse Parish, LA. 1992.

Phosphorus rate	Potassium rate	Days to 50% heading	Plant height	Grain yield at 12% moisture
--------(lb/A)--------			-(cm)-	----(lb/A)----
0	0	85	73	6650
0	20	85	73	6466
0	40	85	72	6609
0	60	86	73	6656
0	80	86	72	6525
20	0	86	75	6506
20	20	86	71	6656
20	40	86	75	6718
20	60	85	74	6830
20	80	85	71	6416
40	0	85	72	6830
40	20	85	71	6806
40	40	86	72	6239
40	60	85	72	6759
40	80	85	70	6709
60	0	85	70	6611
60	20	85	72	6727
60	40	85	71	6674
60	60	85	75	6697
60	80	85	71	6814
80	0	85	73	6815
80	20	85	74	6855
80	40	85	73	6715
80	60	86	75	6393
80	80	85	72	6793
C.V., %		0.73	4.24	4.64
		Main effects		
Phosphorus:				
0		85	73	6581
20		85	73	6625
40		85	72	6669
60		85	72	6705
80		85	73	6714
LSD (0.05)		ns	ns	ns
Potassium:				
0		85	73	6682
20		85	72	6702
40		85	73	6591
60		85	74	6667
80		85	71	6651
LSD (0.05)		ns	ns	ns

Experiment: Row spacing and orientation

Location: Rice Research Station

Soil Type/Analysis: Crowley silt loam; pH: 6.4; O.M.: 1.21%; extractable nutrients (mg/kg): P-60, Na-73, K-118, Ca-1352, Mg-353, Zn-1.03, S-7.18, As-3.83, Fe-28.37

Variety/Seeding Rate: CPRS, BNGL, 100 lb/A

Planting Method/Date: Drill-seeded, Apr 23

Fertilization: 45 lb/A P_2O_5 and K_2O ppl, Apr 23; 135 lb/A PF N, May 21; 45 lb N/A topdress, June 25; 60 lb/A second crop N, Aug 19

Plot Size: 7 x 25 ft (175 ft^2)

Emergence Date: May 4

Water Management: Flushed, Apr 24, May 7, May 14; permanent flood, May 22; harvest drainage, Aug 9; ratoon flooded, Aug 20; harvest drainage, Oct 22

Herbicides: 3.0 lb al/A Stam (propanil), May 19; 0.8 oz al/A Londax (bensulfuron-methyl), June 9; 3.0 lb al/A Ordram (molinate), June 10

Insecticides: 0.6 lb al/A Furadan (carbofuran), June 4

Fungicides: 0.5 lb al/A Benlate (benomyl), July 1, July 24

Harvest: Aug 19, Nov 17

Experimental Design: Randomized complete block with four replications, factorial arrangement of variety and row orientation

Comments: Grain yield of Cypress was significantly higher than that of Bengal (Table 18). Rotten neck blast decreased yield of Bengal. Highest grain yield occurred with a 7-inch row spacing (Table 19). Yields were significantly reduced with all other row orientations. Whole plant weight, grain weight, and grain number were also significantly higher with a 7-inch spacing. Other yield components were not influenced by row orientation.

Table 18. Influence of row spacing and orientation on agronomic performance of drill-seeded Cypress and Bengal rice. Rice Research Station, Crowley, LA. 1992.

Variety	Row orientation	Days to 50% heading	Plant height	Grain yield at 12% moisture: Main crop	Second crop	Total
			(cm)		(lb/A)	
Cypress	7"	84	90	7021	1340	8361
Bengal	7"	83	87	5965	2004	7969
Cypress	14"	86	89	6044	1328	7369
Bengal	14"	83	88	5545	1570	7115
Cypress	7" x 2 rows + 7" skip	85	90	8318	1285	7602
Bengal	7" x 2 rows + 7" skip	83	87	5454	1759	7214
Cypress	7" x 3 rows + 7" skip	85	90	6120	1332	7451
Bengal	7" x 3 rows + 7" skip	83	86	5569	1645	7214
C.V., %		0.73	2.31	4.54	13.55	4.86
				Main effects		
Variety:						
Cypress		85	90	6376	1321	7696
Bengal		83	87	5633	1745	7378
LSD (0.05)		1	2	273	208	ns
Row:						
7"		84	89	6493	1672	8165
14"		85	88	5795	1448	7242
7" x 2 rows + 7" skip		84	89	5886	1522	7408
7" x 3 rows + 7" skip		84	88	5845	1489	7333
LSD (0.05)		1	ns	386	ns	518

Table 19. Influence of row spacing and orientation on yield components of drill-seeded Cypress and Bengal rice. Rice Research Station, Crowley, LA. 1992.

Variety	Row orientation	Whole plant weight	Straw weight	Grain weight	Grain number	Panicle number	Grains per panicle	Grain weight per panicle	1000 grain weight
		(g/7 ft²)			(7 ft²)			(g)	
Cypress	7" ||||	1166	703	463	19928	314	64	1.50	23
Bengal	7" ||||	1163	729	434	17416	234	74	1.85	25
Cypress	14" | | | |	988	573	416	18243	292	63	1.42	23
Bengal	14" | | | |	1053	668	385	15730	233	67	1.65	24
Cypress	7" x 2 rows + 7" skip || || ||	1115	682	433	18961	312	61	1.40	23
Bengal	7" x 2 rows + 7" skip || || ||	1070	691	378	15204	230	66	1.65	25
Cypress	7" x 3 rows + 7" skip ||| |||	1071	638	432	18860	312	61	1.37	23
Bengal	7" x 3 rows + 7" skip ||| |||	1064	682	382	15093	222	68	1.72	25
C.V., %		4.78	6.26	5.31	9.99	6.53	7.00	6.86	2.14
					Main effects				
Variety:									
Cypress		1085	649	436	18998	307	62	1.42	23
Bengal		1088	693	395	15861	230	69	1.72	25
LSD (0.05)		ns	42	22	1045	18	5	.11	1
Row:									
7"		1164	716	448	18672	274	69	1.67	24
14"		1021	620	401	16987	262	65	1.54	24
7" x 2 rows + 7" skip		1092	687	406	17082	271	64	1.52	24
7" x 3 rows + 7" skip		1068	660	407	16977	267	64	1.55	24
LSD (0.05)		73	59	31	1478	ns	ns	ns	ns

CONSERVATION TILLAGE STUDIES

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Studies relating to conservation tillage conducted in 1992 included a drill-seeded variety by tillage evaluation, preplant herbicide burndown evaluations, variety by N studies, and a water-seeded red rice by tillage evaluation. The preplant burndown and variety by N studies were conducted in both drill- and water-seeded, delayed flood, cultural systems.

In the variety by tillage evaluation, Maybelle, Mars, and Lemont were planted into conventional, no-till, and spring- and fall-prepared stale seedbeds. The test area was fallowed the previous year. Seedbed preparation consisted of disking followed by conditioning with a roller harrow. Approximately 60 lb/A P_2O_5 and K_2O were incorporated at the time of seedbed preparation in each tillage system except the no-till, in which these fertilizer nutrients were applied preflood. Existing vegetation was burned down with Roundup prior to planting. The majority of N was applied preflood and the remainder as a midseason topdress. Water samples were collected three times during the season and analyzed for BOD (biological oxygen demand), EC (electrical conductivity), pH, TSS (total suspended solids), TDS (total dissolved solids), TS (total solids), anions, and cations.

In the preplant burndown study, Roundup D-Pak (glyphosate), Diquat, and Ignite (glufosinate) were evaluated alone and in combination with either Facet (quinclorac) or Bolero (thiobencarb) when applied 1 and 3 weeks preplant. All treatments were applied with 1/2% Triton AG98 surfactant. Treatment combinations and rates of application are shown in Table 5. Treatments were rated for % control at 30 and 60 days after planting. Stand density was determined at the time of permanent flood establishment.

Variety by N studies were conducted in a no-till system. The varieties Cypress, Bengal, Lacassine, and Maybelle were evaluated. Roundup plus 1/2% surfactant were applied 6 days prior to flooding in the water-seeded study and 4 days prior to planting in the drill-seeded study. Approximately 40 lb/A P_2O_5 and K_2O and variable rates of N were applied prior to permanent flood establishment. Nitrogen was applied as single applications at rates including 90, 120, 150, and 180 lb/A.

Days to 50% heading, plant height, lodging, grain moisture, and grain yield were determined in all studies.

A water-seeded tillage study was conducted to determine the effectiveness of red rice suppression in a number of different seedbed types and to evaluate the impact of the various tillage methods on the quality of rice field floodwater released during the growing season. The various tillage methods closely parallel those currently being practiced in the ASCS cost-sharing program implemented in the Mermentau River Basin. Clear water planting (dry seedbed preparation), no-till (planting into residue with no soil disturbance), stale seedbed (prepared seedbed allowed to revegetate prior to planting), water retention for a specified period of time (seedbed prepared under flooded conditions with no release of water for 2 weeks), and the traditional mudding in (seedbed prepared under flooded conditions with water release soon after planting) were evaluated in non-replicated large plots. Bolero was applied in each tillage method for red rice suppression. The granular formulation was used in all methods except the clear water planting method, in which the liquid formulation was used.

Experiment: Variety x tillage study

Location: Rice Research Station, South Unit

Soil Type/Analysis: Crowley silt loam; pH: 5.9; O.M.: 1.19%; extractable nutrients (mg/kg): P-99, Na-50, K-105, Ca-1445, Mg-279, Zn-1.39, S-8.34, As-4.87, Fe-60.8

Variety/Seeding Rate: MBLE, LMNT, MARS, 110 lb/A

Planting Method/Date: Drill-seeded, Apr 14

Fertilization: 60 lb/A P_2O_5 and K_2O; 90 lb N/A (urea) pf, May 8; 55 lb N/A topdress, June 4

Plot Size: 10 x 255 ft (2550 ft^2)

Emergence Date: Apr 21 through Apr 24

Water Management: Flushed, Apr 20; permanent flood, May 9; harvest drainage, Aug 3

Herbicides: 1.0 lb al/A Roundup (glyphosate), Apr 3; 4.0 lb al/A Stam (propanil) + 1.0 lb al/A Basagran (bentazon), May 1; 3.0 lb al/A Stam, May 8; 0.9 oz al/A Londax (bensulfuron- methyl), May 26; 3.2 lb al/A Ordram (molinate), June 4

Insecticides: 0.6 lb al/A Furadan (carbofuran), May 27

Fungicides: 0.5 lb al/A Benlate (benomyl), July 1, July 15

Harvest: MBLE, Aug 12; MARS and LMNT, Aug 17

Experimental Design: Randomized complete block with four replications, tillage treatment assigned to main plot and variety to subplot

Comments: Roundup controlled most of the existing vegetation prior to planting. Stand establishment was fairly uniform across tillage treatments. Stand was highest in the fall stale seedbed but was more than adequate in all other tillage treatments (Table 1). There were no differences in grain yields due to tillage although a significant tillage x variety interaction did occur. Grain yield of Maybelle was significantly higher when grown in a conventional seedbed and lowest in a no-till seedbed. Tillage did not affect yields of Mars or Lemont. Maybelle yields were significantly higher than the other varieties.

Evaluations of water quality parameters are in Tables 2, 3, and 4. In general, most of the measurements among tillage methods were not significantly different. In the initial drain samples, pH, Al, B, NO_3^-, and SO_4^{2-} were highest in the conventional treatment and lowest in the no-till. Si, P, K, and PO_4^{2-} were higher in the no-till treatment.

The most important difference in the midseason drain sample was in TDS and TS. This parameter was significantly higher in the no-till treatments. More P, K, Ca, F^-, and PO_4^{2-} were released from a no-till seedbed than a conventional seedbed.

There were few differences observed in the harvest drain water samples. Mn and F^- were higher in the no-till treatment than in the conventional while K and Br^- were higher in the conventional treatment.

Table 1. Effect of seedbed preparation on agronomic performance of drill-seeded rice varieties. Rice Research Station, South Unit, Crowley, LA. 1992.

Tillage	Stand density				Days to 50% heading				Plant height				Grain yield at 12% moisture			
	MBLE	LMNT	MARS	Mean	MBLE	LMNT	MARS	Mean	MBLE	LMNT	MARS	Mean	MBLE	LMNT	MARS	Mean
	---- (plants/ft²) ----								---------(cm)---------				----------(lb/A)----------			
Conventional	36	34	35	35	75	91	89	85	93	89	114	99	7901	7025	6306	7077
Spring stale	39	35	42	39	74	89	87	84	93	90	118	101	6908	6689	6783	6794
Fall stale	33	31	30	31	75	90	88	84	93	90	111	98	7077	6622	6505	6735
No till	36	35	34	35	74	90	87	84	92	86	110	96	6589	6322	6701	6538
Variety Mean	36	34	35		75	90	88		93	89	113		7119	6665	6574	
C.V., %	10.53				0.52				4.87				6.21			
LSD (0.01):																
Tillage	7				1				4				ns			
Variety	ns				1				5				416			
V within T	-				-				-				833			
V across T	-				-				-				951			

Table 2. Influence of tillage on water quality of rice field floodwater (initial drain) from drill-seeded rice. Rice Research Station, South Unit, Crowley, LA. 1992.[1]

Parameter	Conventional	Spring Stale	Fall Stale	No-till	LSD (0.05)
BOD5 (mg/L)	-	-	-	-	-
pH	8.16	7.96	7.77	7.69	0.28
EC (dS/m)	0.60	0.60	0.59	0.60	ns
TSS (mg/L)	17	40	25	25	ns
TDS (mg/L)	360	362	384	380	ns
TS (mg/L)	417	407	444	411	ns
Fe (mg/L)	0.016	0.036	0.027	0.039	ns
Mn (mg/L)	0.001	0.002	0.002	0.004	ns
Ni (mg/L)	0.007	0.000	0.000	0.000	ns
Al (mg/L)	0.083	0.074	0.050	0.046	0.012
Cd (mg/L)	0.000	0.000	0.000	0.000	ns
Cu (mg/L)	0.009	0.010	0.010	0.010	ns
As (mg/L)	0.000	0.018	0.000	0.000	ns
B (mg/L)	0.075	0.073	0.064	0.063	0.008
Cr (mg/L)	0.005	0.006	0.005	0.005	ns
Si (mg/L)	10.597	10.252	11.185	11.660	0.838
P (mg/L)	0.000	0.031	0.149	0.149	0.117
Pb (mg/L)	0.000	0.000	0.000	0.000	ns
Zn (mg/L)	0.003	0.003	0.003	0.005	ns
Mg (mg/L)	19.742	19.600	19.440	18.940	ns
K (mg/L)	3.725	3.971	6.887	8.051	1.194
S (mg/L)	0.874	1.812	0.992	0.776	0.323
Na (mg/L)	71.37	70.46	69.44	67.26	ns
Ca (mg/L)	44.76	45.51	43.70	42.87	ns
F^- (mg/L)	0.579	0.598	0.533	0.535	ns
Cl^- (mg/L)	37.25	42.62	36.23	35.91	3.149
Br^- (mg/L)	0.201	0.152	0.205	0.207	ns
NO_3^- (mg/L)	1.530	1.739	0.170	0.169	0.412
PO_4^{3-} (mg/L)	0.176	0.044	0.447	0.461	0.233
SO_4^{2-} (mg/L)	1.680	4.438	1.803	1.122	0.891

1/ Zero values may indicate no measured amount at the detection limits for that particular variable.

Table 3. Influence of tillage on water quality of rice field floodwater (midseason drain) from drill-seeded rice. Rice Research Station, South Unit, Crowley, LA. 1992.[1]

Parameter	Conventional	Spring Stale	Fall Stale	No-till	LSD (0.05)
BOD5 (mg/L)	-	-	-	-	-
pH	7.71	7.73	7.85	7.85	0.12
EC (dS/m)	0.44	0.46	0.48	0.54	0.03
TSS (mg/L)	19	37	34	27	ns
TDS (mg/L)	296	334	317	353	31
TS (mg/L)	344	358	369	413	31
Fe (mg/L)	0.155	0.123	0.111	0.079	ns
Mn (mg/L)	0.005	0.006	0.016	0.008	0.006
Ni (mg/L)	0.000	0.000	0.000	0.000	ns
Al (mg/L)	0.373	0.305	0.203	0.056	0.150
Cd (mg/L)	0.000	0.000	0.000	0.000	ns
Cu (mg/L)	0.010	0.010	0.008	0.009	ns
As (mg/L)	0.000	0.000	0.000	0.000	ns
B (mg/L)	0.058	0.064	0.059	0.049	ns
Cr (mg/L)	0.004	0.002	0.004	0.004	ns
Si (mg/L)	9.167	10.175	9.407	8.630	ns
P (mg/L)	0.000	0.000	0.000	0.179	0.103
Pb (mg/L)	0.000	0.000	0.000	0.000	ns
Zn (mg/L)	0.002	0.007	0.005	0.001	ns
Mg (mg/L)	14.175	15.517	15.785	16.092	ns
K (mg/L)	3.026	3.261	4.186	6.308	0.906
S (mg/L)	0.747	1.058	0.778	0.869	ns
Na (mg/L)	51.28	57.30	53.69	52.60	ns
Ca (mg/L)	28.31	31.89	35.15	41.12	3.31
F^- (mg/L)	0.435	0.535	0.508	0.694	0.067
Cl^- (mg/L)	28.84	33.14	30.84	33.29	ns
Br^- (mg/L)	0.213	0.161	0.203	0.208	ns
NO_3^- (mg/L)	0.980	0.906	1.711	0.546	ns
PO_4^{3-} (mg/L)	0.000	0.000	0.000	0.378	0.258
SO_4^{2-} (mg/L)	1.332	2.157	1.030	1.038	0.757

1/ Zero values may indicate no measured amount at the detection limits for that particular variable.

Table 4. Influence of tillage on water quality of rice field floodwater (harvest drain) from drill-seeded rice. Rice Research Station, South Unit, Crowley, LA. 1992.[1]

Parameter	Conventional	Spring Stale	Fall Stale	No-till	LSD (0.05)
BOD5 (mg/L)	-	-	-	-	-
pH	7.72	7.76	7.73	7.69	ns
EC (dS/m)	0.29	0.28	0.30	0.28	ns
TSS (mg/L)	2	2	1	3	ns
TDS (mg/L)	171	178	195	185	ns
TS (mg/L)	195	196	205	204	ns
Fe (mg/L)	0.175	0.211	0.162	0.259	ns
Mn (mg/L)	0.066	0.080	0.097	0.157	0.047
Ni (mg/L)	0.000	0.000	0.000	0.000	ns
Al (mg/L)	0.061	0.096	0.098	0.102	ns
Cd (mg/L)	0.000	0.000	0.000	0.000	ns
Cu (mg/L)	0.006	0.006	0.006	0.004	ns
As (mg/L)	0.000	0.000	0.000	0.000	ns
B (mg/L)	0.011	0.011	0.010	0.012	ns
Cr (mg/L)	0.000	0.000	0.000	0.000	ns
Si (mg/L)	9.700	11.180	10.422	9.862	ns
P (mg/L)	0.000	0.000	0.000	0.000	ns
Pb (mg/L)	0.000	0.000	0.000	0.000	ns
Zn (mg/L)	0.003	0.000	0.000	0.001	ns
Mg (mg/L)	10.732	10.675	11.727	11.327	ns
K (mg/L)	3.021	3.237	2.841	2.362	0.579
S (mg/L)	0.431	0.414	0.391	0.433	ns
Na (mg/L)	31.96	32.75	34.50	33.02	ns
Ca (mg/L)	16.86	14.11	17.89	15.98	ns
F^- (mg/L)	0.235	0.262	0.275	0.313	0.046
Cl^- (mg/L)	25.28	24.13	23.04	23.40	ns
Br^- (mg/L)	0.066	0.072	0.059	0.021	0.031
NO_3^- (mg/L)	0.391	0.571	0.554	0.737	ns
PO_4^{3-} (mg/L)	0.000	0.000	0.000	0.000	ns
SO_4^{2-} (mg/L)	0.500	0.478	0.409	0.466	ns

1/ Zero values may indicate no measured amount at the detection limits for that particular variable.

Experiment: Preplant burndown study

Location: Rice Research Station, South Unit

Soil Type/Analysis: Crowley silt loam; pH: 5.9; O.M.: 1.42%; extractable nutrients (mg/kg): P-139, Na-80, K-88, Ca-1586, Mg-356, Zn-3.86, S-9.15, As-5.10, Fe-134.2

Variety/Seeding Rate: MBLE, 150 lb/A

Planting Method/Date: Water-seeded, Apr 22

Fertilization: 40 lb/A P_2O_5 and K_2O; 150 lb N/A (urea) pf, May 19

Plot Size: 10.25 x 25 ft (268 ft^2)

Emergence Date: Apr 30

Water Management: Flooded, Apr 21; drained, Apr 24; flushed, Apr 26, May 3, May 9; permanent flood, May 20; harvest drainage, Aug 3

Herbicides: 1.0 lb al/A Basagran (bentazon), May 19

Insecticides: 0.6 lb al/A Furadan (carbofuran), June 10

Fungicides: 0.5 lb al/A Benlate (benomyl), July 1, July 16

Harvest: Aug 13

Experimental Design: Randomized complete block with four replications, factorial arrangement of herbicide treatment and application time

Comments: All burndown herbicides gave good control of most existing vegetation. Dessication of preplant vegetation was most rapid with Diquat, followed by Ignite and Roundup. The entire test area was treated with Basagran to control broadleaf weeds prior to permanent flood establishment.

Herbicide ratings reflect their effectiveness in controlling or suppressing grassy weeds when applied preplant. The initial rating is an estimate of annual grass (AG) control. The 60 DAP (days after planting) rating distinguishes between barnyardgrass (BYG) and sprangletop (ST) control (Table 5). Time of application was significantly different for all weed ratings. The 30 and 60 DAP ratings for grass control were significantly higher when herbicides were applied 1 week rather than 3 weeks preplant. Grain yields were also higher with a 1 week preplant application.

Weed control was significantly greater when either Facet or Bolero was tank mixed with the burndown herbicides at the 30 and 60 DAP rating. No differences in grain yield were observed due to herbicide treatment. Yields, however, were generally higher with Diquat, Ignite, and Roundup when tank mixed with either Facet or Bolero. Yields were also higher when Facet or Bolero were applied without a burndown herbicide.

Pertinent Rainfall: 0.8 inch (28 Mar); 1.1 inch (5 Apr)

Herbicide(s): N/A

Insecticide(s): N/A

Fungicide(s): N/A

Emergence: 6 Apr

Permanent Flood: N/A

Harvest Date: N/A

Harvested Area: N/A

Exp. Design: Randomized complete block and four replications

Comments: RELEASE seed treatment had no effect on most of the varieties and experimental lines at 21 days after planting. The absence of fungicide seed treatment may have affected the results since overall stands were extremely low. Average stand across all treatments was 5 plants/ft^2 and stands depending on variety/experimental line and rate of RELEASE ranged from 0 to 10 plants/ft^2. Six of the 43 varieties/experimental lines responded significantly to RELEASE seed treatment. Responsive varieties and experimental lines were Rexmont, Rosemont, Texmont, LA2085, LA2168, and TX3072.

Overspraying half (5 linear row feet) of each plot with RyzUp showed many of the varieties/experimental lines were responsive to RyzUp at 7 days after planting. Increases in seedling height ranged from 4 to 8 cm, depending on variety and seed treatment. Of the 43 varieties/experimental lines studied, nine were unresponsive to RyzUp. These were Alan, GulChow, L202, Millie, Newbonnet, Rico 1, Rosemont, URN 69, and LA2168. Of these varieties/experimental lines, stands of Alan, GulChow, L202, Millie, Newbonnet, and Rosemont were very poor, and seedlings were poorly developed at time of application.

The effect of plant growth regulator seed treatment and early planting on seedling vigor of current rice varieties and experimental lines. Rice Research Station, Crowley, LA. 1992.

Treatment Name	Form Amt	Pm Ds	Rate	Alan Stand (plants/ sq ft)	Bengal Stand (plants/ sq ft)	Cypress Stand (plants/ sq ft)	Della Stand (plants/ sq ft)	Dellmont Stand (plants/ sq ft)	Gui Chow Stand (plants/ sq ft)	Gulfmont Stand (plants/ sq ft)	Katy Stand (plants/ sq ft)	Jackson Stand (plants/ sq ft)	Jasmine Stand (plants/ sq ft)	L202 Stand (plants/ sq ft)
Release			0	1a	7a	9a	3a	2a	2a	2a	9a	5a	1a	2a
Release			0.35	0a	4a	7a	4a	4a	2a	4a	9a	5a	3a	1a
Release			0.70	1a	5a	6a	3a	2a	2a	4a	7a	4a	2a	0a
LSD (.05)	=			2	4	6	3	4	2	4	6	4	2	3
Standard Dev.	=			1.2018	2.0344	3.3374	1.7638	2.2546	1.0671	2.2546	3.3952	2.2607	1.2018	1.74
CV	=			160.25	38.15	46.03	51.62	79.57	55.68	69.37	40.34	52.17	62.71	189.82

Means followed by same letter do not significantly differ (Duncan's MRT, P=.05).

Treatment Name	Form Amt	Pm Ds	Rate	L203 Stand (plants/ sq ft)	Labelle Stand (plants/ sq ft)	Lacassine Stand (plants/ sq ft)	Lemont Stand (plants/ sq ft)	M201 Stand (plants/ sq ft)	Mars Stand (plants/ sq ft)	Maybelle Stand (plants/ sq ft)	Mercury Stand (plants/ sq ft)	Millie Stand (plants/ sq ft)	Newbonnet Stand (plants/ sq ft)	Orion Stand (plants/ sq ft)
Release			0	3a	5a	4a	3a	3a	5a	5a	3a	2a	3a	4a
Release			0.35	4a	6a	5a	4a	2a	5a	4a	5a	2a	2a	5a
Release			0.70	3a	7a	6a	3a	3a	4a	4a	4a	1a	2a	4a
LSD (.05)	=			2	3	2	4	3	2	4	2	1	2	3
Standard Dev.	=			1.236	1.724	.9428	2.3033	1.8027	1.2801	2.1015	1.118	.86602	.95742	1.6914
CV	=			40.09	27.96	18.55	70.87	72.11	27.93	49.45	29.17	61.13	45.96	42.29

Means followed by same letter do not significantly differ (Duncan's MRT, P=.05).

Continued.

Continued.

Treatment Name	Form Amt	Fm Ds	Rate	Rexmont Stand (plants/ sq ft)	RT7015 Stand (plants/ sq ft)	Rico 1 Stand (plants/ sq ft)	Rosemont Stand (plants/ sq ft)	Saturn Stand (plants/ sq ft)	Skybonnet Stand (plants/ sq ft)	Tebonnet Stand (plants/ sq ft)	Texmont Stand (plants/ sq ft)	Toro 2 Stand (plants/ sq ft)	URR 69 Stand (plants/ sq ft)	V4716 Stand (plants/ sq ft)
Release			0	2b	5a	3a	0b	2b	5a	5a	2b	4ab	6a	6a
Release			0.35	5ab	5a	5a	1a	5ab	5a	6a	5a	3b	6a	7a
Release			0.70	6a	7a	5a	1ab	6a	4a	6a	6a	4a	7a	7a
LSD (.05)	=			3	3	4	1	3	3	3	3	1	3	5
Standard Dev.	=			1.6244	1.6749	2.4324	.33333	1.9507	1.5986	1.5275	1.5	.83333	1.4529	3.0505
CV	=			41.48	30.00	58.38	66.67	46.82	33.65	25.82	34.62	22.73	24.22	45.76

Means followed by same letter do not significantly differ (Duncan's MRT, P=.05).

Treatment Name	Form Amt	Fm Ds	Rate	V7817 Stand (plants/ sq ft)	AR1007 Stand (plants/ sq ft)	AR1096 Stand (plants/ sq ft)	LA2031 Stand (plants/ sq ft)	LA2085 Stand (plants/ sq ft)	LA2146 Stand (plants/ sq ft)	LA2168 Stand (plants/ sq ft)	LA2192 Stand (plants/ sq ft)	TX3072 Stand (plants/ sq ft)	LA1096 Stand (plants/ sq ft)
Release			0	2a	8a	5a	5a	5b	4a	2b	2b	2b	6a
Release			0.35	2a	6a	2b	6a	9a	5a	7a	5a	5a	9a
Release			0.70	2a	7a	2b	4a	7ab	6a	7a	5ab	5a	10a
LSD (.05)	=			2	5	2	3	3	3	2	3	1	6
Standard Dev.	=			1.2583	2.8136	.89752	2.0207	1.5898	1.7716	1.0929	1.9507	.64549	3.6362
CV	=			62.92	40.20	30.77	39.75	24.15	36.03	20.18	52.02	16.14	46.42

Means followed by same letter do not significantly differ (Duncan's MRT, P=.05).

The effect of plant growth regulator seed and foliar treatments and early planting on seedling vigor of current rice varieties and experimental lines. Rice Research Station, Crowley, LA. 1992.

Treatment Name	Form Amt	Pm Ds	Rate	Alan Seedling Height (cm)	Bengal Seedling Height (cm)	Cypress Seedling Height (cm)	Della Seedling Height (cm)	Dellmont Seedling Height (cm)	Gui Chow Seedling Height (cm)	Gulfmont Seedling Height (cm)	Katy Seedling Height (cm)	Jackson Seedling Height (cm)	Jasmine Seedling Height (cm)	L202 Seedling Height (cm)
Release	sp		0	21a	19bc	18b	21ab	17bc	13b	15a	20b	17c	13c	18b
RyzUp	1		0											
Release	sp		0.35	19a	19bc	18b	20b	17bc	14ab	16de	18c	19bc	15bc	16b
RyzUp	1		0											
Release	sp		0.70	18a	19c	19ab	20b	16c	15ab	18cd	18bc	20bc	14c	16b
RyzUp	1		0											
Release	sp		0	25a	23ab	22a	25a	23a	16ab	20bc	23a	22b	14c	25a
RyzUp	1		1											
Release	sp		0.35	19a	25a	22a	24a	20ab	17ab	21ab	23a	26a	19a	16b
RyzUp	1		1											
Release	sp		0.70		22abc	22a	24ab	21ab	19a	24a	23a	23ab	17ab	20ab
RyzUp	1		1											
LSD (.05) =				12	4	3	4	4	5	2	2	3	3	7
Standard Dev.=				3.9136	2.3734	1.9881	2.6514	2.3721	2.8147	1.609	1.649	2.3021	1.9196	2.958
CV =				19.31	11.30	9.92	11.98	12.58	18.23	8.47	7.93	10.92	12.57	16.21

Means followed by same letter do not significantly differ (Duncan's MRT, P=.05).

Continued.

Continued.

Treatment Name	Form Amt	Pm Ds	Rate	L203 Seedling Height (cm)	Labelle Seedling Height (cm)	Lacassine Seedling Height (cm)	Lemont Seedling Height (cm)	M201 Seedling Height (cm)	Mars Seedling Height (cm)	Maybelle Seedling Height (cm)	Mercury Seedling Height (cm)	Millie Seedling Height (cm)	Newbonnet Seedling Height (cm)	Orion Seedling Height (cm)
Release	sp	0		16b	20ab	16b	16b	15c	18c	18d	17b	19a	18ab	18bc
RyzUp	1	0												
Release	sp	0.35		16b	19ab	15b	16b	17bc	20bc	18d	18b	19a	19ab	16c
RyzUp	1	0												
Release	sp	0.70		16b	18b	17b	16b	16bc	20c	21c	19b	19a	17b	18b
RyzUp	1	0												
Release	sp	0		21a	22a	20a	19ab	20a	25ab	23b	22a	23a	21a	22a
RyzUp	1	1												
Release	sp	0.35		21a	22a	21a	23a	19ab	25a	24ab	23a	22a	20a	20ab
RyzUp	1	1												
Release	sp	0.70		20a	22a	21a	20ab	19ab	26a	26a	22a	22a	21a	21a
RyzUp	1	1												
LSD (.05)	=			2	3	3	4	3	4	2	3	4	3	2
Standard Dev.	=			1.3984	1.9571	1.7919	2.8693	1.6832	2.8259	1.2236	1.7911	2.7433	1.8913	1.308
CV	=			7.73	9.65	9.77	15.87	9.57	12.68	5.68	8.86	13.37	9.89	6.82

Means followed by same letter do not significantly differ (Duncan's MRT, P=.05).

Continued.

Continued.

Treatment Name	Form Amt	Pm Ds	Rate	Remmont Seedling Height (cm)	RT7015 Seedling Height (cm)	Rico 1 Seedling Height (cm)	Rosemont Seedling Height (cm)	Saturn Seedling Height (cm)	Skybonnet Seedling Height (cm)	Tebonnet Seedling Height (cm)	Temmont Seedling Height (cm)	Toro 2 Seedling Height (cm)	URN69 Seedling Height (cm)	V4716 Seedling Height (cm)
Release		sp	0	12c	18b	18b		19c	19b	18b	17b	19d	17b	16cd
RyzUp		1	0											
Release		sp	0.35	14bc	18b	20ab	16	20c	19b	20b	17b	20cd	19ab	15d
RyzUp		1	0											
Release		sp	0.70	16ab	18b	19ab	16	18c	19b	20b	20ab	21bcd	19ab	18bc
RyzUp		1	0											
Release		sp	0	14bc	20ab	20ab		24b	23a	25a	21a	23ab	20a	19ab
RyzUp		1	1											
Release		sp	0.35	17a	23a	22a	16	25ab	25a	26a	22a	23abc	20a	18b
RyzUp		1	1											
Release		sp	0.70	18a	23a	21a		26a	24a	25a	22a	26a	20a	21a
RyzUp		1	1											
LSD (.05)	=			3	3	3		2	2	3	3	3	3	2
Standard Dev.	=			1.7816	2.0323	1.9295		1.157	1.6397	1.9853	2.2527	1.7511	1.6591	1.5202
CV	=			11.94	10.36	9.82		5.34	7.63	9.04	11.38	7.99	8.71	8.65

Means followed by same letter do not significantly differ (Duncan's MRT, P=.05).

Continued.

Continued.

Treatment Name	Form Amt	Fm Ds	Rate	V7817 Seedling Height (cm)	AR1007 Seedling Height (cm)	AR1096 Seedling Height (cm)	LA2031 Seedling Height (cm)	LA2085 Seedling Height (cm)	LA2146 Seedling Height (cm)	LA2168 Seedling Height (cm)	LA2192 Seedling Height (cm)	TX3072 Seedling Height (cm)	LA1069 Seedling Height (cm)
Release		sp	0	14b	21b	21bc	19b	13d	16d	17b	14cd	17b	17b
RyzUp		1	0										
Release		sp	0.35	14b	19b	20c	19b	15cd	19c	19ab	19ab	13b	18b
RyzUp		1	0										
Release		sp	0.70	14b	21b	19c	20b	17c	18cd	20ab	14cd	16b	19b
RyzUp		1	0										
Release		sp	0	16ab	24a	25a	27a	20b	23a	21ab	13d	16b	19b
RyzUp		1	1										
Release		sp	0.35	15ab	25a	26a	24a	21ab	20bc	21a	23a	17b	23a
RyzUp		1	1										
Release		sp	0.70	16a	26a	23ab	26a	23a	22ab	21a	17bc	22a	23a
RyzUp		1	1										
LSD (.05)	=			2	3	3	3	2	3	4	4	4	3
Standard Dev.	=			1.3027	1.7756	1.8257	2.2229	1.5942	1.7183	2.3915	2.691	2.4916	1.7511
CV	=			8.91	7.85	8.27	10.01	8.84	8.68	12.13	16.52	14.84	8.83

Means followed by same letter do not significantly differ (Duncan's MRT, P=.05).

SEEDLING VIGOR STUDIES (Seed Treatment)

R.T. Dunand, R.R. Dilly, Jr., and G.A. Meche

Experiment: Gibberellic Acid Seed and Foliar Treatment in Late Planted Rice (*Oryza sativa* L.)

Location: Rice Research Station, Crowley, LA

Variety: See treatments

Seeding Rate: 100 lb/A

Planting Date: 14 May 92

Row Spacing: 7-inch

Fertilizer: 7-21-21 with 1.2% zinc at 300 lb/A drilled at planting (14 May); urea (46% N) at 200 lb/A by airplane (10 June)

Plot Size: 11.7 ft^2 - 0.58 (1 row) x 20 ft

Treated Area: 11.7 ft^2 - 0.58 x 20 ft

Treatment(s): Varieties/Experimental Lines

Alan	Jackson	Mars	Rico 1	V7817	LA2192
Bengal	Jasmine	Maybelle	Rosemont	AR1007	TX3072
Cypress	L202	Mercury	Saturn	AR1096	URN 69
Della	L203	Millie	Skybonnet	LA1096	
Delmont	Labelle	Newbonnet	Tebonnet	LA2031	
GuiChow	Lacassine	Orion	Texmont	LA2085	
Gulfmont	Lemont	Rexmont	Toro 2	LA2146	
Katy	M201	RT7015	V4716	LA2168	

Plant Growth Regulators

RELEASE (0.35 and 0.70 oz/cwt seed)
RyzUp (1 oz/A)*

* Crop Oil Concentrate (Clean Crop) at 1 qt/A.

Timing

Seed treatment (11 Mar)
3- to 4-leaf (5 June)

Sprayer: **CO_2-driven, hand-held, 32 psi, 15 GPA, 80015 nozzles**

Pertinent Rainfall: **0.1 inch (May 14); 0.1 inch (May 18); 0.5 inch (May 19); 0.8 inch (May 23); 0.4 inch (May 26); 0.1 inch (May 27); 1.7 inches (May 28); 0.2 inch (May 31)**

Herbicide(s): **Arrosolo (1 gal/A) by airplane (4 June); Basagran (1.5 pt/A) + Londax (1 oz/A) by airplane (16 June); Ordram (20 lb/A) by airplane (16 June); Bolero (40 lb/A) by airplane (25 June)**

Insecticide(s): **Furadan (17 lb/A) by airplane (16 June)**

Fungicide(s): **Benlate (1 lb/A) by airplane (15 July); Benlate (1 lb/A) by airplane (30 July)**

Emergence: **23 May**

Permanent Flood: **11 June**

Harvest Date: **N/A**

Harvested Area: **N/A**

Exp. Design: **Randomized complete block design and four replications**

Comments: **RELEASE seed treatment had a significant effect on 65% of the varieties and experimental lines studied at 22 days after planting. Responsive varieties included Bengal and Cypress, which were released in 1992 from Crowley, LA. Other responsive southern varieties were Delmont, Gulfmont, Jasmine, Lacassine, Mars, Mercury, Orion, Rexmont, Rico 1, Saturn, Tebonnet, and Texmont. Three proprietary varieties, RT7015, V7817, and V4716, were responsive. L202, L203, and M201 from California were responsive. Unresponsive varieties were Alan, Della, GuiChow, Katy, Jackson, Labelle, Lemont, Maybelle, Millie, Newbonnet, Rosemont, Skybonnet, and Toro 2. Experimental lines are selections which are being evaluated for release as varieties in the future. Responsive experimental lines were AR1007, AR1096, LA2031, LA2085, LA2168, LA2192, and TX3072. Unresponsive experimental lines were LA2146, LA1096, and URN 69. Most of the responsive varieties and experimental lines were semidwarfs.**

Overspraying half (5 linear row feet) of each plot with RyzUp showed 75% of the varieties and experimental lines were responsive to RyzUp at 7 days after treatment. Of the semidwarfs, Bengal, Cypress, Delmont, Gulfmont, Lacassine, L203, RT7015, Texmont, V4716, V7817, AR1007, LA2031, LA2085, and TX3072 had significant increases in seedling height. Other varieties and experimental lines which responded significantly to RyzUp were Alan, Della, Jackson, Jasmine, Labelle, Mars, Maybelle, Millie, Orion, Newbonnet, Skybonnet, Tebonnet, AR1096, AR1007, LA2146, LA2192, LA1096, and URN 69. Unresponsive semidwarfs were M201, Mercury, L202, Rexmont, Rosemont, Toro 2, and LA2168. Other unresponsive varieties were GulChow, Katy, Saturn, and Rico 1.

The effect of plant growth regulator seed treatment and late planting on seedling vigor of current rice varieties and experimental lines. Rice Research Station, Crowley, LA. 1992.

Treatment Name	Form Amt	Fm Ds	Rate	Bengal Stand (plants/ sq ft)	Cypress Stand (plants/ sq ft)	Dellmont Stand (plants/ sq ft)	Gulfmont Stand (plants/ sq ft)	Lemont Stand (plants/ sq ft)	M201 Stand (plants/ sq ft)	Maybelle Stand (plants/ sq ft)	Mercury Stand (plants/ sq ft)	Rexmont Stand (plants/ sq ft)	RT7015 Stand (plants/ sq ft)	Rosemont Stand (plants/ sq ft)
Release		sp	0	3b	12b	4b	4b	11a	10b	15a	2c	1b	12b	1a
Release		sp	0.35	9a	17a	9a	11a	14a	14a	18a	10a	9a	19a	4a
Release		sp	0.70	5b	14b	9a	10a	13a	11b	18a	6b	6a	16ab	2a
LSD (.05)	=			3	3	3	2	4	2	4	3	3	5	4
Standard Dev.	=			1.7716	1.7873	1.5365	1.1547	2.2298	1.424	2.3979	1.6072	1.8633	2.6087	2.4888
CV	=			31.73	12.62	21.19	13.86	17.38	12.29	14.17	26.79	35.49	16.74	102.99

Means followed by same letter do not significantly differ (Duncan's MRT, P=.05).

Treatment Name	Form Amt	Fm Ds	Rate	Tetmont Stand (plants/ sq ft)	URR69 Stand (plants/ sq ft)	V7817 Stand (plants/ sq ft)	LA2031 Stand (plants/ sq ft)	LA2146 Stand (plants/ sq ft)	LA2085 Stand (plants/ sq ft)	LA2168 Stand (plants/ sq ft)	LA2192 Stand (plants/ sq ft)	TX3072 Stand (plants/ sq ft)	LA1096 Stand (plants/ sq ft)	Alan Stand (plants/ sq ft)
Release		sp	0	3b	6b	1c	3b	20a	2b	4c	3b	2c	13a	7a
Release		sp	0.35	10a	12ab	10b	11a	19a	10a	7b	11a	8b	12a	12a
Release		sp	0.70	8a	14a	15a	11a	19a	13a	11a	12a	12a	15a	11a
LSD (.05)	=			3	6	5	3	7	3	2	5	2	6	6
Standard Dev.	=			1.8633	3.484	2.6246	1.5723	4.0654	1.8559	1.4043	2.9059	1.2801	3.448	3.2702
CV	=			27.27	33.18	30.88	19.25	20.85	23.20	20.06	34.87	16.52	26.52	33.54

Means followed by same letter do not significantly differ (Duncan's MRT, P=.05).

Continued.

Continued.

Treatment Name	Form Amt	Pm Ds	Rate	L202 Stand (plants/ sq ft)	Lacassine Stand (plants/ sq ft)	V4716 Stand (plants/ sq ft)	Gui Chow Stand (plants/ sq ft)	Katy Stand (plants/ sq ft)	Jackson Stand (plants/ sq ft)q	L203 Stand (plants/ sq ft)	Millie Stand (plants/ sq ft)	Orion Stand (plants/ sq ft)	Toro 2 Stand (plants/ sq ft)	Della Stand (plants/ sq ft)
Release		sp	0	4c	7b	7b	4a	21a	11a	4b	13a	4b	7b	9a
Release		sp	0.35	11b	16a	14a	8a	15a	10a	11a	15a	9a	12a	10a
Release		sp	0.70	14a	15a	17a	8a	18a	12a	8ab	14a	9a	11ab	12a
LSD (.05)	=			3	5	7	6	8	4	4	3	3	4	4
Standard Dev.	=			1.5545	2.7487	3.8115	3.3291	4.758	2.3629	2.3273	1.6749	1.74	2.3746	2.0548
CV	=			16.66	21.56	30.29	48.72	26.68	21.81	30.36	12.11	23.73	24.57	20.38

Means followed by same letter do not significantly differ (Duncan's MRT, P=.05).

Treatment Name	Form Amt	Pm Ds	Rate	Jasmine Stand (plants/ sq ft)	Labelle Stand (plants/ sq ft)	Mars Stand (plants/ sq ft)	Newbonnet Stand (plants/ sq ft)	Rico 1 Stand (plants/ sq ft)	Saturn Stand (plants/ sq ft)	Tebonnet Stand (plants/ sq ft)	Skybonnet Stand (plants/ sq ft)	AR1096 Stand (plants/ sq ft)	AR1007 Stand (plants/ sq ft)
Release		sp	0	9b	12a	6b	13a	5b	11b	9b	10b	9b	7b
Release		sp	0.35	12a	13a	13a	14a	10a	15a	17a	15ab	10ab	11a
Release		sp	0.70	13a	12a	12a	13a	12a	12b	15a	15a	11a	10a
LSD (.05)	=			3	7	3	5	4	3	6	5	1	2
Standard Dev.	=			1.7078	4.2295	1.6244	2.6404	2.4209	1.4624	3.3665	2.7938	.76376	.89752
CV	=			15.41	34.06	15.72	19.56	27.15	11.62	24.19	21.35	7.83	9.79

Means followed by same letter do not significantly differ (Duncan's MRT, P=.05).

The effect of plant growth regulator seed and foliar treatment and late planting on seedling vigor of current rice varieties and experimental lines. Rice Research Station, Crowley, LA. 1992.

Treatment Name	Form Amt	Pm Ds	Rate	Bengal Seedling Height (cm)	Cypress Seedling Height (cm)	Dellmont Seedling Height (cm)	Gulfmont Seedling Height (cm)	Lemont Seedling Height (cm)	M201 Seedling Height (cm)	Maybelle Seedling Height (cm)	Mercury Seedling Height (cm)	Rexmont Seedling Height (cm)	RT7015 Seedling Height (cm)	Rosemont Seedling Height (cm)
Release		sp	0	35c	37d	32c	31c	34b	35a	38bc	34a	30ab	39b	28b
RyzUp		1	0											
Release		sp	0.35	39b	39bcd	35b	35b	34b	35a	37c	34a	28b	37b	29ab
RyzUp		1	0											
Release		sp	0.70	38b	38cd	36b	35b	34b	34a	37c	35a	29ab	38b	31ab
RyzUp		1	0											
Release		sp	0	40ab	42ab	35b	36b	37a	35a	40a	37a	30ab	41ab	30ab
RyzUp		1	1											
Release		sp	0.35	43a	44a	40a	40a	39a	35a	40a	39a	31ab	44a	31ab
RyzUp		1	1											
Release		sp	0.70	41ab	42abc	41a	40a	39a	36a	39ab	38a	32a	41ab	33a
RyzUp		1	1											
LSD (.05)	=			3	4	3	2	2	3	2	5	3	4	4
Standard Dev.	=			1.8878	2.4715	1.7795	1.5527	1.3944	2.0568	1.2995	2.9884	1.7732	2.8746	2.6478
CV	=			4.80	6.16	4.89	4.31	3.86	5.91	3.38	8.31	5.93	7.24	8.71

Means followed by same letter do not significantly differ (Duncan's MRT, P=.05).

Continued.

Continued.

Treatment Name	Form Amt	Pm Ds	Rate	Tennent Seedling Height (cm)	URR69 Seedling Height (cm)	V7817 Seedling Height (cm)	LA2031 Seedling Height (cm)	LA2146 Seedling Height (cm)	LA2085 Seedling Height (cm)	LA2168 Seedling Height (cm)	LA2192 Seedling Height (cm)	TX3072 Seedling Height (cm)	LA1096 Seedling Height (cm)	Alan Seedling Height (cm)
Release		sp	0	30c	32b	31c	34c	36c	29c	34b	31c	31c	36c	36c
RyzUp		1	0											
Release		sp	0.35	33b	35ab	33bc	38bc	37bc	31bc	36ab	31c	33bc	38bc	38b
RyzUp		1	0											
Release		sp	0.70	32b	35ab	31bc	38bc	36c	33b	38ab	33bc	34b	36c	38bc
RyzUp		1	0											
Release		sp	0	33b	35ab	31c	40ab	39ab	31bc	37ab	32c	31c	40ab	40ab
RyzUp		1	1											
Release		sp	0.35	38a	37a	37a	44a	39a	37a	38ab	37a	39a	41a	42a
RyzUp		1	1											
Release		sp	0.70	37a	36a	35ab	42ab	40a	39a	40a	35ab	38a	41a	41a
RyzUp		1	1											
LSD (.05)	=			3	3	4	5	2	3	5	3	3	3	2
Standard Dev.	=			1.6898	1.8551	2.3475	3.0677	1.5311	1.9571	3.0564	1.8439	1.8401	1.6766	1.4171
CV	=			5.01	5.31	7.15	7.83	4.07	5.89	8.25	5.59	5.37	4.37	3.62

Means followed by same letter do not significantly differ (Duncan's MRT, P=.05).

Continued.

Continued.

Treatment Name	Form Amt	Fm Ds	Rate	L202 Seedling Height (cm)	Lacassine Seedling Height (cm)	V4716 Seedling Height (cm)	Gui Chow Seedling Height (cm)	Katy Seedling Height (cm)	Jackson Seedling Height (cm)	L203 Seedling Height (cm)	Millie Seedling Height (cm)	Orion Seedling Height (cm)	Toro 2 Seedling Height (cm)	Della Seedling Height (cm)
Release		sp	0	35c	29b	34ab	32a	39a	37d	36b	39bc	35c	40a	40b
RyzUp		1	0											
Release		sp	0.35	38abc	31b	34ab	34a	38a	40c	34b	38c	39a	42a	35c
RyzUp		1	0											
Release		sp	0.70	36bc	31b	32b	33a	38a	39cd	35b	39bc	36bc	40a	36c
RyzUp		1	0											
Release		sp	0	38abc	32b	37a	33a	40a	41bc	38a	41ab	40a	42a	44a
RyzUp		1	1											
Release		sp	0.35	40a	40a	35a	37a	40a	43ab	38a	43a	40a	44a	40ab
RyzUp		1	1											
Release		sp	0.70	39ab	38a	35a	37a	39a	43a	39a	42e	38ab	44a	42ab
RyzUp		1	1											
LSD (.05)	=			4	3	3	5	3	3	2	3	3	4	4
Standard Dev.	=			2.4944	2.1389	1.9663	3.005	1.7535	1.6931	1.4634	1.7724	1.6923	2.8886	2.3261
CV	=			6.67	6.41	5.73	8.81	4.52	4.21	4.00	4.42	4.46	6.91	5.90

Means followed by same letter do not significantly differ (Duncan's MRT, P=.05).

Continued.

Continued.

Treatment Name	Form Amt	Fm Ds	Rate	Jasmine Seedling Height (cm)	Labelle Seedling Height (cm)	Mars Seedling Height (cm)	Newbonnet Seedling Height (cm)	Rico 1 Seedling Height (cm)	Saturn Seedling Height (cm)	Tebonnet Seedling Height (cm)	Skybonnet Seedling Height (cm)	AR1096 Seedling Height (cm)	AR1007 Seedling Height (cm)
Release		sp	0	36bc	39bc	42bc	38b	35a	38b	38d	38de	41c	40c
RyzUp		1	0										
Release		sp	0.35	34c	37c	42bc	37b	35a	38b	39cd	37e	42bc	41bc
RyzUp		1	0										
Release		sp	0.70	35bc	38bc	40c	37b	35a	39ab	41bc	40cd	42bc	40c
RyzUp		1	0										
Release		sp	0	39a	43a	44ab	40a	36a	40ab	42ab	43ab	45abc	40bc
RyzUp		1	1										
Release		sp	0.35	38ab	40b	46a	39ab	37a	41a	43ab	41bc	49a	46a
RyzUp		1	1										
Release		sp	0.70	40a	43a	44ab	41a	36e	41a	45a	44a	46ab	43ab
RyzUp		1	1										
LSD (.05)	=			3	2	3	3	3	3	3	3	5	3
Standard Dev.	=			1.8486	1.615	2.1518	1.6931	2.3207	2.0763	2.1647	1.7224	2.9976	1.8378
CV	=			5.27	4.07	5.00	4.41	6.50	5.26	5.27	4.25	6.82	4.44

Means followed by same letter do not significantly differ (Duncan's MRT, P=.05).

SEEDLING VIGOR STUDIES (Seed Treatment)

R.T. Dunand, R.R. Dilly, Jr., and G.A. Meche

Experiment: Gibberellic Acid and Seeding Rate in Semidwarf Rice (*Oryza sativa* 'LEMONT')

Location: Rice Research Station, Crowley, LA

Variety: Lemont

Seeding Rate: See treatments

Planting Date: 13 May 92

Row Spacing: 7-inch

Fertilizer: 7-21-21 with 1.2% zinc at 300 lb/A drilled at planting (13 May); urea (46% N) at 200 lb/A by airplane (10 June)

Plot Size: 175 ft^2 - 7 (12 rows) x 25 ft

Treated Area: 175 ft^2 - 7 x 25 ft

Treatment(s): Seeding Rates

25, 50, 75, and 100 lb/A

Plant Growth Regulator

RELEASE (0.35 oz/cwt seed)

Timing

Seed treatment (11 Mar)

Sprayer: N/A

Pertinent Rainfall: Trace (<0.1 inch) (14 May); 0.5 inch (18 May); 0.1 inch (19 May); 0.75 inch (23 May); 0.3 inch (26 May); 0.2 inch (27 May); 1.7 inches (28 May)

Herbicide(s): Arrosolo (1 gal/A) by airplane (4 June); Basagran (1.5 pt/A) + Londax (1 oz/A) by airplane (16 June); Ordram (20 lb/A) by airplane (16 June); Bolero (40 lb/A) by airplane (25 June)

Insecticide(s): Furadan (17 lb/A) by airplane (16 June)

Fungicide(s): Benlate (1 lb/A) by airplane (15 July); Benlate (1 lb/A) by airplane (30 July)

Emergence: 22 May

Permanent Flood: 11 June

Harvest Date: 2 Sep

Harvested Area: 46.7 ft^2 - 2.33 (4 rows) x 20 ft

Exp. Design: Factorial (4 seeding rates x 2 RELEASE rates) with a randomized complete block design and four replications

Comments: This is the fourth year of a series of studies to determine the effect of RELEASE seed treatment on seedling vigor at low seeding rates and the impact on crop production. In deep-seeded rice (3 inches), stand and emergence were significantly improved at all seeding rates by RELEASE. The ideal stand in rice is 10 to 20 plants/ft^2. This was achieved at the 75 and 100 lb/A seeding rates, regardless of RELEASE seed treatment. An ideal stand was not achieved with the 25 and 50 lb/A seeding rates except at the 50 lb/A seeding rate with RELEASE treated seed. The 100 lb/A seeding rate with RELEASE was the only treatment in which stand exceeded 20 plants/ft^2. These results are comparable with past years' results indicating seeding rate can be reduced to 50 lb/A with RELEASE seed treatment and adequate stands achieved in deep-seeded rice planted in May.

The effect of RELEASE on seedling height occurred at the intermediate seeding rates. Length of the second true leaf was increased at the 50 and 75 lb/A seeding rates by RELEASE. These effects were not carried to maturity.

Grain yield and panicle density were directly related to stand. Across all seeding rates, there was an average significant increase in grain yield of over 350 lb/A and an average significant increase in panicle density of 6 panicles/ft^2 due to RELEASE seed treatment. The greatest differences occurred at the low (25 lb/A) seeding rate.

The effect of plant growth regulator seed treatment and seeding rate on seedling vigor and productivity of rice (Oryza sativa 'Lemont'). Rice Research Station, Crowley, LA. 1992.

Treatment Name	Form Amt	Fm Ds	Rate	Stand (plants/ sq ft) 7 DAP	Stand (plants/ sq ft) 9 DAP	Stand (plants/ sq ft) 12 DAP	Stand (plants/ sq ft) 15 DAP	Stand (plants/ sq ft) 21 DAP	2nd leaf length (cm) 21 DAP	Mature Height (cm)	Grain Moisture (%)	Yield (lb/A)	Panicle Density (pan./ sq ft)
Seeding Rate RELEASE			25 0	0b	1f	2f	2e	2f	12c	88a	18.3a	3384d	10d
Seeding Rate RELEASE			25 .35	2b	4e	6e	7d	7e	13bc	87a	17.1b	4013c	21c
Seeding Rate RELEASE			50 0	1b	5de	9de	10c	8de	12c	86ab	16.7b	4188bc	24bc
Seeding Rate RELEASE			50 .35	2b	7cd	11c	12c	11c	14ab	87a	16.7b	4449abc	25bc
Seeding Rate RELEASE			75 0	1b	5de	11cd	11c	10cd	11c	86ab	16.4b	4336abc	24bc
Seeding Rate RELEASE			75 .35	6a	12b	17b	18b	16b	14a	86ab	16.5b	4575ab	31ab
Seeding Rate RELEASE			100 0	1b	8c	15b	16b	15b	12bc	86ab	16.4b	4370abc	29ab
Seeding Rate RELEASE			100 .35	7a	15a	23a	24a	23a	13abc	84b	16.2b	4784a	35a
LSD (.05) =				2	2	2	2	2	2	3	1.0	478	7
Standard Dev.=				1.4376	1.4474	1.5979	1.6132	1.2938	1.0669	1.7512	.66129	322.94	4.7802
CV =				63.02	20.68	13.67	13.07	11.28	8.56	2.04	3.94	7.58	19.27

Means followed by same letter do not significantly differ (Duncan's MRT, P=.05).

SEEDLING VIGOR STUDIES (Seed Treatment)

R.T. Dunand, R.R. Dilly, Jr., and G.A. Meche

Experiment: Gibberellic Acid, Varieties, and Seeding Rate in Semidwarf Rice (*Oryza sativa*)

Location: Rice Research Station, Crowley, LA

Variety: See treatments

Seeding Rate: See treatments

Planting Date: 13 May 92

Row Spacing: 7-inch

Fertilizer: 7-21-21 with 1.2% zinc at 300 lb/A drilled at planting (13 May); urea (46% N) at 200 lb/A by airplane (10 June)

Plot Size: 116.75 ft^2 - 4.67 (8 rows) x 25 ft

Treated Area: 116.75 ft^2 - 4.67 x 25 ft

Treatment(s): Varieties

Bengal, Cypress, and Lacassine

Seeding Rates

50 and 100 lb/A

Plant Growth Regulator

RELEASE (0.35 oz/cwt seed)

Timing

Seed treatment (11 Mar)

Sprayer: N/A

Pertinent Rainfall: Trace (<0.1 inch) (14 May); 0.5 inch (18 May); 0.1 inch (19 May); 0.75 inch (23 May); 0.3 inch (26 May); 0.2 inch (27 May); 1.7 inches (28 May)

Herbicide(s): Arrosolo (1 gal/A) by airplane (4 June); Basagran (1.5 pt/A) + Londax (1 oz/A) by airplane (16 June); Ordram (20 lb/A) by airplane (16 June); Bolero (40 lb/A) by airplane (25 June)

Insecticide(s): Furadan (17 lb/A) by airplane (16 June)

Fungicide(s): Benlate (1 lb/A) by airplane (15 July); Benlate (1 lb/A) by airplane (30 July)

Emergence: 22 May

Permanent Flood: 11 June

Harvest Date: 2 Sep

Harvested Area: 46.7 ft^2 - 2.33 (4 rows) x 20 ft

Exp. Design: Factorial (3 varieties x 4 seeding rates and RELEASE rate combinations) with a randomized complete block design and four replications

Comments: Bengal, Cypress, and Lacassine are recently developed semidwarf varieties. They were tested to determine the ability of each to respond to RELEASE at normal (100 lb/A) and low (50 lb/A) seeding rates when planted deep. Stands of Cypress and Lacassine were significantly increased by RELEASE at both the 50 and 100 lb/A seeding rates. Stands of Bengal were significantly increased by RELEASE at the 100 lb/A seeding rate only. Also, stand of Bengal at the 50 lb/A seeding rate was improved with RELEASE and made equivalent to stands at the 100 lb/A seeding rate without RELEASE. Stand of Cypress at the 100 lb/A seeding rate with RELEASE was significantly higher than stand of any other treatment. Stands of Cypress and Lacassine at the 100 lb/A seeding rate with RELEASE were the only stands in the ideal stand range of 15 to 20 plants/ft^2.

Mature plant height, grain moisture, and grain yield were dependent on variety and seeding rate and RELEASE seed treatment combinations, independently. Cypress was the tallest variety (93 cm), and Lacassine was the shortest (87 CM). RELEASE seed treatment increased mature plant height slightly (1 cm) at the 50 lb/A seeding rate, and mature plant height at the 100 lb/A seeding rate was 1 to 2 cm shorter compared with the 50 lb/A seeding rate. Grain moisture was lowest for Lacassine, reflecting its earlier maturity, and grain moisture was highest for Cypress. The difference was 2.3%. At the 100 lb/A seeding rate with RELEASE, grain moisture was lowest compared with the 50 lb/A seeding rate without RELEASE. The grain moisture difference was less than 1%. Grain yield was lowest for Bengal and Lacassine at 4265 and 4348 lb/A, respectively, and Cypress yielded 4666 lb/A. Doubling seeding rate and treating seed with RELEASE, each increased grain yield over 300 lb/A.

The effect of plant growth regulator seed treatment and low seeding rate on seedling vigor and productivity in three new rice varieties. Rice Research Station, Crowley, LA. 1992.

Treatment Name	Form Amt	Fm Ds	Rate	Rate Unit	Stand (plants/ sq ft) 23 DAP	Mature Height (cm)	Grain Moisture (%)	Yield (lb/A)
Bengal					3e	89c	17.8ab	4009de
Seeding Rate			50	lb/A				
RELEASE		sp	0	oz p/A				
Bengal					5e	89c	17.5b	4301cd
Seeding Rate			50	lb/A				
RELEASE		sp	.35	oz p/A				
Bengal					5e	89c	17.8ab	4227cd
Seeding Rate			100	lb/A				
RELEASE		sp	0	oz p/A				
Bengal					10d	88cd	17.3b	4524bc
Seeding Rate			100	lb/A				
RELEASE		sp	.35	oz p/A				
Cypress					6e	94ab	18.5a	4332cd
Seeding Rate			50	lb/A				
RELEASE		sp	0	oz p/A				
Cypress					9d	95a	18.0ab	4575bc
Seeding Rate			50	lb/A				
RELEASE		sp	.35	oz p/A				
Cypress					13bc	92b	17.7ab	4797ab
Seeding Rate			100	lb/A				
RELEASE		sp	0	oz p/A				
Cypress					19a	92b	17.7ab	4959a
Seeding Rate			100	lb/A				
RELEASE		sp	.35	oz p/A				
Lacassine					6e	88cd	16.1c	3776e
Seeding Rate			50	lb/A				
RELEASE		sp	0	oz p/A				
Lacassine					10d	88cd	15.8c	4400c
Seeding Rate			50	lb/A				
RELEASE		sp	.35	oz p/A				
Lacassine					12cd	86d	15.4c	4414c
Seeding Rate			100	lb/A				
RELEASE		sp	0	oz p/A				
Lacassine					15b	87cd	15.4c	4802ab
Seeding Rate			100	lb/A				
RELEASE		sp	.35	oz p/A				
LSD (.05)	=				3	2	0.8	344
Standard Dev.	=				1.7867	1.5861	.52948	237.93
CV	=				19.36	1.77	3.10	5.38

Means followed by same letter do not significantly differ (Duncan's MRT, P=.05).

SEEDLING VIGOR STUDIES (Seed Treatment)

R.T. Dunand, R.R. Dilly, Jr., and G.A. Meche

Experiment: Binder, Fertilizer, and Gibberellic Acid Seed Treatment in Semidwarf Rice (*Oryza sativa* 'LEMONT')

Location: Rice Research Station, Crowley, LA

Variety: Lemont

Seeding Rate: 100 lb/A

Planting Date: 13 May 92

Row Spacing: 7-inch

Fertilizer: 7-21-21 with 1.2% zinc at 300 lb/A drilled at planting (13 May); urea (46% N) at 200 lb/A by airplane (10 June)

Plot Size: 23.3 ft^2 - 1.17 (2 rows) x 20 ft

Treated Area: 23.3 ft^2 - 1.17 x 20 ft

Treatment(s): Plant Growth Regulators

GibGro (0.17 and 0.35 oz/cwt)
RELEASE (0.35 oz/cwt)

Binding Agent

Binder (0.002, 0.004, and 0.008 oz/cwt)

Fertilizer

Ammonium sulfate (1 lb N/A)

Timing

Seed treatment (11 Mar)

Sprayer: N/A

Pertinent Rainfall: Trace (<0.1 inch) (14 May); 0.5 inch (18 May); 0.1 inch (19 May); 0.75 inch (23 May); 0.3 inch (26 May); 0.2 inch (27 May); 1.7 inches (28 May)

Herbicide(s): Arrosolo (1 gal/A) by airplane (4 June); Basagran (1.5 pt/A) + Londax (1 oz/A) by airplane (16 June); Ordram (20 lb/A) by airplane (16 June); Bolero (40 lb/A) by airplane (25 June)

Insecticide(s): Furadan (17 lb/A) by airplane (16 June)

Fungicide(s): Benlate (1 lb/A) by airplane (15 July); Benlate (1 lb/A) by airplane (30 July)

Emergence: 22 May

Permanent Flood: 11 June

Harvest Date: N/A

Harvested Area: N/A

Exp. Design: Randomized complete block design and four replications

Comments: Seed treatment with fertilizer, a binding agent, and two formulations of gibberellic acid were evaluated to determine the effects on seedling vigor in semidwarf rice. There were no differences between seed treatments with ammonium sulfate, Bonus, GibGro, and RELEASE or combinations of ammonium sulfate, Bonus, and RELEASE on final seedling stand. Stands ranged between 14 and 17 plants/ft^2 at 23 days after planting.

The effect of growth regulator seed treatment, fertilizer, and binder on seedling vigor of rice (Oryza sativa 'Lemont'). Rice Research Station, Crowley, LA. 1992.

Treatment Name	Form Amt	Fm Ds	Rate	Stand (plants/ (sq ft) 23 DAP
RELEASE		sp	0.35	16a
GibGro		sp	0.17	14a
GibGro		sp	0.35	16a
RELEASE		sp	0.35	17a
Amm. Sulfate		g	1	
RELEASE		sp	0.35	16a
Bonus		1	0.002	
RELEASE		sp	0.35	16a
Bonus		1	0.004	
RELEASE		sp	0.35	15a
Bonus		1	0.008	
RELEASE		sp	0.35	15a
Bonus		1	0.004	
Amm. Sulfate		g	1	

LSD (.05) =	4
Standard Dev.=	2.5436
CV =	16.48

Means followed by same letter do not significantly differ (Duncan's MRT, P=.05).

SEEDLING VIGOR STUDIES (Seed Treatment)

R.T. Dunand, R.R. Dilly, Jr., and G.A. Meche

Experiment: Plant Growth Regulators and Seed Soaking in Semidwarf Rice (Oryza sativa 'LEMONT')

Location: Rice Research Station, Crowley, LA

Variety: Lemont

Seeding Rate: 150 lb/A

Planting Date: 15 May 92

Row Spacing: Water-seeded: seed were soaked in plant growth regulator solutions for 24 hr beginning on 13 May; seed were kept moist for 24 hr following draining before sowing by hand.

Fertilizer: 7-21-21 with 1.2% zinc at 300 lb/A and urea (46% N) at 100 lb/A preplant incorporated (13 May); urea (46% N) at 200 lb/A by airplane (10 June)

Plot Size: 125 ft^2 - 5 x 25 ft

Treated Area: 125 ft^2 - 5 x 25 ft

Treatment(s): Plant Growth Regulator Solutions

ABG-3139 (22 ppm)
ABG-3145 (187 ppm)
RELEASE (22 ppm)

Timing

Seed treatment (13 May)

Sprayer: N/A

Pertinent Rainfall: N/A

Herbicide(s): Arrosolo (1 gal/A) by airplane (4 June); Londax (1 oz/A) by airplane (9 June); Basagran (1.5 pt/A) + Londax (1 oz/A) by airplane (16 June); Ordram (20 lb/A) by airplane (16 June); Bolero (40 lb/A) by airplane (25 June); Stam M4 (2 qt/A) by airplane (10 July)

Insecticide(s): Furadan (17 lb/A) by airplane (16 June)

Fungicide(s): Benlate (1 lb/A) by airplane (15 July); Benlate (1 lb/A) by airplane (30 July)

Emergence: 22 May - 27 May

Permanent Flood: 15 May

Harvest Date: 4 Sep

Harvested Area: 125 ft^2 - 5 x 25 ft

Exp. Design: Randomized complete block design and four replications

Comments: Soak solutions containing the plant growth regulators (PGRs), RELEASE (22 ppm), ABG-3139 (22 ppm), and ABG-3145 (187 ppm), were evaluated for improving seedling vigor in water-seeded rice. A permanent flood with 3-inch depth was established prior to seeding and maintained throughout the cropping period. RELEASE and ABG-3139 alone both hastened emergence through the flood by 2 days compared with the control. ABG-3145 alone and in combination with RELEASE or ABG-3139 delayed emergence by 3 days. Emergence in the control occurred 10 days after planting (DAP).

Seedling stand was relatively unaffected by the PGRs. Stands ranged between 14 and 23 plants/ft^2. The PGRs slowed growth rate (growth stage at 25 DAP) and reduced tillering. At 25 DAP, the control had 5- to 6-leaf rice (growth stage = 5.5) and the PGR treatments had 4- to 5-leaf rice (growth stage = 4.5). The control had two tillers/plant and the PGR treatments had one tiller/plant. Visual rankings (1 to 6, best to worst) for seedling vigor showed the control had the best vigor (rank = 1) and treatments containing ABG-3145 had the worst vigor (rank = 5). Vigor with RELEASE and ABG-3139 was intermediate (ranks = 3 and 2.3, respectively).

At maturity, there were no distinguishable visual differences between treatments. Maturity (evaluated as grain moisture) was not significantly affected by PGR treatments, as was grain yield. Grain moisture ranged between 16.8 and 17.2%. Grain yield ranged between 6100 and 6800 lb/A. Grain yields with RELEASE (6847 lb/A) and ABG-3139 (6722 lb/A) were about 10% higher than the control (6174 lb/A) and may warrant further investigation.

The effect of plant growth regulator seed treatment on seedling vigor and productivity of water-seeded rice (Oryza sativa 'Lemont'). Rice Research Station, Crowley, LA. 1992.

Treatment Name	Form Amt	Fm Ds	Rate	Emerged (DAP)	Stand (plants/ sq ft) 25 DAP	Growth Stage (leaves/ plant) 25 DAP	Tiller Density (tillers /plant) 25 DAP	Seedling Vigor (visual rating) 25 DAP	Grain Moisture (%)	Yield (lb/A)
Control				10b	23a	5.5a	2a	1.0c	16.8a	6174a
RELEASE			22	8c	19ab	4.8b	1b	3.0b	16.8a	6847a
ABG-3139			22	8c	23a	4.9b	1b	2.3bc	16.9a	6722a
ABG-3145			187	13a	14b	5.1ab	1b	4.8a	16.8a	6372a
RELEASE ABG-3145			22 187	13a	19ab	4.8b	1b	4.8a	17.2a	6206a
ABG-3139 ABG-3145			22 187	13a	15ab	4.9b	1b	5.3a	16.9a	6292a
LSD (.05)	=			0	8	0.5	1	1.4	0.7	646
Standard Dev.	=			0	5.042	.3195	.42163	.93094	.44212	428.45
CV	=			0	26.77	6.42	36.14	26.60	2.62	6.66

Means followed by same letter do not significantly differ (Duncan's MRT, P=.05).

SEEDLING VIGOR STUDIES (Seed Treatment)

R.T. Dunand, R.R. Dilly, Jr., and G.A. Meche

Experiment: Quinclorac and Gibberellic Acid in Semidwarf Rice (*Oryza sativa* 'LEMONT')

Location: Rice Research Station, Crowley, LA

Variety: See treatments

Seeding Rate: 100 lb/A

Planting Date: 11 May 92

Row Spacing: 7-inch

Fertilizer: 7-21-21 with 1.2% zinc at 300 lb/A drilled at planting (11 May); urea (46% N) at 200 lb/A by airplane (10 June)

Plot Size: 157.5 ft^2 - 5.83 x (10 rows) x 27 ft

Treated Area: 157.5 ft^2 - 5.83 x 27 ft

Treatment(s): Varieties

Mars, Maybelle, and Lemont

Plant Growth Regulators

RELEASE (0.35 oz/cwt seed)
RyzUp (1 oz/A)

Herbicide

Facet (0.75 lb/A)*

*Added Crop Oil Concentrate (1 qt/A).

Timing

Seed treatment (11 Mar)
2- to 3-leaf Mars and Maybelle (26 May)
2- to 3-leaf Lemont (28 May)
3- to 4-leaf Mars and Maybelle (1 June)
3- to 4-leaf Lemont (3 June)

Sprayer: CO_2-driven, hand-held, 32 psi, 15 GPA, 80015 nozzles

Pertinent Rainfall: 0.3 inch after 8 hours after application (26 May); 1.7 inches (28 May); 0.3 inch beginning 3 hours after application and lasting 10 hours (1 June)

Herbicide(s): Arrosolo (1 gal/A) by airplane (4 June); Basagran (1.5 pt/A) + Londax (1 oz/A) by airplane (16 June); Ordram (20 lb/A) by airplane (16 June); Bolero (40 lb/A) by airplane (25 June)

Insecticide(s): Furadan (17 lb/A) by airplane (16 June)

Fungicide(s): Benlate (1 lb/A) by airplane (15 July); Benlate (1 lb/A) by airplane (30 July)

Emergence: 18 May

Permanent Flood: 11 June

Harvest Date: Maybelle (18 Aug); Mars and Lemont (28 Aug)

Harvested Area: 157.5 ft^2 - 5.83 x 27 ft

Exp. Design: Split plot with a factorial (2x5) arrangement of the subplots (main plot=varieties, subplot=time of foliar application and agricultural chemical) with a randomized complete block design and four replications.

Comments: RELEASE followed by Facet and RyzUp was evaluated for effects on seedling vigor and final productivity of rice. No adverse effects of having Facet and gibberellic acid on rice at the same time were noted. Treatments with Facet and RyzUp on 3- to 4-leaf Mars and Maybelle were nullified due to rainfall shortly after spraying. In Mars, there was lodging due to a hurricane which complicates interpreting yield data in that variety.

In general, seedling height was increased by RyzUp whether alone or mixed with Facet. For example, at 7 days after treatment (DAT) at the 2- to 3-leaf stage, seedling height was increased by 3 to 6 cm, depending on variety.

At maturity, Facet applied at the 2- to 3-leaf stage of Lemont and Maybelle tended to decrease grain yield, and this decrease tended to be reversed by RELEASE. These grain yields averaged 6543, 6022, and 6296 lb/A for the control, Facet alone, and RELEASE followed by Facet treatments, respectively. The only other trend was related to lodging. Mars treated with RELEASE followed by Facet alone at the 2- to 3-leaf stage had consistently higher lodging ratings, and consequently, the lowest yield compared with the other treatments.

The effect of plant growth regulator seed and foliar treatment and herbicide on seedling vigor and productivity of three major rice varieties. Rice Research Station, Crowley, LA. 1992.

Treatment Name	Form Amt	Fm Ds	Rate	Rate Unit	Seedling Height (cm) 7 DAT	Seedling Height (cm) 14 DAT	Grain Moisture (%)	Lodging (%)	Yield (lb/A)
Lemont					28j	35ijk	18.7b	0.0c	6588ab
Facet									
RELEASE									
RyzUp									
Lemont					27j	34jk	18.5b	0.0c	6239ab
Facet	50	wp	.375	lb ai/A					
RELEASE		sp	0	oz p/A					
RyzUp		1	0	oz p/A					
Lemont					28j	34k	18.6b	0.0c	6544ab
Facet	50	wp	.375	lb ai/A					
RELEASE		sp	.35	oz p/A					
RyzUp		1	0	oz p/A					
Lemont					34f-i	42gh	18.8b	0.0c	6478ab
Facet	50	wp	.375	lb ai/A					
RELEASE		sp	0	oz p/A					
RyzUp		1	1	oz p/A					
Lemont					34f-i	39bi	18.6b	0.0c	6327ab
Facet	50	wp	.375	lb ai/A					
RELEASE		sp	.35	oz p/A					
RyzUp		1	1	oz p/A					
Lemont					34ghi	53cde	18.7b	0.0c	6686a
Facet									
RELEASE									
RyzUp									
Lemont					34ghi	51e	18.9b	0.0c	6538ab
Facet	50	wp	.375	lb ai/A					
RELEASE		sp	0	oz p/A					
RyzUp		1	0	oz p/A					
Lemont					35e-i	52e	19.1b	0.0c	6503ab
Facet	50	wp	.375	lb ai/A					
RELEASE		sp	.35	oz p/A					
RyzUp		1	0	oz p/A					
Lemont					33ghi	52e	18.7b	0.0c	6514ab
Facet	50	wp	.375	lb ai/A					
RELEASE		sp	0	oz p/A					
RyzUp		1	1	oz p/A					
Lemont					33ghi	51e	18.8b	0.0c	6579ab
Facet	50	wp	.375	lb ai/A					
RELEASE		sp	.35	oz p/A					
RyzUp		1	1	oz p/A					
Mars					32hi	43fg	22.9a	28.8bc	6060ab
Facet									
RELEASE									
RyzUp									

Continued.

Continued.

Treatment Name	Form Amt	Fm Ds	Rate	Rate Unit	Seedling Height (cm) 7 DAT	Seedling Height (cm) 14 DAT	Grain Moisture (%)	Lodging (%)	Yield (lb/A)
Mars					32hi	45fg	22.2a	20.0bc	6524ab
Facet	50	wp	.375	lb ai/A					
RELEASE		sp	0	oz p/A					
RyzUp		l	0	oz p/A					
Mars					32i	46f	22.9a	90.0a	4519c
Facet	50	wp	.375	lb ai/A					
RELEASE		sp	.35	oz p/A					
RyzUp		l	0	oz p/A					
Mars					34f-i	45f	22.3a	27.5bc	6274ab
Facet	50	wp	.375	lb ai/A					
RELEASE		sp	0	oz p/A					
RyzUp		l	1	oz p/A					
Mars					35e-h	46f	22.0a	25.0bc	5851ab
Facet	50	wp	.375	lb ai/A					
RELEASE		sp	.35	oz p/A					
RyzUp		l	1	oz p/A					
Mars					45b	64a	21.9a	21.3bc	5973ab
Facet									
RELEASE									
RyzUp									
Mars					44b	62a	21.6a	23.8bc	5678ab
Facet	50	wp	.375	lb ai/A					
RELEASE		sp	0	oz p/A					
RyzUp		l	0	oz p/A					
Mars					45b	65a	22.1a	42.5b	5853ab
Facet	50	wp	.375	lb ai/A					
RELEASE		sp	.35	oz p/A					
RyzUp		l	0	oz p/A					
Mars					49a	65a	21.8a	10.0bc	5853ab
Facet	50	wp	.375	lb ai/A					
RELEASE		sp	0	oz p/A					
RyzUp		l	1	oz p/A					
Mars					48a	64a	22.3a	40.0b	5863ab
Facet	50	wp	.375	lb ai/A					
RELEASE		sp	.35	oz p/A					
RyzUp		l	1	oz p/A					
Maybelle					27j	41gh	16.5c	0.0c	6499ab
Facet									
RELEASE									
RyzUp									
Maybelle					28j	36ijk	16.9c	0.0c	5805ab
Facet	50	wp	.375	lb ai/A					
RELEASE		sp	0	oz p/A					
RyzUp		l	0	oz p/A					

Continued.

Table 5. Preplant burndown evaluation in no-till, water-seeded Maybelle rice. Rice Research Station, South Unit, Crowley, LA. 1992.

Herbicide	Time of application	Rate	Stand density	% Grass control[1] 30 DAP	60 DAP		Days to 50% heading	Plant height	Grain yield at 12% moisture
				AG	BTG	ST			
	(weeks preplant)	(lb ai/A)	(plants/ft²)					(cm)	(lb/A)
Diquat	3	.5	23	6.2	7.0	6.7	75	99	7006
Diquat + Facet	3	.5 + .375	26	8.5	8.0	7.2	75	100	7622
Diquat + Bolero	3	.5 + 3.0	25	7.5	7.7	7.2	74	100	7217
Roundup	3	.75	23	6.5	6.2	6.2	76	99	6462
Roundup + Facet	3	.75 + .375	22	9.0	8.2	7.5	74	103	7715
Roundup + Bolero	3	.75 + 3.0	24	7.7	8.0	7.5	74	101	7795
Ignite	3	.75	25	5.2	6.5	5.0	75	100	6628
Ignite + Facet	3	.75 + .375	28	8.0	7.5	6.5	75	96	6698
Ignite + Bolero	3	.75 + 3.0	25	7.2	8.0	7.2	74	98	6968
Facet	3	.375	19	9.5	8.7	8.7	77	100	7697
Bolero	3	3.0	19	9.5	8.7	8.7	77	98	7445
Diquat	1	.5	24	9.0	6.7	7.2	75	99	7286
Diquat + Facet	1	.5 + .375	20	10.0	8.7	8.5	75	99	7622
Diquat + Bolero	1	.5 + 3.0	23	9.5	8.7	9.0	74	99	7661
Roundup	1	.75	27	9.7	8.5	9.0	75	99	7574
Roundup + Facet	1	.75 + .375	24	9.2	8.5	8.5	75	98	7734
Roundup + Bolero	1	.75 + 3.0	22	9.5	8.7	9.0	75	100	7705
Ignite	1	.75	25	8.0	7.5	7.5	74	96	7168
Ignite + Facet	1	.75 + .375	24	9.7	9.0	8.2	74	96	7322
Ignite + Bolero	1	.75 + 3.0	21	9.5	8.2	8.7	74	99	7733
Facet	1	.375	20	9.0	9.0	8.7	77	99	7636
Bolero	1	3.0	23	9.5	9.0	9.0	77	98	7468
C.V.%			21.40	12.67	10.64	16.20	1.08	3.33	9.13

Continued.

Table 5. Continued.

Main effects	Stand density	% Grass control[1] 30 DAP AG	60 DAP BYG	60 DAP ST	Days to 50% heading	Plant height	Grain yield at 12% moisture
	(plants/ft²)					(cm)	(lb/A)
Time of application:							
3-week preplant	24	7.7	7.7	7.2	75	100	7205
1-week preplant	23	9.3	8.4	8.5	75	99	7537
LSD (0.05)	ns	0.5	0.4	0.5	ns	ns	287
Herbicide:							
Diquat	24	7.6	6.9	7.0	75	99	7146
Diquat + Facet	23	9.2	8.4	7.9	75	100	7622
Diquat + Bolero	24	8.5	8.2	8.1	74	99	7439
Roundup	25	8.1	7.4	7.6	75	99	7018
Roundup + Facet	23	9.1	8.4	8.0	75	100	7724
Roundup + Bolero	23	8.6	8.4	8.2	74	101	7750
Ignite	25	6.6	7.0	6.2	75	99	6898
Ignite + Facet	26	8.9	8.2	7.4	75	96	7010
Ignite + Bolero	23	8.4	8.1	8.0	74	99	7350
Facet	20	9.2	8.9	8.7	77	100	7666
Bolero	21	9.5	8.9	8.9	77	98	7456
LSD (0.05)	ns	1.1	0.9	1.3	1	ns	ns

1/ DAP = days after planting. Rating for 30 DAP is overall grass rating. Separate ratings were assigned for barnyardgrass and sprangletop.

Experiment: Preplant burndown study

Location: Rice Research Station, South Unit

Soil Type/Analysis: Crowley silt loam; pH: 5.9; O.M.: 1.46%; extractable nutrients (mg/kg): P-157, Na-120, K-113, Ca-1948, Mg-534, Zn-2.52, S-7.08, As-5.39, Fe-133.1

Variety/Seeding Rate: MBLE, 110 lb/A

Planting Method/Date: Drill-seeded, Apr 19

Fertilization: 40 lb/A P_2O_5 and K_2O; 150 lb N/A (urea) pf, May 19

Plot Size: 10 x 25 ft (250 ft^2)

Emergence Date: Apr 30

Water Management: Flushed, Apr 21, Apr 26, May 3, May 9; permanent flood, May 20; harvest drainage, Aug 3

Herbicides: 1.0 lb al/A Basagran (bentazon), May 19

Insecticides: 0.6 lb al/A Furadan (carbofuran), June 10

Fungicides: 0.5 lb al/A Benlate (benomyl), July 1, July 16

Harvest: Aug 13

Experimental Design: Randomized complete block with four replications, factorial arrangement of herbicide treatment and application time

Comments: All burndown herbicides gave good control of most existing vegetation. Dessication of preplant vegetation was most rapid with Diquat, followed by Ignite and Roundup. The entire test area was treated with Basagran to control broadleaf weeds prior to permanent flood establishment.

Herbicide ratings reflect their effectiveness in controlling or suppressing grassy weeds when applied preplant. The initial rating is an estimate of annual grass (AG) control. The 60 DAP (days after planting) rating distinguishes between barnyardgrass (BYG) and sprangletop (ST) control (Table 6). Time of application was significantly different for all weed ratings. The 30 and 60 DAP ratings for grass control were significantly higher when herbicides were applied 1 week rather than 3 weeks preplant. Grain yields were also higher with a 1 week application.

Weed control was significantly greater when either Facet or Bolero was tank mixed with the burndown herbicides at the 30 and 60 DAP rating. No differences in grain yield were observed due to herbicide treatment. Yields, however, were generally higher with Diquat and Ignite when tank mixed with either Facet or Bolero. Yields were also higher when Facet or Bolero was applied with either Diquat or Ignite. Yields were similar when Roundup was applied alone or in combination with Facet or Bolero.

Table 6. Preplant burndown evaluation in no-till, drill-seeded Maybelle rice. Rice Research Station, South Unit, Crowley, LA. 1992.

Herbicide	Time of application	Rate	Stand density	% Grass control[1] 30 DAP	60 DAP		Days to 50% heading	Plant height	Grain yield at 12% moisture
				AG	BYG	ST			
	(weeks preplant)	(lb ai/A)	(plants/ft²)					(cm)	(lb/A)
Diquat	3	.5	19	8.5	8.0	7.0	77	101	7113
Diquat + Facet	3	.5 + .375	17	8.0	7.7	7.2	77	100	7743
Diquat + Bolero	3	.5 + 3.0	20	8.7	8.2	7.7	77	101	7436
Roundup	3	.75	18	7.2	7.2	8.2	77	101	7722
Roundup + Facet	3	.75 + .375	22	8.5	8.7	7.5	77	97	7283
Roundup + Bolero	3	.75 + 3.0	21	8.5	9.0	8.2	77	101	7913
Ignite	3	.75	21	6.0	6.7	5.7	77	100	7230
Ignite + Facet	3	.75 + .375	21	9.2	8.7	7.5	77	103	7944
Ignite + Bolero	3	.75 + 3.0	20	8.5	8.5	8.0	77	102	7873
Facet	3	.375	20	9.5	8.5	8.2	78	99	7675
Bolero	3	3.0	19	9.5	8.2	8.7	79	96	7242
Diquat	1	.5	22	9.0	8.2	8.5	77	99	7519
Diquat + Facet	1	.5 + .375	20	9.7	9.0	9.0	77	103	7916
Diquat + Bolero	1	.5 + 3.0	21	10.0	9.0	9.0	77	102	7869
Roundup	1	.75	23	9.5	8.7	8.7	77	100	7971
Roundup + Facet	1	.75 + .375	21	10.0	9.0	8.5	77	99	8110
Roundup + Bolero	1	.75 + 3.0	22	10.0	9.0	9.0	77	99	8098
Ignite	1	.75	21	9.0	8.0	7.7	77	100	7600
Ignite + Facet	1	.75 + .375	22	9.7	9.0	8.7	76	100	7653
Ignite + Bolero	1	.75 + 3.0	23	9.7	8.7	9.0	76	97	7948
Facet	1	.375	18	9.7	9.0	8.7	79	98	7706
Bolero	1	3.0	18	9.7	9.0	9.0	78	97	7936
C.V.%			16.31	12.41	6.49	11.86	0.64	3.41	5.92

Continued.

Table 6. Continued.

Main effects	Stand density	% Grass control[1] 30 DAP AG	60 DAP BYG	60 DAP ST	Days to 50% heading	Plant height	Grain yield at 12% moisture
	(plants/ft²)					(cm)	(lb/A)
Time of application:							
3-week preplant	20	8.4	8.2	7.7	77	100	7561
1-week preplant	21	9.7	8.8	8.7	77	99	7848
LSD (0.05)	ns	0.5	0.2	0.4	ns	ns	194
Herbicide:							
Diquat	21	8.7	8.1	7.7	77	100	7316
Diquat + Facet	19	8.9	8.4	8.1	77	101	7829
Diquat + Bolero	21	9.4	8.6	8.4	77	102	7652
Roundup	20	8.4	8.0	8.5	77	101	7846
Roundup + Facet	21	9.2	8.9	8.0	77	98	7697
Roundup + Bolero	21	9.2	9.0	8.6	77	100	8005
Ignite	21	7.5	7.4	6.7	77	100	7415
Ignite + Facet	21	9.5	8.9	8.1	77	101	7799
Ignite + Bolero	22	9.1	8.6	8.5	77	100	7910
Facet	19	9.6	8.7	8.5	78	99	7691
Bolero	19	9.6	8.6	8.9	79	96	7589
LSD (0.05)	ns	1.1	0.5	1.0	1	ns	ns

1/ DAP = days after planting. Rating for 30 DAP is overall grass rating. Separate ratings were assigned for barnyardgrass and sprangletop 60 DAP.

Experiment: No-till variety x N trial

Location: Rice Research Station, South Unit

Soil Type/Analysis: Crowley silt loam; pH: 6.1; O.M.: 1.39%; extractable nutrients (mg/kg): P-125, Na-96, K-98, Ca-1662, Mg-383, Zn-1.65, S-8.31, As-5.05, Fe-103.8

Variety/Seeding Rate: CPRS, BNGL, LCSN, MBLE, 150 lb/A

Planting Method/Date: Water-seeded, Apr 22

Fertilization: 40 lb/A P_2O_5 and K_2O; N source ammonium sulfate

Plot Size: 10.25 x 25 ft (268 ft^2)

Emergence Date: May 1

Water Management: Flooded, Apr 21; drained, Apr 24; flushed, Apr 26, May 3, May 9; permanent flood, May 20; harvest drainage, Aug 3

Herbicides: 4.0 lb ai/A Stam (propanil), 1.0 lb ai/A Basagran (bentazon), May 19

Insecticides: 0.6 lb ai/A Furadan (carbofuran), June 10

Fungicides: 0.5 lb ai/A Benlate (benomyl), July 1, July 16

Harvest: Aug 18

Experimental Design: Randomized complete block with four replications, N rate assigned to main plot and varieties to subplot

Comments: No differences in emergence were observed among varieties. Stand establishment of Lacassine was slower than the other varieties and density appeared to be less. This is probably due to its poor seedling vigor. A significant response to N rate occurred, and the highest yields occurred when N was applied at 180 lb/A (Table 7). Grain yield of Lacassine was significantly lower than the other varieties.

Table 7. Effect of N rate on agronomic performance of no-till, water-seeded rice varieties. Rice Research Station, South Unit, Crowley, LA. 1992.

	N rate (lb/A)														
	Days to 50% heading					Plant height					Grain yield at 12% moisture				
Variety	90	120	150	180	Mean	90	120	150	180	Mean	90	120	150	180	Mean
						(cm)					(lb/A)				
Cypress	84	85	86	87	85	81	90	90	93	89	6668	7231	6990	7840	7182
Lacassine	84	85	87	87	86	79	86	86	90	85	6265	6649	6338	7069	6581
Maybelle	74	74	74	75	74	86	92	92	98	92	6783	7381	7385	8058	7402
Bengal	84	84	84	85	84	81	87	87	93	87	6639	7408	7556	8371	7493
N															
Mean	81	82	83	84		82	89	89	94		8589	7167	7067	7835	
C.V., %			1.05					3.40					6.27		
LSD (0.01):															
Nitrogen			1					6					1046		
Variety			1					3					432		
V within N			-					-					865		
V across N			-					-					1282		

Experiment: No-till variety x N trial

Location: Rice Research Station, South Unit

Soil Type/Analysis: Crowley silt loam; pH: 5.8; O.M.: 1.43%; extractable nutrients (mg/kg): P-120, Na-112, K-112, Ca-1594, Mg-440, Zn-2.21, S-8.27, As-5.23, Fe-133.1

Variety/Seeding Rate: CPRS, BNGL, LCSN, MBLE, 110 lb/A

Planting Method/Date: Drill-seeded, Apr 19

Fertilization: 40 lb/A P_2O_5 and K_2O; N source ammonium sulfate

Plot Size: 7 x 25 ft (250 ft^2)

Emergence Date: May 1

Water Management: Flushed, Apr 21, Apr 26, May 3, May 9; permanent flood, May 20; harvest drainage, Aug 3

Herbicides: 4.0 lb al/A Stam (propanil), 1.0 lb al/A Basagran (bentazon), May 19

Insecticides: 0.6 lb al/A Furadan (carbofuran), June 10

Fungicides: 0.5 lb al/A Benlate (benomyl), July 1, July 16

Harvest: Aug 18

Experimental Design: Randomized complete block with four replications, N assigned to main plots and varieties to subplots

Comments: No differences in emergence were observed among varieties. Stand establishment of Lacassine was slower than the other varieties and density appeared to be less. This is probably due to its poor seedling vigor. None of the varieties responded significantly to increasing rate of N beyond 90 lb/A (Table 8). Grain yield of Lacassine was significantly lower than the other varieties.

Table 8. Effect of N rate on agronomic performance of no-till, drill-seeded rice varieties. Rice Research Station, South Unit, Crowley, LA. 1992.

	N rate (lb/A)														
	Days to 50% heading					Plant height					Grain yield at 12% moisture				
Variety	90	120	150	180	Mean	90	120	150	180	Mean	90	120	150	180	Mean
						(cm)					(lb/A)				
Cypress	87	88	88	88	88	92	94	96	97	95	7115	7289	7788	7621	7453
Lacassine	89	89	90	90	90	89	90	91	96	92	6005	6445	6586	6798	6459
Maybelle	76	76	77	77	77	93	95	95	96	95	6962	7031	7463	7746	7301
Bengal	85	87	88	87	87	91	93	93	96	93	6983	7211	7547	7755	7374
N															
Mean	85	85	86	86		91	93	94	96		6766	6994	7346	7480	
C.V., %			0.71					2.84					4.55		
LSD (0.01):															
Nitrogen			1					ns					ns		
Variety			1					3					313		
V within N			-					-					626		
V across N			-					-					1222		

Experiment: Rice water quality study

Location: Rice Research Station, South Unit

Soil Type/Analysis: Crowley silt loam; pH: 6.0; O.M.: 1.54%; extractable nutrients (mg/kg): P-126, Na-105, K-111, Ca-1880, Mg-563, Zn-1.27, S-6.34, As-4.47, Fe-115.1

Variety/Seeding Rate: MBLE, 150 lb/A

Planting Method/Date: Water-seeded, Apr 30

Fertilization: 46-24-24 (N-P_2O_5-K_2O), May 19; 58 lb N/A (urea) June 4

Plot Size: 80 x 240 ft (0.5 A)

Emergence Date: May 6

Water Management: See Table 8

Herbicides: 4.0 lb ai/A Bolero (thiobencarb), Apr 27

Insecticides: 0.6 lb ai/A Furadan (carbofuran), June 4

Fungicides: None

Harvest: No harvest

Experimental Design: Non-replicated, large observation plots

Comments: A schedule of tasks is presented in Table 9. Characterization of the initial drain water samples is shown in Table 10. TSS was highest in the mudding in management system and lowest in the no-till and clear water planting system. TSS was significantly reduced when floodwater was retained for 14 days after mudding in. TS was similar for the clear water, no-till, and stale plantings.

Severe herbicide injury was observed during early tillering in all planting systems. Injury became more pronounced over time and significant stand loss occurred. A decrease in red rice population was also observed. The injury appeared to be worse in the clear water planting system. Less injury was observed in the no-till system although the injury was still severe. The test was not harvested due to extensive stand loss.

Table 9. Schedule of tasks for the rice field water quality study. Rice Research Station, South Unit, Crowley, LA. 1992.

Task	Time
Dry field preparation of clear water, stale, mudding in, and water retention systems	4/4
Flooded field preparation (vibra-shank and drag) of water retention system	4/16
Roundup application on no-till and stale system	4/21
Flooded field preparation (vibra-shank and drag) of mudding in system	4/24
Flooding, no-till and stale systems, granular Bolero applied to no-till, stale, mudding in, and water retention systems, liquid Bolero applied to clear water planting system	4/27
Water seeding, all systems	4/30
Initial drainage, water sample collection	5/2
Permanent flood establishment	5/5
Fertilizer application	5/19
Furadan, fertilizer application	6/4

Table 10. Influence of tillage on water quality of rice field floodwater (initial drain) from water-seeded rice. Rice Research Station, South Unit, Crowley, LA. 1992.

Parameter	Clear Water	Spring Stale	Mudding in	Water retention	No tillage
BOD5 (mg/L)	-	-	-	-	-
pH	7.96	8.13	8.03	8.28	7.55
EC (dS/m)	0.41	0.44	0.47	0.54	0.48
TSS (mg/L)	30	60	260	59	10
TDS (mg/L)	280	270	420	425	340
TS (mg/L)	321	359	625	460	364
Fe (mg/L)	0.075	0.162	0.303	0.019	0.455
Mn (mg/L)	0.000	0.002	0.008	0.000	0.002
Ni (mg/L)	0.000	0.000	0.000	0.000	0.000
Al (mg/L)	0.201	0.363	0.763	0.068	0.219
Cd (mg/L)	0.000	0.000	0.000	0.000	0.000
Cu (mg/L)	0.007	0.005	0.008	0.007	0.000
As (mg/L)	0.000	0.000	0.000	0.000	0.000
B (mg/L)	0.044	0.040	0.044	0.034	0.044
Cr (mg/L)	0.000	0.000	0.000	0.000	0.000
Si (mg/L)	8.301	7.335	10.940	0.739	11.360
P (mg/L)	0.000	0.000	0.000	0.000	0.159
Pb (mg/L)	0.000	0.000	0.000	0.000	0.000
Zn (mg/L)	0.006	0.005	0.006	0.000	0.006
Mg (mg/L)	13.470	11.190	16.140	16.010	15.130
K (mg/L)	3.534	2.956	4.263	2.747	7.833
S (mg/L)	0.850	0.955	0.920	0.529	1.408
Na (mg/L)	64.32	57.48	69.28	59.76	65.28
Ca (mg/L)	28.19	18.84	30.44	28.15	28.26
F^- (mg/L)	0.532	0.275	0.598	0.493	0.479
Cl^- (mg/L)	37.96	37.97	42.48	32.88	42.47
Br^- (mg/L)	0.253	0.283	0.241	0.228	0.000
NO_3^- (mg/L)	0.337	0.365	0.416	0.000	0.000
PO_4^{3-} (mg/L)	0.000	0.000	0.000	0.000	0.000
SO_4^{2-} (mg/L)	1.441	1.959	1.185	0.445	2.588

FOUNDATION SEED RICE PROGRAM

Lawrence M. White, III

INTRODUCTION

Foundation seed rice has been produced by the Rice Research Station for distribution to Louisiana farmers since 1949. The station's seed rice program was instituted in response to the critical shortage of pure planting stocks which existed during and after World War II. Since its inception, the program has made available to Louisiana growers over 109,000 cwt. of pedigreed stock of 26 rice varieties.

Concurrent with the distribution of pure seed by the Rice Research Station, there developed in Louisiana an industry comprised of independent seed dealers through whom farmers could conduct trade in registered and certified classes of pedigreed rice.

Foundation seed rice, the planting stock from which registered and certified seed are produced, is the farmers link with the work of the plant breeder. It is the product of hybridization and of successive generations of selection and testing to establish its value as crop seed and eventually as a commercial commodity. For this reason, foundation seed and the basic stocks from which it is produced, must be grown and conditioned in a manner which will insure that viability is maintained and that it be genetically pure and free from mechanical mixtures or contamination by noxious weeds.

Through the Rice Research Station's seed program, Louisiana farmers may obtain seed rice of improved varieties developed through the Louisiana Agricultural Experiment Station breeding program and of established commercial varieties originating either at Crowley or at research centers in neighboring states.

In order to fulfill the objectives of the seed program, the Rice Research Station utilizes the personnel, land, machinery, and other facilities needed to plant, harvest, condition, and store its annual seed rice crop. The production of breeder seed, planting stock for the foundation fields, and the maintenance of purity in commercial rice varieties are functions of the seed program. Breeder seed is sometimes grown within fields of foundation rice, or in a special nursery, set aside for propagating the Rice Research Station's seed stocks. The nursery also serves as a site for evaluating, purifying, and increasing selections from the Louisiana Agricultural Experiment Station breeding program which show promise as new varieties.

The distribution of pedigreed seed rice produced by the Rice Research Station is done according to a formula adopted by the Louisiana Seed Rice Growers Association. For each rice producing parish, the amount of seed allotted to an individual parish is determined by the percentage of the states total rice acreage grown in that parish during the previous crop year.

Personnel of the Louisiana Cooperative Extension Service in cooperation with parish committees of the Seed Rice Growers Association assist in the allocation of foundation seed rice. It is at the parish committee level that the allocation of seed to individual growers is decided. The county agents receive applications for seed rice from growers and handle information and publicity for the pure seed program.

In this state, the official seed certifying agency for all crops is the Louisiana Department of Agriculture. The rules and regulations pertaining to the certification of agricultural seeds are part of the Louisiana Seed Law. They are formulated by the Louisiana Seed Commission and enforced by Agronomic Programs Division of the Louisiana Department of Agriculture. Personnel of the Agronomic Programs Division, operating from district offices conduct field inspections of growing rice and sampling of bagged rice for laboratory analyses which consist of purity determinations and germination tests.

PRODUCTION PRACTICES

Each year, the Rice Research Station devotes approximately 80 acres of land to the production of foundation seed rice. In order to eliminate noxious weeds, especially red rice, which can disqualify rice from certification, the fields are fallowed for a 2-year period preceding planting. This also enables the fields to meet the crop history requirements specified in the seed rice regulations.

Following seedbed preparation, foundation fields are planted by means of a 16-runner grain drill. A basal application of fertilizer (20-60-60 lb/A of NPK) is made at the time of seeding. The breeder stock is planted at the rate of approximately 100 lb/A. The rice receives a preflood application of urea in which the rate of N may vary from 45 to 90 lb/A.

Seedling grasses and weeds are controlled by means of commercially available herbicides, applied by airplane. Similarly, aerial applications of insecticides are used to protect the fields from outbreaks of harmful insects.

Roguing of the rice fields for the removal of off-types, varietal mixtures, and noxious weeds, begins at the onset of heading and continues until the rice is harvested. During this interval, the headed rice is inspected by personnel of the Agronomic Programs Division to determine whether or not it meets minimum field standards of the certifying agency.

The rice is harvested with a conventional combine, and dried in the Rice Research Station's continuous flow drier to a moisture level of approximately 12% During the storage period between drying and cleaning, the rice is treated with an insecticide in order to protect it from stored-grain insects.

Cleaning of foundation and breeder seed usually commences in late October and continues until late December. The rice first moves through an air-and-screen cleaner which removes chaff, straw, and other foreign material and grades the grain according to width and thickness.

It then flows through two sets of length grading machines which consist of rotating, indented metal cylinders. The first set of cylinders removes stemmy rice, grains which have very long awns of which are attached to portions of the panicle. The second set removes small grains and broken or dehulled kernels of rice.

In the final phase of cleaning, the rice moves through a machine which performs diameter grading of the grain by means of rapidly oscillating perforated screens. This machine is designed to separate medium-grain and/or red rice from long-grain rice. It is also capable of removing shrivelled and other slender kernels from medium-grain rice.

From the cleaning machines, foundation and breeder seed rice flow directly into a treater which applies a measured quantity of liquid fungicide for protection of young rice plants from seedling disease. The rice is bagged as it comes from the treater, assigned a lot number, and placed in storage in the Station's seed rice warehouse where it remains until the time that it is distributed to Louisiana farmers.

The field and laboratory purity standards for foundation seed rice are very strict with regard to varietal mixtures and noxious weeds. In all phases of production, therefore, great care must be exercised in order to prevent these impurities from contaminating the seed stocks. To that end, it is routine procedure at the Rice Research Station to partially disassemble all planting and harvesting equipment and to clean it thoroughly with water an/or compressed air before using it in the field. The drier and cleaning plant, including all elevators and other conveying equipment, are also subjected to meticulous cleaning and inspection before and after having been used in stubble fields. Therefore, tractors, plows, harrows, and land levelers are carefully washed before they enter land which is in a fallow cycle. These measures, together with the inspection and roguing which are done during the growing season, help to insure that foundation seed is genetically pure and free of mechanical mixtures and noxious weed seeds.

1992 ACTIVITIES

Of the 3239 cwt. of foundation seed rice sold in March 1992, the varieties and quantities were as follows: Cypress, 1182 cwt.; Lacassine, 856 cwt.; Maybelle, 532 cwt.; Lemont, 509 cwt.; and Bengal, 160 cwt.

The Rice Research Station's foundation seed crop in 1992 consisted of 28.82 acres of Cypress, 19.32 acres of Bengal, 13.56 acres of Lacassine, and 7.00 acres of Maybelle.

Breeder seed was grown in 1992 as follows: Cypress, .70 acre; Bengal, .65 acre; Lacassine, .60 acre; Maybelle, .50 acre; and LA 2031, an experimental long-grain variety, .50 acre.

Headrows of Cypress, Bengal, Lacassine, and Maybelle were also grown in 1992.

RICE PHYSIOLOGY

INTRODUCTION

Plant growth regulators (PGRs) have a tremendous effect on crop production because of their ability to alter plant growth and development. Therefore, studies of PGR modifications to plant growth and development which improve rice production were conducted.

In preliminary greenhouse and small plot trials, emergence has been improved with PGR seed treatments which cause mesocotyl and coleoptile elongation. These structures are short in some semidwarf cultivars, and seeding more than one inch below the soil surface can result in poor stands. Small plot seed treatment studies were continued in 1992. In addition, seedling height of semidwarf rice increases slowly resulting in poor seedling vigor. Studies to increase seedling height with PGRs were conducted in 1992.

At present, PGRs have been identified which can modify internode elongation and modification of internode elongation can be beneficial. In some semidwarf varieties panicles are below the upper leaves at maturity. This increases the plant matter entering combines at harvest and decreases harvest efficiency. Plant growth regulators can increase upper stem elongation and raise panicles above the canopy for easier harvest. In contrast, research has shown PGRs can shorten plant stature by reducing internode elongation. In varieties susceptible to lodging because of tall stature, reductions in plant height by PGRs have been accomplished and have resulted in a greater tolerance of tall varieties to lodging. In addition, studies to limit internode elongation in rice have shown that PGRs can prevent exsertion of the panicle. Studies of this particular response to properly timed applications of PGRs have shown that seed production in red rice can be prevented. In that respect, PGRs offer the first control measure for established red rice in commercial rice production. Studies on enhancing panicle exsertion in white rice and preventing panicle exsertion in red rice were conducted.

Some PGRs are reported to increase grain yield directly. Several of those materials were evaluated.

To address the objectives of emergence and seedling vigor improvement of semidwarf cultivars, harvest efficiency, red rice seed elimination, and yield enhancement, PGRs were tested for their effects on rice growth and development.

SEEDLING VIGOR STUDIES (Seed Treatment)

R.T. Dunand, R.R. Dilly, Jr., and G.A. Meche

Experiment: Gibberellic Acid and Mancozeb Seed Treatment in Early Planted Semidwarf Rice (Oryza sativa)

Location: Rice Research Station, Crowley, LA

Variety: See treatments

Seeding Rate: 100 lb/A

Planting Date: 25 Mar 92

Row Spacing: 7-inch

Fertilizer: N/A

Plot Size: 23.3 ft^2 - 1.2 (2 rows) x 20 ft

Treated Area: 23.3 ft^2 - 1.2 x 20 ft

Treatment(s): Varieties

Bengal, Cypress, Lacassine, and Mars

Plant Growth Regulators

RELEASE (0.35 oz/cwt seed)
RyzUp (1 oz/A)

Fungicide

Dithane DF (4 oz/cwt seed)

Timing

Seed treatment (11 Mar)
2-leaf rice (22 Apr)

Sprayer: N/A

Pertinent Rainfall: 0.8 inch (28 Mar); 1.1 inch (5 Apr); flushed (10 Apr)

Herbicide(s): N/A

Insecticide(s): N/A

Fungicide(s): N/A

Emergence: 6 Apr

Permanent Flood: 11 June

Harvest Date: N/A

Harvested Area: N/A

Exp. Design: Factorial (4 varieties x 2 plant growth regulator treatments x 2 fungicide treatments with a randomized complete block design and four replications

Comments: RELEASE and Dithane DF seed treatments alone and in combination were studied for their effects on seedling vigor of early planted rice at 27 days after planting. In all four varieties (Bengal, Cypress, Lacassine, and Mars), RELEASE did not substitute for Dithane DF seed treatment. In general, stands were higher when fungicide was present. Stands for RELEASE alone averaged 7 plants/ft^2. Stands for Dithane DF alone averaged 10 plants/ft^2. Of the varieties tested, Bengal only was responsive to RELEASE when Dithane DF was present. Stands of Bengal were increased from 10 plants/ft^2 with Dithane DF alone to 13 plants/ft^2 with Dithane DF and RELEASE. Seedling height of Cypress without Dithane DF and seedling height of Lacassine with or without Dithane DF were increased by RELEASE. Seedling heights for Cypress were 14 and 17 cm without RELEASE and with RELEASE, respectively. Seedling heights of Lacassine with or without Dithane DF averaged 12 cm and with RELEASE averaged 14 cm.

Overspraying half of each plot with RyzUp showed Cypress, Lacassine, and Mars responded in general. Increases in seedling height ranged from 1 to 3 cm, depending on variety and seed treatment at 7 days after treatment.

The effect of fungicide and plant growth regulator on seedling vigor of new rice varieties. Rice Research Station, Crowley, LA. 1992.

Treatment Name	Form Amt	Fm Ds	Rate	Stand (plants/ sq ft)	- RyzUp Height (cm)	+ RyzUp Height (cm)
Bengal				6efg	16bcd	18b
Dithane DF		df	0			
RELEASE		sp	0			
Bengal				6d-g	17ab	17bc
Dithane DF		df	0			
RELEASE		sp	0.35			
Bengal				10bc	17abc	17bc
Dithane DF		df	4			
RELEASE		sp	0			
Bengal				13a	17ab	18b
Dithane DF		df	4			
RELEASE		sp	0.35			
Cypress				9c	14d	17bc
Dithane DF		df	0			
RELEASE		sp	0			
Cypress				8c-f	17abc	17bc
Dithane DF		df	0			
RELEASE		sp	0.35			
Cypress				14a	16bcd	17bc
Dithane DF		df	4			
RELEASE		sp	0			
Cypress				12ab	16bcd	18b
Dithane DF		df	4			
RELEASE		sp	0.35			
Lacassine				4g	12e	14d
Dithane DF		df	0			
RELEASE		sp	0			
Lacassine				5fg	14d	17bc
Dithane DF		df	0			
RELEASE		sp	0.35			

Continued.

Continued.

Treatment Name	Form Amt	Fm Ds	Rate	Stand (plants/ sq ft)	- RyzUp Height (cm)	+ RyzUp Height (cm)
Lacassine				8c-f	12e	15cd
Dithane DF		df	4			
RELEASE		sp	0			
Lacassine				8cde	15cd	16bc
Dithane DF		df	4			
RELEASE		sp	0.35			
Mars				9bc	19a	21a
Dithane DF		df	0			
RELEASE		sp	0			
Mars				8c-f	18ab	21a
Dithane DF		df	0			
RELEASE		sp	0.35			
Mars				9c	19a	22a
Dithane DF		df	4			
RELEASE		sp	0			
Mars				9cd	18ab	21a
Dithane DF		df	4			
RELEASE		sp	0.35			
LSD (.05)	-			2	2	2
Standard Dev.	-			1.618	1.4747	1.4092
CV	-			19.11	9.25	7.91

Means followed by same letter do not significantly differ (Duncan's MRT, P=.05).

SEEDLING VIGOR STUDIES (Seed Treatment)

R.T. Dunand, R.R. Diiiy, Jr., and G.A. Meche

Experiment: Gibberellic Acid and ABG-3139 Seed Treatment in Early Planted Semidwarf Rice (*Oryza sativa* 'LEMONT')

Location: Rice Research Station, Crowley, LA

Variety: Lemont

Seeding Rate: 100 lb/A

Planting Date: 25 Mar 92

Row Spacing: 7-inch

Fertilizer: N/A

Plot Size: 23.3 ft^2 - 1.2 (2 rows) x 20 ft

Treated Area: 23.3 ft^2 - 1.2 x 20 ft

Treatment(s): Planting Depth

Shallow (<1 inch)
Deep (1 to 1.5 inches)

Plant Growth Regulators

RELEASE (0.17 and 0.35 oz/cwt seed)
ABG-3139 (0.17, 0.35, and 0.70 oz/cwt seed)

Timing

Seed treatment (11 Mar)

Sprayer: N/A

Pertinent Rainfall: 0.8 inch (28 Mar); 1.1 inch (5 Apr); flushed (10 Apr)

Herbicide(s): N/A

Insecticide(s): N/A

Fungicide(s): N/A

Emergence: 6 Apr

Permanent Flood: 11 June

Harvest Date: N/A

Harvested Area: N/A

Exp. Design: Split plot (main plot = planting depth; subplot = plant growth regulator and rate) with a randomized complete block design and four replications

Comments: The plant growth regulators (PGR) RELEASE and ABG-3139 were evaluated for effects on seedling emergence and height. In general, rate of emergence increased as rates of RELEASE and ABG-3139 increased. Emergence with PGR seed treatment in the shallow-seeded treatments was completed at 19 days after planting (DAP) compared with 22 DAP for the control. In the deep-seeded treatments, the differences were 22 and 26 DAP, respectively. Although stands for deep-seeded rice were approximately half the stands for shallow-seeded rice, final emergence was the same for the control and all RELEASE and ABG-3139 treatments within each group of shallow- and deep-seeded treatments. Under the early season conditions, the soil could not be disked deep and the deep-seeded treatments were planted at a depth of 1 to 1½ inches or less as opposed to the intended depth of 3 inches. This may explain the lack of difference in emergence between the control and PGR treatments in the deep-seeded treatments.

Seedling height measured 5 days after 100% emergence (27 DAP) showed no significant effect of either RELEASE or ABG-3139 on seedling height. Seedlings were shorter in the deep-seeded treatments. Seedling heights in the shallow-seeded treatments ranged between 124 and 132 mm. Seedling heights in the deep-seeded treatments ranged between 109 and 124 cm. Measurements of the length of the second true leaf at 35 DAP showed no significant effect of any treatment. Leaf lengths ranged from 11 to 12 cm in shallow- and deep-planted treatments.

The effect of planting depth, early planting, and plant growth regulator on seedling vigor of rice (*Oryza sativa* 'Lemont'). Rice Research Station, Crowley, LA. 1992.

Treatment Name	Form Amt	Fm Ds	Rate	Stand (plants/ sq ft) 14 DAP	Stand (plants/ sq ft) 16 DAP	Stand (plants/ sq ft) 19 DAP	Stand (plants/ sq ft) 22 DAP	Stand (plants/ sq ft) 26 DAP	Seedling Height (mm)	2nd leaf Length (cm)
Shallow Depth Untreated				4d	10d	18a	22a	21a	125ab	11ab
Shallow Depth RELEASE		sp	0.17	9bc	16abc	20a	21a	22a	132a	12ab
Shallow Depth RELEASE		sp	0.35	13a	18a	22a	23a	23a	124ab	12ab
Shallow Depth ABG-3139		sp	0.35	9c	13cd	20a	22a	23a	130a	11ab
Shallow Depth ABG-3139		sp	0.70	10bc	14bc	20a	22a	22a	125ab	12ab
Shallow Depth ABG-3139		sp	1.40	12ab	17ab	22a	24a	24a	130a	12ab
Deep Depth Untreated				0e	1f	6c	11b	13b	124ab	11b
Deep Depth RELEASE		sp	0.17	1e	5e	9bc	11b	12b	109b	12a
Deep Depth RELEASE		sp	0.35	3de	6e	10bc	14b	14b	120ab	12ab
Deep Depth ABG-3139		sp	0.35	2de	5e	11b	15b	16b	119ab	11ab
Deep Depth ABG-3139		sp	0.70	2de	6e	10bc	13b	13b	115ab	12ab
Deep Depth ABG-3139		sp	1.40	2de	5e	9bc	12b	13b	119ab	12ab
LSD (.05) =				3	3	4	5	5	14	1
Standard Dev.=				1.8451	2.1743	2.677	3.2899	3.5851	9.8417	.75712
CV =				34.20	22.64	18.15	18.91	20.00	8.04	6.56

Means followed by same letter do not significantly differ (Duncan's MRT, P=.05).

SEEDLING VIGOR STUDIES (Seed Treatment)

R.T. Dunand, R.R. Dilly, Jr., and G.A. Meche

Experiment: Gibberellic Acid and ABG-3139 Seed Treatment in Late Planted Semidwarf Rice (Oryza sativa 'LEMONT')

Location: Rice Research Station, Crowley, LA

Variety: Lemont

Seeding Rate: 100 lb/A

Planting Date: 13 May 92

Row Spacing: 7-inch

Fertilizer: 7-21-21 with 1.2% zinc at 300 lb/A drilled at planting (13 May); urea (46% N) at 200 lb/A by airplane (10 June)

Plot Size: 23.3 ft^2 - 1.17 (2 rows) x 20 ft

Treated Area: 23.3 ft^2 - 1.17 x 20 ft

Treatment(s): Planting Depth

Shallow (<1 inch)
Deep (3 inches)

Plant Growth Regulators

RELEASE (0.17 and 0.35 oz/cwt)
ABG-3139 (0.35, 0.7, and 1.4 oz/cwt)

Timing

Seed treatment (11 Mar)

Sprayer: N/A

Pertinent Rainfall: Trace (<0.1 inch) (14 May); 0.5 inch (18 May); 0.1 inch (19 May); 0.75 inch (23 May); 0.3 inch (26 May); 0.2 inch (27 May); 1.7 inches (28 May)

Herbicide(s): Arrosolo (1 gal/A) by airplane (4 June); Basagran (1.5 pt/A) + Londax (1 oz/A) by airplane (16 June); Ordram (20 lb/A) by airplane (16 June); Bolero (40 lb/A) by airplane (25 June)

Insecticide(s): Furadan (17 lb/A) by airplane (16 June)

Fungicide(s): Benlate (1 lb/A) by airplane (15 July); Benlate (1 lb/A) by airplane (30 July)

Emergence: 22 May

Permanent Flood: 11 June

Harvest Date: N/A

Harvested Area: N/A

Exp. Design: Split plot (main plot = planting depth and subplot = plant growth regulators and rates) with a randomized complete block design and four replications

Comments: RELEASE and ABG-3139 were compared for improvement of seedling vigor in semidwarf rice. At the shallow planting depth (< 1 inch), RELEASE and ABG-3139 were comparable and RELEASE showed a slight advantage. Final stand with RELEASE at 0.35 oz/cwt (29 plants/ft^2) was significantly different from the control (23 plants/ft^2). Final stand with ABG-3139 at 0.7 oz/cwt (27 plants/ft^2) was not significantly different from the control. At the deep planting depth (3 inches), a similar trend in the results occurred with the exception that differences were not significant. Final stand with RELEASE was 19 plants/ft^2 compared with 16 and 15 plants/ft^2 for ABG-3139 and the control, respectively. Also, there was no difference in the effect of seed treatment with RELEASE or ABG-3139 on elongation of the second true leaf. Leaf lengths ranged between 10 and 12 cm with the shallow planted and 11 and 14 cm with the deep planted.

The effect of planting depth, late planting, and plant growth regulator seed treatment on seedling vigor of rice (Oryza sativa 'Lemont'). Rice Research Station, Crowley, LA. 1992.

Treatment Name	Form Amt	Pm Ds	Rate	Stand (plants/ sq ft) 8 DAP	Stand (plants/ sq ft) 12 DAP	Stand (plants/ sq ft) 21 DAP	2nd leaf Length (cm) 21 DAP
Shallow Depth Untreated				19c	25b	23bc	10b
Shallow Depth RELEASE		sp	0.17	23abc	28ab	25ab	12ab
Shallow Depth RELEASE		sp	0.35	27ab	30a	29a	13ab
Shallow Depth ABG-3139		sp	0.35	24ab	29ab	26ab	12ab
Shallow Depth ABG-3139		sp	0.70	27a	31a	27ab	11ab
Shallow Depth ABG-3139		sp	1.40	22bc	28ab	23bc	12ab
Deep Depth Untreated				6d	15d	15d	14a
Deep Depth RELEASE		sp	0.17	11d	21c	20cd	13a
Deep Depth RELEASE		sp	0.35	9d	20c	19cd	12ab
Deep Depth ABG-3139		sp	0.35	7d	16cd	15d	12ab
Deep Depth ABG-3139		sp	0.70	8d	17cd	16d	11ab
Deep Depth ABG-3139		sp	1.40	11d	19cd	19cd	13a
LSD (.05) =				5	4	5	2
Standard Dev.=				3.2345	2.855	3.1583	1.5227
CV =				20.06	12.37	14.88	12.76

Means followed by same letter do not significantly differ (Duncan's MRT, P=.05).

SEEDLING VIGOR STUDIES (Seed Treatment)

R.T. Dunand, R.R. Dilly, Jr., and G.A. Meche

Experiment: Gibberellic Acid Seed and Foliar Treatment in Early Planted Rice (Oryza sativa L.)

Location: Rice Research Station, Crowley, LA

Variety: See treatments

Seeding Rate: 100 lb/A

Planting Date: 20 Mar 92

Row Spacing: 7-inch

Fertilizer: N/A

Plot Size: 11.7 ft^2 - 0.58 (1 row) x 20 ft

Treated Area: 11.7 ft^2 - 0.58 x 20 ft

Treatment(s): Varieties/Experimental Lines

Alan	Jackson	Mars	Rico 1	V7817	LA2192
Bengal	Jasmine	Maybelle	Rosemont	AR1007	TX3072
Cypress	L202	Mercury	Saturn	AR1096	URN 69
Della	L203	Millie	Skybonnet	LA1096	
Delmont	Labelle	Newbonnet	Tebonnet	LA2031	
GuiChow	Lacassine	Orion	Texmont	LA2085	
Gulfmont	Lemont	Rexmont	Toro 2	LA2146	
Katy	M201	RT7015	V4716	LA2168	

Plant Growth Regulators

RELEASE (0.35 and 0.70 oz/cwt seed)
RyzUp (1 oz/A)

Timing

Seed treatment (11 Mar)
2- to 3-leaf (21 Apr)

Sprayer: N/A

Continued.

Treatment Name	Form Amt	Fm Ds	Rate	Unit	Seedling Height (cm) 7 DAT	Seedling Height (cm) 14 DAT	Grain Moisture (%)	Lodging (%)	Yield (lb/A)
Maybelle					27j	38ij	16.9c	0.0c	6049ab
Facet	50	wp	.375	lb ai/A					
RELEASE		sp	.35	oz p/A					
RyzUp		1	0	oz p/A					
Maybelle					32i	46f	17.0c	0.0c	5942ab
Facet	50	wp	.375	lb ai/A					
RELEASE		sp	0	oz p/A					
RyzUp		1	1	oz p/A					
Maybelle					32i	44fg	17.0c	0.0c	5543b
Facet	50	wp	.375	lb ai/A					
RELEASE		sp	.35	oz p/A					
RyzUp		1	1	oz p/A					
Maybelle					38cde	57bc	16.7c	0.0c	6155ab
Facet									
RELEASE									
RyzUp									
Maybelle					36d-g	53de	16.9c	0.0c	6097ab
Facet	50	wp	.375	lb ai/A					
RELEASE		sp	0	oz p/A					
RyzUp		1	0	oz p/A					
Maybelle					39cd	55b-e	16.8c	0.0c	5815ab
Facet	50	wp	.375	lb ai/A					
RELEASE		sp	.35	oz p/A					
RyzUp		1	0	oz p/A					
Maybelle					39c	57b	16.6c	0.0c	5932ab
Facet	50	wp	.375	lb ai/A					
RELEASE		sp	0	oz p/A					
RyzUp		1	1	oz p/A					
Maybelle					37c-f	57bcd	16.8c	0.0c	6213ab
Facet	50	wp	.375	lb ai/A					
RELEASE		sp	.35	oz p/A					
RyzUp		1	1	oz p/A					
LSD (.05)	=				3	3	1.3	28.3	902
Standard Dev.	=				1.9905	2.2852	.9066	20.044	637.99
CV	=				5.70	4.67	4.71	182.92	10.43

Means followed by same letter do not significantly differ (Duncan's MRT, P=.05).

SEEDLING VIGOR STUDIES (Foliar Treatment)

R.T. Dunand, R.R. Dilly, Jr., and G.A. Meche

Experiment: Foliar Gibberellic Acid and ABG-3068 and Late Season Application in Main and Ratoon Crop Semidwarf Rice (*Oryza sativa* 'LEMONT')

Location: Rice Research Station, Crowley, LA

Variety: Lemont

Seeding Rate: 75 lb/A

Planting Date: 22 Apr 92

Row Spacing: 7-inch

Fertilizer: Main crop -- 7-21-21 with 1.2% zinc at 300 lb/A drilled at planting (22 Apr); urea (46% N) at 200 lb/A by airplane (10 June)

Ratoon crop -- Urea (46% N) at 90 lb/A by hand (2 Sep)

Plot Size: 245 ft^2 - 7 (12 rows) x 35 ft

Treated Area: 245 ft^2 - 7 x 35 ft

Treatment(s): Plant Growth Regulators

RyzUp (2 and 4 oz/A)
ABG-3068 (2 and 4 oz/A)

Timing

Main crop

Panicle development (PD, 2 mm panicle stage), 7 July
Late boot (LB, 5- to 7-inch panicle stage), 23 July

Ratoon crop

Panicle development (PD, 2 mm panicle stage), 21 Sep
Late boot (LB, 3- to 4-inch panicle stage), 5 Oct

Sprayer: CO_2-driven, hand-held, 32 psi, 15 GPA, 80015 nozzles

Pertinent Rainfall: No significant rainfall within 24 hours following applications.

Herbicides: Arrosolo (1 gal/A) by sprayer (21 May); Arrosolo (1 gal/A) by airplane (4 June); Basagran (1.5 pt/A) + Londax (1 oz/A) by airplane (16 June); Ordram (20 lb/A) by airplane (16 June)

Insecticide(s): Furadan (17 lb/A) by airplane (16 June); Sevin (1 qt/A) by airplane (30 July)

Fungicide(s): Benlate (1 lb/A) by sprayer (29 July)

Emergence: 29 Apr

Permanent Flood: 11 June (main crop); 2 Sep (ratoon crop)

Harvest Date: 25 Aug (main crop); no harvest (ratoon crop)

Harvested Area: 245 ft^2 - 7 x 35 ft

Exp. Design: Randomized complete block (four replications)

Comments: RyzUp and ABG-3068 applied during the reproductive stage of the main crop were evaluated for yield enhancement. There were no significant yield increases, although in general, yields were higher for applications made at panicle development (PD-M). Late boot (LB-M) applications showed no consistent effects. Milling yields were also not affected by RyzUp and ABG-3068. Plant height 8 days after PD application of RyzUp was increased significantly. The increases were 7 and 13 cm above the control for the 2 and 4 oz/A rates, respectively. The height differences were temporary, and at maturity, no significant effects on plant height were noted.

Due to the late date of harvest of the first crop, the second crop did not produce grain. Consequently, second crop evaluations were not made.

The effect of plant growth regulator foliar treatments on productivity of rice (*Oryza sativa* 'Lemont'). Rice Research Station, Crowley, LA. 1992.

Treatment Name	Form Amt	Fm Ds	Rate	Growth Stage	Plant Height (cm) 84 DAP	Mature Height (cm)	Grain Moisture (%)	Yield (lb/A)	Total Milling (%)	Whole Milling (%)
Control					73d	89a	18.2ab	6299ab	71a	62a
ABG-3068		1	2	PD-M	78bc	92a	18.4ab	6519ab	70ab	62a
ABG-3068		1	4	PD-M	74d	90a	18.7ab	6508ab	70ab	62a
ABG-3068		1	2	LB-M	74d	90a	18.5ab	6430ab	70b	62a
ABG-3068		1	4	LB-M	75cd	92a	17.8b	6278ab	70ab	62a
RyzUp		1	2	PD-M	80b	91a	18.0ab	6605a	71ab	62a
RyzUp		1	4	PD-M	86a	93a	18.3ab	6438ab	71ab	61a
ABG-3068 ABG-3068		1 1	2 2	PD-M LB-M	75cd	90a	18.6ab	6539ab	71a	62a
ABG-3068		1	4	PD-R	75cd	90a	18.5ab	6177b	71a	62a
ABG-3068		1	4	LB-R	74d	90a	19.0a	6383ab	70ab	62a
LSD (.05)	=				3	3	0.8	341	1	1
Standard Dev.	=				1.9293	2.2531	.56996	235.28	.61388	.80277
CV	=				2.53	2.49	3.09	3.67	0.87	1.30

Means followed by same letter do not significantly differ (Duncan's MRT, P=.05).

SEEDLING VIGOR STUDIES (Foliar Treatment)

R.T. Dunand, J.B. Baker, M.P. Braverman, R.R. Dilly, Jr., and G.A. Meche

Experiment: Foliar Gibberellic Acid and Postemergence Herbicide Compatibility in Semidwarf Rice (*Oryza sativa* 'LEMONT') – Study One

Location: Rice Research Station, Crowley, LA

Variety: Lemont

Seeding Rate: 75 lb/A

Planting Date: 22 Apr 92

Row Spacing: 7-inch

Fertilizer: 7-21-21 with 1.2% zinc at 300 lb/A drilled at planting (22 Apr); urea (46% N) at 200 lb/A by airplane (10 June)

Plot Size: 245 ft^2 - 7 (12 rows) x 35 ft

Treated Area: 245 ft^2 - 7 x 35 ft

Treatment(s):

Plant Growth Regulators
- PGR-IV (3 and 6 oz/A)
- RyzUp (1 oz/A)

Herbicides
- Arrosolo (3 gal/A)
- Basagran (1.5 pt/A)
- Bolero (3 pt/A)
- Facet (.75 and 1.5 lb/A)*
- Grandstand (1 pt/A)
- Londax 60 DF (1 oz/A)*
- Propanil 4 (4 gal/A)
- Prowl (1.5 pt/A)
- Stam 80 EDF (5 lb/A)*
- Stam M4 (4 gal/A)
- Riverside Propanil 60 DF (6.67 lb/A)
- Wham DF (8 lb/A)*
- Wham EZ (4 gal/A)

* Crop Oil (Clean Crop) added at 1 qt/A.

Timing

3- to 4-leaf stage (20 May)
4- to 5-leaf stage (25 May)

Sprayer: CO_2-driven, hand-held, 32 psi, 15 GPA, 80015 nozzles

Pertinent Rainfall: No significant rainfall within 24 hours following applications.

Insecticide(s): Furadan (17 lb/A) by airplane (16 June); Sevin (1 qt/A) by airplane (30 July)

Fungicide(s): Benlate (1 lb/A) by airplane (30 July)

Emergence: 29 Apr

Permanent Flood: 11 June

Harvest Date: 21 Aug

Harvested Area: 245 ft^2 - 7 x 35 ft

Exp. Design: Randomized complete block (four replications)

Comments: Season-long weed control was average to poor because weeds were 5 to 6 inches tall at treatment and flooding was delayed 2 weeks following herbicide application. The highest grain yield was 4800 lb/A and reflects the general status of weed control.

Seedling Height

Seedling height following application of PGR-IV, postemergence herbicides, and RyzUp was monitored between 6 and 15 days after treatment (DAT). Major differences in plant height were observed during that period.

RyzUp alone and in combination with a crop oil or a herbicide increased seedling height significantly at 6, 9, and 15 DAT. Increases ranged from as little as 3 cm to as much as 17 cm. RyzUp alone or in combination with crop oil concentrate or herbicides, which require the addition of crop oil concentrate, increased seedling height between 3 and 9 cm during the evaluation period. Herbicides in this category were Facet, Propanil 60 DF, Stam 80 EDF, and Wham DF. In general, the largest and most consistent increases in seedling height were noted when RyzUp was mixed with herbicides formulated in organic solvents. RyzUp when mixed with Arrosolo, Propanil 4, Stam M4, Stam M4 plus Basagran, Bolero or Prowl and Wham

EZ plus Basagran increased seedling height between 9 and 17 cm during the 2-week period following application. Differences in plant height were noted at maturity and were related to herbicide efficacy rather than RyzUp treatment. PGR-IV had no effect on plant height.

Rice Tolerance

Rice tolerance to herbicide, PGR-IV, and RyzUp treatments was evaluated at 7 DAT. Rice tolerance was excellent (rating = 5) for most herbicides. Rice tolerance to Arrosolo, Propanil 60 DF, Stam M4, and Stam M4 + Bolero was good (rating = 4). The addition of RyzUp to these more injurious herbicides improved rice tolerance significantly from good to excellent. In addition, PGR-IV improved rice tolerance to Arrosolo.

Weed Control

At 7 DAT, weed control was generally good (rating = 4) to excellent (rating = 5). Facet was the least effective herbicide for the weed spectrum present. Moderate control (rating = 3) of barnyardgrass, broadleaf signalgrass, and rice flatsedge occurred with Facet. The moderate control for barnyardgrass and broadleaf signalgrass at this time was due to the slow activity of Facet. Also, Facet gave poor (rating = 1) control of yellow nutsedge. Propanil 4 was the next least effective herbicide with moderate control of barnyardgrass and broadleaf signalgrass. Two herbicide combinations, Stam M4 + Prowl and Stam M4 + Grandstand, gave moderate control of yellow nutsedge. PGR-IV had no effect on the herbicide activity of Arrosolo, Stam M4, Facet, or Stam M4 + Basagran.

RyzUp altered the efficacy of some herbicide treatments at 7 DAT. Control of barnyardgrass and broadleaf signalgrass by Propanil 4 was improved by RyzUp. Also, control of eclipta by Facet was improved by RyzUp. In contrast, RyzUp tank mixed with Propanil 60 DF or Stam M4 + Basagran decreased control of yellow nutsedge, and RyzUp tank mixed with Stam M4 + Grandstand decreased control of rice flatsedge.

At midseason (49 DAT), weed control ratings were low compared with the early evaluation (7 DAT). Facet gave the best control of barnyardgrass and along with Wham DF and Stam M4 + Bolero had poorest yellow nutsedge control. Facet also exhibited poor control of sprangletop. Stam M4 + Londax had the best control of yellow nutsedge. As in the early evaluation, RyzUp improved barnyardgrass control with Propanil 4 and decreased yellow nutsedge control with Stam M4 + Basagran. No other decreases in herbicide efficacy were noted. Control ratings which differed from the early evaluation were Facet control of sprangletop and Stam M4 + Grandstand control of yellow nutsedge. RyzUp improved weed control of both herbicides for the respective weeds.

Maturity

At maturity, grain yield was highly variable and related mostly to degree of weed control. PGR-IV had no effect on grain yield. RyzUp had little effect on grain yield with one exception. RyzUp mixed with Stam M4 + Basagran reduced grain yield compared with Stam M4 + Basagran without RyzUp. The reduction in yield was due to the reduction in control of yellow nutsedge when RyzUp was tank mixed with Stam M4 + Basagran.

Conclusions

Most of the results mimicked those from previous studies. Emulsifiable concentrate formulations of herbicides enhanced RyzUp efficacy more than dry formulations. RyzUp improved rice tolerance to some herbicides and enhanced or decreased the efficacy of other herbicides. Mature plant height and grain yield were related primarily to degree of weed control. PGR-IV had no effect on the parameters measured.

The main results which were unexpected and may be worthy to note were the moderate level of sprangletop control with Facet + RyzUp and the improvement of Stam M4 + Grandstand control of yellow nutsedge by the addition of RyzUp. Facet and Stam M4 + Grandstand are not labeled for sprangletop and yellow nutsedge control, respectively.

Table 1. The effect of plant growth regulator foliar treatment and herbicides on early season efficacy in rice (Oryza sativa 'Lemont'). Rice Research Station, Crowley, LA. 1992.

Treatment Name	Form Amt	Form Ds	Rate	Rate Unit	Seedling Height (cm) 6 DAT	Seedling Height (cm) 9 DAT	Seedling Height (cm) 15 DAT	Rice Injury (visual rating) 7 DAT	Barnyardgrass Control (visual rating) 7 DAT	Bracharia Control (visual rating) 7 DAT	Rice Flat Sedge Control (visual rating) 7 DAT	Yellow Nutsedge Control (visual rating) 7 DAT	Eclipta Control (visual rating) 7 DAT
Arrosolo 3-3E	6	ec	0	lb ai/A	21kl	25ij	30lm	5ab	1f	1f	1f	1f	1d
RyzUp	1		0	oz p/A									
Arrosolo 3-3E	6	ec	6	lb ai/A	24g-j	28fgh	35f-j	5ab	3b-e	3b-e	4abc	3bcd	4abc
RyzUp	1		1	oz p/A									
Arrosolo 3-3E	6	ec	6	lb ai/A	25fgh	31ef	37d-h	5a	3a-e	3a-e	4abc	3cde	4abc
RyzUp	1		1	oz p/A									
Crop Oil Conc	1		32	oz p/A									
Arrosolo 3-3E	6	ec	6	lb ai/A	23g-k	26hij	34g-k	4bc	4ab	4ab	5a	4abc	5a
RyzUp	1		0	oz p/A									
Arrosolo 3-3E	6	ec	6	lb ai/A	30a	38a	44ab	5a	4abc	4abc	5a	3b-e	5a
RyzUp	1		1	oz p/A									
Facet	50	wp	.375	lb ai/A	20l	25ij	31j-m	5abc	3cde	3cde	3de	1f	3c
Crop Oil Conc	1		32	oz p/A									
RyzUp	1		0	oz p/A									
Facet	50	wp	.375	lb ai/A	25fgh	29efg	33i-l	5a	3cde	3cde	4bcd	1f	4ab
Crop Oil Conc	1		32	oz p/A									
RyzUp	1		1	oz p/A									
Propanil 4	4	ec	4	lb ai/A	22jkl	26g-j	33i-l	5ab	3de	3de	5ab	4abc	4ab
RyzUp	1		0	oz p/A									
Propanil 4	4	ec	4	lb ai/A	28a-d	38ab	44ab	5a	4a	4a	5ab	4abc	5ab
RyzUp	1		1	oz p/A									
Propanil 60 DF	60	df	4	lb ai/A	21jkl	25hij	32j-m	4c	4abc	4abc	5a	3a-d	5a
Crop Oil Conc	1		32	oz p/A									
RyzUp	1		0	oz p/A									

Continued.

Table 1. Continued.

Treatment Name	Form Amt	Form Ds	Rate	Rate Unit	Seedling Height (cm) 6 DAT	Seedling Height (cm) 9 DAT	Seedling Height (cm) 15 DAT	Rice Injury (visual rating) 7 DAT	Barnyard-grass Control (visual rating) 7 DAT	Brachiaria Control (visual rating) 7 DAT	Rice Flat Sedge Control (visual rating) 7 DAT	Yellow Nutsedge Control (visual rating) 7 DAT	Eclipta Control (visual rating) 7 DAT
Propanil 60 DF	60	df	4	lb ai/A	24f-i	31ef	39def	5ab	4a-d	4a-d	5ab	2e	5ab
Crop Oil Conc	1		32	oz p/A									
RyzUp	1		1	oz p/A									
Stam M4	4	ec	4	lb ai/A	22jkl	28ghi	34g-k	4bc	4ab	4ab	5a	4abc	4ab
RyzUp	1		0	oz p/A									
Stam M4	4	ec	4	lb ai/A	27cde	35bc	41bcd	5a	3a-e	3a-e	5ab	3cde	5ab
RyzUp	1		1	oz p/A									
Stam 80 EDF	80	df	4	lb ai/A	22jkl	26g-j	35f-j	5a	4ab	4ab	5ab	3cde	5ab
Crop Oil Conc	1		32	oz p/A									
RyzUp	1		0	oz p/A									
Stam 80 EDF	80	df	4	lb ai/A	26def	34cd	39de	5a	3a-e	4a-d	5ab	3a-d	5ab
Crop Oil Conc	1		32	oz p/A									
RyzUp	1		1	oz p/A									
Wham DF	50	df	4	lb ai/A	22jkl	25hij	33b-l	5abc	4ab	4a	5a	4abc	5a
Crop Oil Conc	1		32	oz p/A									
RyzUp	1		0	oz p/A									
Wham DF	50	df	4	lb ai/A	25fg	31ef	38d-g	5a	3a-e	4a-d	4ab	3b-e	5ab
Crop Oil Conc	1		32	oz p/A									
RyzUp	1		1	oz p/A									
Wham EZ	4	l	4	lb ai/A	22h-l	27g-j	33b-l	5abc	4ab	4ab	5a	4abc	5a
RyzUp	1		0	oz p/A									
Wham EZ	4	l	4	lb ai/A	20l	25ij	33i-l	5abc	3b-e	3a-e	5ab	3b-e	5ab
RyzUp	1		1	oz p/A									
Stam M4	4	ec	3	lb ai/A	22i-l	28ghi	37e-i	5ab	4a-d	4a-d	5a	4a	5a
Basagran	4	sl	.75	lb ai/A									
RyzUp	1		0	lb/A									

Continued.

Table 1. Continued.

Treatment Name	Form Amt	Form Ds	Rate	Rate Unit	Seedling Height (cm) 6 DAT	Seedling Height (cm) 9 DAT	Seedling Height (cm) 15 DAT	Rice Injury (visual rating) 7 DAT	Barnyard-grass Control (visual rating) 7 DAT	Bracharia Control (visual rating) 7 DAT	Rice Flat Sedge Control (visual rating) 7 DAT	Yellow Nutsedge Control (visual rating) 7 DAT	Eclipta Control (visual rating) 7 DAT
Stam M4	4	ec	3	lb ai/A	28bcd	34cd	40cde	5a	3de	3de	4ab	3bcd	4abc
Basagran	4	sl	.75	lb ai/A									
RyzUp		1	1	oz p/A									
Stam M4	4	ec	3	lb ai/A	22i-l	26g-j	34g-l	4c	4a	4a	5ab	3b-e	5ab
Bolero 8EC	8	ec	3	lb ai/A									
RyzUp		1	0	oz p/A									
Stam M4	4	ec	3	lb ai/A	30a	39a	45a	5a	4a-d	4abc	5a	3b-e	5a
Bolero 8EC	8	ec	3	lb ai/A									
RyzUp		1	1	oz p/A									
Stam M4	4	ec	3	lb ai/A	22i-l	26hij	34g-k	5ab	4a-d	4a-d	5a	4a	5a
Londax 60 DF	60	df	1	oz p/A									
RyzUp		1	0	oz p/A									
Stam M4	4	ec	3	lb ai/A	29ab	37ab	44abc	5ab	3a-e	3a-e	5ab	3a-d	5ab
Londax 60 DF	60	df	1	oz p/A									
RyzUp		1	1	oz p/A									
Stam M4	4	ec	3	lb ai/A	22i-l	26hij	33i-l	4bc	3b-e	3b-e	4abc	3de	4ab
Prowl	4	e	.75	lb ai/A									
RyzUp		1	0	oz p/A									
Stam M4	4	ec	3	lb ai/A	29abc	37ab	47a	5a	3de	3cde	4ab	3bcd	4ab
Prowl	4	e	.75	lb ai/A									
RyzUp		1	1	oz p/A									
Wham EZ	4	l	3	lb ai/A	21jkl	27g-j	34g-l	5ab	3a-e	3a-e	5a	4ab	5a
Basagran	4	sl	.75	lb ai/A									
RyzUp		1	0	oz p/A									
Wham EZ	4	l	3	lb ai/A	25efg	32de	40cde	5a	3cde	3cde	4abc	4ab	5a
Basagran	4	sl	.75	lb ai/A									
RyzUp		1	1	oz p/A									

Continued.

Table 1. Continued.

Treatment Name	Form Amt	Form Fm Ds	Rate Rate	Rate Unit	Seedling Height (cm) 6 DAT	Seedling Height (cm) 9 DAT	Seedling Height (cm) 15 DAT	Rice Injury (visual rating) 7 DAT	Barnyard-grass Control (visual rating) 7 DAT	Brachiaria Control (visual rating) 7 DAT	Rice Flat Sedge Control (visual rating) 7 DAT	Yellow Nutsedge Control (visual rating) 7 DAT	Eclipta Control (visual rating) 7 DAT
Stam M4	4	ec	4	lb ai/A	21jkl	26g-j	34g-k	5abc	3a-e	4a-d	5ab	3cde	5a
PGR-IV	1		6	oz p/A									
Arrosolo 3-3E	6	ec	6	lb ai/A	22i-l	27g-j	35f-j	5a	4ab	4ab	5a	3b-e	5a
PGR-IV	1		6	oz p/A									
Facet	50	wp	.75	lb ai/A	21kl	24j	30klm	5ab	2e	2e	3cde	1f	4abc
Crop Oil Conc	1		32	oz p/A									
PGR-IV	1		6	oz p/A									
Facet	50	wp	.375	lb ai/A	21jkl	24j	29m	4bc	3de	3de	2e	1f	3bc
Crop Oil Conc	1		32	oz p/A									
PGR-IV	1		3	oz p/A									
Stam M4	4	ec	3	lb ai/A	21jkl	27g-j	33h-l	5abc	3a-e	3a-e	5ab	3a-d	5ab
Basagran	4	sl	.75	lb ai/A									
PGR-IV	1		6	oz p/A									
Grandstand	3	e	.375	lb ai/A	22jkl	25ij	32j-m	4bc	3b-e	3b-e	4bcd	1f	4ab
RyzUp	1		0	oz p/A									
Grandstand	3	I	.375	lb ai/A	21kl	27g-j	37d-h	5abc	3de	3de	2e	1f	4abc
RyzUp	1		1	oz p/A									
LSD (.05) =					2	2	3	1	1	1	1	1	1
Standard Dev.=					1.4374	1.7856	2.4185	.38798	.67219	.68317	.76237	.45045	.93552
CV =					6.13	6.19	6.72	8.29	20.86	20.89	18.12	18.30	21.49

Means followed by same letter do not significantly differ (Duncan's MRT, P=.05).

Table 2. The effect of plant growth regulator foliar treatment and herbicides on late season efficacy in rice (Oryza sativa 'Lemont'). Rice Research Station, Crowley, LA. 1992.

Treatment Name	Form Amt	Form Ds	Rate	Rate Unit	Barnyard-grass Control (%) 49 DAT	Rice Flat Sedge Control (%) 49 DAT	Sprangle top Control (%) 49 DAT	Mature Height (cm)	Grain Moisture (%)	Yield (lb/A)
Arrosolo 3-3E	6	ec	0	lb ai/A	0j	0e	3ef	84fgh	24.0ab	1758f
RyzUp	1		0	oz p/A						
Arrosolo 3-3E	6	ec	6	lb ai/A	36e-j	5e	85abc	91a-e	23.6abc	3462a-e
RyzUp	1		1	oz p/A						
Arrosolo 3-3E	6	ec	6	lb ai/A	69a-e	10de	95a	93abc	20.8b-e	4133a-d
RyzUp	1		1	oz p/A						
Crop Oil Conc	1		32	oz p/A						
Arrosolo 3-3E	6	ec	6	lb ai/A	53c-h	10de	98a	92a-e	20.7b-e	4573ab
RyzUp	1		0	oz p/A						
Arrosolo 3-3E	6	ec	6	lb ai/A	63b-f	5e	95a	92abc	21.8a-e	4200a-d
RyzUp	1		1	oz p/A						
Facat	50	wp	.375	lb ai/A	96ab	0e	0f	92abc	22.6a-e	4052a-d
Crop Oil Conc	1		32	oz p/A						
RyzUp	1		0	oz p/A						
Facet	50	wp	.375	lb ai/A	97ab	0e	44cde	90a-g	21.6a-e	4809a
Crop Oil Conc	1		32	oz p/A						
RyzUp	1		1	oz p/A						
Propanil 4	4	ec	4	lb ai/A	15hij	10de	75abc	87b-h	23.3a-d	3047cde
RyzUp	1		0	oz p/A						
Propanil 4	4	ec	4	lb ai/A	59c-g	4e	98a	94ab	20.8b-e	4373abc
RyzUp	1		1	oz p/A						
Propanil 60 DF	60	df	4	lb ai/A	31e-j	26cde	100a	90a-g	21.3a-e	3686a-e
Crop Oil Conc	1		32	oz p/A						
RyzUp	1		0	oz p/A						
Propanil 60 DF	60	df	4	lb ai/A	31e-j	8de	88abc	92a-d	23.4a-d	3471a-e
Crop Oil Conc	1		32	oz p/A						
RyzUp	1		1	oz p/A						
Stam M4	4	ec	4	lb ai/A	48d-i	29b-e	95a	94a	22.1a-e	4119a-d
RyzUp	1		0	oz p/A						
Stam M4	4	ec	4	lb ai/A	24g-j	36b-e	98a	91a-e	22.2a-e	3362b-e
RyzUp	1		1	oz p/A						
Stam 80 EDF	80	df	4	lb ai/A	43d-i	0e	81abc	92a-d	21.3a-e	3888a-e
Crop Oil Conc	1		32	oz p/A						
RyzUp	1		0	oz p/A						
Stam 80 EDF	80	df	4	lb ai/A	48d-i	6e	92ab	94a	20.8b-e	4113a-d
Crop Oil Conc	1		32	oz p/A						
RyzUp	1		1	oz p/A						
Wham DF	50	df	4	lb ai/A	35e-j	0e	98a	91a-a	20.8b-e	4128a-d
Crop Oil Conc	1		32	oz p/A						
RyzUp	1		0	oz p/A						

Continued.

Table 2. Continued.

Treatment Name	Form Amt	Form Da	Rate	Rate Unit	Barnyardgrass Control (%) 49 DAT	Rice Flat Sedge Control (%) 49 DAT	Sprangletop Control (%) 49 DAT	Mature Height (cm)	Grain Moisture (%)	Yield (lb/A)
Whem DF	50	df	4	lb ai/A	48d-i	0e	96a	94ab	23.0a-e	3596e-e
Crop Oil Conc		1	32	oz p/A						
RyzUp		1	1	oz p/A						
Whem EZ	4	1	4	lb ai/A	34e-j	15de	58a-d	93abc	21.1a-e	4167a-d
RyzUp		1	0	oz p/A						
Whem EZ	4	1	4	lb ai/A	29f-j	21cde	86abc	86d-h	21.5a-e	3301b-e
RyzUp		1	1	oz p/A						
Stam M4	4	ec	3	lb ai/A	44d-i	74a	55a-d	91e-e	21.5a-e	4180a-d
Basagran	4	sl	.75	lb ai/A						
RyzUp		1	0	lb/A						
Stam M4	4	ec	3	lb ai/A	16hij	38b-e	66a-d	82h	22.2a-e	2593ef
Basagran	4	sl	.75	lb ai/A						
RyzUp		1	1	oz p/A						
Stam M4	4	ec	3	lb ai/A	60c-g	0e	70a-d	90a-e	22.9a-e	4229a-d
Bolero 8EC	8	ec	3	lb ai/A						
RyzUp		1	0	oz p/A						
Stam M4	4	ec	3	lb ai/A	76a-d	0e	98a	93ab	22.1a-e	4613ab
Bolero 8EC	8	ec	3	lb ai/A						
RyzUp		1	1	oz p/A						
Stam M4	4	ec	3	lb ai/A	39e-i	65ab	100a	92abc	20.1de	4025a-d
Londax 60 DF	60	df	1	oz p/A						
RyzUp		1	0	oz p/A						
Stam M4	4	ec	3	lb ai/A	36e-j	80a	100a	87c-h	21.0e-e	3750a-e
Londax 60 DF	60	df	1	oz p/A						
RyzUp		1	1	oz p/A						
Stam M4	4	ec	3	lb ai/A	60c-g	0e	90abc	94ab	20.7cde	4029a-d
Prowl	4	e	.75	lb ai/A						
RyzUp		1	0	oz p/A						
Stam M4	4	ec	3	lb ai/A	38e-j	19cde	75abc	90a-f	20.0e	3772a-e
Prowl	4	e	.75	lb ai/A						
RyzUp		1	1	oz p/A						
Whem EZ	4	1	3	lb ai/A	30f-j	21cde	66a-d	92a-d	21.2a-e	3645a-e
Basagran	4	sl	.75	lb ai/A						
RyzUp		1	0	oz p/A						
Whem EZ	4	1	3	lb ai/A	29f-j	55abc	26def	85e-h	23.8abc	2587ef
Basagran	4	sl	.75	lb ai/A						
RyzUp		1	1	oz p/A						
Stam M4	4	ec	4	lb ai/A	13ij	0e	94a	84gh	22.4e-e	3231b-e
PGR-IV		1	6	oz p/A						
Arrosolo 3-3E	6	ec	6	lb ai/A	43d-i	37b-e	100a	92a-e	21.9e-e	4364abc
PGR-IV		1	6	oz p/A						

Continued.

Table 2. Continued.

Treatment Name	Form Amt	Fm Ds	Rate	Unit	Barnyard-grass Control (%) 49 DAT	Rice Flat Sedge Control (%) 49 DAT	Sprangle top Control (%) 49 DAT	Mature Height (cm)	Grain Moisture (%)	Yield (lb/A)
Facet	50	wp	.75	lb ai/A	99a	3a	45b-e	90a-g	24.2a	3872a-e
Crop Oil Conc		1	32	oz p/A						
PGR-IV		1	6	oz p/A						
Facet	50	wp	.375	lb ai/A	88abc	0e	26def	91a-e	21.8a-e	3464a-e
Crop Oil Conc		1	32	oz p/A						
PGR-IV		1	3	oz p/A						
Stam M4	4	ec	3	lb ai/A	16hij	46a-d	71a-d	90a-g	22.0a-e	3306b-e
Basagran	4	sl	.75	lb ai/A						
PGR-IV		1	6	oz p/A						
Grandstand	3	e	.375	lb ai/A	18hij	24cde	68a-d	90a-f	23.1a-e	2938def
RyzUp		1	0	oz p/A						
Grandstand	3	I	.375	lb ai/A	25f-j	78a	88abc	89a-g	21.8a-e	3305b-e
RyzUp		1	1	oz p/A						
LSD (.05) =					31	32	39	5	2.6	1132
Standard Dev.=					21.978	22.737	27.509	3.7929	1.892	808.33
CV =					49.94	113.06	36.41	4.21	8.62	21.69

Means followed by same letter do not significantly differ (Duncan's MRT, P=.05).

SEEDLING VIGOR STUDIES (Foliar Treatment)

R.T. Dunand, J.B. Baker, R.R. Dilly, Jr., and G.A. Meche

Experiment: Foliar Gibberellic Acid and Postemergence Herbicide Compatibility in Semidwarf Rice (*Oryza sativa* 'LEMONT') -- Study Two

Location: Rice Research Station, Crowley, LA

Variety: Lemont

Seeding Rate: 75 lb/A

Planting Date: 22 Apr 92

Row Spacing: 7-inch

Fertilizer: 7-21-21 with 1.2% zinc at 300 lb/A drilled at planting (22 Apr); urea (46% N) at 200 lb/A by airplane (10 June)

Plot Size: 189 ft^2 - 7 (12 rows) x 27 ft

Treated Area: 189 ft^2 - 7 x 27 ft

Treatment(s): Plant Growth Regulator

RyzUp (1 oz/A)

Herbicides

Arrosolo (3 gal/A)
Facet (.75 lb/A)*
Wham 80 DF (5 lb/A)*

* Crop Oil (Clean Crop) added at 1 qt/A.

Timing

1- to 2-leaf, Facet only (11 May)
3- to 4-leaf (20 May)

Sprayer: CO_2-driven, hand-held, 32 psi, 15 GPA, 80015 nozzles

Pertinent Rainfall: No significant rainfall within 24 hours following applications.

Insecticide(s): Furadan (17 lb/A) by airplane (16 June); Sevin (1 qt/A) by airplane (30 July)

Fungicide(s): Benlate (1 lb/A) by airplane (30 July)

Emergence: 29 Apr

Permanent Flood: 11 June

Harvest Date: 25 Aug

Harvested Area: 189 ft^2 - 7 x 27 ft

Exp. Design: Randomized complete block (four replications)

Comments: The effects of mixing RyzUp with Facet applied early postemergence and with Wham 80 DF, a dry flowable formulation of propanil, applied postemergence on seedling vigor and weed control were evaluated. Arrosolo was included also.

RyzUp in mixture with the emulsifiable concentrate (ec) formulation of Arrosolo produced seedlings which were significantly taller than seedlings treated with RyzUp alone or RyzUp mixed with crop oil concentrate (COC), Facet + COC, or Wham 80 DF + COC. RyzUp alone, RyzUp + COC, RyzUp + Facet + COC, and RyzUp + Wham 80 DF + COC increased seedling height equally well. These effects were constant for the period from 6 to 15 days after treatment (DAT).

Rice tolerance was excellent (rating = 5) for each herbicide. Weed control was good (rating = 4) to excellent (rating = 5) for each herbicide on barnyardgrass, broadleaf signalgrass, rice flatsedge, and eclipta. Wham 80 DF was slightly less effective on barnyardgrass and broadleaf signalgrass than Arrosolo and Facet. Control of yellow nutsedge was moderate (rating = 3) for Arrosolo and Wham 80 DF + COC and poor (rating = 2) for Facet + COC. RyzUp had no effect on herbicide activity (rice tolerance or weed control).

Mature plant height, grain yield, and grain moisture were related primarily to degree of weed control. Herbicides gave relatively equal weed control and produced taller plants, higher yields, and lower grain moisture compared with treatments without herbicide. RyzUp had no effect on any of these parameters.

The effect of plant growth regulator foliar treatment and herbicides on chemical efficacy and productivity of rice (Oryza sativa 'Lemont'). Rice Research Station, Crowley, LA. 1992.

Treatment Name	Form Amt	Fm Ds	Rate	Rate Unit	Rice Injury (visual rating) 7 DAT	Barnyard-grass Control (visual rating) 7 DAT	Bracharia Control (visual rating) 7 DAT	Rice Flat Sedge Control (visual rating) 7 DAT	Yellow Nutsedge Control (visual (rating) 7 DAT	Eclipta Control (visual rating) 7 DAT
Arrosolo 3-3E	6	ec	6	lb ai/A	5a	5b	5ab	5a	3a	5a
RyzUp	1		0	oz p/A						
Arrosolo 3-3E	6	ec	8	lb ai/A	5a	5b	5ab	5a	3a	5a
RyzUp	1		1	oz p/A						
Facet	50	wp	.375	lb ai/A	5a	5a	5a	5a	2b	5a
Crop Oil Conc.	1		32	oz p/A						
RyzUp	1		0	oz p/A						
Facet	50	wp	.375	lb ai/A	5a	5a	5a	5a	1b	5a
Crop Oil Conc.	1		32	oz p/A						
RyzUp	1		1	oz p/A						
Wham 80 DF	80	df	4	lb ai/A	5a	4c	4b	5a	3a	5a
Crop Oil Conc.	1		32	oz p/A						
RyzUp	1		0	oz p/A						
Wham 80 DF	80	df	4	lb ai/A	5a	4c	4b	5a	3a	5a
Crop Oil Conc.	1		32	oz p/A						
RyzUp	1		1	oz p/A						
Crop Oil Conc.	1		32	oz p/A	5a	1d	1c	1b	1b	1b
RyzUp	1		1	oz p/A						
RyzUp	1		1	oz p/A	5a	1d	1c	1b	1b	1c
Control					5a	1d	1c	1b	1b	1d
LSD (.05) =					0	0	1	0	1	0
Standard Dev.=					1.5317	.2656	.34085	.21821	.43415	0
CV =					0.03	7.92	10.30	6.09	23.15	0

Means followed by same letter do not significantly differ (Duncan's MRT, P=.05).

The effect of plant growth regulator foliar treatment and herbicides on chemical efficacy and productivity of rice (Oryza sativa 'Lemont'). Rice Research Station, Crowley, LA. 1992.

Treatment Name	Form Amt	Fm Ds	Rate	Rate Unit	Seedling Height (cm) 6 DAT	Seedling Height (cm) 9 DAT	Seedling Height (cm) 15 DAT	Mature Height (cm)	Grain Moisture (%)	Yield (lb/A)
Arrosolo 3-3E	6	ec	6	lb ai/A	24cde	27cd	37d	97a	20.8bc	5288a
RyzUp	1		0	oz p/A						
Arrosolo 3-3E	6	ec	6	lb ai/A	33a	42a	49a	94a	21.2bc	5319a
RyzUp	1		1	oz p/A						
Facet	50	wp	.375	lb ai/A	23de	27cd	36d	94a	21.8bc	4822a
Crop Oil Conc.	1		32	oz p/A						
RyzUp	1		0	oz p/A						
Facet	50	wp	.375	lb ai/A	27bc	31b	39bc	96a	20.3c	5310a
Crop Oil Conc.	1		32	oz p/A						
RyzUp	1		1	oz p/A						
Wham 80 DF	80	df	4	lb ai/A	23de	27cd	36d	95a	21.8bc	4669a
Crop Oil Conc.	1		32	oz p/A						
RyzUp	1		0	oz p/A						
Wham 80 DF	80	df	4	lb ai/A	28b	31b	41b	98a	21.1bc	5090a
Crop Oil Conc.	1		32	oz p/A						
RyzUp	1		1	oz p/A						
Crop Oil Conc.	1		32	oz p/A	26bcd	29bc	37d	84b	26.1a	1708b
RyzUp	1		1	oz p/A						
RyzUp	1		1	oz p/A	25cd	30b	37cd	81b	23.9ab	1967b
Control					21e	25d	31e	83b	25.6a	1849b
LSD (.05) =					3	3	2	6	2.9	685
Standard Dev.=					1.94	1.8232	1.3877	4.0782	1.9731	469.29
CV =					7.54	6.11	3.66	4.47	8.76	11.69

Means followed by same letter do not significantly differ (Duncan's MRT, P=.05).

SEEDLING VIGOR STUDIES (Foliar Treatment)

R.T. Dunand, R.R. Diiiy, Jr., and G.A. Meche

Experiment: Foliar Gibberellic Acid and Adjuvants in Semidwarf Rice (*Oryza sativa* 'LEMONT')

Location: Rice Research Station, Crowley, LA

Variety: Lemont

Seeding Rate: 75 lb/A

Planting Date: 22 Apr 92

Row Spacing: 7-Inch

Fertilizer: 7-21-21 with 1.2% zinc at 300 lb/A drilled at planting (22 Apr); urea (46% N) at 200 lb/A by airplane (10 June)

Plot Size: 122.5 ft^2 - 3.5 (6 rows) x 35 ft

Treated Area: 122.5 ft^2 - 3.5 x 35 ft

Treatment(s): Plant Growth Regulator

RyzUp (1 oz/A)

Adjuvants

Dyne-maic (4.8 oz/A)
Kinetic (4.8 oz/A)
Latron AG-98 (4.8 oz/A)
Latron CS-7 (4.8 oz/A)
Penetrator Plus (16 oz/A)
Prime Ag Oii (16 oz/A)
Prime Oil (16 oz/A)
Tween 20 (4.8 oz/A)
Unifilm 8020 (4.8 oz/A)
Valent X-77 (4.8 oz/A)

Timing

3- to 4-leaf rice (21 May)

Sprayer: CO_2-driven, hand-held, 32 psi, 15 GPA, 80015 nozzles

Pertinent Rainfall: No significant rainfall within 24 hours following applications.

Herbicides: Arrosolo (1 gal/A) by airplane (4 June); Basagran (1.5 pt/A) + Londax (1 oz/A) by airplane (16 June); Ordram (20 lb/A) by airplane (16 June)

Insecticide(s): Furadan (17 lb/A) by airplane (16 June); Sevin (1 qt/A) by airplane (30 July)

Fungicide(s): N/A

Emergence: 29 Apr

Permanent Flood: 11 June

Harvest Date: N/A

Harvested Area: N/A

Exp. Design: Randomized complete block (four replications)

Comments: Adjuvants (surfactants and crop oil concentrates) were evaluated for effects on RyzUp activity on seedling height. RyzUp alone increased seedling height by 4 to 5 cm during the period of 1 to 2 weeks following application. Tween 20 was the only adjuvant to significantly increase seedling height more than RyzUp alone. Seedling height was increased 9 to 10 cm by mixing Tween 20 and RyzUp.

The effect of plant growth regulator foliar treatment and adjuvants on seedling vigor of rice (Oryza sativa 'Lemont'). Rice Research Station. Crowley, LA. 1992.

Treatment Name	Form Amt	Fm Ds	Rate	Seedling Height (cm) 5 DAT	Seedling Height (cm) 8 DAT	Seedling Height (cm) 15 DAT
RyzUp		1	0	23c	24e	30e
RyzUp		1	1	25abc	29bc	34bc
AG-98		1	4.8	24abc	30b	34bcd
RyzUp		1	1			
Dyne-maic		1	4.8	22c	27cd	33cde
RyzUp		1	1			
CS-7		1	4.8	24abc	27d	33b-e
RyzUp		1	1			
Kinetic		1	4.8	25abc	31ab	34bcd
RyzUp		1	1			
Penetrator +		1	16	25ab	30b	36b
RyzUp		1	1			
Prime Ag Oil		1	16	22c	27cd	31cde
RyzUp		1	1			
Prime Oil		1	16	23bc	26d	31de
RyzUp		1	1			
Tween 20		1	4.8	25a	33a	40a
RyzUp		1	1			
X-77		1	4.8	24abc	29bc	34bcd
RyzUp		1	1			
Unifilm 8020		1	4.8	24abc	29bc	33b-e
RyzUp		1	1			
LSD (.05)	=			2	2	3
Standard Dev.	=			1.4788	1.4275	2.0165
CV	=			6.25	5.05	6.03

Means followed by same letter do not significantly differ (Duncan's MRT, P=.05).

SEEDLING VIGOR STUDIES (Foliar Treatment)

R.T. Dunand, R.R. Dilly, Jr., and G.A. Meche

Experiment: Foliar Gibberellic Acid, pH, and Delivery Volume in Semidwarf Rice (*Oryza sativa* 'LEMONT')

Location: Rice Research Station, Crowley, LA

Variety: Lemont

Seeding Rate: 75 lb/A

Planting Date: 22 Apr 92

Row Spacing: 7-inch

Fertilizer: 7-21-21 with 1.2% zinc at 300 lb/A drilled at planting (22 Apr); urea (46% N) at 200 lb/A by airplane (10 June)

Plot Size: 122.5 ft^2 - 3.5 (6 rows) x 35 ft

Treated Area: 122.5 ft^2 - 3.5 x 35 ft

Treatment(s): Plant Growth Regulator

RyzUp (1 oz/A)

Spray Solution pH (adjusted with sodium hydroxide)

pH = 3, 7, and 10

Delivery Volume

10, 20, and 40 gal/A

Timing

3- to 4-leaf rice (22 May)

Sprayer: CO_2-driven, hand-held, 32 psi, 15 GPA, 80015 nozzles

Pertinent Rainfall: No significant rainfall within 24 hours following applications.

Herbicides: Arrosolo (1 gal/A) by airplane (4 June); Basagran (1.5 pt/A) + Londax (1 oz/A) by airplane (16 June); Ordram (20 lb/A) by airplane (16 June)

Insecticide(s): Furadan (17 lb/A) by airplane (16 June); Sevin (1 qt/A) by airplane (30 July)

Fungicide(s): N/A

Emergence: 29 Apr

Permanent Flood: 11 June

Harvest Date: N/A

Harvested Area: N/A

Exp. Design: Randomized complete block (four replications)

Comments: The independent effects of pH and delivery volume on RyzUp activity on seedling height were evaluated. Seedling height increased as pH and carrier volume increased. Optimum activity occurred at pH 10 and delivery volume of 40 gal/A. Seedling heights at 14 DAT were 36 and 37 cm for pH 10 and the 40 gal/A delivery volume compared with 29 cm in the control. Since the increase in seedling height with pH 10 (delivery volume = 15 gal/A) was the same as the increase in seedling height with the delivery volume of 40 gal/A (no pH adjustment), the high pH was equivalent to a 25-gal/A increase in delivery volume.

The effect of plant growth regulator foliar treatment, pH, and delivery rate on seedling vigor of rice (Oryza sativa 'Lemont'). Rice Research Station, Crowley, LA. 1992.

Treatment Name	Form Amt	Fm Ds	Rate	Seedling Height (cm) 5 DAT	Seedling Height (cm) 10 DAT	Seedling Height (cm) 14 DAT
RyzUp		1	0	21d	26e	29c
RyzUp/pH3		1	1	21cd	26e	29c
RyzUp/pH7		1	1	26ab	30bc	33b
RyzUp/pH10		1	1	27a	32ab	36ab
RyzUp/5 gal		1	1	24bcd	28de	30c
RyzUp/10 gal		1	1	24bc	29cd	33b
RyzUp/20 gal		1	1	25ab	30bc	34b
RyzUp/40 gal		1	1	26ab	32a	37a
LSD (.05)	=			3	2	3
Standard Dev.	=			1.7251	1.2863	1.7491
CV	=			7.15	4.42	5.38

Means followed by same letter do not significantly differ (Duncan's MRT, P=.05).

SEEDLING VIGOR STUDIES (Foliar Treatment)

R.T. Dunand, R.R. Diiiy, Jr., and G.A. Meche

Experiment: Foliar Gibberellic Acid in Multiple Applications on Semidwarf Rice (Oryza sativa 'LEMONT')

Location: Rice Research Station, Crowley, LA

Variety: Lemont

Seeding Rate: 100 lb/A

Planting Date: 12 May 92

Row Spacing: 7-inch

Fertilizer: 7-21-21 with 1.2% zinc at 300 lb/A drilled at planting (12 May); urea (46% N) at 200 lb/A by airplane (10 June)

Plot Size: 157.5 ft^2 - 5.83 x (10 rows) x 27 ft

Treated Area: 157.5 ft^2 - 5.83 x 27 ft

Treatment(s): Herbicide

Stam M4 (1 gal/A)

Plant Growth Regulator

RyzUp (0.5 and 1 oz/A)

Timing

2- to 3-leaf (28 May)
4- to 5-leaf (9 June)

Sprayer: CO_2-driven, hand-held, 32 psi, 15 GPA, 80015 nozzles

Pertinent Rainfall: 1.7 inches after 12 hours after application (28 May)

Herbicide(s): Arrosolo (1 gal/A) by airplane (4 June); Basagran (1.5 pt/A) + Londax (1 oz/A) by airplane (16 June); Ordram (20 lb/A) by airplane (16 June); Bolero (40 lb/A) by airplane (25 June)

Insecticide(s): Furadan (17 lb/A) by airplane (16 June)

Fungicide(s): Benlate (1 lb/A) by airplane (15 July); Benlate (1 lb/A) by airplane (30 July)

Emergence: 18 May

Permanent Flood: 11 June

Harvest Date: 31 Aug

Harvested Area: 157.5 ft^2 - 5.83 x 27 ft

Exp. Design: Randomized complete block design and four replications

Comments: Multiple applications of RyzUp were compared with single applications for increasing seedling vigor. All RyzUp applications were made in combination with the herbicide Stam M4. At 7 and 14 days after treatment (DAT), seedling height was increased from 25 to 41 cm and from 33 to 49 cm, respectively, when RyzUp was applied at the 2- to 3-leaf stage. Application of RyzUp at the 4- to 5-leaf stage increased seedling height from 51 to 64 cm and from 64 to 71 cm at 7 and 14 DAT.

Evaluating all treatments at 35 and 42 days after planting (DAP) or 7 and 14 days after the 4- to 5-leaf timing showed the late application (4- to 5-leaf) alone was equally as effective in increasing seedling height as applications made at the 2- to 3-leaf stage followed by applications made at the 4- to 5-leaf stage. Also, the late application produced taller seedlings at 35 and 42 DAP than the early application. The protocol was changed from multiple applications of 0.75 oz to 1 oz followed by 0.5 oz. It appears multiple applications (early followed by late timing) are no more effective than one late application. Also, a low rate (0.5 oz) late is more effective than the standard rate (1 oz) early and just as effective as the standard rate early followed by the low rate late when flooding is timed after the 4- to 5-leaf stage. It appears multiple applications of RyzUp offer no practical benefit, and RyzUp should be applied once approximately one week prior to establishment of the permanent flood. The later the timing the lower the rate of RyzUp necessary for seedling elongation.

The effect of plant growth regulator foliar treatment and propanil on seedling vigor and productivity of rice (Oryza sativa 'Lemont'). Rice Research Station, Crowley, LA. 1992.

Treatment Name	Form Amt	Fm Ds	Rate	Rate Unit	Seedling Height (cm) 7 DAT	Seedling Height (cm) 14 DAT	Seedling Height (cm) 35 DAP	Seedling Height (cm) 42 DAP	Grain Moisture (%)	Yield (lb/A)
RyzUp	1		0	oz p/A	25d	33d	51b	65b	15.2a	5983a
Stam M4	4	ec	4	lb ai/A						
RyzUp	1		0	oz p/A	51b	64b	51b	64b	15.0a	6128a
Stam M4	4	ec	4	lb ai/A						
RyzUp	1		0	oz p/A	49b	64b	49b	64b	15.1a	6017a
Stam M4	4	ec	4	lb ai/A						
RyzUp	1		0	oz p/A						
Stam M4	4	ec	4	lb ai/A						
RyzUp	1		1	oz p/A	41c	49c	51b	65b	15.1a	6038a
Stam M4	4	ec	4	lb ai/A						
RyzUp	1		.5	oz p/A	63a	72a	63a	72a	14.8a	6000a
Stam M4	4	ec	4	lb ai/A						
RyzUp	1		1	oz p/A	64a	71a	64a	71a	14.8a	5876a
Stam M4	4	ec	4	lb ai/A						
RyzUp	1		.5	oz p/A						
Stam M4	4	ec	4	lb ai/A						
LSD (.05) =					2	2	3	3	0.4	253
Standard Dev.=					1.5881	1.4298	1.7826	1.7256	.28187	167.93
CV =					3.26	2.44	3.25	2.59	1.88	2.79

Means followed by same letter do not significantly differ (Duncan's MRT, P=.05).

SEEDLING VIGOR STUDIES (Foliar Treatment)

R.T. Dunand, R.R. Dilly, Jr., and G.A. Meche

Experiment: Foliar Gibberellic Acid Formulations Comparison on Semidwarf Rice (Oryza sativa 'LEMONT')

Location: Rice Research Station, Crowley, LA

Variety: Lemont

Seeding Rate: 100 lb/A

Planting Date: 12 May 92

Row Spacing: 7-inch

Fertilizer: 7-21-21 with 1.2% zinc at 300 lb/A drilled at planting (12 May); urea (46% N) at 200 lb/A by airplane (10 June)

Plot Size: 157.5 ft^2 - 5.83 (10 rows) x 27 ft

Treated Area: 157.5 ft^2 - 5.83 x 27 ft

Treatment(s): Plant Growth Regulators

GibGro 4LS
RyzUp

Rate

1, 2, and 3 oz/A

Timing

1- to 2-leaf (26 May)
2- to 3-leaf (1 June)

Sprayer: CO_2-driven, hand-held, 32 psi, 15 GPA, 80015 nozzles

Pertinent Rainfall: 0.3 inch after 8 hours after application (26 May); 0.3 inch beginning 3 hours after application and lasting 10 hours (1 June)

Herbicide(s): Arrosolo (1 gal/A) by airplane (4 June); Basagran (1.5 pt/A) + Londax (1 oz/A) by airplane (16 June); Ordram (20 lb/A) by airplane (16 June); Bolero (40 lb/A) by airplane (25 June)

Insecticide(s): Furadan (17 lb/A) by airplane (16 June)

Fungicide(s): Benlate (1 lb/A) by airplane (15 July); Benlate (1 lb/A) by airplane (30 July)

Emergence: 18 May

Permanent Flood: 11 June

Harvest Date: 4 Sep

Harvested Area: 157.5 ft^2 - 5.83 x 27 ft

Exp. Design: Factorial (2 formulations x 4 rates x 2 timings) with a randomized complete block design and four replications

Comments: GibGro 4LS and RyzUp were compared for effects on seedling elongation, mature plant height, grain moisture, and grain yield. GibGro and RyzUp performed with equal effectiveness. At 7 days after treatment (DAT) at either time of application, the rate of 1 oz/A increased seedling height by 8 cm. Increasing the rate to 2 and 3 oz/A gave incremental increases of 3 cm each. By 14 DAT, the response to rate was dependent on time of application. Larger seedlings (3- to 4-leaf stage at application) had greater increases in height as rate increased. The difference in height between the control and 3 oz/A rate applied at the early timing was 7 cm compared with 14 cm for the late timing. At maturity, plant height, grain moisture, and grain yield were not significantly affected by formulation or time or rate of application. Each varied less than 5%.

The effect of time and rate of two plant growth regulator foliar treatments on seedling vigor and productivity of rice (Oryza sativa 'Lemont'). Rice Research Station, Crowley, LA. 1992.

Treatment Name	Form Amt	Fm Ds	Rate	Seedling Height (cm) 7 DAT	Seedling Height (cm) 14 DAT	Mature Height (cm)	Grain Moisture (%)	Yield (lb/A)
Timing-1 RyzUp Rate-1		1	0	22h	32ij	87b	14.1b	6148a
Timing-1 RyzUp Rate-2		1	1	28fg	33ij	87ab	14.2b	5909ab
Timing-1 RyzUp Rate-3		1	2	31d-g	38gh	88ab	14.4b	5941ab
Timing-1 RyzUp Rate-4		1	3	33de	38gh	88ab	14.3b	5804ab
Timing-1 GibGro Rate-1		1	0	21h	30j	87ab	14.9a	5509b
Timing-1 GibGro Rate-2		1	1	28g	34hij	87ab	14.2b	5902ab
Timing-1 GibGro Rate-3		1	2	32def	36ghi	88ab	14.0b	5941ab
Timing-1 GibGro Rate-4		1	3	34d	39g	87ab	14.1b	5968ab
Timing-2 RyzUp Rate-1		1	0	30efg	44f	88ab	14.1b	5883ab
Timing-2 RyzUp Rate-2		1	1	39c	49cd	88ab	14.1b	6005ab
Timing-2 RyzUp Rate-3		1	2	41c	51cd	90a	14.3b	5653ab
Timing-2 RyzUp Rate-4		1	3	47a	58a	87ab	14.3b	5809ab
Timing-2 GibGro Rate-1		1	0	31d-g	44ef	88ab	14.1b	6113a
Timing-2 GibGro Rate-2		1	1	40c	48de	88ab	14.5ab	5634ab

Continued.

Continued.

Treatment Name	Form Amt	Fm Ds	Rate	Seedling Height (cm) 7 DAT	Seedling Height (cm) 14 DAT	Mature Height (cm)	Grain Moisture (%)	Yield (lb/A)
Timing-2 GibGro Rate-3		1	2	42bc	53bc	87ab	14.1b	5836ab
Timing-2 GibGro Rate-4		1	3	45ab	57ab	87ab	14.3b	5851ab
LSD (.05) =				3	4	2	0.4	471
Standard Dev.=				2.4344	2.8989	1.6554	.28734	329.71
CV =				7.20	6.79	1.89	2.02	5.61

Means followed by same letter do not significantly differ (Duncan's MRT, P=.05).

HARVEST EFFICIENCY STUDY

R.T. Dunand, R.R. Dilly, Jr. and G.A. Meche

Experiment: Foliar Gibberellic Acid and Panicle Extension in Semidwarf Rice (*Oryza sativa* 'Lemont')

Location: Rice Research Station, Crowley, LA

Variety: Lemont

Seeding Rate: 75 lb/A

Planting Date: 22 Apr 92

Row Spacing: 7 inch

Fertilizer: 7-21-21 with 1.2% zinc at 300 lb/A drilled at planting (22 Apr); urea (46% N) at 200 lb/A by airplane (10 June)

Plot Size: 175 ft^2 - 7 ft (12 rows) x 35 ft

Treated Area: 175 ft^2 - 7 x 35 ft

Treatment(s): Plant Growth Regulator

GibGro 4 LS (4 oz/A)

Crop Oil Concentrate

Penetrator Plus (1 pt/A)

Timing

First heading (FiH), 24 July
50% heading (50H), 29 July
Full heading (FuH), 3 Aug
Post anthesis (PA), 7 Aug
Milk stage (MS), 11 Aug

Sprayer: CO_2-driven, hand-held, 32 psi, 15 GPA, 80015 nozzles

Pertinent Rainfall: No significant rainfall within 24 hours following each application except 0.1 inch within 1 hour on 3 Aug

Herbicide(s): Arrosolo (1 gal/A) by sprayer (21 May); Arrosolo (1 gal/A) by airplane (4 June); Basagran (1.5 pt/A) + Londax (1 oz/A) by airplane (16 June); Ordram (20 lb/A) by airplane (16 June)

Insecticide(s): Furadan (17 lb/A) by airplane (16 June); Sevin (1 qt/A) by airplane (30 July)

Fungicide(s): Benlate (1 lb/A) by sprayer (29 July)

Emergence: 29 Apr

Permanent Flood: 11 June

Harvest Date: 25 Aug

Harvested Area: 175 ft^2 - 7 x 35 ft

Exp. Design: Randomized complete block (four replications)

Comments: GibGro 4 LS increased plant height when applied during heading. From first heading through full heading plant height was increased significantly by 4 to 12 cm. The greatest increase in height occurred with the application made at 50% heading. The smallest increase occurred with the application made at full heading. The effect at full heading may have been diminished by the rain which occurred immediately after application.

Grain yield was unaffected by applications made at first heading, 50% heading and milk stage. Grain yields for these applications ranged between 7001 and 7167 lb/A. The control had a grain yield of 7134 lb/A. Applications made at full heading and post anthesis significantly decreased grain yield about 300 lb/A. Full heading and post anthesis are times when pollination and initial grain filling are occurring. The application of GibGro 4 LS at those times may interfere with fertilization.

Grain moisture and rice stubble were relatively unaffected by GibGro 4 LS. Grain moistures ranged between 19.7 and 21.6%. Stubble height ranged between 44 and 49 cm. Stubble height for the 50% heading treatment, like plant height, was taller than the control. No attempt was made to purposely adjust cutter bar height, and the results indicate height differences were large enough visually to cause the combine driver to adjust combine cutting height in response to GibGro 4 LS application.

Effect of gibberellic acid on panicle extension in semidwarf rice (Oryza sativa 'Lemont'). Rice Research Station, Crowley, LA. 1992.

Treatment Name	Fm Ds	Rate	Grow Stg	Plant height (cm)	Grain moisture (%)	Yield (lb/A)	Stubble height (cm)
GibGro 4 LS	1	0		99d	20.7ab	7134a	44b
GibGro 4 LS	1	4	FiH	107b	21.6a	7167a	47ab
Penetrator +	1	16	FiH				
GibGro 4 LS	1	4	50H	111a	21.1ab	7001ab	49a
Penetrator +	1	16	50H				
GibGro 4 LS	1	4	FuH	103c	21.6a	6746c	44b
Penetrator +	1	16	FuH				
GibGro 4 LS	1	4	PA	100cd	20.5ab	6860bc	46ab
Penetrator +	1	16	PA				
GibGro 4 LS	1	4	MS	99cd	19.7b	7152a	45ab
Penetrator +	1	16	MS				
LSD (.05)	=			4	1.5	233	4
Standard Dev.	=			2.4381	.99802	154.54	2.4832
CV	=			2.37	4.78	2.20	5.43

Means followed by same letter do not significantly differ (Duncan's MRT, P=.05).

RED RICE STUDIES

R.T. Dunand, R.R. Diiiy, Jr., and G.A. Meche

Experiment: Maleic Hydrazide Rate and Timing for Red Rice (Oryza sativa L.) Seedhead Suppression in Rice (Oryza sativa 'MAYBELLE')

Location: Rice Research Station, Crowley, LA

Variety: Maybelle

Seeding Rate: 150 lb/A

Planting Date: 16 Apr 92

Row Spacing: Water-seeded: seed were soaked in water for 24 hr beginning on 14 Apr; seed were kept moist for 24 hr following draining before sowing by airplane

Fertilizer: 7-21-21 with 1.2% zinc at 300 lb/A and urea (46% N) at 160 lb/A preplant incorporated (14 Apr)

Water Management: Flooded (1 to 2 inches) on 15 Apr for seeding; drained on 19 Apr and permanent flood (3 to 4 inches) on 24 Apr; drained for harvest on 14 July

Plot Size: 600 ft^2 - 8 x 75 ft

Treated Area: 600 ft^2 - 8 x 75 ft

Treatment(s): Plant Growth Regulator

Royal MH-30 SG

Rates

.375, .75, 1.5, and 2.0 lb ai/A

Timing (based on growth stage of Maybelle)

50% heading (HD), 30 June
Milk stage (MS), 6 July
Dough stage (DS), 13 July
Physiological maturity (PM), 20 July

Sprayer: CO_2-driven, hand-held, 32 psi, 15 GPA, 80015 nozzles

Pertinent Rainfall: No significant rainfall within 6 hours following each timing except 50% heading was followed immediately by 0.1 inch

Herbicide(s): Londax (1.3 oz/A) by airplane (15 May)

Insecticide(s): Furadan (17 lb/A) by airplane (15 May)

Fungicide(s): N/A

Emergence: 16 Apr (seeded germinated seed)

Permanent Flood: 24 Apr

Harvest Date: 7 Aug

Harvested Area: 600 ft^2 - 8 x 75 ft

Exp. Design: Factorial (4 rates x 4 timings) with a randomized complete block design and four replications

Comments: Lodging, grain moisture, and grain yield were significantly affected by time and rate of application of Royal MH-30 SG. Lodging was most affected by the later applications. Royal MH-30 SG applied at milk stage, dough stage, and physiological maturity decreased lodging. In general, lodging was decreased as rate increased. The untreated controls for the three timings ranged from 28 to 45% lodging. Treatments of Royal MH-30 SG at the rate of 2 lb al/A had lodging ranging from 5 to 23% for the same three timings.

Grain moisture was significantly affected by time and rate of Royal MH-30 SG application. At milk stage, grain moisture was lowest and averaged 20.9% across all rates compared with 23.6, 22.8, and 23.5% for the heading and milk and dough stage timings. As rate of Royal MH-30 SG increased up to 0.75 lb al/A, grain moisture increased. As rate of Royal MH-30 SG increased above 0.75 lb al/A grain moisture decreased to control levels. This response in grain moisture to constant increases in rate of Royal MH-30 SG is not understood.

Grain yields were generally lower in the Royal MH-30 SG treatments. The untreated controls for the four timings averaged 5345 lb/A. The Royal MH-30 SG treatments for all four timings averaged 4330 lb/A. Suppression of red rice by Royal MH-30 SG accounts to some degree for the yield decrease.

Evaluation of red rice panicle suppression showed red rice panicle density decreased for each of the four timings as rate of Royal MH-30 SG increased. The more effective treatments were the 1.5 and 2 lb ai/A rates applied at milk and dough stage. On average, the untreated controls for the two timings had 200 panicles/m^2 compared with 41 panicles/m^2 at the 2 lb ai/A rate. The results

indicate, as in past studies, that applications made either too early or too late in the growth cycle of red rice have diminished effects on red rice suppression. At heading of early season rice like Maybelle, much of the red rice is still in the vegetative stage, and at physiological maturity of Maybelle, much of the red rice is already headed and forming seed. Red rice is most susceptible when in the booting stages during the 3-week period between the end of the vegetative stage and beginning of heading.

Although significant treatment effects were noted for total and whole milling yields, they were not consistent effects. Consequently, no noticeable trends were noted. In the past, decreasing red rice has improved milling yields. Amount of red rice in milled rice was dramatically affected by time and rate of application of Royal MH-30 SG. Red rice content decreased as rate of Royal MH-30 SG increased at all timings except the heading application. For the heading application, red rice content varied from 25.53 to 41.15% across rates of Royal MH-30 SG. In contrast, at milk stage, red rice content was decreased from 20.67% (sample grade) in the untreated control to 6.6% (grade 5) at the 2 lb al/A rate. At dough stage, red rice content was decreased from 35.65% (sample grade) in the untreated control to 7.26% (grade 6) at the 2 lb al/A rate. At physiological maturity, red rice content was decreased from 30.88% (sample grade) in the untreated control to 6.88% (grade 5) at the 2 lb al/A rate.

Due to the heavy red rice infestation in this experiment, for the first time it is possible to determine the maximum amount of decrease in red rice content which Royal MH-30 SG can make. On average (milk stage, dough stage, and physiological maturity timings), the 2 lb al/A rate of Royal MH-30 SG decreased a very high red rice content of 29.1% down to 6.9%. The decrease was 22.2% which in effect means if red rice content had averaged 22.2% Royal MH-30 SG application would have effectively eliminated red rice from the milled rice. In farming situations, red rice content seldom exceeds 20%.

The effect of time and rate of plant growth regulator on red rice (Oryza sativa L.) suppression in rice (Oryza sativa 'Maybelle'). Rice Research Station, Crowley, LA. 1992.

Treatment Name	Form Amt	Fm Ds	Rate	Lodging (%)	Grain Moisture (%)	Yield (lb/A)	Red Rice Panicle Density (pan./sq meter)	Total Milling (%)	Whole Milling (%)	Grain Red Rice Content (%)	Grade (r.u.)
Headed Royal MH 30 SG	60	sg	0	25cde	21.9abc	5408ab	226a-e	61ab	44a-d	25.53b-e	7a
Headed Royal MH 30 SG	60	sg	0.5	35abc	23.5abc	4833b-e	291a	57bcd	42a-e	41.15a	7a
Headed Royal MH 30 SG	60	sg	1.0	30b-e	25.9ab	4478b-f	274abc	56cd	38cde	38.33ab	7a
Headed Royal MH 30 SG	60	sg	1.5	50a	23.4abc	4799b-e	249a-d	58a-d	40b-e	31.02abc	7a
Headed Royal MH 30 SG	60	sg	2.0	33bcd	23.2abc	4907a-d	134efg	57bcd	40b-e	35.47ab	7a
Milk Stage Royal MH 30 SG	60	sg	0	26b-e	19.1c	6010a	170def	61ab	48a	20.67c-f	7ab
Milk Stage Royal MH 30 SG	60	sg	0.5	35abc	23.9abc	4688b-f	249a-d	57bcd	40b-e	38.15ab	7a
Milk Stage Royal MH 30 SG	60	sg	1.0	13ef	22.2abc	3999def	174c-f	59abc	42a-e	16.38c-f	6ab
Milk Stage Royal MH 30 SG	60	sg	1.5	15def	19.3c	4018c-f	40h	62a	46ab	9.29f	6abc
Milk Stage Royal MH 30 SG	60	sg	2.0	5f	20.2c	3566f	19h	61ab	43a-e	6.60f	5d
Dough Stage Royal MH 30 SG	60	sg	0	35abc	22.1abc	4998a-d	264a-d	57bcd	38de	35.65ab	7a
Dough Stage Royal MH 30 SG	60	sg	0.5	20c-f	22.5abc	5224abc	226a-e	59abc	42a-e	28.63a-d	7a
Dough Stage Royal MH 30 SG	60	sg	1.0	25cde	26.2a	3649ef	193a-e	56cd	37e	18.97c-f	7ab

Continued.

Continued.

Treatment Name	Form Amt	Fm Ds	Rate	Lodging (%)	Grain Moisture (%)	Yield (lb/A)	Red Rice Panicle Density (pan./sq meter)	Total Milling (%)	Whole Milling (%)	Grain Red Rice Content (%)	Grade (r.u.)
Dough Stage Royal MH 30 SG	60	sg	1.5	18c-f	22.1abc	4647b-f	89fgh	58abc	40b-e	13.44ef	6ab
Dough Stage Royal MH 30 SG	60	sg	2.0	18c-f	21.0abc	3958def	63gh	59abc	40b-e	7.26f	6bcd
Phys. Maturity Royal MH 30 SG	60	sg	0	45ab	23.1abc	4965a-d	281ab	58abc	43a-e	30.88abc	7a
Phys. Maturity Royal MH 30 SG	60	sg	0.5	33bcd	23.7abc	4257b-f	249a-d	57bcd	39b-e	16.60c-f	6ab
Phys. Maturity Royal MH 30 SG	60	sg	1.0	25cde	26.3a	3925def	238a-d	54d	39b-e	13.82def	7ab
Phys. Maturity Royal MH 30 SG	60	sg	1.5	28b-e	23.7abc	3950def	206a-e	56cd	40b-e	11.70ef	7ab
Phys. Maturity Royal MH 30 SG	60	sg	2.0	23cde	20.8bc	4381b-f	188b-e	60abc	45abc	6.28f	5cd
LSD (.05) =				15	4.3	1018	85	4	6	13.00	1
Standard Dev.=				10.821	3.0507	719.56	60.013	2.5704	4.0829	9.1919	.71818
CV =				40.45	13.44	15.87	31.42	4.43	9.91	41.24	11.22

Means followed by same letter do not significantly differ (Duncan's MRT, P=.05)

RED RICE STUDIES

R.T. Dunand, R.R. Dilly, Jr., and G.A. Meche

Experiment: Maleic Hydrazide High Rate for Red Rice (*Oryza sativa* L.) Seedhead Suppression in Rice (*Oryza sativa* 'MAYBELLE')

Location: Rice Research Station, Crowley, LA

Variety: Maybelle

Seeding Rate: 150 lb/A

Planting Date: 16 Apr 92

Row Spacing: Water-seeded: seed were soaked in water for 24 hr beginning on 14 Apr; seed were kept moist for 24 hr following draining before sowing by airplane

Fertilizer: 7-21-21 with 1.2% zinc at 300 lb/A and urea (46% N) at 160 lb/A preplant incorporated (14 Apr)

Water Management: Flooded (1 to 2 inches) on 15 Apr for seeding; drained on 19 Apr and permanent flood (3 to 4 inches) on 24 Apr; drained for harvest on 14 July

Plot Size: 600 ft^2 - 8 x 75 ft

Treated Area: 600 ft^2 - 8 x 75 ft

Treatment(s): Plant Growth Regulator

Royal MH-30 SG

Rates

0, 1.5, and 3.0 lb ai/A

Timing (based on growth stage of Maybelle)

Dough stage (DS), 14 July

Sprayer: CO_2-driven, hand-held, 32 psi, 15 GPA, 80015 nozzles

Pertinent Rainfall: No significant rainfall within 6 hours following application

Herbicide(s): Londax (1.3 oz/A) by airplane (15 May)

Insecticide(s): Furadan (17 lb/A) by airplane (15 May)

Fungicide(s): N/A

Emergence: 16 Apr (seeded germinated seed)

Permanent Flood: 24 Apr

Harvest Date: 10 Aug

Harvested Area: 600 ft^2 - 8 x 75 ft

Exp. Design: Randomized complete block design and four replications

Comments: Grain moisture was unaffected by rate of Royal MH-30 SG while grain yield was significantly decreased. On average, grain yield was decreased about 1000 lb/A. The untreated control yielded 4447 lb/A, and the Royal MH-30 SG treatments had an average yield of 3377 lb/A.

Red rice panicle production and grain red rice content were decreased significantly and grade increased significantly by Royal MH-30 SG. Milling yields were unaffected. Red rice panicle density was reduced 85% by Royal MH-30 SG. This led to a reduction in grain red rice content of approximately 30% which resulted in an improvement of grade from sample grade (grade = 7) for the untreated control to grade 5 and 3 for the 1.5 and 3.0 lb ai/A rates of Royal MH-30 SG, respectively. The 30% reduction in red rice content almost exactly accounts for the approximately 1000 lb/A decrease in grain yield caused by Royal MH-30 SG. In other words, the yield reduction can be directly attributed to reduction in grain contamination from red rice seed.

The results from the untreated control and 1.5 lb ai/A rate of Royal MH-30 SG are similar to the results from the 'rate and timing study' previously reported. The improvement over the 1.5 lb ai/A rate obtained with the high rate (3 lb ai/A) in this study (grade 3 compared with grade 5) indicates that when red rice infestations are as heavy as they were in the studies this year that high rates of Royal MH-30 SG may be required.

The effect of high rates of plant growth regulator on red rice (Oryza sativa L.) suppression in rice (Oryza sativa 'Maybelle'). Rice Research Station, Crowley, LA. 1992.

Treatment Name	Form Amt	Fm Ds	Rate	Red Rice Panicle Density (pan./sq meter)	Grain Moisture (%)	Yield (lb/A)	Total Milling (%)	Whole Milling (%)	Grain Red Rice Content (%)	Grade (r.u.)
Royal MH 30 SG	60	sg	0	254.0a	19.0a	4447a	57a	41a	35.77a	7a
Royal MH 30 SG	60	sg	1.5	43.0b	18.3a	3528b	58a	41a	6.22b	5b
Royal MH 30 SG	60	sg	3.0	41.5b	17.8a	3225b	58a	41a	3.96b	3b
LSD (.05) =				107.3	2.6	725	4	5	12.14	2
Standard Dev.=				62	1.5036	418.75	2.1343	2.9107	7.0162	1.3743
CV =				54.95	8.21	11.22	3.71	7.13	45.81	28.44

Means followed by same letter do not significantly differ (Duncan's MRT, P=.05).

RED RICE STUDIES

R.T. Dunand, R.R. Dilly, Jr., and G.A. Meche

Experiment: Maleic Hydrazide, Benomyl, and Methyl Parathion Compatibility and Red Rice Seedhead Suppression in Rice (Oryza sativa 'MAYBELLE')

Location: Rice Research Station, Crowley, LA

Variety: Maybelle

Seeding Rate: 150 lb/A

Planting Date: 16 Apr 92

Row Spacing: Water-seeded: seed were soaked in water for 24 hr beginning on 14 Apr; seed were kept moist for 24 hr following draining before sowing by airplane

Fertilizer: 7-21-21 with 1.2% zinc at 300 lb/A and urea (46% N) at 160 lb/A preplant incorporated (14 Apr)

Water Management: Flooded (1 to 2 inches) on 15 Apr for seeding; drained on 19 Apr and permanent flood (3 to 4 inches) on 24 Apr; drained for harvest on 14 July

Plot Size: 600 ft^2 - 8 x 75 ft

Treated Area: 600 ft^2 - 8 x 75 ft

Treatment(s): Plant Growth Regulator

Royal MH-30 SG (1.5 lb ai/A)

Fungicide

Benlate (1 lb ai/A)

Insecticide

Methyl Parathion (.25 lb ai/A)

Timing (based on growth stage of Maybelle)

Milk to Dough stage (10 July)

Sprayer: CO_2-driven, hand-held, 32 psi, 15 GPA, 80015 nozzles

Pertinent Rainfall: No significant rainfall within 6 hours following applications.

Herbicide(s): Londax (1.3 oz/A) by airplane (15 May)

Insecticide(s): Furadan (17 lb/A) by airplane (15 May)

Fungicide(s): N/A

Emergence: 16 Apr (seeded germinated seed)

Permanent Flood: 24 Apr

Harvest Date: 10 Aug

Harvested Area: 600 ft^2 - 8 x 75 ft

Exp. Design: Factorial (2 plant growth regulator rates x 2 fungicide rates x 2 insecticide rates) with a randomized complete block design and four replications

Comments: Grain moisture was not affected by the treatments, and grain yield was significantly affected. The effects on grain yield were inconsistent due to lodging. In general, grain yield was decreased by Royal MH-30 SG. On average, the untreated controls (no Royal MH-30 SG) yielded 3563 lb/A. Treatments which included Royal MH-30 SG averaged 2775 lb/A.

Panicle production and grain red rice content were decreased significantly and grade was improved significantly. Milling yields were not significantly affected by any treatment. The untreated control and Benlate and Methyl Parathion alone or in mixture average 349 red rice panicles/m^2. Royal MH-30 SG alone or in mixture with Benlate and/or Methyl Parathion averaged 40 red rice panicles/m^2. These differences resulted in red rice content of milled rice, averaging 41 and 9% for treatments without Royal MH-30 SG and treatments with Royal MH-30 SG, respectively. This approximately 30% decreased in red rice due to Royal MH-30 SG application improved rice quality from sample grade (grade = 7) to grade 5, on average. Also, as previously noted, the 30% decrease in red rice content accounts for the approximately 800 lb/A decrease in grain yield due to Royal MH-30 SG application.

There was a slight indication that mixing Royal MH-30 SG with Benlate or Methyl Parathion improved activity. This is reflected in red rice content of the milled rice. Royal MH-30 SG alone resulted in a red rice content of 13.04% compared with just over 8% for treatments with Royal MH-30 SG in mixture with fungicide and/or insecticide. The results definitely indicate that Royal MH-30 SG and Benlate and Methyl Parathion are compatible. Benlate and Methyl Parathion can be applied during grain filling for blast and sheath blight diseases and the rice stinkbug, respectively.

The effect of insecticide, fungicide, and plant growth regulator tank mixes on red rice (Oryza sativa L.) suppression in rice (Oryza sativa 'Maybelle'). Rice Research Station, Crowley, LA. 1992.

Treatment Name	Form Amt	Fm Ds	Rate	Red Rice Panicle Density (pan./sq meter)	Grain Moisture (%)	Yield (lb/A)	Total Milling (%)	Whole Milling (%)	Grain Red Rice Content (%)	Grade (r.u.)
Royal MH 30 SG	60	sg	0	355.0a	17.5a	3509ab	59a	38ab	40.63a	7a
Benlate 50 DF	50	df	0							
Methyl Parathi	4	ec	0							
Royal MH 30 SG	60	sg	0	372.0a	17.7a	4026a	60a	41a	40.24a	7a
Benlate 50 DF	50	df	0							
Methyl Parathi	4	ec	.25							
Royal MH 30 SG	60	sg	0	305.0a	17.5a	2962bc	59a	40ab	39.50a	7a
Benlate 50 DF	50	df	1							
Methyl Parathi	4	ec	0							
Royal MH 30 SG	60	sg	0	365.0a	18.3a	3756ab	58a	38ab	47.30a	7a
Benlate 50 DF	50	df	1							
Methyl Parathi	4	ec	.25							
Royal MH 30 SG	60	sg	1.5	65.5b	18.5a	2542c	59a	36b	13.04b	6ab
Benlate 50 DF	50	df	0							
Methyl Parathi	4	ec	0							
Royal MH 30 SG	60	sg	1.5	19.8b	18.4a	3143abc	60a	41a	8.47b	5b
Benlate 50 DF	50	df	0							
Methyl Parathi	4	ec	.25							
Royal MH 30 SG	60	sg	1.5	23.3b	18.5a	2999bc	61a	41a	8.72b	5ab
Benlate 50 DF	50	df	1							
Methyl Parathi	4	ec	0							
Royal MH 30 SG	60	sg	1.5	54.5b	17.4a	2418c	61a	41a	8.26b	5ab
Benlate 50 DF	50	df	1							
Methyl Parathi	4	ec	.25							
LSD (.05) =				90.9	1.9	865	3	4	8.99	2
Standard Dev.=				61.822	1.3076	588.3	1.9426	2.5298	6.1119	1.0669
CV =				31.70	7.27	18.56	3.27	6.42	23.72	17.16

Means followed by same letter do not significantly differ (Duncan's MRT, P=.05)

RED RICE STUDIES

R.T. Dunand, R.R. Diiiy, Jr., and G.A. Meche

Experiment: Adjuvant Influence on Maleic Hydrazide Rate and Red Rice Seedhead Suppression in Rice (Oryza sativa 'MAYBELLE')

Location: Rice Research Station, Crowley, LA

Variety: Maybelle

Seeding Rate: 150 lb/A

Planting Date: 16 Apr 92

Row Spacing: Water-seeded: seed were soaked in water for 24 hr beginning on 14 Apr; seed were kept moist for 24 hr following draining before sowing by airplane

Fertilizer: 7-21-21 with 1.2% zinc at 300 lb/A and urea (46% N) at 160 lb/A preplant incorporated (14 Apr)

Water Management: Flooded (1 to 2 inches) on 15 Apr for seeding; drained on 19 Apr and permanent flood (3 to 4 inches) on 24 Apr; drained for harvest on 14 July

Plot Size: 600 ft^2 - 8 x 75 ft

Treated Area: 600 ft^2 - 8 x 75 ft

Treatment(s): Plant Growth Regulator

Royal MH-30 SG (0.8, 1.6, and 2.5 lb/A)

Adjuvant

Penetrator Plus (1 pt/A)

Timing (based on growth stage of Maybelle)

Dough stage (14 July)

Sprayer: CO_2-driven, hand-held, 32 psi, 15 GPA, 80015 nozzles

Pertinent Rainfall: No significant rainfall within 6 hours following applications.

Herbicide(s): Londax (1.3 oz/A) by airplane (15 May)

Insecticide(s): Furadan (17 lb/A) by airplane (15 May)

Fungicide(s): N/A

Emergence: 16 Apr (seeded germinated seed)

Permanent Flood: 24 Apr

Harvest Date: 6 Aug

Harvested Area: 600 ft^2 - 8 x 75 ft

Exp. Design: Factorial (4 plant growth regulator rates x 2 adjuvant rates) with a randomized complete block design and four replications

Comments: The addition of Penetrator Plus had no significant effect on the activity of Royal MH-30 SG on red rice seedhead suppression. Grain moisture, grain yield, milling yield, grain red rice content, and grade were also unaffected.

As previously noted, increasing rate of Royal MH-30 SG decreased grain moisture, grain yield, red rice panicle exsertion, and red rice content of the grain and improved grade. The high rate of Royal MH-30 SG (2.5 lb/A) had the greatest activity. Grain moisture was decreased 2%, grain yield was decreased approximately 1000 lb/A, red rice panicle density was decreased 70%, grain red rice content was decreased over 90%, and grade was improved from sample grade (grade = 7) to 3. The low rate of Royal MH-30 SG (0.8 lb/A) decreased milling yields for no apparent reason.

The effect of rate of plant growth regulator and adjuvant on red rice (Oryza sativa L.) suppression in rice (Oryza sativa 'Maybelle'). Rice Research Station, Crowley, LA. 1992.

Treatment Name	Form Amt	Fm Ds	Rate	Rate Unit	Red Rice Panicle Density (pan./sq ft)	Grain Moisture (%)	Yield (lb/A)	Total Milling (%)	Whole Milling (%)	Grain Red Rice Content (%)	Grade (r.u.)
Penetrator + Royal MH 30 SG	60 sg		0 0	oz p/A lb/A	225b	21.1ab	4346a	61ab	45a	25.58b	7a
Penetrator + Royal MH 30 SG	60 sg		0 .8	oz p/A lb/A	274ab	21.5a	3743bcd	58bc	39b	20.63b	7a
Penetrator + Royal MH 30 SG	60 sg		0 1.6	oz p/A lb/A	99c	21.3ab	3092e	59abc	44a	5.56c	5b
Penetrator + Royal MH 30 SG	60 sg		0 2.5	oz p/A lb/A	87c	19.9ab	3204de	60abc	45a	2.85c	4bc
Penetrator + Royal MH 30 SG	60 sg		16 0	oz p/A lb/A	317a	21.8a	4014ab	60abc	45a	32.72a	7a
Penetrator + Royal MH 30 SG	60 sg		16 .8	oz p/A lb/A	242ab	21.5a	3815abc	57c	40b	18.29b	7a
Penetrator + Royal MH 30 SG	60 sg		16 1.6	oz p/A lb/A	114c	19.4ab	3276cde	59abc	44a	7.08c	5b
Penetrator + Royal MH 30 SG	60 sg		16 2.5	oz p/A lb/A	61c	18.8b	3238de	61a	47a	2.11c	3c
LSD (.05) =					83	2.4	518	3	4	6.99	1
Standard Dev.=					56.745	1.6187	352.05	2.0044	2.6404	4.7503	.90386
CV =					32.00	7.84	9.80	3.38	6.09	33.09	16.16

Means followed by same letter do not significantly differ (Duncan's MRT, P=.05).

YIELD ENHANCEMENT STUDIES

R.T. Dunand, R.R. Dilly, Jr., and G.A. Meche

Experiment: Foliar Gibberellic Acid and Yield Enhancement in Semidwarf Rice (*Oryza sativa* 'LEMONT')

Location: Rice Research Station, Crowley, LA

Variety: See treatments

Seeding Rate: 100 lb/A

Planting Date: 12 May 92

Row Spacing: 7-inch

Fertilizer: 7-21-21 with 1.2% zinc at 300 lb/A drilled at planting (12 May); urea (46% N) at 200 lb/A by airplane (10 June)

Plot Size: 157.5 ft^2 - 5.83 x (10 rows) x 27 ft

Treated Area: 157.5 ft^2 - 5.83 x 27 ft

Treatment(s): Varieties

Mars, Maybelle, and Lemont

Plant Growth Regulator

RyzUp (1 oz/A)

Timing

2- to 3-leaf (28 May)
3- to 4-leaf (3 June)

Sprayer: CO_2-driven, hand-held, 32 psi, 15 GPA, 80015 nozzles

Pertinent Rainfall: 1.7 inches after 12 hours after application (28 May)

Herbicide(s): Arrosolo (1 gal/A) by airplane (4 June); Basagran (1.5 pt/A) + Londax (1 oz/A) by airplane (16 June); Ordram (20 lb/A) by airplane (16 June); Bolero (40 lb/A) by airplane (25 June)

Insecticide(s): Furadan (17 lb/A) by airplane (16 June)

Fungicide(s): Benlate (1 lb/A) by airplane (15 July); Benlate (1 lb/A) by airplane (30 July)

Emergence: 18 May

Permanent Flood: 11 June

Harvest Date: Maybelle (18 Aug); Mars and Lemont (28 Aug)

Harvested Area: 157.5 ft^2 - 5.83 x 27 ft

Exp. Design: Split plot with a factorial (2x2) arrangement of the subplots (main plot=varieties, subplot=time of foliar application, and RyzUp rate) with a randomized complete block design and four replications.

Comments: Seedling applications of RyzUp were evaluated on seedling vigor and grain yield. Seedling height of Lemont, Mars, and Maybelle were increased by RyzUp applied at the 2- to 3-leaf and 3- to 4-leaf stage at 7 days after treatment (DAT). At 14 DAT, only the 2- to 3-leaf timing still exhibited increased seedling height. The only effects on mature plant height were varietal. Lemont was the shortest variety and Mars was the tallest.

Grain yield was unaffected by RyzUp, and there were no trends in the data to suggest further testing of this type. Panicle density evaluations also showed no effect of RyzUp on a major yield component.

The effect of plant growth regulator foliar treatment on seedling vigor and productivity of three major rice varieties. Rice Research Station, Crowley, LA. 1992.

Treatment Name	Pm Ds	Rate	Growth Stage	Seedling Height (cm) 7 DAT	Seedling Height (cm) 14 DAT	Grain Moisture (%)	Mature Height (cm)	Yield (lb/A)	Panicle Density (pan./ sq ft)
Lemont				28h	35g	15.0c	87c	5896abc	34bc
RyzUp									
Lemont				36ef	43f	15.3c	89c	5962ab	37ab
RyzUp	1	1	2-3 L						
Lemont				33g	55c	15.0c	89c	6005a	34bc
RyzUp									
Lemont				41bc	54c	15.2c	88c	5834a-d	31c
RyzUp	1	1	3-4 L						
Mars				35fg	46e	17.2b	110a	5543a-e	31c
RyzUp									
Mars				43b	50d	17.2b	113a	5264e	31c
RyzUp	1	1	2-3 L						
Mars				43b	73a	17.1b	111a	5264e	31c
RyzUp									
Mars				49a	73a	17.1b	112a	5451cde	34bc
RyzUp	1	1	3-4 L						
Maybelle				29h	40f	17.4ab	92b	5470b-e	41a
RyzUp									
Maybelle				38de	47de	17.7a	92b	5380de	41a
RyzUp	1	1	2-3 L						
Maybelle				39cd	63b	17.4ab	92b	5538a-e	39a
RyzUp									
Maybelle				50a	65b	17.7a	92b	5543a-e	39a
RyzUp	1	1	3-4 L						
LSD (.05) =				3	3	0.4	2	434	4
Standard Dev.=				2.0587	2.5184	.33532	1.8492	339.49	3.3932
CV =				5.33	4.70	2.02	1.90	6.07	9.60

Means followed by same letter do not significantly differ (Duncan's MRT, P=.05).

YIELD ENHANCEMENT STUDIES

R.T. Dunand, R.R. Dilly, Jr., and G.A. Meche

Experiment: Chitosan Seed Treatment and Water-Seeding in Semidwarf Rice (Oryza sativa 'LEMONT')

Location: Rice Research Station, Crowley, LA

Variety: Lemont

Seeding Rate: 150 lb/A

Planting Date: 15 May 92

Row Spacing: Water-seeded: dry seeded by hand

Fertilizer: 7-21-21 with 1.2% zinc at 300 lb/A and urea (46% N) at 100 lb/A preplant incorporated (13 May); and urea (46% N) at 200 lb/A by airplane (10 June)

Plot Size: 125 ft^2 - 5 x 25 ft

Treated Area: 125 ft^2 - 5 x 25 ft

Treatment(s): Plant Growth Regulator Seed Treatment

Lot # F-1.0
Lot # F-2.0
Lot # F-3.0
Lot # F-4.0
Lot # F-5.0
Lot # F-6.0
Lot # F-7.0

Timing

Seed treatment (Coated 10 lb of seed with 568 ml of plant growth regulator solution followed by air drying), 8 May

Sprayer: N/A

Pertinent Rainfall: N/A

Herbicide(s): Arrosolo (1 gal/A) by airplane (4 June); Londax (1 oz/A) by airplane (9 June); Basagran (1.5 pt/A) + Londax (1 oz/A) by airplane (16 June); Ordram (20 lb/A) by airplane (16 June); Bolero (40 lb/A) by airplane (25 June); and Stam M4 (2 qt/A) by airplane (10 July)

Insecticide(s): Furadan (17 lb/A) by airplane (16 June)

Fungicide(s): Benlate (1 lb/A) by airplane (15 July); Benlate (1 lb/A) by airplane (30 July)

Emergence: 22 May - 27 May

Permanent Flood: 15 May

Harvest Date: 4 Sept

Harvested Area: 125 ft^2 - 5 x 25 ft

Exp. Design: Randomized complete block design and four replications

Comments: Grain moisture and yield were not significantly affected by chitosan seed treatment. In general, grain moistures ranged between 15.7 and 16.0%. Grain yield was highest at 7206 lb/A with seed treatment of Lot # F-4.0. This represents a 10% increase over the designated control treatment which yielded 6655 lb/A. There are two extra controls (treatments 9 & 10). The experiment was originally designed for a total of 10 treatments, including a control. The number of treatments was reduced to eight, and consequently, two extra treatments received no chemical. These treatments are effective control treatments but are not designated controls.

As in past studies, grain yield increased steadily from Lot # F-1.0 through Lot # F-4.0. In the past, the equivalent of Lot # F-3.0 was the last treatment in the series. Treatments which had not been tested in the past were Lot # F-4.0, Lot # F-5.0, Lot # F-6.0, and Lot # F-7.0. With the new treatments, grain yield for Lot # F-5.0 was lower than the designated control, and grain yields for Lots # F-6.0 and F-7.0 were higher than the designated control.

The effect of plant growth regulator seed treatment on productivity of rice (*Oryza sativa* 'Lemont'). Rice Research Station, Crowley, LA. 1992.

Treatment Name	Form Amt	Fm Ds	Rate	Grain Moisture (%)	Yield (lb/A)
Control				15.8a	6655bc
Chitosan Lot # F-1.0				16.0a	6778abc
Chitosan Lot # F-2.0				15.8a	6794abc
Chitosan Lot # F-3.0				15.9a	7047abc
Chitosan Lot # F-4.0				15.8a	7206a
Chitosan Lot # F-5.0				16.0a	6575c
Chitosan Lot # F-6.0				15.7a	6972abc
Chitosan Lot # F-7.0				15.7a	6922abc
Control				15.8a	6896abc
Control				15.7a	7133ab
LSD (.05)	=			0.4	468
Standard Dev.	=			.29158	321.52
CV	=			1.84	4.66

Means followed by same letter do not significantly differ (Duncan's MRT, P=.05).

YIELD ENHANCEMENT STUDIES

R.T. Dunand, R.R. Dilly, Jr. and G.A. Meche

Experiment: PGR-IV and Foliar Fungicides in Semidwarf Rice (Oryza sativa 'Lemont')

Location: Rice Research Station, Crowley, LA

Variety: Lemont

Seeding Rate: 75 lb/A

Planting Date: 22 Apr 92

Row Spacing: 7 inch

Fertilizer: 7-21-21 with 1.2% zinc at 300 lb/A drilled at planting (22 Apr); urea (46% N) at 200 lb/A by airplane (10 June)

Plot Size: 175 ft^2 - 7 ft (12 rows) x 35 ft

Treated Area: 175 ft^2 - 7 x 35 ft

Treatment(s): Plant Growth Regulator

PGR-IV (4 and 6 oz/A)

Fungicides

Benlate (.75 lb ai/A)
Rovral (.5 lb ai/A)
Tilt (6 oz/A)

Timing

3- to 5-leaf rice (25 May)
Panicle differentiation, PD or panicle 2 mm (7 July)
Late boot, LB (22 July)
50% heading (30 July)

Sprayer: CO_2-driven, hand-held, 32 psi, 15 GPA, 80015 nozzles

Pertinent Rainfall: No significant rainfall within 24 hours following applications.

Herbicide(s): Arrosolo (1 gal/A) by sprayer (21 May); Arrosolo (1 gal/A) by airplane (4 June); Basagran (1.5 pt/A)+Londax (1 oz/A) by airplane (16 June); Ordram (20 lb/A) by airplane (16 June)

Insecticide(s): Furadan (17 lb/A) by airplane (16 June); Sevin (1 qt/A) by airplane (30 July)

Fungicide(s): See treatments

Emergence: 29 Apr

Permanent Flood: 11 June

Harvest Date: 25 Aug

Harvested Area: 175 ft^2 - 7 x 35 ft

Exp. Design: Randomized complete block (four replications)

Comments: PGR-IV and standard rice fungicides were compatible in mixture and had no significant effect on grain moisture and yield at harvest. Grain moisture ranged between 17 and 18%, and grain yield ranged between 6320 and 6771 lb/A. PGR-IV applied at the 3- to 5-leaf stage followed by PGR-IV + Rovral applied at PD and LB resulted in the lowest yield. The same treatment sequence with Benlate as the fungicide resulted in the highest yield. The high yielding treatment exceeded the control (6344 lb/A) by 373 lb/A.

The primary diseases controlled by the fungicides tested are blast and sheath blight. Incidence of both diseases was very low, and disease ratings were not made since there was no disease infestation to control with the fungicides.

Effect of PGR-IV and late season fungicides on productivity of rice (*Oryza sativa* 'Lemont'). Rice Research Station, Crowley, LA. 1992.

Treatment Name	Fm Ds	Rate	Grow Stg	Grain moisture (%)	Yield (lb/A)
PGR-IV	l	0		17.5ab	6344ab
PGR-IV	l	6	3-5 L	17.9ab	6399ab
PGR-IV	l	4	3-5 L	17.5ab	6320b
PGR-IV	l	4	PD		
PGR-IV	l	6	PD	17.9ab	6305b
PGR-IV	l	4	3-5 L	17.3ab	6385ab
PGR-IV	l	4	PD		
Tilt	l	6	PD		
Tilt	l	6	LB		
PGR-IV	l	4	3-5 L	17.1b	6583ab
PGR-IV	l	4	PD		
Rovral	wp	.5	PD		
Rovral	wp	.5	LB		
PGR-IV	l	4	3-5 L	18.2a	6771a
PGR-IV	l	4	PD		
Benlate	wp	.75	PD		
Benlate	wp	.75	LB		
Tilt	l	6	PD	17.6ab	6363ab
Tilt	l	6	LB		
Rovral	wp	.5	PD	17.9ab	6522ab
Rovral	wp	.5	LB		
Benlate	wp	.75	PD	18.1a	6551ab
Benlate	wp	.75	LB		
LSD (.05)	=			0.8	389
Standard Dev.	=			.55142	268.17
CV	=			3.11	4.15

Means followed by same letter do not significantly differ (Duncan's MRT, P=.05).

WEED CONTROL IN RICE

Michael Braverman

INTRODUCTION

While the number of herbicides available for weed control in rice has increased over the last year, there are still some problem weeds in Louisiana that are not adequately controlled. The experimentation with new herbicides and herbicide combinations continues to be a critical area of research necessary to improve production efficiency. When new herbicides are introduced, such as Londax and Facet, it is important to explore the best ways in which they can fit into our present production practices, or if it is practical, to change production practices to improve weed control.

Alligatorweed is an example of a weed that has received little attention in other rice growing areas but is a major problem in the rice fields of Louisiana. Good control of alligatorweed can be obtained with older products, such as 2,4-D, but the restriction of midseason applications is undesirable because a significant amount of competition has already occurred by midseason. Furthermore, the liability risks and increasing restrictions on the aerial application of 2,4-D continue to limit its use. The development of alternative and improved methods of controlling weeds is the primary goal of this research project.

Thanks are extended to Dr. Dearl Sanders for his assistance, especially in the spraying of borders in off-station experiments, and to Dr. Richard Dunand for his helpful suggestions in organizing the experiments.

BOLERO TANK-MIX COMBINATIONS

Michael Braverman

MATERIALS AND METHODS

Field experiments were conducted at the South Farm of the Rice Research Station in Crowley, Louisiana to determine the efficacy of some Bolero tank-mix combinations for weed control in rice. Pregerminated, water-seeded 'Lemont' rice was hand sown at 150 lb/A on May 20, 1992 out of which 6 X 40' plots were established. The treatments listed below were replicated four times in a randomized complete block design, and means preceded by significant F tests were separated by Duncan's test at the 5% level (Table 1).

All herbicide treatments were applied with a four-nozzle, CO_2-powered backpack sprayer in a 10-gal/A spray volume. In relation to rice, the preplant surface application (Preplant Surf) was applied 1 day prior to water seeding, the early post (E Post) treatment was applied at the 2- to 3-leaf stage, and the postemergence treatment was at the 4-leaf stage of rice. Major weed species present included junglerice, rice flatsedge, and ducksalad.

RESULTS

Weed control ratings are listed in Table 2. At the first rating that was taken on June 5, only the preplant surface application of Bolero had been applied. This rating, which was 2 weeks after the Bolero application, was used to determine how much weed control was being obtained in Treatment 6 from the Bolero alone. As shown in Table 2, Bolero provided excellent control of junglerice and ducksalad, and fair control of rice flatsedge. Rice injury (a tip burn) was minimal and dissipated quickly, but it is worth noting that rice injury tended to be greater with the two Bolero-Propanil treatments (Treatments 1 and 2). With all other treatments, rice injury ratings were similar to the check.

Junglerice control was excellent with all treatments, but the Bolero-Propanil or the sequential Propanil combinations (Treatments 1 and 7) provided somewhat reduced control by the July 14 rating. Rice flatsedge control was good to excellent. The sequential Propanil treatment (Treatment 5, which had only received the first propanil treatment at this rating) provided significantly reduced flatsedge control and the Bolero-Facet combination (#3) provided the least flatsedge control, compared with all other treatments at the June 12 rating. At the June 24 and July 14 ratings, rice flatsedge control was similar with all treatments. Ducksalad control was good to excellent with all treatments, but the sequential Propanil treatment provided less control than other treatment combinations.

Table 1. Treatment Schedule.

Tmt	Herbicide	Form	Rate	Timing	Date Application
1	Bolero	8EC	4 lb al	E Post	6-5-92
	Propanil	4EC	2 lb al	E Post	6-5-92
2	Bolero	8EC	3 lb al	E Post	6-5-92
	Arrosolo	6EC	3 qt/a	E Post	6-5-92
3	Bolero	8EC	3 lb al	E Post	6-5-92
	Facet	50WP	0.25 lb al	E Post	6-5-92
4	Facet	50WP	0.25 lb al	E Post	6-5-92
	Propanil	4EC	3 lb al	E Post	6-5-92
5	Propanil	4EC	3 lb al	E Post	6-5-92
	Propanil	4EC	3 lb al	Post	6-12-92
6	Bolero	8EC	3 lb al	Preplant Surf	5-19-92
	Facet	50WP	0.25 lb al	E Post	6-5-92
	Propanil	4EC	3 lb al	E Post	6-5-92
7	Untreated check				

Table 2. Weed control ratings (%) in the Bolero tank-mix study.

Treatment	Rice Injury	Junglerice	Rice Flatsedge	Ducksalad
		June 5		
6 *	0	100	65	100
All others	0	0	0	0
		June 12		
1 Bol,Prop	18a	98a	100a	100a
2 Bol,Arro	16a	100a	100a	100a
3 Bol,Fac	6b	100a	62c	100a
4 Prop,Fac	4b	100a	90ab	97a
5 Prop Seq **	5b	100a	84b	82b
6 Bol,Prop,Fac	0b	100a	100a	100a
7 Check	0b	0b	0d	0c
		June 24		
1 Bol,Prop	1	100a	100a	100a
2 Bol,Arro	0	100a	100a	98a
3 Bol,Fac	0	99a	98a	96a
4 Prop,Fac	0	100a	96a	90a
5 Prop Seq	0	100a	100a	70b
6 Bol,Prop,Fac	0	100a	100a	96a
7 Check	0	0b	0b	0c
		July 14		
1 Bol,Prop	2	93c	100a	95a
2 Bol,Arro	0	100a	100a	96a
3 Bol,Fac	0	99a	96a	81a
4 Prop,Fac	0	98a	94a	90a
5 Prop Seq	0	95bc	100a	86a
6 Bol,Prop,Fac	0	100a	100a	94a
7 Check	0	0d	0b	0b

* At this rating the only herbicide applied was the preplant surface application of Bolero in Treatment 6.

** At this rating only the first application of the sequential propanil treatment had been applied.

Bol=Bolero Prop=Propanil Arro=Arrosolo Fac=Facet Seq=Sequential

EFFICACY OF SOME FACET TANK-MIX COMBINATIONS FOR THE CONTROL OF ALLIGATORWEED IN RICE

Michael Braverman

METHODS

Field studies were conducted to compare the efficacy of several herbicide tank mixes with Facet for the control of Alligatorweed in rice. This research was performed on the farm of Mr. Mark Medus, which is located on Highway 3007 in Crowley, Louisiana approximately 2 miles southeast of Rice Research Station South Farm. The field had been water seeded with 'Maybelle' rice on April 23, 1992. The first four treatments were applied on May 8, when rice was in the 2-leaf stage. The fifth treatment, which contained Triclopyr (Grandstand), was not applied until May 20, when rice was in the 4-leaf stage. The field was flushed on May 12 and permanent flood was established on May 24. All herbicide treatments were applied with a CO_2-powered backpack sprayer in a 10-gal/A spray volume. Plot size was 6 X 30,' and all treatments were replicated four times in a randomized complete block design.

RESULTS

The rice showed excellent tolerance to Facet tank-mix treatments. The greatest amount of injury occurred with the Facet-Triclopyr tank-mix, which resulted in 7% injury. Facet alone gave a minor degree of alligatorweed control but was never greater than 20%. The addition of Basagran or Wham EZ to the Facet greatly improved its activity on alligatorweed. The addition of Basagran led to better alligatorweed control than Wham EZ at 1 month after treatment; however, the initial burn was more rapid. The combination of Facet and Triclopyr resulted in the best overall control of any treatment. While statistically there is no way to compare the treatments, I happened to have a triclopyr test in the same field, and the triclopyr alone or the triclopyr with Stam was not as good a treatment as the Facet-triclopyr treatment in this test. There may be some advantage to this mix due to them having "hormone"-type activity, but the cost is probably too high.

Efficacy of Facet treatment combinations on Alligatorweed control.

Treatment	Rice Injury (%) May 15	May 22	May 27	June 11	June 22
1 Check	0	0	0	0	0
2 Facet 0.38	0	0	0	0	0
3 Facet 0.38 +Basagran 1.0	0	1	0	0	0
4 Facet 0.38 +Wham EZ 3.0	0	0	0	0	0
5 Facet 0.38 +Triclopyr 0.125**	0	0	7	0	0

* All rates are in lb al/A and were applied with 2.5% by volume COC (HERBIMAX) in a 10-gpa spray volume.

** The first four treatments were applied on 5-08-92 (2-leaf rice). The last treatment was applied on 5-20-92 (4-leaf rice).

Efficacy of Facet treatment combinations on Alligatorweed control.

Treatment	Alligatorweed control (%) May 15	May 22	May 27	June 11	June 22
1 Check	0c	0d	0d	0d	0d
2 Facet 0.38	10cb	15cd	15c	20c	20c
3 Facet 0.38 +Basagran 1.0	20b	40b	40b	86ab	86ab
4 Facet 0.38 +Wham EZ 3.0	42a	65a	65b	70b	70b
5 Facet 0.38 +Triclopyr 0.125 **	0c	30cb	87a	98a	100a

* All rates are in lb ai/A and were applied with 2.5% by volume COC (HERBIMAX) in a 10-gpa spray volume.

** The first four treatments were applied on 5-08-92 (2-leaf rice). The last treatment was applied on 5-20-92 (4-leaf rice).

TRICLOPYR TANK-MIX COMBINATIONS FOR ALLIGATORWEED CONTROL IN RICE - 1992

Michael Braverman

MATERIALS AND METHODS

Field experiments were conducted to evaluate triclopyr for the control of alligatorweed in rice. The field was located on the Mark Medus Farm on Hwy. 3007 in Crowley about 2 miles southeast of the Rice Research Station South Farm. The field had been water seeded to Maybelle rice on April 23, 1992. Plot size was 6 X 30,' and all treatments were replicated four times in a randomized complete block design. Pre- and postflood treatments were applied on May 20 and June 11, respectively, with a backpack sprayer in a 10-gal/A spray volume. Permanent flood was established on May 24. Herbicide treatments are listed in Tables 1 and 2.

RESULTS

Weed control ratings for the pre- and postflood herbicide treatments are listed in Tables 3 and 4, respectively. The preflood treatments of Grandstand and Blazer or Blazer alone resulted in 30 and 32% injury to rice on May 27 (1 week after application). Some of the other treatments also caused some injury, but were not significantly different from the check. By the June 5 and June 22 ratings, all of the previous injury had dissipated and none of the rice injury ratings were significantly different from the check. The overall greatest control of alligatorweed was obtained with a tank-mix of Grandstand at 0.25 and Stam M4 at 4 lb ai/A. With the exception of the 0.125 rate of Grandstand with 3 lb of Stam at the first rating, all Grandstand - Stam or Arrosolo combinations provided similar levels of control and were superior to Grandstand or Stam alone. The high rate of Grandstand (0.25 lb) was similar to the Grandstand - Stam tank mixes by the June 22 rating but did not provide good early season control. To the contrary, Blazer alone provided good early season burn but the alligatorweed recovered. Spike rush control ratings were also taken on May 27. Most treatments containing Stam or Arrosolo were similar to their respective treatments with Grandstand, while Grandstand alone provided poor control.

The effects of postflood applications of triclopyr are outlined in Table 4. The greatest level of rice injury occurred with Blazer alone at 0.125 and Grandstand at 0.38 lb ai. Alligatorweed control was excellent with Grandstand alone or in combination with Stam. Stam, Londax, or Blazer alone did not provide control of alligatorweed. Closure of the rice canopy precluded meaningful ratings later in the season.

Table 1. Herbicide treatments applied preflood on May 20, 1992.

Tmt	Herbicide(s)*		Rate (lb ai)				
1	Grandstand	3SL	0.125				
2	Grandstand	3SL	0.25				
3	Grandstand	3SL	0.125	+	Stam M4	4SL	3
4	Grandstand	3SL	0.25	+	Stam M4	3SL	3
5	Grandstand	3SL	0.125	+	Stam M4	4SL	4
6	Grandstand	3SL	0.25	+	Stam M4	4SL	4
7	Grandstand	3SL	0.125	+	Stam	80WG	3
8	Grandstand	3SL	0.125	+	Arrosolo	6EC	6
9	Grandstand	3SL	0.125	+	Blazer	2SL	0.125
10	Stam M4	4SL	3				
11	Stam M4	4SL	4				
12	Stam	80WG	3				
13	Arrosolo	6EC	6				
14	Blazer	2SL	0.125				
15	Untreated Check						
16	Grandstand	3SL	0.125	+	Buctril	2EC	0.25

* Treatments 1, 2, 7, 9, 12, and 14 were mixed with X-77 surfactant at 0.25%. Although the triclopyr formulation is listed here as Grandstand, the actual product applied was Garlon.

Table 2. Herbicide treatments applied postflood on June 11, 1992.

Tmt	Herbicide(s)*		Rate (lb ai)				
1	Grandstand	3SL	0.25				
2	Grandstand	3SL	0.38				
3	Grandstand	3SL	0.25	+	Stam M4	4SL	1
4	Grandstand	3SL	0.38	+	Stam M4	4SL	1
5	Grandstand	3SL	0.25	+	Stam	80WG	1
6	Grandstand	3SL	0.125	+	Londax	60WG	0.016
7	Grandstand	3SL	0.25	+	Londax	60WG	0.016
8	Grandstand	3SL	0.25	+	Blazer	2SL	0.125
9	Stam M4	4SL	1				
10	Stam	80WG	1				
11	Londax	60WG	0.016				
12	Blazer	2SL	0.125				
13	Untreated Check						

* Treatments 1, 2, 5, 6, 7, 8, 10, 11, and 12 were mixed with X-77 surfactant at 0.25%. Although the triclopyr formulation is listed here as Grandstand, the actual product applied was Garlon.

Table 3. Rice injury, alligatorweed control, and ratings with preflood applications of triclopyr, 1992.

Tmt(s) Rate(s) (lb ai)	Rice Injury (%)			Alligatorweed (% control)			Rush
	5/27	6/5	6/22	5/27	6/5	6/22	5/27
Grand 0.125	8b	0	0	43de	58c	64b	13gf
Grand 0.25	8b	4	0	53de	81ab	92a	12gf
Grand .125+Stam M4 3	8b	0	0	72c	85ab	83a	30ef
Grand .25 +Stam M4 3	8b	0	0	86abc	90ab	96a	79ab
Grand .125+Stam M4 4	11b	0	0	90ab	82ab	87a	80ab
Grand .25 +Stam M4 4	9b	5	0	93a	96a	94a	83a
Grand .125+Stam 80 3	8b	0	0	76abc	86ab	93a	80ab
Grand .125+Arsolo 6	8b	3	0	83abc	93ab	81a	83a
Grand .125+Blaz .125	30a	0	0	73c	76b	81a	35edf
Stam M4 3	11b	0	0	45de	49c	45c	68abc
Stam M4 4	6b	0	0	38ef	48c	49bc	70abc
Stam 80EDF 3	0b	0	0	25f	5e	9de	55bcd
Arrosolo 6	3b	0	0	74bc	58c	56bc	76ab
Blazer 0.125	33a	3	0	80abc	29d	18d	50cde
Check	0b	0	0	0g	0e	0g	0g
Grand .125+Buctrl .25	6b	0	0	56d	78ab	79a	30ef

Herbicide treatments were applied 5/20/92.

Table 4. Rice injury and alligatorweed control with postflood applications of triclopyr - June 17, 1992.

Herbicide(s) (lb ai)	Rice injury (%)	Alligatorweed control (%)
Grand 0.25	5cde	94ab
Grand 0.38	15ab	92ab
Grand 0.25 + Stam M4 1	2de	75d
Grand 0.38 + Stam M4 1	6cde	88ab
Grand 0.25 + Stam 80EDF 1	9bcd	95a
Grand 0.125 + Londax 0.016	11bc	85bc
Grand 0.25 + Londax 0.016	11bc	78cd
Grand 0.25 + Blazer 0.125	8bcd	87ab
Stam M4 1	0e	10f
Stam 80EDF 1	0e	10f
Londax 0.016	0e	0g
Blazer 0.125	20a	30e
Check	0e	0g

Herbicides were applied on 6/11/92.

EFFICACY OF BUCTRIL FORMULATIONS AND TANK MIXES

Michael Braverman

METHODS

Field studies were conducted to evaluate the efficacy of Buctril for weed control in rice. The experiment was conducted on the farm of Mr. Bruce Brown in Eunice, Louisiana. The field was located near the southeast corner of the intersection of Highway 190 and Parish Road 6-225. Rice ('Mars') had been water seeded on May 19 and was in the 3- to 4-leaf stage on June 9 when the herbicides were applied. Birdeye (Texasweed) was in the cotyledon to 2-leaf stage, with a majority in the cotyledon to 1-leaf stage. Alligatorweed had 6-12" runners. All treatments were applied in a CO_2-powered backpack sprayer in a 10-gal/A spray volume. In addition to the herbicide treatments listed in Table 1, all spray mixtures contained crop oil (HerbiMax) at the rate of 1 qt/A. During the application of Treatment 2 it began to rain, and it rained approximately 1.5" over a period of 3 hours following application. All other treatments were applied after the rain and Treatment 2 was repeated as Treatment 12. Treatments were replicated four times in a randomized complete block design.

RESULTS

Rice injury and weed control ratings are listed in Table 2. The Buctril-Stam tank mixes all resulted in about a 20% injury to rice at 3 days after application; however, at later ratings, most of these treatments did not cause significant injury. The most phytotoxic mixture was the combination of Grandstand at 0.38 and Buctril at 0.25 lb ai, which resulted in 33, 70, and 52% injury at the three ratings.

Birdeye control was excellent with all herbicides tested. Treatment 2 (Buctril 0.25 + Stam 3 lb), which had been subjected to rain immediately after application, provided only half the control of Treatment 12 at the June 12 rating; however, at the June 22 and July 9 rating, birdeye control was excellent with Treatment 2 also.

Alligatorweed control was affected by the rainfall. While the post-rain application (Treatment 12) partially controlled alligatorweed, Treatment 2 did not. All other herbicide treatments provided some initial burn on alligatorweed; however, by 2 weeks after application, almost all treatments faded. The only treatment that provided good control of alligatorweed (Grandstand +Buctril) was far too phytotoxic to rice. In summary, this study showed that Buctril was equally effective as a 2EC formulation or a gel. In addition, the propanil formulation was not an important factor in activity. While not compared in this study, the addition of the crop oil to the treatments, including the Wham EZ, was probably not needed and could cause greater phytotoxicity to rice in some instances.

Table 1. List of herbicide treatments applied postemergence to 3- to 4-leaf rice on June 9, 1992.

Tmt No	Herbicide	Rate (lb ai/A)		Herbicide	Rate (lb ai/A)
1	Untreated Control				
2	Buctril 2EC	0.25	+	Stam 80WG	3
3	Buctril 2EC	0.25	+	Wham EZ	3
4	Buctril 2EC	0.38	+	Stam 80WG	3
5	Buctril 2EC	0.38	+	Wham EZ	3
6	Buctril Gel(4EC)	0.25	+	Stam 80WG	3
7	Buctril Gel(4EC)	0.25	+	Wham EZ	3
8	Grandstand 3EC	0.38	+	Stam M4	3
9	Londax 60WP	0.06	+	Stam M4	3
10	Grandstand 3EC	0.38	+	Buctril 2EC	0.25
11	Wham EZ	3.00			
12	Buctril 2EC	0.25	+	Stam 80WG	3

NOTE: All treatments included HerbiMax crop oil at 1 qt/A

Table 2. Rice injury and weed control ratings from the June 9, 1992 application.

Herbicide*		Rice Injury (%)			Birdeye (%control)			Alligatorweed (%control)		
(lb ai)		6/12	6/22	7/9	6/12	6/22	7/9	6/12	6/22	7/9
1	Check	0d	0b	0c	0d	0b	0b	0b	0c	0b
2	B.25+Sta	3d	0b	0c	44c	100a	100a	3b	0c	0b
3	B.25+Wha	18bc	0b	0c	90a	100a	100a	60a	0c	0b
4	B.38+Sta	23ab	0b	10bc	100a	100a	100a	63a	13bc	0b
5	B.38+Wha	18bc	0b	0c	100a	100a	100a	60a	0c	0b
6	BG.25+Sta	16bc	0b	0c	100a	100a	100a	64a	0c	0b
7	BG.25+Wha	18bc	0b	20b	95a	100a	100a	62a	0c	0b
8	G.38+M4	18bc	0b	15bc	93ab	100a	100a	53a	28bc	0b
9	Lo.06+M4	8cd	0b	0c	71b	100a	100a	55a	38b	0b
10	G.38+B.25	33a	70a	52a	90ab	100a	100a	74a	95a	45a
11	Wha	15bc	13b	10bc	99a	100a	100a	75a	35b	0b
12	B.25+Sta	17bc	3b	0c	85ab	100a	100a	54a	12bc	0b

B=Buctril, Sta=Stam 80WG, Wha=Wham EZ, BG=Buctril, Gel G=Grandstand, M4=Stam M4, Lo=Londax

All propanil formulations were applied at 3 lb ai/A.

* Note: The second and last herbicide treatment are identical, but it rained immediately after application of Treatment 2.

ORDRAM FORMULATION STUDY - 1992

Michael Braverman

MATERIALS AND METHODS

A field experiment was conducted to compare the efficacy of two formulations of Ordram at the South Farm of the Rice research Station in Crowley Louisiana. Pregerminated 'Lemont' rice was water seeded on May 20, 1992 at the rate of 150 lb/A out of which 6 X 30' plots were established. The treatments listed below were replicated four times in a randomized complete block design.

Tmt	Herbicide	Form	Rate (lb/ai)	Application Code
1	Propanil	4EC	3	A
1	Ordram	15GR WF1153	3	B
2	Propanil	4EC	3	A
2	Ordram	15GR WF1552	3	B
3	Propanil	4EC	3	A
3	Ordram	15GR WF1153	4	C
4	Propanil	4EC	3	A
4	Ordram	15GR WF1552	4	C
5	Ordram	15GR WF1153	4	C
6	Ordram	15GR WF1552	4	C
7	Untreated Check			

Treatments in application code A were applied on June 5, 1992 to 2-leaf junglerice with a backpack sprayer in a 10-gal/A spray volume, and all plots were flooded on June 16 to a depth of 2-3". Treatments in application code B were applied on June 24 when the junglerice was 3-4" tall. Treatment application code C treatments were applied on June 30, and junglerice was 6-10" tall in treatments 3 and 4. In treatments 5 and 6, which were not treated with propanil, the junglerice was 8-12" tall and was starting to head. Rice flatsedge was also heading. Water was raised to 4-6" on July 2. All plots were fertilized with 7-21-21 at 250 lb/a on

June 26 and 21-0-0 at 300 lb/A on July 16, 1992. Plots were rated on July 7 and 14, and on August 4, 1992. Major weeds present included junglerice, ducksalad, and rice flatsedge. Minor amounts of amazon sprangletop were also present, but meaningful ratings could not be obtained until the August 4 rating when panicles were evident.

RESULTS

The weed control ratings are listed in Table 1. Rice injury was never more than 5%, and that minor amount was only present at the first rating and was most likely from the propanil treatment. In a similar manner, the ducksalad control, which was evident only at the first rating, was probably due to the propanil herbicide treatment. Sprangletop control was also probably due more to the early propanil treatment.

For all treatments and weed species evaluated the effect of application time (Treatments 1 and 2 Vs 3 and 4) had a greater effect than Ordram formulation (Treatments 1 vs 2 and 3 vs 4). Failure to apply propanil (Treatments 5 and 6) led to greater and more mature weed infestations and reduced the level of control (Treatments 5 and 6 vs 3 and 4). Junglerice control was affected by application time. In the July 7 and July 14 ratings, the early Treatments 1 and 2 were better than 3 and 4, but by the August 4, ratings all of the first four treatments were similar. The only place where there was a difference due to Ordram formulation was at the August 4 rating of Junglerice. At this rating, the formulation 1153 (Treatment 5) was superior to formulation 1552 (Treatment 6).

In comparing the handling characteristics of the two formulations, the 1153 flowed a little faster than the 1552 formulation but the odor was similar. Because of the fewer and larger granules in the 1153 formulation, uniform distribution was slightly more difficult but placement was more precise. The dust level was much less with the 1153 formulation, and it tended to sink faster in the water. The faster sinking of the 1153 formulation may also have resulted in less uniform distribution, but it did not influence weed control.

Table 1 Weed control ratings(%) in the Ordram formulation study.

Treatment	Ducksalad	Junglerice	Rice Flatsedge	Sprangletop
		July 7		
1	60a	80a	76a	-
2	65a	86a	84a	-
3	62a	58b	66ab	-
4	55a	65b	52b	-
5	0b	9c	1c	-
6	0b	12c	0c	-
7	0b	0d	0c	-
		July 14		
1	0	94a	68a	-
2	0	95a	63a	-
3	0	83b	60a	-
4	0	79b	56a	-
5	0	48c	25b	-
6	0	40c	20b	-
7	0	0d	0c	-
		August 4		
1	0	91a	81a	88a
2	0	91a	86a	83a
3	0	90a	85a	88a
4	0	88a	76a	70a
5	0	72b	30b	0b
6	0	60c	20b	0b
7	0	0d	0c	0b

RICE DISEASE CONTROL STUDIES, 1992[1]

D.E. Groth, M. Frey, J. Nugent, P.K. Bollich, S.D. Linscombe, and M.C. Rush

1992 SOIL FUNGICIDE X SEED SOAKING AND TREATMENT

Location: Rice Research Station, Crowley, LA

Soil Type: Crowley silt loam

Variety/Seed Rate: Lemont, 120 lb/A

Planting Method/Date: Water-seeded, Mar 26

Emergence Date: Apr 6

Fertilization: Preplant 90-46-46, Mar 25

Plot Size: 8 x 20 ft

Water Management: Flooded, Mar 25; drained, Mar 30; flooded, Apr 2; drained, Apr 19; flooded, Apr 21

Herbicides: 3 qt Arrosolo/A, Apr 21; Londax 4 oz/A, May 1

Insecticides: 17 lb/A Furadan, May 12

Fungicides (Foliar): Tilt 10 oz/A, June 9; Benlate 1 lb/A, July 2 (by plane)
Seed treatment 4.3 oz Dithane/100 wt

Application Equipment: CO_2 backpack sprayer, 8002 tips, 10 gal/A

Application Date: Ridomil (preplant to the soil), Mar 25

Drained: July 17

Harvest: Aug 6

Experimental Design: Randomized block design with four replications

Disease Ratings: Visual water mold signs were noted Apr 10; seedling counts, Apr 20

[1] This research is supported in part by funds provided by rice producers through the Louisiana Rice Research Board and various agricultural chemical companies.

Results: See Table 1.

Comments: Water mold (Pythium spp. and Achylia spp.) severity was high. Lowest stand densities were still in acceptable range. Other diseases were low in severity.

Table 1. The effect of seed treatment, seed soaking, and soil applied fungicide on plant stand densities and rice yield. Rice Research Station, Crowley, LA. 1992.

Soil Treatment/ Seed treatment	Rate soil fungicide (lb ai/A)	Plant stand (pl/ft^2)	Yield (lb/A)
Check - untreated/ Untrt - unsoaked seed		16.0 d	6106 ab
Check - untreated/ Untrt - soaked seeds		17.3 cd	5583 b
Check - untreated/ Trt - unsoaked seeds		15.3 d	6017ab
Check - untreated/ Trt - soaked seeds		19.5 cd	5746 ab
Ridomil 2 EC/ Untrt - unsoaked seeds	0.25 PRPL	19.0 cd	5874 ab
Ridomil 2 EC/ Untrt - soaked seeds	0.25 PRPL	22.5 bc	6085 ab
Ridomil 2 EC/ Trt - unsoaked seeds	0.25 PRPL	28.3 a	6382 a
Ridomil 2 EC/ Trt - soaked seeds	0.25 PRPL	25.8 ab	6024 ab
LSD (.05) =		5.2	603.8
Standard Dev. =		3.52	410.6
CV =		17.21	6.87

Means followed by same letter do not significantly differ (Duncan's MRT, P = .05).

1992 OFF-STATION SOIL FUNGICIDE TRIAL

Location: Errol Lounsberry Farm, Lake Arthur, LA

Soil Type: Crowley silt loam

Variety/Seed Rate: Lemont, 150 and 75 lb/A

Planting Method/Date: Water-seeded, Mar 27

Emergence Date: Apr 7

Fertilization: 90-0-0 preplant, Mar 25

Plot Size: 8 x 25 ft

Water Management: Flooded, Mar 26

Herbicides: Ordram 23 lb/A, Apr 16; 2 oz/A Londax, Apr 17

Insecticides: Furadan 17 lb/A, May 8

Fungicides: Ridomil, preplant to the soil

Application Equipment: CO_2 backpack sprayer, 8002 tips, 10 gal/A

Application Date: Mar 8

Drained: July 13

Harvest: July 28

Experimental Design: Randomized block with four replications

Disease Ratings: Seedling stand counts, May 7

Results: See Table 2.

Comments: Stands were erratic due to deep water on plots.

Table 2. Effect of planting rate and soil fungicide on plant stand and rice yield. Errol Lounsberry Farm, Lake Arthur, LA. 1992.

Seeding rate/ Soil treatment	Rate soil fungicide (lb al/A)	Plant stand (pl/ft^2)	Yield (lb/A)
150 lb/A/ Untreated soil		21.0 a	6358 a
150 lb/A/ Ridomil 2 EC	0.25 PRPL	18.3 a	6469 a
75 lb/A/ Untreated soil		8.5 b	5765 b
75 lb/A/ Ridomil 2 EC	0.25 PRPL	11.8 b	6200 ab
LSD (.05) =		6.4	497
Standard Dev.=		3.98	310.7
CV =		26.73	5.01

Means followed by same letter do not significantly differ (Duncan's MRT, P = .05).

1992 PLANTING RATE X SOIL FUNGICIDE RATE

Location: Rice Research Station, Crowley, LA

Soil Type: Crowley silt loam

Variety/Seed Rate: Lemont, 75 and 150 lb/A

Planting Method/Date: Water-seeded, Mar 26

Emergence Date: Apr 6

Fertilization: Preplant 90-46-46, Mar 25

Plot Size: 8 x 20 ft

Water Management: Flooded, Mar 25; drained, Mar 30; flooded, Apr 2; drained, Apr 19; flooded, Apr 21

Herbicides: 3 qt Arrosolo/A, April 21; 4 oz/A Londax, May 1

Insecticides: 17 lb/A Furadan, May 12

Fungicides: Foliar: Tilt 3.6 EC 10 oz/A, June 9; Benlate 50 WP 1 lb/A, July 2 (by plane)

Application Equipment: Soil Treatments: CO_2 backpack sprayer, 8002 tips, 10 gal/A

Application Date: Ridomil (preplant to the soil), Mar 25

Drained: July 17

Harvest: Aug 6

Experimental Design: Randomized block design with four replications

Disease Ratings: Visual water mold signs were noted Apr 10; seedling counts, Apr 20

Results: See Table 3.

Comments: Water mold severity was high. Lowest stand densities were still in acceptable range. Other disease severities were low.

Table 3. Effect of planting rate and soil applied fungicide on plant stand and rice yield. Rice Research Station, Crowley, LA. 1992.

Soil treatment/ Seeding rate	Rate soil fungicide (lb al/A)	Plant stand (pl/ft^2)	Yield (lb/A)
Unsprayed/ 75 lb seed/A		13.3 b	6193 a
Ridomil 2 EC/ 75 lb seed/A	0.125 PRPL	12.5 b	6248 a
Ridomil 2 EC/ 75 lb seed/A	0.187 PRPL	12.5 b	6500 a
Ridomil 2 EC 75 lb seed/A	0.25 PRPL	14.8 b	6177 a
Unsprayed/ 150 lb seed/A		24.0 a	6425 a
Ridomil 2 EC/ 150 lb seed/A	0.125 PRPL	29.0 a	5880 a
Ridomil 2 EC/ 150 lb seed/A	0.187 PRPL	26.0 a	6245 a
Ridomil 2 EC/ 150 lb seed/A	0.25 PRPL	28.0 a	6037 a
LSD (.05) =		5.8	730.7
Standard Dev. =		3.94	496.78
CV =		19.72	8.00

Means followed by same letter do not significantly differ (Duncan's MRT, P = .05).

1992 VARIETY TRIAL

Location: Rice Research Station, Crowley, LA

Soil Type: Crowley silt loam

Variety/Seed Rate: Various varieties and breeding lines, 3-4 gm/6 ft row

Planting Method/Date: Hege tray planter (drill-seeded), Apr 13

Emergence Date: Apr 20

Fertilization: Preplant 60-60-60, Apr 13; 120-0-0 preflood, May 8; 21-0-0, June 25

Plot Size: 3 - 6 ft rows

Water Management: Permanent flood, May 11

Herbicides: 4 qt Propanil, May 8; 1 oz/A Londax, June 5

Insecticides: 17 lb/A Furadan, May 12

Fungicides: None

Application Equipment: N/A

Inoculation Dates: Inoculated for sheath blight, June 3 (10-15 ml/row)

Drained: Aug 20

Harvest: N/A

Disease Ratings: Sheath blight and foliar disease data taken July 30-31; blast data taken Aug 3-13

Results: See Table 4.

Comments: Sheath blight and blast severity were very high; other diseases were moderate in severity.

Table 4. Reaction of rice varieties to sheath blight, narrow brown spot, leaf smut, and neck blast. Rice Research Station, Crowley, LA. 1992.

Variety	Sheath blight (0-9)	Leaf smut (0-9)	Brown spot (0-9)	Narrow brown spot (0-9)	Rotten-neck blast (%)
Alan	6.5 g-j	4.0 b-f	2.5 c-h	0.8 k-n	53.8 c-f
Texmont	8.5 ab	1.3 k-n	3.3 c-f	1.3 l-n	93.8 a
Maybelle	7.5 c-f	2.8 e-j	2.3 d-h	1.8 h-i	48.8 d-g
Jackson	7.8 b-e	2.5 f-k	2.0 e-h	1.5 h-m	37.5 f-l
Millie	6.0 i-l	1.8 i-l	1.8 fgh	1.0 j-n	20.0 l-m
Rosemont	8.0 a-d	2.0 h-k	4.0 abc	1.0 j-n	77.5 ab
RT7015	8.0 a-d	2.8 e-j	1.5 gh	1.3 l-n	63.8 b-d
Skybonnet	8.8 a	2.8 e-j	1.8 fgh	4.5 abc	20.0 l-m
Labelle	8.3 abc	3.3 d-i	2.0 e-h	4.0 bcd	13.8 k-m
Gulfmont	8.3 abc	4.3 a-e	3.0 c-g	4.0 bcd	32.5 g-k
Tebonnet	6.5 g-j	3.3 d-i	2.0 e-h	3.3 def	16.3 j-m
Lemont	8.5 ab	5.5 a	3.3 c-f	5.5 a	42.5 e-h
Lacassine	8.5 ab	2.3 g-k	5.3 a	1.5 h-m	60.0 b-e
Katy	5.5 kl	2.5 f-k	1.8 fgh	1.5 h-m	4.3 m
Cypress	7.3 d-g	3.3 d-i	2.3 d-h	1.3 l-n	11.3 lm
Newbonnet	6.5 g-j	3.5 c-h	2.0 e-h	2.3 f-j	22.5 l-m
Della	5.8 jkl	3.0 d-j	3.3 c-f	1.0 j-n	6.0 m
Dellmont	8.5 ab	5.5 a	2.3 d-h	5.0 ab	30.0 g-l

Continued.

Table 4. Continued.

Variety	Sheath blight (0-9)	Leaf smut (0-9)	Brown spot (0-9)	Narrow brown spot (0-9)	Rotten-neck blast (%)
V7817	7.0 e-h	0.3 mn	1.5 gh	0.0 n	21.3 l-m
Rexmont	8.8 a	2.5 f-k	2.5 c-h	3.8 cde	70.0 bc
Orion	5.3 l	3.3 d-l	2.8 c-h	1.8 h-l	2.8 m
Rico-1	6.3 h-k	3.8 c-g	3.5 b-e	1.0 j-n	5.3 m
Mars	5.8 jkl	4.5 a-d	1.8 fgh	3.0 d-g	10.0 lm
Mercury	6.5 g-j	5.3 ab	3.3 c-f	2.0 g-k	22.5 l-m
Saturn	5.3 l	4.0 b-f	4.8 ab	2.5 f-l	5.5 m
Bengal	5.8 jkl	3.0 d-j	2.8 c-h	0.8 k-n	11.3 lm
V4716	6.5 g-j	0.5 lmn	2.0 e-h	0.3 mn	28.8 h-l
Jasmine 85	2.8 m	0.0 n	2.8 c-h	0.0 n	2.8 m
Toro 2	7.5 c-f	1.5 j-m	1.3 h	1.3 l-n	12.5 k-m
URN 31	8.3 abc	4.0 b-f	3.3 c-f	1.5 h-m	36.3 f-j
URN 146	6.8 f-l	4.5 a-d	2.5 c-h	1.8 h-l	30.0 g-l
URN 168	7.0 e-h	3.5 c-h	2.5 c-h	0.5 lmn	12.5 k-m
URN 85	7.8 b-e	4.8 abc	3.8 bcd	2.8 e-h	28.8 h-l
URN 115	7.5 c-f	2.0 h-k	2.8 c-h	1.3 l-n	28.8 h-l
LSD (.05) =	0.8	1.2	1.3	1.1	16.6
Standard Dev.=	0.54	0.88	0.90	0.77	11.88
CV =	7.75	29.28	34.57	39.95	41.11

Means followed by same letter do not significantly differ (Duncan's MRT, P = .05). Ratings based on 0-9 scale where 0 = no disease (immune) and 9 = maximum disease (very susceptible).

1992 UNIFORM DISEASE NURSERY

Location: Rice Research Station, Crowley, LA

Soil Type: Crowley silt loam

Variety/Seed Rate: Various varieties and breeding lines, 3-4 gm/6 ft row, two (2) reps

Planting Method/Date: Hege tray planter (drill-seeded), Apr 13

Emergence Date: Apr 20

Fertilization: Preplant 60-60-60, Apr 13; 120-0-0 preflood, May 8; 21-0-0, June 25

Plot Size: 6 ft row

Water Management: Permanent flood, May 25

Herbicides: 4 qt Propanil, May 8; 1 oz/A Londax, June 5

Insecticides: 17 lb/A Furadan, May 12

Fungicides: None

Application Equipment: N/A

Inoculation Dates: Inoculated for sheath blight, June 3 (10-15 ml/row)

Drained: Aug 20

Harvest: N/A

Disease Ratings: Sheath blight and foliar disease data taken July 30-31; blast data taken Aug 3-13

Results: See Tables 5-11.

Comments: Sheath blight and blast severity were very high; other diseases were moderate in severity.

Table 5. Disease reactions of 1992 uniform rice nursery (URN), Group 1. Rice Research Station, Crowley, LA.

URN No.	Sheath Blight (0-9)	Brown Spot (0-9)	Leaf Smut (0-9)	Narrow Brown (0-9)	Leaf Blast (0-9)	Rotten Neck %
1	6.0	4.0	5.5	1.0	5	45
2	8.0	1.5	1.5	0.0	3	85
3	9.0	1.5	1.5	1.5	6	87
4	7.0	1.0	3.5	1.5	3	30
5	8.5	0.5	3.0	1.0	3	95
6	9.0	0.0	3.0	0.0	4	100
7	5.5	1.0	1.5	1.0	5	35
8	7.5	0.0	4.2	0.0	7	8
9	9.0	1.0	1.5	0.5	6	100
10	7.5	1.0	1.5	0.0	4	72
11	8.5	1.0	1.0	0.0	4	63
12	9.0	2.0	3.5	0.0	5	100
13	6.5	1.0	3.5	1.0	4	67
14	6.5	1.0	2.5	0.0	4	30
Alan	7.0	0.0	2.5	0.5	6	80
Texmont	9.0	0.5	1.5	0.5	6	100
Maybelle	8.5	0.5	2.0	1.5	5	87
Rosemont	9.0	1.0	1.5	2.0	6	95
Millie	7.0	3.0	2.5	0.5	4	23
Jackson	8.0	0.5	2.5	0.0	4	80

Table 6. Disease reactions of 1992 uniform rice nursery (URN), Group 2. Rice Research Station, Crowley, LA.

URN No.	Sheath Blight (0-9)	Brown Spot (0-9)	Leaf Smut (0-9)	Narrow Brown (0-9)	Leaf Blast (0-9)	Rotten Neck %
21	6.5	1.0	3.5	1.5	4	28
22	4.5	2.0	3.0	0.0	6	10
23	9.0	0.0	1.5	0.0	5	98
24	7.0	2.0	3.0	0.5	5	78
25	7.0	2.0	3.0	0.5	6	8
26	8.5	3.0	2.5	0.0	4	78
27	7.0	0.0	3.0	0.5	4	18
28	4.5	0.0	3.0	0.5	6	4
29	8.5	0.0	4.0	3.0	5	95
30	8.0	2.0	3.5	1.0	6	28
31	8.5	0.0	2.5	1.5	4	50
32	8.5	0.0	3.0	0.0	4	88
33	5.5	1.5	0.5	0.0	4	15
34	7.0	1.0	3.5	0.5	4	30
35	9.0	0.0	3.0	3.5	3	80
36	6.5	0.0	3.0	1.3	2	15
Orion	6.0	0.0	2.5	0.5	4	2
Bengal	4.5	1.5	1.5	0.0	7	8
Mars	6.0	0.5	4.0	0.0	7	10
Delmont	8.0	2.5	4.5	3.0	5	83

Table 7. Disease reactions of 1992 uniform rice nursery (URN), Group 3. Rice Research Station, Crowley, LA.

URN No.	Sheath Blight (0-9)	Brown Spot (0-9)	Leaf Smut (0-9)	Narrow Brown (0-9)	Leaf Blast (0-9)	Rotten Neck %
41	7.5	0.0	4.5	1.5	2	10
42	8.5	1.0	1.5	0.5	4	55
43	8.5	0.0	2.0	0.5	4	65
44	5.5	0.0	3.5	1.5	2	13
45	8.0	0.5	2.0	0.0	2	78
46	9.0	0.0	2.0	2.0	4	85
47	6.5	1.6	5.0	1.5	4	13
48	7.0	0.0	5.0	1.5	6	25
49	8.0	1.5	3.0	1.5	4	93
50	6.5	1.5	2.0	0.0	7	35
51	4.5	1.5	2.5	0.0	7	5
52	8.0	0.0	3.0	2.5	5	95
53	7.0	1.0	1.0	1.0	2	15
54	7.0	0.0	4.0	1.0	3	10
Lemont	8.0	1.0	3.5	2.0	4	95
Gulfmont	8.5	0.0	4.5	1.5	4	95
Lacassine	8.5	0.0	3.0	2.0	4	100
Katy	6.5	0.0	4.5	0.0	2	7
Cypress	8.0	0.0	5.0	0.0	5	40
Newbonnet	7.0	0.0	5.0	1.5	6	45

Table 8. Disease reactions of 1992 uniform rice nursery (URN), Group 4. Rice Research Station, Crowley, LA.

URN No.	Sheath Blight (0-9)	Brown Spot (0-9)	Leaf Smut (0-9)	Narrow Brown (0-9)	Leaf Blast (0-9)	Rotten Neck %
61	5.5	0.0	2.5	0.0	5	13
62	7.5	1.0	3.5	1.0	4	43
63	8.0	1.5	4.0	1.0	4	63
64	7.0	0.5	3.5	0.5	5	48
65	7.5	0.5	2.5	0.5	5	55
66	8.5	0.5	2.5	1.0	5	90
67	5.5	0.0	4.5	2.5	4	10
68	7.5	1.5	3.0	0.5	4	40
69	6.0	0.5	4.0	0.5	6	5
70	7.0	1.0	3.0	1.0	5	35
71	7.0	1.5	2.0	0.0	3	6
72	9.0	0.5	1.0	0.5	4	90
73	8.0	1.5	4.0	1.0	4	93
74	6.0	1.0	5.5	0.0	6	2
75	9.0	1.5	2.5	2.0	5	95
76	6.0	0.0	4.5	2.0	4	8
77	8.0	0.0	3.5	2.5	3	50
78	8.5	0.0	4.5	2.5	4	85
Rico-1	5.5	0.0	4.5	0.0	6	2
Toro-2	7.0	1.0	1.0	0.0	4	25

Table 9. Disease reactions of 1992 uniform rice nursery (URN), Group 5. Rice Research Station, Crowley, LA.

URN No.	Sheath Blight (0-9)	Brown Spot (0-9)	Leaf Smut (0-9)	Narrow Brown (0-9)	Leaf Blast (0-9)	Rotten Neck %
81	7.5	1.5	4.0	0.0	5	37
82	7.5	2.5	3.5	0.0	5	25
83	8.0	0.0	2.0	1.5	4	95
84	7.0	0.0	4.5	3.0	3	18
85	8.5	0.0	5.5	2.5	4	88
86	8.5	0.0	3.0	0.5	4	93
87	8.0	1.0	1.5	0.0	4	75
88	8.5	0.0	3.5	2.5	5	88
89	8.5	0.0	3.0	1.5	5	98
90	7.0	0.0	6.0	1.5	5	25
91	7.5	0.0	4.0	2.0	4	65
92	8.5	0.5	2.0	2.0	4	88
93	6.0	0.0	1.0	0.0	5	30
94	6.5	0.0	4.5	0.0	3	50
95	8.5	0.0	2.5	3.0	5	85
96	6.0	0.0	5.0	0.0	8	95
97	7.0	3.5	3.5	0.5	4	33
98	6.5	1.0	1.0	0.0	4	50
99	5.0	3.0	4.0	0.0	3	20
100	7.5	1.0	3.0	4.0	5	65
101	6.6	1.5	2.0	0.5	5	15
102	4.5	0.0	2.5	0.0	2	3
103	6.0	1.0	3.0	2.0	4	15
104	9.0	1.0	3.5	1.0	5	90
105	7.0	2.0	1.5	1.5	6	43
106	7.0	1.0	4.5	2.0	5	33
107	8.5	1.5	1.0	0.0	4	95
108	7.5	0.0	3.0	0.0	4	95
109	7.4	0.0	3.5	0.0	6	73
110	8.0	0.0	4.5	2.5	6	85
111	5.0	1.0	4.0	1.0	6	23
112	7.0	1.5	5.0	0.0	7	23
113	7.5	1.0	2.0	0.0	4	93
114	8.0	0.0	3.5	2.5	2	90
115	7.0	0.0	3.5	0.0	5	40
116	8.5	2.0	1.5	1.0	4	90
Skybonnet	8.5	0.5	4.5	1.0	4	33
Labelle	7.5	0.0	4.5	1.0	4	28
L203	7.5	1.0	2.0	0.0	7	80
Tebonnet	7.0	1.0	4.5	2.0	2	40

Table 10. Disease reactions of 1992 uniform rice nursery (URN), Group 6. Rice Research Station, Crowley, LA.

URN No.	Sheath Blight (0-9)	Brown Spot (0-9)	Leaf Smut (0-9)	Narrow Brown (0-9)	Leaf Blast (0-9)	Rotten Neck %
121	7.0	1.0	4.5	1.0	4	70
122	5.0	0.5	2.5	0.0	4	10
123	8.0	0.0	2.5	0.0	5	95
124	8.0	0.0	4.5	1.0	5	68
125	3.5	2.0	0.0	0.0	2	5
126	8.0	0.5	1.5	0.5	5	68
127	6.5	0.0	3.5	0.0	5	23
128	7.0	0.0	4.0	0.0	6	4
129	7.5	0.0	3.5	0.5	6	38
130	7.5	0.5	5.0	0.5	5	90
131	4.5	1.0	3.5	1.0	6	25
132	8.0	0.5	1.5	0.0	6	65
133	6.5	0.0	3.5	0.0	5	40
134	3.0	1.5	4.5	0.0	6	4
135	8.0	0.0	4.5	0.0	4	80
136	7.5	1.5	4.0	1.5	5	98
137	4.0	2.0	2.5	0.0	3	5
138	9.0	0.0	4.0	1.0	5	100
139	7.5	0.0	2.0	1.0	4	78
140	5.5	1.0	1.0	0.5	4	10
141	8.0	0.0	2.5	0.5	3	100
142	6.0	1.0	3.0	0.0	5	53
143	5.5	0.0	4.0	0.5	5	40
144	8.0	1.0	2.0	0.5	4	85
145	7.0	0.5	1.5	0.0	2	13
146	3.5	0.5	3.0	0.0	3	6
147	8.0	1.0	2.5	0.0	4	98
148	7.0	1.5	2.5	0.5	4	68
149	6.5	0.0	5.0	0.0	1	10
150	8.0	1.5	4.5	0.0	2	70
151	7.0	0.0	4.0	0.0	4	30
152	5.5	1.0	3.0	0.0	5	13
153	8.0	0.0	3.5	0.0	4	90
154	6.0	0.0	1.0	0.0	3	28
155	4.5	0.0	4.0	0.0	5	6
156	6.5	0.5	3.0	0.0	6	68
Mercury	7.0	0.0	4.0	0.0	6	63
Rexmont	8.5	0.5	3.0	2.5	5	95
Della	4.5	0.5	2.0	1.0	5	4
Lebonnet	7.5	0.0	3.5	1.0	4	78

Table 11. Disease reactions of 1992 uniform rice nursery (URN), Group 7. Rice Research Station, Crowley, LA.

URN No.	Sheath Blight (0-9)	Brown Spot (0-9)	Leaf Smut (0-9)	Narrow Brown (0-9)	Leaf Blast (0-9)	Rotten Neck %
161	7.0	1.0	1.5	1.5	4	68
162	6.0	0.0	1.0	0.5	4	18
163	3.5	0.0	0.0	0.0	3	4
164	6.5	0.0	2.5	1.5	4	28
165	6.0	0.0	2.5	0.5	5	33
166	4.5	1.0	0.0	0.0	3	4
167	7.5	0.0	2.0	1.0	4	70
168	6.0	2.5	3.5	0.5	6	35
169	6.0	0.0	0.5	0.5	3	4
170	8.0	0.0	1.0	0.0	4	70
171	4.5	1.5	2.0	1.0	2	8
172	7.0	0.0	1.5	1.0	5	80
173	7.5	0.0	4.0	0.5	5	80
174	8.0	0.0	3.5	0.0	4	40
175	4.4	0.0	0.0	0.5	3	2
176	7.0	0.0	5.0	0.0	3	25
177	8.0	0.0	5.0	2.5	4	95
178	5.0	1.0	0.0	0.0	3	2
179	7.0	1.5	3.5	1.0	-	13
180	6.5	2.0	2.0	0.5	4	20
181	3.0	0.4	0.0	0.0	3	2
182	7.0	1.0	3.5	1.5	6	65
183	7.5	0.5	4.0	1.5	4	73
184	4.0	1.0	0.0	0.0	3	2
185	7.5	0.0	3.0	3.0	3	90
186	6.5	0.0	4.0	0.5	5	33
187	4.5	2.0	1.5	0.0	3	2
188	7.0	1.0	0.5	0.0	6	58
189	6.5	0.0	4.0	1.0	5	10
190	8.0	0.0	3.5	1.5	5	85
191	7.0	0.0	4.5	1.5	2	10
192	3.0	1.0	0.0	0.0	3	2
193	6.5	0.0	0.5	1.0	5	45
194	7.0	0.0	5.0	1.0	5	93
195	8.5	3.5	1.0	0.0	4	93
196	8.5	2.0	4.0	0.0	4	93
Jasmine 85	2.5	0.5	0.0	1.0	3	2
A-301	4.5	0.5	0.0	0.5	7	8
Gui Chow	3.0	3.3	0.0	0.0	3	4
Teqing	2.5	0.5	0.0	0.0	4	4

1992 FOLIAR DISEASE FUNGICIDE TRIAL

Location: Rice Research Station, Crowley, LA

Soil Type: Crowley silt loam

Variety/Seed Rate: Lemont, 110 lb/A

Planting Method/Date: Kincaid cone planter (drill-seeded), Apr 22

Emergence Date: Apr 29

Fertilization: Preplant 25-75-75, Apr 21; 120-0-0, May 19

Plot Size: 4 x 16 ft

Water Management: Permanent flood, May 20

Herbicides: 4 qt/A Propanil, May 8; 1 oz/A Londax, May 26; Ordram 20 lb/A, May 27

Insecticides: Furadan 17 lb/A, May 27 and June 10

Fungicides: Applied at panicle differentiation (PD), Jun 22; PD + 7 days, July 29; boot (B), Jul 1; and heading (H), Jul 17 to foliage

Application Equipment: CO_2 backpack sprayer, 8002 tips, 15 gal/A

Inoculation Dates: Inoculated for sheath blight, June 15 (100 ml/plot)

Drained: Aug 4

Harvest: Aug 18

Experimental Design: Randomized block design with four replications

Disease Ratings: Sheath blight severity (0-9), July 31 (milk stage) and Aug 17 (maturity); sheath blight infestation levels (percent tillers infected), leaf smut (0-9), sheath rot (0-9), and narrow brown leaf spot (0-9) severities, Aug 17; Percent rotten neck blast, Aug 14

Results: See Tables 12 and 13.

Comments: Sheath blight severity was high; other diseases were moderate. Treatments with Benlate delayed maturity of second crop, and yields were reduced due to cold weather during heading of second crop.

Table 12. Effects of rice foliar fungicides on sheath blight, blast, leaf smut, narrow brown leaf spot, sheath rot control, and rice yield. Rice Research Station, Crowley, LA. 1992.

Treatment	Rate	Timing[1]	Sheath blight Severity (0-9) July 31	Sheath blight Severity (0-9) Aug 17	Sheath blight Tillers infected (%)	Rotten neck blast (%)	Leaf smut (0-9)	Narrow brown (0-9)	Sheath rot (0-9)	Yield (lb/A)
Inoculated unsprayed check			6.8 ab	8.0 a	76.5 ab	13.8 a-g	4.5 abc	2.8 ab	3.8 abc	5616.5 p
Uninoculated unsprayed check			5.0 c-f	6.0 c-g	27.5 j-p	16.3 a-e	4.8 ab	3.0 a	4.0 ab	5736.0 op
Benlate 50 WP	0.5 lb al/A	B+H	4.8 d-g	6.3 b-f	65.0 a-f	7.5 e-i	3.5 c-g	2.0 a-e	2.8 a-e	6793.8 a-g
Benlate 50 WP	1.0 lb al/A	B+H	4.5 d-h	5.8 c-g	59.0 a-h	3.5 i	3.3 d-h	1.8 b-f	3.0 a-e	6263.2 e-p
Benlate 50 WP	0.5 lb al/A	PD+B	6.0 bc	7.5 ab	68.0 a-d	7.3 f-i	4.5 abc	2.8 ab	2.8 a-e	6651.0 a-j
Moncut 50 WP	0.35 lb al/A	PD+B	3.5 h	5.3 e-i	18.5 m-p	14.3 a-g	2.8 fgh	1.8 b-f	2.8 a-e	6347.5 c-o
Moncut 50 WP	0.35 lb al/A	B	4.3 e-h	5.0 f-i	37.0f-p	17.5 a-d	3.3 d-h	2.0 a-e	3.0 a-e	5987.3 j-p
Moncut 50 WP	0.50 lb al/A	B	4.3 e-h	5.3 e-i	28.0 j-p	16.3 a-e	3.0 e-h	1.8 b-f	3.8 abc	5896.2 m-p
Moncut 50 WP	0.70 lb al/A	B	3.8 gh	4.3 hij	16.5 nop	17.5 a-d	2.8 fgh	2.5 abc	3.0 a-e	5795.3 nop
Moncut 70 WG	0.35 lb al/A	PD+B	4.0 fgh	5.0 f-i	26.5 j-p	18.0 abc	2.5 ghi	1.8 b-f	3.0 a-e	6274.3 e-p
Tilt 3.6 EC	6 oz pr/A	PD+B	6.5 ab	7.0 abc	64.5 a-f	16.3 a-e	2.5 ghi	1.5 c-f	3.0 a-e	6214.5 e-p
Tilt 3.6 EC	10 oz pr/A	B	5.0 c-f	6.8 bcd	42.5 c-o	11.3 b-i	1.5 ij	1.5 c-f	1.8 e	6621.3 a-k
Tilt 3.6 EC Benlate 50 WP	10 oz pr/A 1 lb pr/A	B H	4.5 d-h	5.8 c-g	32.5 g-p	12.5 a-h	1.0 jk	1.0 ef	2.0 de	7016.8 abc

Continued.

Table 12. Continued.

Treatment	Rate	Timing[1]	Sheath blight Severity (0-9) July 31	Sheath blight Severity (0-9) Aug 17	Sheath blight Tillers infected (%)	Rotten neck blast (%)	Leaf smut (0-9)	Narrow brown (0-9)	Sheath rot (0-9)	Yield (lb/A)
Rovral 4 SC	0.5 lb al/A	B+H	4.5 d-h	6.0 c-g	39.0 e-o	16.3 a-e	4.0 a-e	2.8 ab	2.3 cde	6040.2 h-p
Rovral 4 SC CS-7 8.33 EC	0.5 lb al/A 0.5% v/v	B+H B+H	4.5 d-h	6.0 c-g	33.0 g-p	11.3 b-i	3.5 c-g	2.8 ab	2.5 b-e	6180.8 f-p
Rovral 50 WG	0.5 lb al/A	B+H	5.0 c-f	6.3 b-f	34.5 b-j	11.3 b-i	3.3 d-h	2.0 a-e	2.5 b-e	6151.0 g-p
Rovral 50 WG CS-7 8.33 EC	0.5 lb al/A 0.5% v/v	B+H B+H	4.3 e-h	6.3 b-f	60.0 a-g	9.3 c-i	4.5 abc	3.0 a	2.3 cde	6132.3 g-p
Rovral 4 SC Kinetic	0.5 lb al/A 0.5% v/v	B+H B+H	4.5 d-h	6.0 c-g	54.5 b-j	5.5 ghl	4.0 a-e	2.5 abc	3.8 abc	6280.5 e-p
Rovral 4 SC Kinetic Benlate 50 WP	0.5 lb al/A 0.5% v/v 0.5 lb al/A	B B H	4.8 d-g	6.5 b-e	66.0 a-e	6.0 ghl	3.8 b-f	2.5 abc	3.0 a-e	6872.0 a-e
Bromuconazole 1.67 SC	0.18 lb al/A	B+H	5.3 cde	6.3 b-f	47.0 c-l	8.0 e-i	0.0 k	0.8 f	3.8 abc	6582.0 a-l
Bromuconazole 1.67 SC	0.22 lb al/A	B+H	5.0 c-f	6.0 c-g	41.0 d-o	7.3 f-i	0.3 k	1.0 ef	2.3 cde	6666.0 a-j
Bromuconazole 1.67 SC	0.27 lb al/A	B+H	4.8 d-g	6.0 c-g	51.5 b-k	7.3 f-i	0.0 k	1.0 ef	2.8 a-e	6872.0 a-e
Bromuconazole 1.67 SC Ortho X-77 8.33 EC	0.18 lb al/A 0.125% v/v	B+H B+H	5.3 cde	6.0 c-g	51.5 b-k	8.0 e-i	0.0 k	1.0 ef	3.0 a-e	6650.0 a-j
Bromuconazole 1.67 SC Rovral 4 SC	0.18 lb al/A 0.5 lb al/A	B+H B+H	3.8 gh	5.8 c-g	24.5 k-p	8.0 e-i	0.3 k	1.0 ef	2.8 a-e	6859.8 a-f
Bromuconazole 1.67 SC Rovral 4 SC	0.18 lb al/A 0.36 lb al/A	B+H B+H	4.3 e-h	5.5 d-h	44.5 c-n	4.3 hi	0.0 k	1.0 ef	2.5 b-e	6626.0 a-k

Continued.

Table 12. Continued.

Treatment	Rate	Timing[1]	Sheath blight Severity (0-9) July 31	Sheath blight Severity (0-9) Aug 17	Sheath blight Tillers infected (%)	Rotten neck blast (%)	Leaf smut (0-9)	Narrow brown (0-9)	Sheath rot (0-9)	Yield (lb/A)
Rovral 4 SC CS-7	0.5 lb al/A 0.5% v/v	B+H B+H	4.8 d-g	6.5 b-e	46.0 c-m	8.8 d-i	3.5 c-g	2.3 a-d	2.5 b-e	5998.0 j-p
EXP 01712B 50 WP CS-7	0.75 lb al/A 0.5% v/v	B+H B+H	5.0 c-f	7.0 abc	83.0 a	6.8 f-i	3.5 c-g	2.0 a-e	2.8 a-e	6693.3 a-l
EXP 01712B 50 WP CS-7	1.0 lb al/A 0.5% v/v	B+H B+H	4.5 d-h	6.5 b-e	54.0 b-j	3.5 l	3.3 d-h	2.0 a-e	2.8 a-e	6968.5 a-d
EXP 10388A 33 WP CS-7	0.66 lb al/A	B+H	4.5 d-h	5.5 d-h	45.0 c-m	5.5 ghl	3.5 c-g	1.8 b-f	2.3 cde	6718.6 a-h
EXP 10388A 33 WP CS-7	0.99 lb al/A	B+H	3.8 gh	4.8 g-j	20.5 l-p	3.5 l	3.5 c-g	1.0 ef	2.3 cde	7189.5 ab
EXP 10388A 33 WP CS-7	1.32 lb al/A	B+H	4.0 fgh	4.3 hlj	22.5 l-p	3.5 l	3.0 e-h	1.5 c-f	2.8 a-e	7220.5 a
MON24001 50 WG MON24001 50 WG	0.125 lb al/A 0.094 lb al/A	PD Boot	4.3 e-h	4.8 g-j	31.0 h-p	15.5 a-f	3.0 e-h	1.3 def	2.5 b-e	5849.3 m-p
MON24001 50 WG	0.125 lb al/A	PD+7 One trt	4.5 d-h	6.3 b-f	37.5 f-p	17.5 a-d	3.5 c-g	1.5 c-f	3.0 a-e	6185.5 f-p
MON24001 50 WG	0.188 lb al/A	PD+7 One trt	4.8 d-g	5.8 c-g	32.5 g-p	12.5 a-h	3.5 c-g	2.0 a-e	3.0 a-e	6253.8 e-p
MON24001 50 WG	0.250 lb al/A	PD+7 One trt	4.3 e-h	5.5 d-h	29.5 j-p	13.8 a-g	3.3 d-h	2.0 a-e	3.3 a-e	5927.3 i-p
MON24001 50 WG Benlate 50 WP	0.250 lb al/A 0.5 lb al/A	PD+7 One trt Head	4.3 e-h	5.3 e-i	37.0 f-p	8.8 d-i	3.3 d-h	1.5 c-f	2.5 b-e	6750.0 a-g
MON24001 50 WG	0.125 lb al/A	Boot	4.3 e-h	5.3 e-i	33.5 g-p	21.3 a	3.0 e-h	2.5 abc	2.3 cde	6405.0 c-o

Continued.

Table 12. Continued.

Treatment	Rate	Timing[1]	Sheath blight Severity (0-9) July 31	Sheath blight Severity (0-9) Aug 17	Sheath blight Tillers Infected (%)	Rotten neck blast (%)	Leaf smut (0-9)	Narrow brown (0-9)	Sheath rot (0-9)	Yield (lb/A)
MON24001 50 WG MON24017 50 WP	0.250 lb al/A 0.188 lb al/A	Boot PD+7 One trt	3.8 gh	4.0 lj	9.5 p	17.5 a-d	2.8 fgh	2.0 a-e	2.5 b-e	6244.5 e-p
Monceren 75 WP	0.25 lb al/A	B+H	3.8 gh	3.8 j	14.8 op	17.5 a-d	4.5 abc	2.5 abc	3.5 a-d	5981.8 j-p
Moncut 50 WP Benlate 50 WP	0.35 lb al/A 0.5 lb ai/A	B H	3.8 gh	4.8 g-j	31.0 h-p	4.3 hi	2.3 hi	2.0 a-e	3.0 a-e	6805.8 a-g
Rovral 4 SC	0.5 lb al/A	PD+B	5.0 c-f	7.0 abc	58.5 a-l	14.3 a-g	3.8 b-f	2.8 ab	3.0 a-e	6283.3 d-p
Rovral 4 SC Benlate 50 WP	0.5 lb al/A 0.5 lb al/A	B H	5.5 cd	6.5 b-e	59.0 a-h	6.8 f-l	3.5 c-g	1.3 def	3.0 a-e	6656.5 a-j
Tilt 3.6 EC	10 oz pr/A	PD	6.5 ab	7.5 ab	79.0 ab	18.8 ab	2.8 fgh	2.0 a-e	3.0 a-e	5952.0 k-p
SAN 619 0.83 EC	1 pt pr/A	PD+B	4.0 fgh	5.0 f-l	30.5 l-p	8.5 e-l	2.3 hl	2.5 abc	3.5 a-d	6508.5 b-m
Benlate 50 WP	1 lb pr/A	H	5.5 cd	6.5 b-e	69.0 a-d	4.3 hi	3.8 b-f	2.3 a-d	3.3 a-e	6446.3 c-n
Benlate 50 WP MON24017 50 WP	1 lb pr/A 0.125 lb al/A	PD+B PD+B	3.5 h	4.3 hlj	18.0 m-p	10.0 b-l	2.5 ghl	2.5 abc	2.3 cde	6983.3 abc
Benlate 50 WP	1.5 lb pr/A	H	5.5 cd	6.5 b-e	75.5 ab	6.8 f-l	3.8 b-f	2.0 a-e	3.0 a-e	6633.0 a-k
Rovral 4 SC	1 pt pr/A	H	5.5 cd	6.5 b-e	63.5 a-f	11.3 b-l	4.3 a-d	2.5 abc	2.5 b-e	6018.3 l-p

Continued.

Table 12. Continued.

Treatment	Rate	Timing[1]	Sheath blight Severity (0-9) July 31	Sheath blight Severity (0-9) Aug 17	Sheath blight Tillers infected (%)	Rotten neck blast (%)	Leaf smut (0-9)	Narrow brown (0-9)	Sheath rot (0-9)	Yield (lb/A)
Inoculated unsprayed check			7.0 a	7.5 ab	70.0 abc	10.0 b-i	5.0 a	3.0 a	4.3 a	5617.5 p
Uninoculated check			3.5 h	4.8 g-j	33.0 g-p	13.8 a-g	4.5 abc	3.0 a	3.8 abc	6459.0 c-n
LSD (.05)	=		0.9	1.0	23.0	7.1	1.0	0.9	1.2	552.9
Standard Dev.	=		0.62	0.74	16.41	5.11	0.71	0.64	0.88	394.9
CV	=		13.27	12.70	37.08	47.44	23.78	32.23	30.51	6.17

Means followed by same letter do not significantly differ (Duncan's MRT, P = .05).

[1] PD = panicle differentiation (June 22); PD+7 = 7 days after PD (June 29); B = boot (July 1), and H = heading (July 17).

Table 13. Effects of selected rice foliar fungicides on rice yield increases, milling yields, and second crop yields. Rice Research Station, Crowley, LA. 1992.

Treatment	Rate	Timing	First Crop Yield Increase (lb/A)	First Crop Whole Milling (%)	First Crop Total Milling (%)	First Crop Whole Rice (lb/A)	Second Crop Yield (lb/A)
Inoculated CK			0 p	48.0 gh	65.8 fg	2696	1305
Benlate 50 WP	0.5 lb al/A	B+H	1179 a-g	55.0 ac	67.9 a-d	3737	1008
Moncut 50 WP	0.35 lb al/A	PD+B	730 c-o	51.0 d-g	66.5 def	3237	1427
Moncut 50 WP	0.50 lb al/A	B	279 m-p	47.5 h	64.6 g	2801	1623
Moncut 70 WG	0.35 lb ai/A	PD+B	657 e-p	51.8 c-f	66.5 def	3250	1612
Tilt 3.6 EC	6 oz pr/A	PD+B	597 e-p	50.5 e-h	66.8 c-f	3139	1666
Tilt 3.6 EC	10 oz pr/A	B	1004 a-k	51.8 c-f	66.6 def	3430	1512
Tilt 3.6 EC Benlate 50 WP	10 oz pr/A 1 lb pr/A	B H	1399 abc	55.9 ab	68.7 ab	3950	1216
Rovral 4 SC	0.5 lb ai/A	B+H	423 h-p	49.4 e-h	65.9 fg	2984	1634
Bromuconazole 1.67 SC	0.27 lb ai/A	B+H	1255 a-e	54.5 a-c	68.0 abc	3718	1569
Bromuconazole 1.67 SC Rovral 4 SC	0.18 lb ai/A 0.5 lb al/A	B+H B+H	1243 a-f	54.2 a-c	67.2 bcd	3718	1408
EXP 01712B 50 WP CS-7	1.0 lb ai/A 0.5% v/v	B+H B+H	1352 a-d	56.7 a	68.5 ab	3951	1148
EXP 10388A 33 WP CS-7	1.32 lb al/A	B+H	1604 a	56.6 a	68.7 a	4087	1175
MON24001 50 WG	0.25 lb al/A	PD+7	310 l-p	48.9 fgh	65.9 fg	2898	1705
Moncut 50 WP Benlate 50 WP	0.35 lb al/A 0.5 lb ai/A	B H	1188 a-g	55.3 ab	68.2 abc	3764	1303
Rovral 4 SC Benlate 50 WP	0.5 lb al/A 0.5 lb ai/A	B H	1040 a-j	54.4 a-c	67.8 abc	3621	1223
SAN 619 0.83 EC	1 pt pr/A	PD+B	891 b-m	52.6 b-d	66.8 cde	3424	1293
Benlate 50 WP MON24017 50 WP	0.5 lb ai/A 0.13 lb ai/A	PD+B PD+B	1366 abc	55.6 ab	68.1 abc	3883	1262
LSD (.05) =			553	2.9	1.3		331
Standard Dev. =			394.9	2.1	0.89		236
CV =			-------	4.0	1.34		16.76

Means followed by same letter do not significantly differ (Duncan's MRT, P = .05).

[1] PD = panicle differentiation (June 22); PD+7 = 7 days after PD (June 29); B = boot (July 1), and H = heading (July 17).

1992 BLAST FUNGICIDE TRIAL

Location: Rice Research Station, Crowley, LA

Soil Type: Crowley silt loam

Variety/Seed Rate: M201, 120 lb/A

Planting Method/Date: Kincaid cone planter (drill-seeded), Apr 22

Emergence Date: Apr 29

Fertilization: Preplant 25-75-75, Apr 21; 90-0-0, May 19

Plot Size: 4 x 16 ft

Water Management: Permanent flood, May 20

Herbicides: 4 qt Propanil /A, May 8; 1 oz/A Londax, May 26;
Ordram 20 lb/A, May 27

Insecticides: Furadan 17 lb/A, May 27 and June 10

Fungicides: Boot (B), June 26; Heading (H), July 7

Application Equipment: CO_2 backpack sprayer, 8002 tips, 15 gal/A

Drained: July 30

Harvest: Aug 10

Experimental Design: Randomized block design with four replications

Disease Ratings: Blast data taken, July 31 (maturity stage)

Results: See Table 14.

Comments: Blast severity was high; other diseases were low.

Table 14. Effect of fungicides on rotten neck blast control and rice yield on the variety M201. Rice Research Station, Crowley, LA, 1992.

Treatment	Rate	Timing[1]	Rotten neck blast (%)	Sterility (%)	Yield (lb/A)	Change from check (lb/A)
Unsprayed check			100.0 a	32.5 a	1705.0 h	0.0 h
Benlate 50 WP	0.50 lb ai/A	B+H	77.0 ef	15.0 def	2845.5 bcd	1140.5 bcd
Benlate 50 WP	1.00 lb ai/A	B+H	53.0 g	10.0 f	3529.3 a	1824.3 a
Benlate 50 WP	0.50 lb ai/A	H	90.5 a-e	17.5 c-f	2568.3 b-f	863.3 b-f
Benlate 50 WP	0.75 lb ai/A	H	76.0 f	20.0 b-e	2621.0 b-f	916.0 b-f
Benlate 50 WP	1.00 lb ai/A	H	76.0 f	17.5 c-f	2529.0 c-g	824.0 c-g
EXP 01712B 50 WP	0.75 lb ai/A	B+H	93.5 a-d	20.0 b-e	2593.5 b-f	888.5 b-f
EXP 01712B 50 WP	1.00 lb ai/A	B+H	87.5 a-f	17.5 c-f	2174.0 d-h	469.0 d-h
EXP10388A 50 WP	0.66 lb ai/A	B+H	95.0 a-d	20.0 b-e	2374.3 c-h	669.3 c-h
EXP10388A 50 WP	0.99 lb ai/A	B+H	94.0 a-d	20.0 b-e	2791.3 b-e	1086.3 b-e
EXP10388A 50 WP	1.32 lb ai/A	B+H	85.0 b-f	15.0 def	2834.8 b-e	1129.8 b-e
Bromuconazole 1.67 SC	0.18 lb ai/A	B+H	96.0 abc	25.0 bc	2174.0 d-h	469.0 d-h
Bromuconazole 1.67 SC	0.22 lb ai/A	B+H	98.5 ab	20.0 b-e	1951.0 fgh	246.0 fgh
Bromuconazole 1.67 SC Rovral 4 SC	0.18 lb ai/A 0.50 lb ai/A	B+H B+H	96.0 abc	20.0 b-e	2247.5 c-h	542.5 c-h
Bromuconazole 1.67 SC Rovral 4 SC	0.18 lb ai/A 0.36 lb ai/A	B+H B+H	97.5 ab	20.0 b-e	2555.3 c-g	850.3 c-g
Bromuconazole 1.67 SC Ortho X-77 8.33 EC	0.18 lb ai/A 0.125% v/v	B+H B+H	96.5 ab	22.5 bcd	2407.8 c-g	702.8 c-g
Bromuconazole 1.67 SC	0.27 lb ai/A	B+H	97.0 ab	22.5 bcd	1862.5 gh	157.5 gh
PCC514 SC	1.70 pt pr/A	B+H	95.5 abc	17.5 c-f	2127.3 e-h	422.3 e-h
PCC514 SC	2.60 pt pr/A	B+H	82.0 c-f	15.0 def	2907.3 bc	1202.3 bc
PCC514 SC	1.70 pt pr/A	H	95.5 abc	22.5 bcd	2287.0 c-h	582.0 c-h
PCC514 SC	2.60 pt pr/A	H	90.5 a-e	17.5 c-f	2602.3 b-f	897.3 b-f
Beam 75 WP	0.25 lb ai/A	B+H	53.0 g	12.5 ef	2820.5 b-e	1115.5 b-e
MON24017 50 WP Benlate 50 WP	0.125 lb ai/A 0.50 lb ai/A	B+H B+H	81.0 def	12.5 ef	3254.0 ab	1549.0 ab
LSD (.05) =			12.0	6.7	586.1	586.1
Standard Dev. =			8.48	4.72	414.43	
CV =			9.67	24.66	16.52	

[1] B = boot (July 1) and H = heading (July 17).
Means followed by same letter do not si grifi cantly differ (Duncan's MRT, P = .05).

1992 AERIAL FUNGICIDE TRIALS -- Location 1

Location: Brian Leonards Farm, Crowley, LA

Soil Type: Crowley silt loam

Variety: Maybelle

Planting Method: Dry broadcast

Plot Size: 5-20 acres

Fungicides: Applied at heading June 16

Application Equipment: Commercial aircraft

Inoculation Dates: All natural inoculum

Harvest: July 17, 1.0 m^2 hand harvested

Disease Ratings: Sheath blight severity (0-9), sheath blight infestation levels (Percent tillers infected), leaf smut (0-9), brown spot (0-9) and narrow brown leaf spot (0-9) severities, July 17 at maturity

Results: See Table 15.

Comments: Sheath blight severity was high; other diseases were low. Yield estimates were very close to whole field yield levels.

Table 15. Aerial application of Rovral brand fungicide on disease control and rice yield of variety Maybelle. Brian Leonard's Farm, Crowley, LA. 1992.

Treatment	Rate	Timing	Sheath blight (0-9)	Sheath blight (% tillers)	Leaf smut (0-9)	Brown spot (0-9)	Narrow brown (0-9)	Yield (lb/A)
Untreated check			6.8 a	56.0 a	1.8 a	3.5 a	1.3 a	5321.8 b
Rovral 4 SC	1 pt/A	Heading	4.5 b	35.8 a	1.0 a	1.0 b	0.5 a	6341.5 a
Rovral 4 SC Kinetic	1 pt/A	Heading	5.3 ab	37.8 a	1.3 a	1.0 b	1.3 a	6222.3 a
LSD (.05) =			1.9	20.0	1.0	1.2	1.1	817.6
Standard Dev. =			1.17	12.51	0.62	0.74	0.71	511.19
CV =			21.43	28.99	46.77	40.66	70.71	8.57

Means followed by same letter do not significantly differ (Duncan's MRT, P = .05)

1992 AERIAL FUNGICIDE TRIALS -- Location 2

Location: Hundley Farm, Crowley, LA

Variety: Gulfmont

Planting Method: Water seeded by plane

Plot Size: 5-20 acres

Fungicides: Boot and heading

Application Equipment: Commercial aircraft

Inoculation Dates: All natural inoculum

Harvest: Aug 7, 1.0 m^2 hand harvested

Disease Ratings: Sheath blight severity (0-9), sheath blight infestation levels (Percent canopy covered with symptoms), blast (percent rotten neck), leaf smut (0-9), and brown spot (0-9) severities, Aug 7 at maturity

Results: See Table 16.

Comments: Sheath blight and blast severities were high; other diseases were low. Variation was high within the field. Yield estimates were lower than actual combined harvested yield.

Table 16. Effects of aerial application of Rovral, Tilt, and Benlate fungicides on disease control and rice yield of variety Gulfmont. Hundley Farm, Crowley, LA. 1992.

Treatment	Rate	Timing	Sheath blight (0-9)	Sheath blight canopy	Neck blast (%)	Leaf smut (0-9)	Brown spot (0-9)	Yield (lb/A)
Unsprayed		Boot	7.3 a	50.0 a	28.8 a	4.8 a	3.0 ab	4317.8 a
Benlate 50 WP	1 lb pr/A	Head						
Rovral 4 SC	1 pt pr/A	Boot	5.5 ab	25.0 b	21.3 a	4.8 a	2.0 b	4083.8 a
Benlate 50 WP	1 lb pr/A	Head						
Tilt 3.6 EC	10 oz pr/A	Boot	5.0 b	15.0 b	16.3 a	0.3 b	3.5 a	4906.0 a
Benlate 50 WP	1 lb pr/A	Head						
LSD (.05) =			1.8	11.9	17.7	0.8	1.2	1005.0
Standard Dev. =			1.14	7.45	11.08	0.5	0.74	628.34
CV =			19.31	24.85	50.20	15.38	26.31	14.17

Means followed by same letter do not significantly differ (Duncan's MRT, P=.05)

1992 RICE SEED PROTECTANT TEST

Location: Rice Research Station, Crowley, LA

Soil Type: Crowley silt loam

Variety/Seed Rate: 100 seeds/plot

Planting Method/Date: Hege tray planter (drill-seeded); by hand for water seeded; first planting, Mar 21; second planting, Apr 29

Fertilization: Preplant 25-75-75, Mar 24 (1st) and Apr 21 (2nd)

Plot Size: 6 ft rows (drill seeded) and 2.5 ft dia rings (water seeded)

Herbicides: First planting: 3 qt Arrosolo, Apr 21; Londax 4 oz/A, May 1
Second planting: 3 qt Propanil + 1 qt Basagran/A; 1 oz/A Londax, May 7

Insecticides: 17 lb/A Furadan, May 27

Fungicides: Applied to seeds (See Table 10 for rates)

Application Equipment: Rolling jar mixer

Harvest: N/A

Experimental Design: Randomized block design with five replications

Stand counts: Apr 20 and May 4

Results: See Table 17.

Comments: Water mold pressure was high in water-seeded rice at both planting dates.

Table 17. Effect of seed-protectant fungicides on percent (%) germination in water- and drill-seeded rice at two planting dates. Rice Research Station, Crowley, LA. 1992.

Treatment	Rate	March 21 planting			April 29 planting		
		Water seeded			Water seeded		
		Soaked seed	Dry seed	Drill seeded	Soaked seed	Dry seed	Drill seeded
Untreated check		24.4 cde	26.6 cd	35.2 d	16.5 b	20.4 d	59.8 cd
Vitavax 200 SC	4 oz pr/cwt	28.4 bcd	32.0 bc	51.4 ab	26.6 ab	37.8 abc	68.6 abc
Thiram 42 SC	3.3 oz pr/cwt	31.8 b	30.4 bcd	44.6 bc	36.4 ab	39.8 ab	65.8 a-d
Vitavax 200 SC PG-19 G/100 lb	4 oz pr/cwt 10 lb ai/cwt	21.2 e	24.2 d	45.0 bc	27.0 ab	26.6 cd	70.8 a
Vitavax 200 SC PG-19 G/100 lb	4 oz pr/cwt 6 lb ai/cwt	27.2 b-e	27.8 cd	54.0 a	26.6 ab	37.4 abc	68.4 abc
LI-305609	200 mg ai/L	23.8 de	29.6 bcd	44.8 bc	22.0 ab	29.0 bcd	61.2 bcd
Benlate 50 DF	4 oz pr/cwt	28.6 bcd	31.6 bc	43.4 bc	18.2 b	19.2 d	57.8 d
Dithane 75 DF	4.3 oz pr/cwt	30.6 bc	27.4 cd	48.6 ab	32.4 ab	40.2 ab	69.6 ab
Champ Flowable	8 oz pr/cwt	39.4 a	38.6 a	45.8 abc	41.9 a	45.6 a	64.2 a-d
Champ Flowable GibGro G/100 lb	8 oz pr/cwt 5 lb ai/cwt	38.6 a	35.4 ab	38.0 cd	28.3 ab	39.4 ab	64.8 a-d
LSD (.05) =		6.1	5.9	7.8	19.7	10.8	8.2
Standard Dev. =		4.68	4.60	6.01	15.22	8.38	6.34
CV =		15.94	15.16	13.35	55.18	25.01	9.74

Means followed by same letter do not significantly differ (Duncan's MRT, P=.05)

1992 SEED COATING/PROTECTANT TEST

Location: Rice Research Station, Crowley, LA

Soil Type: Crowley silt loam

Variety/Seed Rate: 100 seeds/plot

Planting Method/Date: Hege tray planter (drill-seeded), Apr 29;
Water-seeded by hand, Apr 29

Fertilization: Preplant 25-75-75, Apr 21

Plot Size: 6 ft rows (drill-seeded) and 2.5 ft dia rings (water-seeded)

Herbicides: 3 qt Propanil + 1 qt Basagran/A; 1 oz/A Londax, May 7

Insecticides: 17 lb/A Furadan, May 27

Fungicides: Applied to seeds (See Table 11 for rates)

Application Equipment: Proprietary

Harvest: N/A

Experimental Design: Randomized block design with five replications

Stand counts: May 4

Results: See Table 18.

Comments: Water mold pressure was high in water-seeded rice.

Table 18. Effect of Ceprell-coated seed-protectant fungicides on percent (%) germination in water- and drill-seeded rice. Rice Research Station, Crowley, LA. 1992.

Treatment	Rate	Water seeded		Drill seeded
		Dry seed	Soaked seed	
Check		30.4 bc	49.6 ab	64.2 b
Rovral 4 SC	3.5 oz pr/100 lb seed	29.0 c	35.0 b	66.6 b
Rovral 4 SC	2.5 oz pr/100 lb seed	39.6 abc	51.2 a	70.2 b
Allette 80 WP	5 oz pr/100 lb seed	43.6 a	42.8 ab	66.8 b
Allette 80 WP	7 oz pr/100 lb seed	37.8 abc	44.8 ab	67.2 b
Allette 80 WP Rovral 4 SC	5 oz pr/100 lb seed 2.5 oz pr/100 lb seed	41.4 ab	46.6 ab	77.0 a
LSD (.05) =			10.6	13.867
Standard Dev. =		8.03	10.4	5.07313
CV =		21.75	23.27	7.39

Means followed by same letter do not significantly differ (Duncan's MRT, P=.05).

1992 SHEATH BLIGHT YIELD LOSS TRIAL

Location: Rice Research Station, Crowley, LA

Soil Type: Crowley silt loam

Variety/Seed Rate: Lemont, Cypress, Newbonnet, Jackson, Gulfmont - 110 lb/A

Planting Method/Date: Kincaid cone planter (drill-seeded), Apr 8

Emergence Date: Apr 15

Fertilization: Preplant 60-60-60, Apr 8; 120-0-0, May 2; 21-0-0, June 6

Plot Size: 4 x 16 ft

Water Management: Permanent flood, May 3

Herbicides: 3 qt Propanil + 1 qt Basagran, Apr 23; 2 oz/A Londax, May 7

Insecticides: 17 lb/A Furadan, May 7 and June 6

Fungicides: None

Application Equipment: N/A

Inoculation Dates: Inoculated for sheath blight, May 31 (12-100 ml/plot)

Drained: July 24

Harvest: Aug 7-8

Experimental Design: Randomized block design with four replications

Disease Ratings: Sheath blight and blast severity, July 24

Results: See Table 19.

Comments: Sheath blight and blast severities were high; other diseases were low to moderate in severity.

Table 19. Effects of sheath blight inoculation on disease development and resulting yield losses. Rice Research Station, Crowley, LA. 1992.

Variety	Inoculum per plot	Sheath blight Infestation % Initial	Sheath blight Infestation % Final	Sheath blight Severity (0-9)	Neck blast (%)	Yield (lb/A)
Lemont	uninoc. ck.	0 d	26 ghi	4.3 de	36.3 d-g	5968.8 a-d
Lemont	12 mls	1 d	85 a-d	7.3 abc	35.0 efg	5462.5 b-h
Lemont	25 mls	3 cd	75 a-d	7.5 ab	41.3 c-g	5419.0 c-h
Lemont	50 mls	3 cd	81 a-d	7.3 abc	57.5 bc	5010.8 gh
Lemont	100 mls	6 bc	93 abc	7.8 a	40.0 c-g	5218.5 d-h
Cypress	uninoc. ck.	1 d	23 ghi	4.5 de	26.3 g	6634.5 a
Cypress	12 mls	1 d	74 a-d	6.8 abc	27.5 fg	5769.3 b-g
Cypress	25 mls	1 d	67 cde	6.5 bc	30.0 fg	6220.5 ab
Cypress	50 mls	1 d	82 a-d	6.3 c	30.0 fg	5722.5 b-h
Cypress	100 mls	8 ab	60 def	6.8 abc	23.8 g	5787.0 b-f
Newbonnet	uninoc. ck.	0 d	6 i	4.0 e	100.0 a	3332.8 I
Newbonnet	12 mls	1 d	47 efg	6.5 bc	100.0 a	3401.5 I
Newbonnet	25 mls	3 cd	44 efg	6.5 bc	92.5 a	3905.8 I
Newbonnet	50 mls	2 cd	33 gh	6.5 bc	100.0 a	3507.5 I
Newbonnet	100 mls	8 ab	42 fg	6.5 bc	100.0 a	3819.8 I
Jackson	uninoc. ck.	1 d	13 hi	4.0 e	57.5 bc	6005.8 abc
Jackson	12 mls	0 d	68 b-e	7.3 abc	70.0 b	5985.0 a-d
Jackson	25 mls	1 d	73 a-d	7.8 a	55.0 b-e	5867.8 b-f
Jackson	50 mls	1 d	81 a-d	7.8 a	60.0 bc	5686.3 b-h
Jackson	100 mls	1 d	88 abc	7.8 a	73.8 b	5616.3 b-h
Gulfmont	uninoc. ck.	1 d	32 gh	5.3 d	42.5 c-g	5894.3 b-e
Gulfmont	12 mls	3 cd	92 abc	7.8 a	43.8 c-g	5100.0 fgh
Gulfmont	25 mls	3 cd	99 a	7.5 ab	56.3 bcd	5175.5 e-h
Gulfmont	50 mls	4 bcd	94 ab	7.5 ab	47.5 c-f	4962.8 h
Gulfmont	100 mls	11 a	97 a	7.5 ab	42.5 c-g	4977.8 h
LSD (.05)		4	22	1.0	17.1	646.9
Standard Dev.	=	2.81	15.77	0.67	12.12	457.43
CV (%)	=	108.42	25.04	10.29	21.82	8.77

Means followed by same letter do not significantly differ (Duncan's MRT, P=.05).

USE OF SOMACLONAL VARIATION FOR IMPROVED DISEASE RESISTANCE IN RICE

M.C. Rush, K.P. Sellhan, S.D. Linscombe, James Oard, and Q.J. Xie

INTRODUCTION

Sheath Blight

A rice somaclone produced from the cultivar Labelle in 1986 was found to be highly resistant to the sheath blight disease. Selections from this somaclone (LR163) were used in genetic studies carried out in the late 1980's (2). Breeding lines resistant to Rhizoctonia solani Kuhn were selected from the F_2 populations of crosses made with the somaculture-derived resistant lines LSBR-5 and LSBR-33 by the cultivar Lemont.

In 1992, four segregates from crosses between LSBR-5 and Lemont were included in the Cooperative Uniform Regional Rice Nursery (URN), along with the LSBR-5 line, as entries from the rice breeding program at the L.S.U. Agricultural Center, La. Agri. Exp. Stn., Rice Research Station (RRS). These lines were assigned the URN numbers 71, 122, 125, 146 (LSBR-5), and 149. Data collected by the participating breeding programs on yield and percent head rice were extracted from the mean data across the four southern states of Arkansas, Louisiana, Mississippi, and Texas. Participating rice breeders included Drs. K.A. Moldenhauer, K.A. Gravois, S.D. Linscombe, D.G. Kanter, and A.M. McClung.

A second set of breeding lines from these crosses, previously grown in yield tests in 1991 by the breeding program of the RRS, were compared with the sheath blight susceptible cultivars Labelle (source of the LSBR-5 somaclone), Lemont, Lacassine, and Cypress; with the sheath blight tolerant cultivar Katy, and with the LSBR-5 resistant line for the effects of sheath blight on yield. The experimental lines were 91SP065, 91SP067, 91SP068, 91SP086, 91SP091, 91PY683, 91PY685, 91PY686, and 91PY688.

Blast

During the period 1989 through 1991, about 400 somaclones were derived from the blast susceptible cultivar Newbonnet and screened in blast nursery and field tests for blast resistance. Seven selected blast resistant lines were field tested in yield plots in 1992. They were compared with the three commercial cultivars Newbonnet, Rosemont, and Katy. Newbonnet was the cultivar from which the somaclones were derived, Rosemont is a recently released blast susceptible cultivar, and Katy was released from the Arkansas Rice Research Station as blast resistant. The lines were NBSC-29, NBSC-62, NBSC-64, NBSC-71, NBSC-77, NBSC-88, and NBSC-90. Disease data were collected and yield comparisons were made in these tests.

EXPERIMENTAL PARAMETERS

Experiment 1: Sheath Blight Yield Test with Resistant Lines

Location: Rice Research Station, Crowley, LA

Seeding Rate/Date: 100 lb/A, Apr 13, 1992

Planting Method: Drill-seeded

Fertilization: 45-45-45 lb/A (N-P_2O_5-K_2O), Apr 13; 70 lb/A N, May 11; 42 lb/A N, June 10

Plot Size/Design: 4.66 x 16 ft (74.6 ft^2) -- Split plot in a randomized complete block design (four replications). Main plots were rice genotypes, split plots were inoculation treatments.

Water Management: Flushed, Apr 21; flooded, May 11; harvest drainage, Aug 7

Herbicides: Stam (propanil 3 lb/A ai), May 1, May 8;
Londax (bensulfuron-methyl 1 oz/A ai), May 19

Insecticides: Furadan (carbofuran .5 lb/A ai), May 28

Inoculation: Half of each split plot was inoculated with 2 ml/sq. ft of inoculum consisting of *Rhizoctonia solani* growing on a rice grain:rice hull mixture (1:2).

Type of Disease Data Collected: Following inoculation, weekly measurements were made of the height in cm of the highest sheath blight lesion and the height of the collar of the most recently formed leaf on tillers selected as infected at the water-line and flagged 1 week after inoculation. Five infected tillers were flagged in each of four replicate plots. Weekly counts were made of the number of infected tillers, those with any lesions, in each inoculated plot. Two days before harvest, a 0 to 9 rating for sheath blight was made on each inoculated plot. Zero was equal to no disease and a 9 equaled most tillers dead.

Harvest: Aug 18

Comments: Labelle, Lemont, and Lacassine showed limited lodging in the noninoculated plots and heavy lodging in inoculated plots. LSBR-5 was planted 1 week later than the other plots.

Experiment 2: Yield and Comparative Resistance to Blast of Selected Newbonnet Somaclones and the Cultivars Newbonnet, Rosemont, and Katy

Location: Rice Research Station, Crowley, LA

Seeding Rate/Date: 100 lb/A, Apr 13

Planting Method: Drill-seeded

Fertilization: 45-45-45 lb/A (N-P_2O_5-K_2O), Apr 13; 70 lb/A N, May 11; 42 lb/A N, June 10

Plot Size/Design: 4.66 x 16 ft (74.6 ft^2) -- Randomized complete block design with four replications

Water Management: Flushed, Apr 21; flooded, May 11; drained, June 1; flooded, June 4; harvest drainage, Aug 7

Herbicides: Stam (propanil 3 lb/A ai), May 1, May 8; Londax (bensulfuron-methyl 1 oz/A ai), May 19

Insecticides: Furadan (carbofuran .5 lb/A ai), May 28

Inoculation: Infections in plots were from natural inoculum. The plot area was surrounded by a mixed planting of the cultivars M201 and Newbonnet to serve as spreader plants.

Type of Disease Data Collected: A 0-9 rating was made at the maximum tillering stage on the amount of leaf blast. Data was collected at maturity on the percentage of panicles with rotten-neck and the percentage of panicles with panicle blast, and a rating was made on severity of the rotten-neck blast lesion. The percentage of tillers with collar-blast was also determined at maturity.

Harvest: Aug 18

Comments: NBSC-71 lodged about 70%.

RESULTS AND DISCUSSION

Sheath Blight

The mean yields and head rice yields for the four sheath blight resistance lines, along with several check cultivars, are listed in Table 1. The URN 71 and 149 lines yielded well, but head rice yields were low. Data from sheath blight nurseries in the four states indicated that the lines were highly resistant to moderately resistant to sheath blight (Table 2). URN 71 was the least resistant of the four lines, but had sheath blight resistance about equal to the medium-grain cultivar Rico 1.

Yields of the sheath blight resistant lines and control cultivars planted at the RRS in Crowley are listed in Table 3. The cultivar yields in healthy (noninoculated) plots were high, ranging from 7730 to 8527 lb/A. The same cultivars had yields ranging from 5995 to 7777 lb/A in inoculated plots. Yield losses to sheath blight ranged from 890 to 2071 lb/A among the commercial cultivars. The sheath blight tolerant cultivar Katy had a 398 ib/A loss. Yields in healthy plots of the sheath blight resistant lines ranged from 6871 to 8269 lb/A (Table 2). Yields in inoculated plots ranged from 6435 to 8085 lb/A. Yield loss to sheath blight ranged from 184 to 751 lb/A. The LSBR-5 line, 91SP067, and 91PY685 had higher yields in the inoculated plots than in the healthy plots. The sheath blight resistance in the resistant lines and in Katy considerably reduced loss to sheath blight when compared with susceptible cultivars.

The sheath blight reactions of the cultivars and resistant lines are shown in Table 4. Sheath blight ratings of the lines ranged from 1.3 to 4.8 on the 0 to 9 scale. Sheath blight ratings of the commercial cultivars ranged from 6.5 to 9.0. The LSBR-5 resistant somaclone line had a 0.3 rating. In this test, the resistant lines were more resistant to sheath blight than the cultivars, including Katy, which is the most sheath blight resistant long-grain cultivar.

Disease incidence and disease severity for the resistant line 91PY685 and the cultivars Cypress, Katy, Lacassine, and Lemont are shown in Figures 1 and 2, respectively. The disease spread slowly in the resistant line, reaching a maximum of 21% of the tillers infected at maturity. The rate of spread of the disease was highest in the cultivar Lacassine, reaching a maximum of 98.5% tillers infected. Cypress and Lemont had similar rates of disease development. Katy had a lower rate of disease incidence than the other commercial cultivars, as expected.

Disease severity was measured as the rate of spread of lesions up infected tillers. The initial measurement was misleading as it represented a single lesion at the water-line a few days after inoculation. The distance measured was from the ground to the top of the highest sheath lesion. At this time, plants were short. At subsequent measurements, the line increased or decreased percentage-wise according to the rate of disease development and the plant growth. In general, after the 4th week, disease development exceeded plant growth and the percentage of sheath area with lesions increased (Figure 2). The resistant line 91PY685 had

Table 1. Yields and head rice yields of the sheath blight resistant lines and selected control cultivars as abstracted from the 1992 URN results[1].

Line or Cultivar	Mean Yield (lb/A)	Mean % Head Rice	Highest % Head Rice
URN 71	7312	55	61
URN 122	6231	54	58
URN 125	5872	57	62
URN 146 (LSBR-5)	6012	55	61
URN 149	7406	56	59
Maybelle	6121	59	62
Lemont	6746	63	65
Lacassine	7202	60	66
Cypress	7016	63	66
Katy	6865	63	67

[1] Mean of data from the rice breeding programs in Arkansas, Louisiana, Mississippi, and Texas. Yields were corrected to 12% grain moisture.

Table 2. Sheath blight ratings on the sheath blight resistant lines and selected varieties from the 1992 URN tests[1].

Line or cultivar	Arkansas	Texas Test 1	Texas Test 2	Mississippi	Louisiana	Mean Sheath Blight Rating (0-9)[2]
71	4.0	5	7	3.7	5	4.9
122	2.8	4	5	3.0	4	3.8
125	3.0	2	2	3.0	2	2.4
149	3.8	5	6	3.0	4	4.4
LBSC-5	0.8	1	3	2.3	3	2.0
LCSN	7.8	6	9	5.3	7	7.0
KATY	2.5	5	6	2.3	6	4.4
CPRS	6.5	6	8	4.7	6	6.2
LMNT	8.0	7	8	5.7	6	6.9
MBLE	8.5	7	9	5.3	5	7.0
RICO	5.0	4	6	4.0	4	4.6
LBLE	8.5	6	9	4.3	5	6.6

[1] Data abstracted from tests conducted on the URN entries in Arkansas (Dr. Fleet Lee), Texas (Dr. M. A. Marchetti), Mississippi (Dr. Gabe Sciumbato), and Louisiana (Dr. D. E. Groth).

[2] Based on a 0 to 9 rating where 0 = no disease and 9 = most tillers killed at maturity.

Table 3. Effect of sheath blight on yield of resistant lines and commercial cultivars. Rice Research Station, Crowley, LA. 1992.

Line or Cultivar	Treatment[1]	Mean First Crop Yield[2]	Mean Second Crop Yield[2]	Mean Total Yield[2]	Difference in Yield[2]
91SP067	noninoculated	5138	1733	6871	
	inoculated	5368	1971	7339	+ 468
91SP065	noninoculated	5727	1370	7097	
	inoculated	5622	1288	6910	- 187
91SP086	noninoculated	5749	1878	7627	
	inoculated	5537	1706	7243	- 384
91SP068	noninoculated	5274	1597	6871	
	inoculated	5047	1450	6497	- 374
91SP091	noninoculated	5560	2709	8269	
	inoculated	5539	2546	8085	- 184
91PY686	noninoculated	5741	1445	7186	
	inoculated	5332	1103	6435	- 751
91PY688	noninoculated	5245	1747	6992	
	inoculated	4865	1679	6544	- 448
91PY685	noninoculated	5140	1742	6882	
	inoculated	5146	1846	6992	+ 110
91PY683	noninoculated	5174	2538	7712	
	inoculated	4731	2315	7046	- 666

Continued

Table 3. (Cont'd)

Line or Cultivar	Treatment[1]	Mean First Crop Yield[2]	Mean Second Crop Yield[2]	Mean Total Yield[2]	Difference in Yield[2]
Labelle	noninoculated	5677	2112	7789	
	inoculated	4783	1464	6247	- 1542
Lemont	noninoculated	6306	1424	7730	
	inoculated	5567	1273	6840	- 890
Lacassine	noninoculated	5982	2084	8066	
	inoculated	5106	889	5995	- 2071
Cypress	noninoculated	6803	1724	8527	
	inoculated	5996	1328	7324	- 1203
Katy	noninoculated	5869	2306	8175	
	inoculated	5694	2083	7777	- 398
LSBR-5	noninoculated	3823	2659	6482	
	inoculated	3871	2638	6509	+ 27

[1] Inoculated plots received 2 ml/sq foot of inoculum consisting of *Rhizoctonia solani* grown on a rice grain:rice hull mixture (1:2).
[2] Yields in lb/A at 12% moisture.

Table 4. Sheath blight ratings and disease incidence for sheath blight resistant lines and selected cultivars. Rice Research Station, Crowley, LA. 1992.

Line or Cultivar	Sheath Blight Rating (0-9)[1]	Mean % Tillers Infected 4 Weeks After Inoculation[2]	Mean % Tillers Infected at Maturity[2]
91SP067	1.5	16.8	26.0
91SP065	1.3	8.0	12.0
91SP086	4.5	32.5	57.3
91SP068	2.0	19.5	31.0
91SP091	4.0	26.5	52.0
91PY686	4.0	28.5	34.0
91PY688	4.8	40.8	71.5
91PY683	2.8	32.0	40.0
91PY685	2.0	15.3	21.0
Labelle	8.0	44.8	77.8
Lemont	8.3	52.8	85.8
Lacassine	9.0	74.8	98.5
Cypress	7.3	47.0	76.8
Katy	6.5	33.3	54.8
LSBR-5	0.3	1.0	2.8

[1] Rating based on a 0 to 9 scale where 0=no disease and 9=most tillers dead at maturity.
[2] Percentage of tillers with one or more lesions.

the slowest rate of disease development, and the cultivar Lacassine had the highest rate of disease development. Multiplying the percentage tillers infected by the percentage sheath area infected at any measuring period gives a rough approximation of the percentage of sheath area throughout the plot that was infected. The calculated percentage of sheath area infected at maturity was 70.8% for Lemont, 93% for Lacassine, and 12.6% for the 91PY685 line. This measurement is approximate and an overestimation as all infected tillers in each plot did not become infected at the same time.

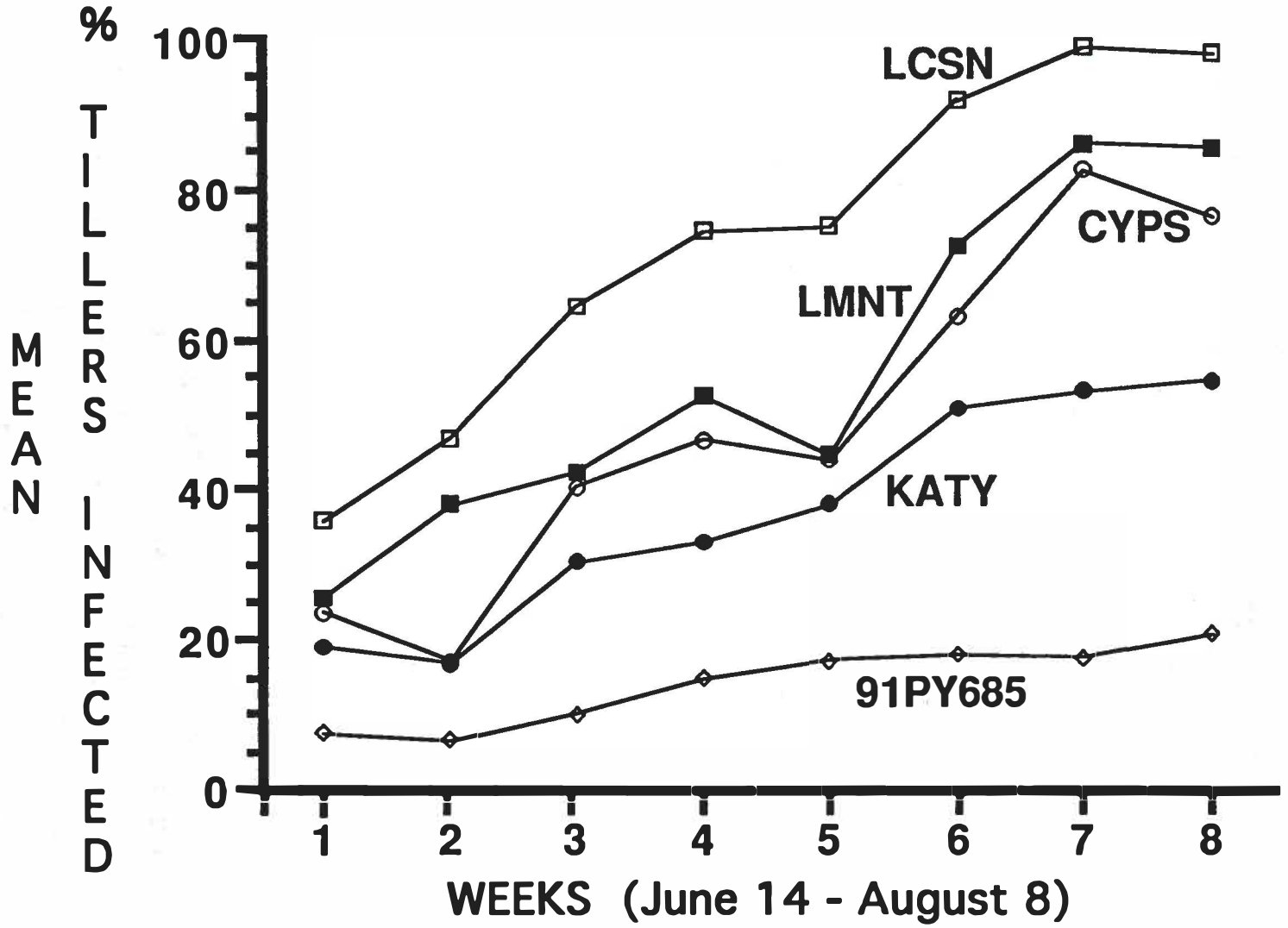

Figure 1. Mean percentage of tillers infected by *Rhizoctonia solani* at eight weekly measurement periods starting about 10 days after inoculation (disease incidence).

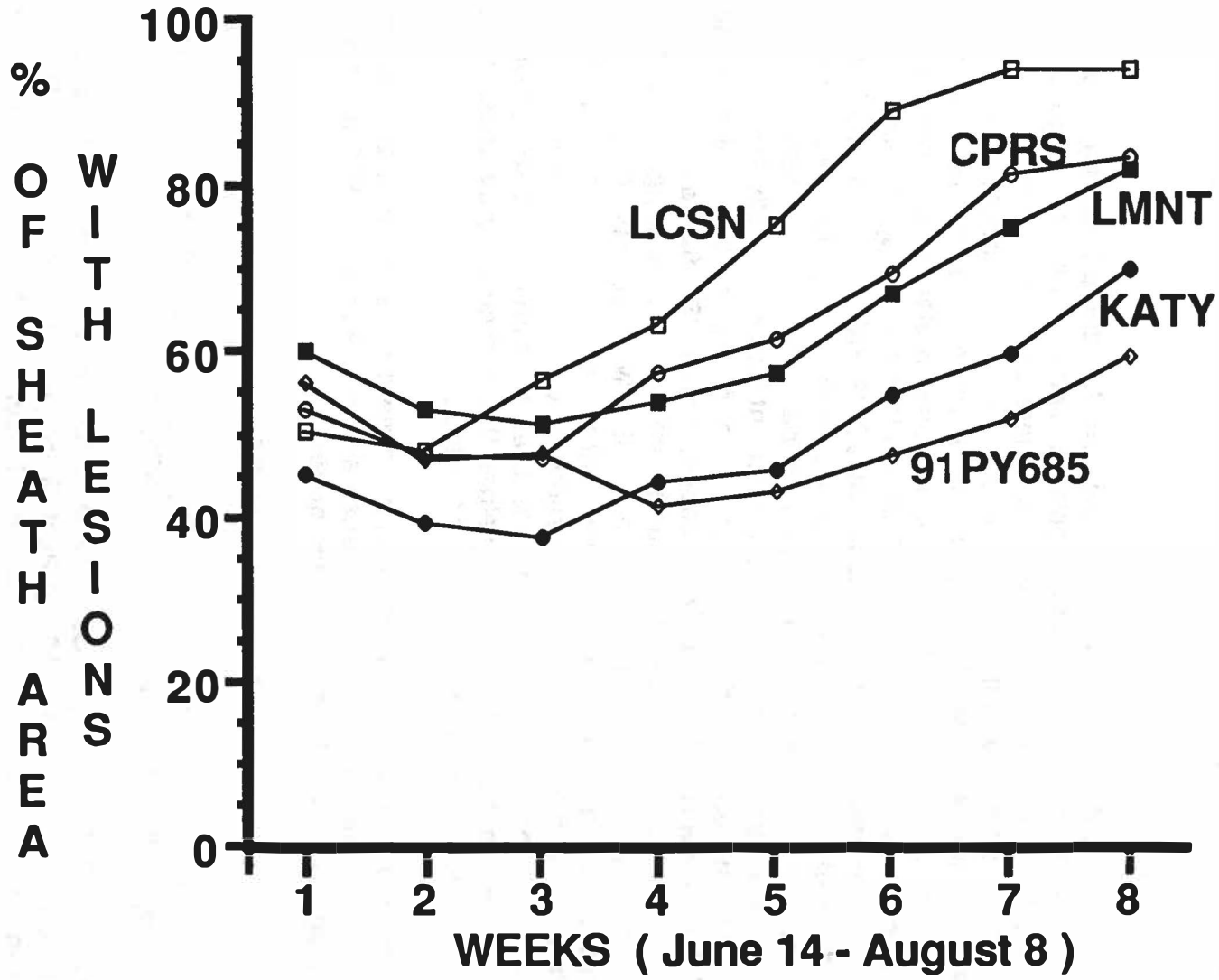

Figure 2. Mean percentage of rice sheath area with sheath blight lesions at eight weekly measuring periods starting about 10 days after inoculation (disease severity).

The resistance to sheath blight expressed in line LSBR-5 and the breeding lines derived from crossing this line with the Lemont cultivar is of sufficient magnitude to be very useful in the rice breeding program. The resistance is stable and has not decreased since the line was first tested in 1986. The resistance of LSBR-5 and other lines, derived from the original resistant somaclone (Labelle 163) was confirmed by research carried out in California during the 1991 and 1992 seasons (1).

Blast

The data on yield collar blast, rotten-neck blast, panicle blast, and the rating for severity of rotten-neck blast are given in Table 5. Line NBSC-62 had leaf blast at the same level as the susceptible cultivars Newbonnet and Rosemont. Leaf blast was greatly reduced in the other somaclones. The cultivar Rosemont was severely damaged by collar blast. The somaclones and the other cultivars had little collar blast. The leaf blast resistant somaclones all had limited infection with small, round dark-brown lesions. It appears that they have a high level of partial resistance. Lines NBSC-29, NBSC-62, NBSC-77, and NBSC-88 had about 25 to 35% of their panicles infected with rotten-neck blast. This suggested that a single dominant gene may be controlling the blast resistance in these lines. Newbonnet and Rosemont had essentially 100% rotten-neck blast, sugggesting that the 65 to 75% of panicles without blast in the somaclonal lines were resistant and not escapes. Line NBSC-62 was susceptible to leaf blast but resistant to rotten-neck blast. This suggests that leaf blast and rotten-neck blast resistance in this line were controlled by different genes. Line NBSC-77 was very resistant to rotten-neck blast, and the severity rating for neck lesions was greatly reduced with this line. Katy was more resistant to all of the forms of blast measured than any of the somaclones (Table 5). The resistant line NBSC-71 outyielded the cultivar Katy by about 1000 lb/A even though Katy was equally resistant to blast.

Panicles with and without rotten-neck blast were collected and maintained separately for each line. These will be planted as panicle rows in 1993 to obtain plants homozygous for the blast resistance gene(s).

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Table 5. Yield, leaf blast, collar blast, rotten-neck blast, panicle blast and rotten-neck blast severity for selected Newbonnet somaclones and the cultivars Newbonnet, Rosemont, and Katy.

Line or Cultivar	Leaf Blast (0-9)[1]	Collar Blast (%)[2]	Rotten-neck Blast (%)	Panicle Blast (%)	Rotten-neck Blast Severity Rating (1-5)[3]	Mean Yield (lb/A)[4]
NBSC-29	1.8	9.0	35.3	29.0	3.6	5964
NBSC-62	6.0	12.3	27.5	21.5	3.4	6018
NBSC-64	3.5	6.0	14.5	24.8	2.9	5412
NBSC-71	1.5	5.0	6.0	22.8	2.3	7844
NBSC-77	1.5	6.5	29.0	31.5	3.4	6198
NBSC-88	1.5	3.3	28.0	21.5	3.7	5445
NBSC-90	1.5	7.3	27.8	28.0	3.6	5621
Newbonnet	6.5	17.5	98.3	98.0	4.5	3741
Rosemont	6.8	89.8	100.0	99.3	5.0	4546
Katy	1.5	0.5	4.3	7.8	2.1	6801

[1] Leaf blast rating was based on a 0 to 9 scale where 0=no disease and 9 represented many large, fully expanded leaf lesions. Rating based on four replicate plots.
[2] Percent of tillers with blast.
[3] A 1-5 rating scale where 1=a barely visible rotten-neck blast lesion that did not surround the peduncle node and 5=a severe lesion, dark brown and with panicle killed.
[4] Yields were given in lb/A at 12% moisture.

WHEAT DISEASE CONTROL STUDIES, 1992

D.E. Groth, M. Frey, and J. Nugent

1992 WHEAT FUNGICIDE TRIAL

Location: Rice Research Station, Crowley, LA

Soil Type: Crowley silt loam

Variety/Seed Rate: FL 302 and McNair 1003, 120 lb/A

Planting Method/Date: Drill seeded, Nov 26, 1991

Emergence Date: Dec 3

Fertilization: Preplant 36-96-96, Nov 26; top dressed 75-0-0, Mar 2

Plot Size: 4 x 20 ft

Herbicides: Glean 0.5 oz/A, Mar 3

Insecticides: None

Fungicides: See Tables 1 and 2

Application Equipment: CO_2 backpack sprayer, 8002 tips, 10 gal/A

Application Dates: Applied fungicides at stages 8, 9, and 10.5 (Feeke's scale), Mar 11, Mar 16, and Mar 31, respectively

Harvest: May 6

Experimental Design: Randomized block design with four replications

Disease Ratings: Parent leaf rust and septoria leaf blotch, May 6

Results: See Tables 1 and 2.

Comments: Leaf rust and septoria leaf blotch were severe.

Table 1. Foliar fungicide control of leaf rust, Septoria, leaf spot, and scab on the wheat variety Florida 302. Rice Research Station, Crowley, LA. 1992.

Treatment	Rate	Growth stage (Feeks)	% Leaf rust	% Septoria	Yield (lb/A)	Yield change
Unsprayed check			35.0 a	31.3 a	2919.5 a	0.0 a
Folicur 3.6 SC	1.8 oz ai/A	9 + 10.5	11.3 d	13.8 c	3263.0 a	343.8 a
Folicur 3.6 SC	2.7 oz ai/A	9	16.3 bcd	21.3 bc	2868.8 a	-50.8 a
Folicur 3.6 SC	1.8 oz ai/A	8	25.0 abc	20.0 bc	3216.3 a	297.0 a
Tilt 3.6 EC	1.8 oz ai/A	8	32.5 a	26.3 ab	3236.8 a	317.5
Bayleton 50 DF	1.0 oz ai/A	9 + 10.5	27.5 ab	25.0 ab	3337.8 a	418.8 a
Bayleton 50 DF Dithane 75 DF	1.0 oz ai/A 25.6 oz ai/A	9 + 10.5 9 + 10.5	17.5 bcd	18.8 bc	2962.0 a	42.5 a
Dithane 75 DF	25.6 oz ai/A	9 + 10.5	25.0 abc	20.0 bc	3240.0 a	320.8 a
San 619 0.83 EC	30 gm ai/A	8	15.0 cd	20.0 bc	3143.0 a	223.8 a
San 619 0.83 EC	30 gm ai/A	9	11.3 d	18.8 bc	3231.5 a	312.3 a
San 619 0.83 EC	30 gm ai/A	10.5	11.3 d	13.8 c	3017.3 a	98.0 a
San 619 0.83 EC	15 gm ai/A	8	20.0 bcd	26.3 ab	2892.8 a	-26.5 a
LSD (.05) =			10.1	7.6	413.2	
Standard Dev. =			6.98	5.23	286.19	
CV =			33.87	24.63	9.20	

Means followed by the same letter do not significantly differ (Duncan's MRT, P=.05).

Table 2. Foliar fungicide control of leaf rust on the wheat variety McNair 1003. Rice Research Station, Crowley, LA. 1992.

Treatment	Rate	Growth stage	% Leaf rust	Yield (lb/A)	Yield change
Unsprayed check			41.3 a	3832.5 b	0.0 b
Folicur 3.6 SC	1.8 oz ai/A	9 + 10.5	6.3 f	4237.5 a	405.5 a
Folicur 3.6 SC	2.7 oz ai/A	9	17.5 d	4049.8 ab	217.3 ab
Folicur 3.6 SC	1.8 oz ai/A	8	25.0 bc	4009.3 ab	176.8 ab
Tilt 3.6 EC	1.8 oz ai/A	8	26.3 b	4055.8 ab	223.5 ab
Bayleton 50 DF	1.0 oz ai/A	9 + 10.5	10.0 ef	4178.5 ab	346.0 ab
Bayleton 50 DF Dithane 75 DF	1.0 oz ai/A 25.6 oz ai/A	9 + 10.5 9 + 10.5	8.8 f	4218.8 a	386.8 a
Dithane 75 DF	25.6 oz ai/A	9 + 10.5	20.0 cd	4156.3 ab	324.0 ab
SAN 619 0.83 EC	30 gm ai/A	8	15.0 de	4010.5 ab	178.3 ab
SAN 619 0.83 EC	30 gm ai/A	9	6.3 f	4274.3 a	442.0 a
SAN 619 0.83 EC	30 gm ai/A	10.5	5.0 f	3943.5 ab	111.0 ab
SAN 619 0.83 EC	15 gm ai/A	8	20.0 cd	4048.0 ab	215.5 ab
LSD (.05) =			5.5	299.3	
Standard Dev. =			3.82	207.28	
CV =			22.83	5.07	

Means followed by same letter do not significantly differ (Duncan's MRT, P=.05).

ROTATIONAL CROPS[1]

R.J. Habetz

INTRODUCTION

Soybean [Glycine max (L.) Merr.] is a major agronomic crop in southwest Louisiana. The soybean crop is primarily grown as a rotational crop with rice. The acreage of soybeans in the past 10 years has been declining, primarily due to market conditions. In 1992, the average acreage and yield did show a tremendous increase over 1991 due to ideal growing conditions. With the growing interest in early maturing soybeans, research was directed to more variety evaluations of Group IV soybeans. Yields of these varieties showed that with good growing conditions these varieties can be very promising.

Grain sorghum [Sorghum bicolor (L.) Moench] is also grown in rotation with rice in southwest Louisiana. Research has shown that this crop can be used as an alternative to soybeans or can enhance a farming operation with soybeans.

The Rice Research Station participates in a statewide variety evaluation of these two crops in cooperation with the Louisiana Agricultural Experiment Station. Results of these studies are presented in this section.

Wheat (Triticum aestivum L.) is primarily double cropped with soybeans in southwest Louisiana. The acreage of wheat in 1992 was about the same as in previous years. The yield of the variety test at the Rice Research Station for 1992 was above average. Ideal growing conditions and lack of disease made this possible. Wheat variety tests and a fertilizer-fungicide study were conducted in 1992 with results presented in the following section.

A variety and crop tolerance test of Kenaf (Hibiscus cannabinus) was conducted, and the results are presented in the following section.

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[1] This research is partially supported by funds provided by the Louisiana Soybean and Grain Research and Promotion Board.

SOYBEAN VARIETY TEST

R.J. Habetz, B.G. Harville, and W. Hall

Location: Rice Research Station

Soil Type: Crowley silt loam

Seeding Rate: 10 seed/row ft

Planting Date: Group IV, Apr 21, 1992; Groups V, VI, VII, VIII, May 11, 1992

Row Spacing: 32 inches

Fertilizer: 0-80-80 (N-P_2O_5-K_2O) banded at planting

Plot Size: 4 rows x 30 ft

Herbicide: 2.0 pt/A Dual broadcast after planting

Insecticide: Orthene 1.0 pt/A applied: Group IV, July 16, Aug 6, Aug 13; Groups V, VI, VII, VIII, Aug 20, Sept 10, Sept 24

Rainfall: Group IV - first week after planting, .80 in; 2nd week, 1.21 in; 3rd week, 1.10 in; Groups V-VIII - first week, .08 in; 2nd week, 1.39 in; 3rd week, 2.38 in

Harvested: At maturity for each variety

Experimental Design: Randomized complete block with four replications

Comments: 1992 was a season of ideal growing conditions. Groups IV, V, and VI all had an average yield of over 50 bu/A, while Group VII had an average yield of 42.9 bu/A. Over one-half of all the varieties evaluated had a yield above 50 bu/A. The highest yielding variety was an early maturing variety UAPX 95 (68.2 bu/A) (Table 1). A Louisiana State University Agricultural Center variety LA88-30801 (57.6 bu/A) was the third highest variety in Group V. In 2-year averages, Riverside RVS had an average of 56.1 bu/A, followed by Northrup King RA 452 (55.9 bu/A), Hartz 6686 (52.2 bu/A), Hutcheson (50.3 bu/A), and LA88-55 (50.2 bu/A).

Table 1. Performance of commercial varieties grown on a Crowley silt loam soil at the Rice Research Station, Crowley, LA. 1992.

Maturity group and variety/brand	Yield per acre	2-year average yield[a]	Aerial blight rating[1]	Plant height	Lower pod height	Lodging[2]	Maturity date
	---------(bu/A)--------			---------(in)---------		----(%)----	
Group IV							
UAPX 95	68.2	----	----	37	5	1.0	09/10
BU 44	66.6	----	----	39	4	1.0	09/17
BU 42	64.4	----	----	42	6	1.0	09/18
Riverside RVS 499	64.2	56.1	----	37	5	1.0	09/25
Hamlin Achiever 480	64.1	----	----	36	4	1.0	09/18
Northrup King RA 452	61.0	55.9	----	27	4	1.0	09/18
HyPerformer HB2 - X498	60.7	----	----	32	5	1.0	09/13
Pioneer® Variety 9501	60.2	----	---	27	3	1.0	09/18
LA88-32	55.3	----	---	23	3	1.0	09/18
Hornbeck HBK 49	55.1	----	----	36	6	1.0	09/18
HyPerformer HB2- X484	54.4	----	----	33	3	1.0	09/10
Riverside RVSL 91-46	52.5	----	----	33	3	1.0	09/18
Deltapine DP 3456	49.5	----	----	21	2	1.0	09/10
LA88-20637	48.7	----	----	18	2	1.0	09/25
Northrup King S48-84	48.6	48.9	----	23	4	1.0	09/13
UAPX 96	46.8	----	----	42	6	1.0	10/05
LA88-14	44.8	----	----	18	2	1.0	09/08
DeKalb CX 458	44.0	41.4	----	17	2	1.0	09/18

Continued.

Table 1. Continued.

Maturity group and variety/brand	Yield per acre	2-year average yield[a]	Aerial blight rating[1]	Plant height	Lower pod height	Lodging[2]	Maturity date
	---------(bu/A)--------			---------(in)---------		----(%)----	
Group IV (continued)							
Hartz Variety H4464	41.5	42.1	----	24	3	1.0	09/10
Pioneer® Variety 9442	37.5	41.6	----	16	2	1.0	09/10
HyPerformer HSC 401	31.9	----	----	23	3	1.0	09/10
LSD (0.1)	7.3						
CV (%)	11.6						
Group V							
Hartz Variety HX511694	58.0	----	----	21	3	1.0	09/28
Hutcheson	58.0	50.3	3.0	21	4	1.3	10/10
Northrup King S59-60	51.4	----	3.3	22	3	1.3	10/17
Asgrow A5979	51.2	45.5	4.5	21	4	1.0	10/06
Bedford	51.0	44.2	3.8	26	5	1.0	10/28
Riverside RVS 577	50.5	----	2.3	23	4	2.0	10/10
D87-4647	50.2	----	1.5	21	4	1.5	10/29
Hyperformer HB2 - X549	50.1	----	3.3	28	4	1.3	11/02
LA88-20803	50.0	----	1.8	25	3	1.0	10/06
HyPerformer HSC 557	50.0	45.7	3.3	23	4	1.0	10/02
Stoneville FFR 595	49.8	----	2.5	28	4	1.8	10/06
Deltapine 105	49.6	44.1	3.3	23	4	1.0	10/06

Continued.

Table 1. Continued.

Maturity group and variety/brand	Yield per acre	2-year average yield[a]	Aerial blight rating[1]	Plant height	Lower pod height	Lodging[2]	Maturity date
	---------(bu/A)--------			---------(in)---------		----(%)----	
Group V (continued)							
Terra-Vig 5452	49.2	45.3	4.5	22	4	1.5	10/05
Terra-Vig 5693	48.6	47.8	4.5	19	3	1.0	10/06
Stoneville FFR 562	48.0	45.7	5.3	24	4	1.5	10/06
Terra-Vig 515	47.9	42.2	3.5	24	4	1.0	10/24
UAPX 42	47.1	—	3.5	24	4	1.0	10/19
Hartz Variety H5350	45.2	—	4.0	23	4	1.0	10/02
AgraTech AT 2665	43.9	—	3.0	24	4	1.5	10/28
LSD (0.1)	6.9						
CV (%)	11.1						
Group VI							
Asgrow A6297	57.0	45.0	3.0	24	3	1.3	10/22
Hartz Variety HX615008	55.5	—	2.4	22	4	1.0	10/06
Hartz 6686	54.7	52.2	2.3	24	3	1.5	10/28
Hartz Variety HX6464	54.5	—	2.5	24	4	1.5	10/04
Terra-Vig X6253	54.3	—	2.5	28	5	1.5	10/26
Deltapine DPX 3606	54.3	—	2.3	26	5	3.0	10/17
Terra-Vig 6670	54.2	—	2.0	25	4	1.8	10/04
Deltapine DP 3627	53.5	46.9	3.0	25	4	2.0	10/19

Continued.

Table 1. Continued.

Maturity group and variety/brand	Yield per acre	2-year average yield[a]	Aerial blight rating[1]	Plant height	Lower pod height	Lodging[2]	Maturity date
	----------(bu/A)--------			---------(in)---------		----(%)----	
Group VI (continued)							
MECO 679	53.5	----	3.3	26	4	1.8	10/28
LA88-407101	53.5	----	2.0	23	3	1.0	10/27
Riverside RVSL 91-42	53.4	----	2.3	28	3	1.3	11/02
Pioneer® Variety 9641	53.2	48.3	5.3	21	3	1.5	10/06
Asgrow A6961	53.2	----	2.8	26	4	1.3	10/28
HyPerformer HB2 - X6142	53.2	----	2.3	24	4	1.0	10/17
BU 62	53.2	----	2.8	29	5	1.5	10/25
LA88-55	53.0	50.2	4.0	25	5	1.5	10/07
Riverside RVS 699	52.8	47.2	2.8	24	3	1.0	10/28
Kunkle KSC 607	52.4	----	3.0	23	4	1.0	11/02
D82-2740	52.4	----	2.5	28	4	1.3	10/06
Hamlin Achiever 670	52.3	----	3.8	26	4	1.3	10/01
Hartz 6200	52.3	48.5	2.8	23	3	1.3	10/05
Dyna-Gro 3601	52.2	----	3.5	25	5	2.5	10/05
Riverside RVSL 91-85	51.2	----	4.0	29	5	2.5	10/04
LA88-4030	51.1	----	4.3	26	5	1.5	11/02
Terra-Vig 6653	51.0	----	3.5	24	4	1.3	10/26
BU 68	50.8	----	3.8	23	3	1.0	10/28
Stoneville FFR 695	50.8	48.7	2.0	23	3	1.0	10/26
Northrup King S62-66	50.4	----	4.3	23	5	1.8	10/06
MECO 678	50.2	----	3.8	26	4	1.0	10/26

Continued.

Table 1. Continued.

Maturity group and variety/brand	Yield per acre	2-year average yield[a]	Aerial blight rating[1]	Plant height	Lower pod height	Lodging[2]	Maturity date
	----------(bu/A)--------			---------(in)---------		---(%)---	
Group VI (continued)							
HyPerformer HB2 - X663	50.0	----	4.3	24	5	1.0	10/28
HyPerformer HB2 - X695	49.7	----	3.0	26	5	2.0	10/20
Deltapine DPX 3682	49.7	----	2.5	25	4	2.0	10/28
HyPerformer HB2 - X688	49.3	----	3.5	23	4	1.0	10/18
UAPX 29	49.2	----	4.0	26	4	2.0	10/27
UAPX 36	48.9	----	2.5	28	5	2.3	10/19
LA88-408814	48.5	----	3.8	29	3	1.0	10/20
AgraTech AT 695	48.3	46.2	3.0	28	5	1.3	10/19
Hamlin Achiever 697	48.3	----	3.3	23	3	1.0	11/03
Buckshot 66	48.2	----	3.3	22	3	1.0	10/26
HyPerformer HB2 - X683	47.5	----	4.0	24	5	1.3	10/16
LA88-30801	57.6	----	3.3	25	4	1.3	10/10
Stoneville FFR 642	56.8	----	3.5	21	4	1.0	10/10
Northrup King Coker 6955	56.7	----	3.8	23	4	1.0	10/11
Pioneer® Variety 9593	55.9	----	2.8	22	3	1.0	09/30
Walters	55.8	45.3	2.8	21	3	1.3	10/02
Kunkle KSC 515	55.4	----	1.5	23	3	1.5	10/24
Asgrow A5885	55.3	----	4.0	23	5	1.0	10/19
Hartz Variety H5566	55.1	----	2.8	26	5	1.0	09/27
Hartz Variety HX12041	55.0	----	----	25	4	1.3	09/29
Hartz Variety H5033	54.6	----	2.8	22	3	1.0	10/01

Continued.

Table 1. Continued.

Maturity group and variety/brand	Yield per acre	2-year average yield[a]	Aerial blight rating[1]	Plant height	Lower pod height	Lodging[2]	Maturity date
	---(bu/A)---			---(in)---		---(%)---	
Group VI (continued)							
Buckshot 55	54.5	----	3.8	26	4	1.0	10/06
HyPerformer HSC 579	54.4	44.7	4.3	24	3	1.0	10/06
Riverside RVSL 77	54.4	----	3.3	22	3	1.0	10/05
Buckshot 507	54.3	46.4	2.5	24	4	1.3	10/06
Deltapine DPX 3553	54.2	----	3.8	25	5	1.3	09/26
UAPX 76	54.2	----	4.0	21	3	1.0	10/06
Hartz Variety HX512088	54.0	----	----	21	3	1.0	09/30
Terra-Vig X6897	53.7	----	3.8	22	4	1.5	10/18
Bogard 50600	53.7	----	3.3	22	4	1.0	10/03
Northrup King Coker 485	53.6	47.3	1.5	22	3	1.0	10/19
Deltapine DPX 3451	53.4	----	4.0	23	4	1.0	10/02
Terra-Vig X5653	53.4	----	4.0	25	5	1.5	10/06
HyPerformer HSC 591	53.2	48.9	2.0	26	4	1.0	10/26
AgraTech AT 575	53.2	----	4.0	25	4	1.5	10/07
AgraTech AT 2555	53.0	----	3.3	23	3	1.0	10/02
Hartz Variety H5088	52.4	----	4.3	20	4	1.0	10/12
Pioneer® Variety 9592	52.4	47.2	2.8	24	4	1.0	10/24
Hartz Variety H5070	52.1	----	1.8	23	3	1.5	10/22
Deltapine DPX 3589	52.1	----	3.0	26	4	1.0	10/02
Riverside RVSL 90-94	51.8	----	3.3	23	4	1.0	10/02
Deltapine 415	51.7	47.3	3.3	24	4	1.5	10/05

Continued.

Table 1. Continued.

Maturity group and variety/brand	Yield per acre	2-year average yield[a]	Aerial blight rating[1]	Plant height	Lower pod height	Lodging[2]	Maturity date
	----------(bu/A)--------			---------(in)———		----(%)----	
Group VI (continued)							
Northrup King S64-23	47.2	43.6	3.3	26	6	2.3	10/04
Bryan	47.0	43.0	2.0	31	6	1.8	10/26
Stoneville FFR 671	46.6	----	3.3	25	3	2.5	10/26
HyPerformer HB2 - X6138	46.4	----	3.0	24	5	2.0	10/20
HyPerformer HSC 623	46.3	40.1	3.3	24	4	2.5	10/05
Asgrow A6785	46.2	41.8	3.5	28	3	2.3	10/29
Hornbeck HBK 65	45.3	----	2.3	24	3	2.5	10/06
Brim	44.2	44.0	4.8	28	5	2.5	10/19
Buckshot 67	43.8	----	4.8	30	4	2.5	10/28
Hartz Variety H6500	41.8	----	3.8	23	3	1.0	10/06
Northrup King X9169	41.2	----	3.5	29	5	1.5	10/17
Northrup King X9267	40.0	----	4.3	19	2	1.0	10/28
LSD (0.1)	6.6						
CV (%)	11.3						
Group VII							
Hartz Variety H7550	49.8	----	2.5	28	5	1.0	11/16
Hornbeck HBK 79	48.7	----	3.3	28	4	1.3	11/15
Pioneer® Variety 9761	47.2	----	----	26	4	1.0	11/01

Continued.

Table 1. Continued.

Maturity group and variety/brand	Yield per acre	2-year average yield[a]	Aerial blight rating[1]	Plant height	Lower pod height	Lodging[2]	Maturity date
	(bu/A)			(in)		(%)	
Group VII (continued)							
UAPX 82	46.3	----	2.8	28	4	1.5	10/24
HyPerformer HSC 741	45.6	----	2.3	27	4	1.0	11/15
Stonewall	45.5	46.3	2.8	27	4	1.0	10/24
HyPerformer HSC 721	45.2	42.6	2.8	25	4	1.0	10/28
Deltapine DP 3776	45.2	43.4	2.0	27	4	1.3	11/15
LA88-36	44.8	----	2.5	26	4	1.5	10/30
Terra-Vig 727	44.8	42.5	3.5	26	4	1.0	10/25
LA88-406820	44.6	----	3.8	28	4	2.0	10/26
Colquitt	44.2	42.0	3.0	27	4	1.0	11/03
Hartz Variety HX716083	44.2	----	----	27	4	1.0	11/13
LA78-5286	44.1	39.5	3.8	28	4	1.5	10/30
HyPerformer HB2 - X733	43.4	----	3.5	28	4	1.3	10/27
Hartz Variety H7999	43.0	----	3.5	28	4	1.3	11/03
Terra-Vig 7292	42.7	----	2.0	26	4	1.0	11/13
AgraTech AT 700	42.6	41.9	2.3	30	5	1.0	11/15
MECO 799	42.5	----	5.0	25	4	1.0	11/03
Riverside RVSL 91-75	42.5	----	2.8	30	4	1.8	11/13
Hartz Variety H7190	42.0	43.3	3.3	27	3	1.3	11/15
Pioneer® Variety 9791	41.9	44.2	2.8	26	4	1.5	11/01
UAPX 80	41.0	—	3.0	25	5	1.5	10/27
Stoneville FFR 731	41.0	—	2.5	25	4	1.0	10/30

Continued.

Table 1. Continued.

Maturity group and variety/brand	Yield per acre	2-year average yield[a]	Aerial blight rating[1]	Plant height	Lower pod height	Lodging[2]	Maturity date
	(bu/A)			(in)		(%)	
Group VII (continued)							
Riverside RVS 757	40.9	40.6	3.0	28	4	1.0	11/15
Deltapine DPX 3733	38.9	----	2.8	25	4	1.0	10/25
Pioneer® Variety 9711	38.8	42.5	3.5	23	4	1.3	10/25
Buckshot 723	38.3	39.2	3.0	30	4	2.3	10/26
Hamlin Achiever 790	38.1	—	3.3	29	4	1.3	11/02
Asgrow 7986	38.0	39.5	3.8	26	4	1.0	11/15
Thomas	33.1	35.8	3.8	29	5	1.0	10/25
LSD (0.1)	7.4						
CV (%)	14.7						
Group VIII							
Cook	41.1	—	3.3	29	4	1.5	11/15
Pioneer® Variety 9831	39.6	—	3.5	27	4	1.0	11/02
LSD (0.1)	9.9						
CV (%)	17.9						

[a] Excessive rainfall in 1991 prevented variety testing.
[1] Aerial blight ratings: 1 = little a.b.; 9 = plants dead.
[2] 1 = no lodging; 5 = all plants leaning or lodged.

GRAIN SORGHUM VARIETY TEST

R.J. Habetz and M.J. Kang

Location: Rice Research Station

Soil Type: Crowley silt loam

Planting Date: Apr 21, 1992

Row Spacing: 32 inches

Fertilizer: 40-80-80 (N-P_2O_5-K_2O) banded at planting; 80-0-0 (21%) on May 20

Plot Size: 4 rows x 30 ft

Treated: 3 pt/A atrazine applied broadcast after planting

Rainfall: 1st week after planting, .70 in; 2nd week, 1.21 in; 3rd week, .30 in

Harvested: Sept 4

Experimental Design: Randomized complete block with four replications

Comments: In 1992, a total of 28 grain sorghum hybrids were evaluated. For the early-medium varieties, only KS710 had a yield above 4000 lb/A (Table 1). The average yield for all early-medium varieties was 3533 lb/A. Of the 3-year averages, for which a variety is recommended, Topaz (4323 lb/A) followed by Pioneer 8333 (4258 lb/A) showed the highest averaged yield.

Table 1. Performance of early-medium maturity, bird susceptible grain sorghum hybrids at the Rice Research Station, Crowley, LA. 1992.

Company/Brand	Hybrid	Yield			Grain moisture	Test weight	Plant height
		1992	2-yr[1] Mean	3-yr[2] Mean			
		lb/A			%	lb/bu	in
Northrup King	KS710	4063	—	—	14.3	55.9	40
Pioneer Hi-Bred	8333	3937	3900	4258	14.5	56.0	42
Terral Norris	TV960	3886	—	—	14.3	54.6	46
Asgrow Seed	Topaz	3795	3928	4323	14.5	55.3	50
Delta & Pine Land	G-522DR	3748	3982	4181	14.5	53.9	48
Terral Norris	TV900	3656	—	—	14.4	53.7	46
Pioneer Hi-Bred	8310	3552	—	—	15.8	54.0	51
Cargill Hybrid	837	3545	—	—	15.1	54.7	50
HyPerformer	HSC Cherokee	3544	3675	4123	14.6	55.7	51
DeKalb Plant Genet	DK56	3544	4224	—	15.4	54.0	50
Terral Norris	TV1050	3510	—	—	14.7	53.9	48
Delta & Pine Land	1552	3484	3800	3668	14.8	55.1	48
Oro Hybrids	Amigo	3460	—	—	14.6	54.6	50
Northrup King	2665	3435	3819	4050	15.0	55.3	46
Oro Hybrids	G-Xtra	3412	—	—	14.6	54.0	48
Seed Production	Penngrain DR	3356	—	—	15.1	54.7	45
Asgrow Seed	A603	3329	—	—	14.6	53.4	48
Pioneer Hi-Bred	8212Y	3322	—	—	14.5	54.3	46
HyPerformer	91HSC-17	3287	—	—	14.8	54.7	51
Pioneer Hi-Bred	8118	3238	—	—	17.0	53.8	57
DeKalb Plant Genet	DK60	2940	2971	—	15.8	53.5	47
Mean[3]		3533			14.9	54.5	48
CV (%)		9			3.0	1.7	
LSD (0.05)		430			0.6	1.3	

[1] 2-year mean: 1990 and 1992 data.
[2] 3-year mean: 1989, 1990, and 1992 data.
[3] Mean of 22 hybrids; results for one hybrid not listed because of non-payment of testing fees by company.

Table 2. Performance of full-season maturity, bird-susceptible grain sorghum hybrids at the Rice Research Station, Crowley, LA. 1992.

Company/Brand	Hybrid	Yield			Grain moisture	Test weight	Plant height
		1992	2-yr[1] Mean	3-yr[2] Mean			
		lb/A			%	lb/bu	in
DeKalb Plant Genet	DK64	3321	3806	4066	16.9	53.9	51
Delta & Pine Land	G-1616	3175	—	—	16.3	53.1	47
HyPerformer	HSC Wings	3003	3152	3336	16.1	53.3	50
Mean[3]		3146			16.6	52.9	50
CV (%)		12			5.2	1.9	
LSD (0.05)		NS			NS	NS	

[1] 2-year mean: 1990 and 1992 data.
[2] 3-year mean: 1989, 1990, and 1992 data.
[3] Mean of 6 hybrids; results for three hybrids not listed because of non-payment of testing fees by company.

WHEAT VARIETY TEST

R.J. Habetz and S.A. Harrison

Location: Rice Research Station

Soil Type: Crowley silt loam

Seeding Rate: 90 lb/A

Planting Date: Nov 26, 1991

Fertilizer: 400 # 10-20-20 at planting; topdress 75 lb (21%)

Herbicide: Glean (Pre) .50 oz/A broadcast after planting

Plot Size: 4 rows x 25 ft

Harvested: May 20

Experimental Design: Randomized complete block with four replications

Comments: The 1992 growing season was excellent and yields were generally high. The average yield of 18 entries in the test was 60.6 bu/A (Table 1). Florida 303, Madison, Coker 9835, Savannah, and Pioneer 2548 had average yields of at least 65 bu/A. Disease pressure was unusually low, and there was little yield bias against susceptible varieties in 1992. FFR 525W, Savannah, FL 8172 (experimental line), and Buckshot's DS 2368 had the highest test weights. The average test weight for the test was 56.3 lb/bu, which is quite high for south Louisiana. For the 2-year average, Florida 303 had the highest mean yield (67.0 bu/A), followed by Coker 9105, Savannah, Terral 877, and Buckshot's DS 2368, which were all statistically equal (Table 2).

Table 1. Performance of entries in the wheat performance trials at the Rice Research Station, Crowley, LA. 1992.

Brand/Variety	Yield[1]	Test weight[2]	Head day[3]	Plant height	Leaf rust[4]	Septoria[5]	Bacteria[6]
	-bu/A-	-lb/bu-		—in—	—%—	——(1-9)——	
Florida 303	73.1	55.7	76	34	1	6.5	2.0
Madison	71.1	56.0	87	34	12	4.0	1.5
Northrup King/Coker 9835	69.7	56.4	88	32	1	4.5	3.0
Agripro/Savannah	69.0	57.1	87	33	1	5.0	4.0
Pioneer/2548	65.0	56.3	96	35	4	3.0	2.5
Terral 877	63.7	55.9	87	37	1	3.5	1.0
Stoneville/FFR EX801	62.9	56.3	77	34	2	4.0	3.0
FL 8172	61.6	57.1	89	40	1	5.0	1.0
Buckshot's DS 2368	61.6	56.9	84	34	1	2.5	1.0
Northrup King/Coker 9105	60.2	56.6	89	38	2	3.0	3.5
Northrup King/Coker 9877	60.2	55.6	91	40	1	3.5	6.0
Bayles	58.1	56.2	89	36	1	4.0	3.0
Northrup King/Coker 9543	57.9	56.9	100	33	1	1.5	5.0
Wakefield	53.6	55.5	92	40	6	3.0	5.5
AgraTech/ATW270	52.1	56.2	78	36	1	6.0	1.0
Northrup King/Coker 9766	51.4	56.0	93	37	1	2.5	5.5
Stoneville/FFR 525W	51.0	57.4	96	44	4	2.0	2.0
Terral 101	49.0	55.7	93	36	2	2.5	3.0
Mean	60.6	56.3	88	36	2	3.7	3.0
CV (%)	14	1	–	4	128	26	45
LSD (0.10)	10.2	0.7	–	–	5	1.7	2.3

[1] Yields in bu/A adjusted to 13% moisture. Yield differences of less than 10.2 bu/A are not significant at the 10% probability level.

[2] Test weight differences of less than 0.7 lb/bu are not significant at the 10% probability level.

[3] Days after December 31 until 50% heading.

[4] Percent of upper three leaves affected. Rated on 4-14-92.

[5] Septoria leaf and glume blotch rated on 4-14-92, on a scale of 1 to 9, with 1 indicating no disease and 9 indicating severe disease on flag leaves and heads.

[6] Xanthomonas (bacterial streak) rated on 4-14-92, on a scale of 1 to 9, with 1 indicating no disease and 9 indicating severe disease on flag leaves and heads.

Table 2. Performance of entries in the wheat performance trials at the Rice Research Station, Crowley, LA, for 2 years.

Brand/Variety	Yield[1]	Test weight[2]	Head day[3]	Plant height	Lodging[4]	Leaf rust[5]	Septoria[6]	Bacteria[7]
	-bu/A-	-lb/bu-		—in—	—(1-5)—	—%—	——(1-9)——	
Florida 303	67.0	55.7	70	37	3	1	6.0	3.7
Northrup King/Coker 9105	62.4	56.6	82	39	3	1	3.0	2.7
Agripro/Savannah	61.9	57.1	82	35	1	1	3.8	3.2
Terral 877	60.9	55.9	82	39	2	2	3.5	2.0
Buckshot's DS 2368	59.9	56.9	84	36	2	1	2.8	2.0
Northrup King/Coker 9877	58.9	55.6	86	40	2	1	3.0	4.2
Bayles	56.4	56.2	86	36	1	1	4.2	2.7
Northrup King/Coker 9766	54.4	56.0	88	37	3	1	2.8	5.0
Stoneville/FFR 525W	51.5	57.4	90	43	1	10	2.5	2.5
AgraTech/ATW 270	48.2	56.2	72	36	1	1	6.2	2.0
Terral 101	43.6	55.7	93	36	4	1	2.2	2.0
Mean	56.8	56.3	83	38	2	1	3.6	2.9
CV (%)	15	1	–	4	–	213	24	37
LSD (0.10)	7.3	0.7	–	2	–	4	1.1	1.3

[1] Yield in bu/A adjusted to 13% moisture. Includes 1991 and 1992 data from Crowley. Yield differences of less than 7.3 bu/A are not significant at the 10% probability level.
[2] Test weight includes 1992 data only. Test weight differences of less than 0.7 lb/bu are not significant at the 10% probability level.
[3] Days after December 31 until 50% heading.
[4] Lodging rated on a scale of 1-5, with a 1 indicating no lodging and a 5 indicating that all plants were prostrate.
[5] Leaf rust as percent of upper three leaves affected.
[6] Septoria leaf and glume blotch rated on a scale of 1 to 9, with 1 indicating no disease and 9 indicating severe disease on flag leaves and heads.
[7] Xanthomonas (bacterial streak) rated on a scale of 1 to 9, with 1 indicating no disease and 9 indicating severe disease on flag leaves and heads.

WHEAT NITROGEN-FUNGICIDE TEST

R.J. Habetz and S.A. Harrison

Location: Rice Research Station

Soil Type: Crowley silt loam

Plot Size: 4 x 25 ft

Planting Date: Nov. 26, 1991

Herbicide: Glean (Pre) .50 oz/A broadcast after planting

Fertilizer: 400 lb 10-20-20 at planting

Treatments: Varieties: Coker 9877, Coker 9105, Buckshot 2368, FFR 525W

Fungicides: None, two applications of Dithane (1.0 lb/A) plus Bayleton (4 oz/A)

Topdress nitrogen rates:
60 lb/A (ammonium nitrate at jointing)
90 lb/A (60 lb/A at jointing + 30 lb/A 2 weeks later)
120 lb/A (60 lb/A at jointing + 60 lb/A 2 weeks later)

Harvested: May 21

Comments: This test was initiated because in previous variety trials with high management, there was very little interaction between management and varieties. Such was that the highest yielding varieties under conventional management were also the highest yielding under high management. The high management consisted of additional topdress nitrogen and fungicides, as a package. The current studies were designed to identify whether the response to management was the result of the additional nitrogen, the fungicides, or both. Disease pressure was very light in 1992, and there was not much response to fungicide (Table 1). All yields were good, with the highest yields generally coming from the 90 or 120 lb/A nitrogen treatments. As far as variety response, Buchshot's DS 2368 showed the highest yield (89.2 bu/A).

Table 1. Performance of nitrogen by fungicide study at the Rice Research Station, Crowley, LA. 1992.

Variety	Fungicide[1]	Nitrogen[2]	Yield[3]	Test weight[4]	Heading day[5]	Leaf rust[6]	Septoria[7]	Bacteria[8]
			-bu/A-	-lb/bu-		--%--	----------(1-9)----------	
BS 2368	N	120	100.2	56.9	87	5	2.5	2.3
Coker 9877	F	120	96.7	56.3	--	15	1.3	2.8
BS 2368	N	90	91.5	56.9	85	20	2.5	3.5
Coker 9877	N	90	90.8	56.8	86	5	2.8	2.8
BS 2368	F	90	90.4	56.6	--	0	2.0	3.0
BS 2368	F	60	90.0	56.8	--	0	1.8	1.5
BS 2368	F	120	89.2	57.3	--	0	1.3	3.3
Coker 9877	N	120	88.3	56.1	86	3	3.8	3.5
FFR 525W	F	90	85.3	56.0	--	0	1.3	3.3
Coker 9105	F	90	82.5	55.8	--	0	1.3	2.5
Coker 9877	F	90	82.0	56.4	--	0	1.3	1.0
Coker 9105	F	120	81.6	55.7	--	3	1.3	2.5
Coker 9105	N	90	80.7	54.7	87	13	3.0	3.0
FFR 525W	N	120	77.9	56.3	94	20	2.5	2.5
Coker 9105	N	120	76.5	56.0	89	0	2.5	2.8
FFR 525W	N	90	75.0	56.2	93	0	3.0	3.0
Coker 9877	F	60	74.3	55.3	--	3	1.3	3.0
BS 2368	N	60	74.3	56.2	83	23	4.0	2.8
FFR 525W	F	120	74.0	56.3	--	0	1.3	2.3
Coker 9105	F	60	72.0	55.2	--	10	1.3	2.3

Continued.

Table 1. Continued.

Variety	Fungicide[1]	Nitrogen[2]	Yield[3]	Test weight[4]	Heading day[5]	Leaf rust[6]	Septoria[7]	Bacteria[8]
			-bu/A-	-lb/bu-		--%--	----------(1-9)----------	
FFR 525W	N	60	69.5	55.5	91	3	3.3	1.5
Coker 9877	N	60	69.0	55.3	84	3	2.3	2.8
Coker 9105	N	60	66.1	55.7	85	0	2.8	1.5
FFR 525W	F	60	59.6	55.8	--	5	1.3	2.0
Test Mean			80.7	56.1	88	5	2.1	2.5
Treatment Means								
Fungicide			81.5	56.1	--	3	1.4	2.4
None			80.0	56.1	88	8	2.9	2.6
60 lb N			71.8	55.7	86	6	2.2	2.2
90 lb N			84.8	56.2	88	5	2.1	2.8
120 lb N			85.5	56.4	89	6	2.0	2.7
Coker 9877			83.5	56.0	85	5	2.1	2.6
Buckshot's DS 2368			89.2	56.8	85	8	2.3	2.7
FFR 525W			73.5	56.0	93	5	2.1	2.4
Coker 9105			76.6	55.5	87	4	2.0	2.4

[1] N = no fungicide applied; F = two applications of Dithane (2 lb) + Bayleton (3 oz).
[2] 60 = 60 lb/A of topdress nitrogen; 90 = 60 + 30 split; 120 = 60 + 60 split.
[3] Yield in bu/A adjusted to 13% moisture. [4] Test weight. [5] Days after December 31 until 50% heading.
[6] Percent of upper three leaves affect by leaf rust.
[7] Septoria leaf and glume blotch complex rated on a scale of 1 to 9, with a 1 indicating that no disease occurred and a 9 indicating very severe disease on the upper leaves and head.
[8] *Xanthomonas* (bacterial streak) rated on a scale of 1 to 9, with a 1 indicating no disease and a 9 indicating severe disease on the upper leaves and head.

KENAF VARIETY TEST

R.J. Habetz

Location: Rice Research Station

Soil Type: Crowley silt loam

Planting Date: Apr 22, 1992

Row Spacing: 32 inches

Fertilizer: 80-40-40 (N-P_2O_5-K_2O) banded at planting;
68-0-0 (45%) topdress on May 25

Plot Size: 4 rows x 30 ft

Herbicide: 2.0 pt/A Dual

Rainfall: 1st week after planting, .70 in; 2nd week, 1.21 in; 3rd week, .30 in

Harvested: Oct 30

Experimental Design: Randomized complete block with four replications

Comments: Kenaf (Hibiscus cannabinus) is a high fiber, biodegradable crop which has many uses, with research emphasis being mostly on newsprint. In 1992, overall yields were much higher than 1991 with the exception of a numbered variety 19-117-2, which had a low yield due to poor seed quality (Table 1). Cubano-108 had the highest yield (8.43 t/A) followed closely by Tainung 2 (7.62 t/A) and 15-2 (7.52 t/A), which for the past 2 years was the highest yielding variety. For the 3-year average 15-2 (7.32 t/A) had the highest average. Seven of the other varieties had a 3-year average above 5 t/A.

Table 1. Performance of Kenaf varieties grown on a Crowley silt loam soil at the Rice Research Station, Crowley, LA. 1992.

Variety	1992	1992	3-year average	Plant height	Moisture
	-(lb/A)-	-(t/A)-	--(t/A)--	-- (ft)---	---(%)--
Cubano-108	16860.1	8.49	6.10	12.5	70.8
Tainung 2	15229.3	7.62	5.89	13.0	70.8
15-2	15034.0	7.52	7.32	13.0	70.6
Tainung 1	14567.8	7.28	5.85	14.0	70.6
78-18RS10	13501.8	6.75	5.32	12.0	75.2
Everglades 71	13405.6	6.70	5.91	10.0	73.1
45-9	12605.3	6.30	5.27	13.0	74.2
Everglades 41	12477.6	6.24	5.58	13.0	70.2
Cubano	11649.7	5.82	4.91	12.0	73.0
19-117-2	5398.6	2.70	4.06	11.0	74.5
CV (%)	14.56				
LSD (0.05)	2762.5				

SOYBEAN PHYSIOLOGY TEST

R.J. Habetz

Location: Rice Research Station

Soil Type: Crowley silt loam

Variety/Seeding Rate: Centennial, 50 lb/A

Planting Date: June 19, 1992

Row Spacing: 32 inches

Fertilizer: 0-80-80 (N-P_2O_5-K_2O) banded at planting

Plot Size: 4 rows x 30 ft inside two rows harvested

Treated: Vegetative stage (V-4), July 20; early flower, Aug 12; late flower, Aug 21

Herbicide: 1.5 pt/A Dual

Rainfall: 1st week after planting, 1.27 in; 2nd week, 3.51 in; 3rd week, 0.00 in

Harvested: Oct 25

Comments: As the yields indicate, growing conditions were great. Even though we know that a soybean plant aborts about one-half of its flowers, this preliminary test shows that applying a growth regulator will not influence flower abortion, seed size, or yield. Gibberellic acid was applied at three stages, vegetative, early flower, and late flower development, to enhance yield. The highest yielding treatment was the check plots which did not receive any growth regulator (Table 1). It would appear from these results that the higher rate applied at the vegetation stage did increase yield. The early flower application did not show a significant difference, but late flower applications showed a significant difference for the lower rate.

Table 1. The effect of gibberellic acid applied at different plant growth stages on yield of Centennial soybeans. Rice Research Station, Crowley, LA. 1992.

Treatment	Rate of application	Application time	Mature plant height	Yield
	---(oz/A)---		--(in)--	-(bu/A)-
Gibberellic acid	3.0	early flower	26	71.4
Gibberellic acid	3.0	late flower	25	69.1
Gibberellic acid	3.0 + 3.0	early + late	26	65.0
Gibberellic acid	3.0	vegetative	28	64.9
Gibberellic acid	12.0	early flower	24	69.3
Gibberellic acid	12.0	late flower	26	63.4
Gibberellic acid	12.0 + 12.0	early + late	25	69.2
Gibberellic acid	12.0	vegetative	26	72.7
Check	-----	-----	25	74.6
CV (%)				4.31
LSD (0.05)				4.3

SOYBEAN PLANTING METHODS STUDY

R.J. Habetz

Location: Rice Research Station and Buster Hardee Farm

Soil Type: Silty loam

Variety/Seeding Rate: Hartz 6686; no till, 50 lb/A; drill, broadcast 85 lb/A; conventional rows, 50 lb/A

Planting Date: RRS, May 14; Hardee Farm, May 25

Row Spacing: No-till, 30 in; drill, 7 in; rows, 30 in

Fertilizer: RRS, 0-80-80 (N-P_2O_5-K_2O); Hardee Farm - None

Plot Size: 10 x 30 ft

Subsoil: 15 to 17 inches deep

Herbicide: 2.0 pt/A Roundup as burndown, 2.0 pt/A Dual, .5 lb/A Sencor

Rainfall: RRS - 1st week after planting, .67 in; 2nd week, 1.30 in; 3rd week, 3.14 in; Hardee Farm - adequate

Harvested: RRS, Nov 2; Hardee Farm, Nov 17

Experimental Design: Randomized complete block, four replications

Comments: Subsoiling is the only method to break the hardpan, which lies 6 to 8 inches below the soil surface in southwest Louisiana. This test was initiated to compare subsoiling with different planting methods. The two locations of this test enabled us to get data under different planting conditions. At the Rice Station, there was no difference in the subsoil treatments (Table 1), whereas, the Hardee Farm test showed a 2.7 bu/A increase in the plots that were subsoiled (Table 2). The results at the Rice Station are the same as the results that were received in a similar preliminary test in 1991. The highest yielding treatment at the Rice Station was conventional tillage on rows with no subsoiling, which the Hardee Farm test showed conventional broadcast and subsoiling as the highest yield treatment. Overall, there was little difference in yield, except the two broadcast and no-till, no subsoil treatments which were lower at the Rice Station. On the Hardee Farm, no-till subsoil, conventional rows, and conventional rows + subsoil were all lower than the other treatments.

It must be pointed out that this is just preliminary data and the important factor of rainfall verses drought conditions must be considered before final conclusions can be drawn.

Table 1. Performance of subsoil vs. no subsoil in a conventional tillage and no till soil at the Rice Research Station, Crowley, LA. 1992.

Treatment	Plot weight	Moisture	Yield (bu/A)
No till	18.80 b	13.85 ab	42.9 b
No till + subsoil	19.65 ab	13.85 ab	44.8 ab
Conventional-rows	23.17 a	14.08 a	52.8 a
Conv.-rows+subsoil	21.23 ab	13.75 ab	48.5 ab
Conventional-drill	21.75 ab	13.98 ab	49.6 ab
Conv.-drill+subsoil	21.83 ab	13.88 ab	49.8 ab
Conv.-broadcast	18.48 b	13.65 b	42.3 b
Conv.-brdcst.+subsoil	19.22 b	13.85 ab	43.9 b
LSD (.05) =	3.21	0.30	7.3
Standard Dev. =	2.20092	.205380	5.02304
CV =	10.73	1.48	10.73

Means followed by same letter do not significantly differ (Duncan's MRT, P = .05).

Table 2. Performance of subsoil vs. no subsoil in a conventional tillage on no-till soil at the Buster Hardee Farm, Gueydan, LA. 1992.

Treatment	Plot weight	Moisture	Yield (bu/A)
No till	12.50 ab	15.43 a	28.0 ab
No till + subsoil	11.52 b	15.38 a	25.8 b
Conventional-rows	12.10 b	15.28 a	27.1 b
Conv.-rows+subsoil	12.18 b	15.30 a	27.3 b
Conventional-drill	14.08 ab	15.48 a	31.5 ab
Conv.-drill+subsoil	15.67 ab	15.53 a	35.1 ab
Conv.-broadcast	13.07 ab	15.32 a	29.3 ab
Conv.-brdcst.+subsoil	17.30 a	15.80 a	38.6 a
LSD (.05) =	4.46	0.54	10.0
Standard Dev. =	3.05708	.367705	6.85016
CV =	22.56	2.38	22.57

Means followed by same letter do not significantly differ (Duncan's MRT, P = .05).

EVALUATION OF GROUP IV SOYBEAN PRODUCTION IN LOUISIANA

R.J. Habetz and D.J. Boethel

Experiment: Group IV and V Stinkbug Evaluation

Location: Rice Research Station

Soil Type: Crowley silt loam

Planting Date: Group IV, April 21; Group V, May 20

Row Spacing: Drill, 7 inches

Plot Size: .2 acre

Herbicide: Dual 2.0 pt/A

Variety: Group IV, Pioneer 9442; Group V, Coker 485

Seeding Rate: 50 lb/A

Insecticide: Orthene 1.0 lb/A, Group IV applied 7/20, 8/6, 8/14; Group V applied 8/20, 9/10, 9/24

Fertilizer: 400 lb 0-20-20

Harvest Date: Group IV, Sept. 17; Group V, Oct. 15

Results: The southern green stinkbug was the predominant species collected in 1992. Populations increased throughout the season. Poor control on August 6 required another insecticide application on August 13. This was partially due to movement of stinkbug in from adjacent, infested variety plots. The frequent infestation of stinkbugs and subsequent insecticide applications are an indication of potential problems in Group IV varieties. Group V plots were first infested on July 9, and southern stinkbug populations gradually increased during the season. The highest population peak occurred on September 24 at 33 per 25 sweeps. Yield data for the Group IV plots was not substantially different from Group V plots. A mean of 43.9 bu/A for Group IV plots was comparable with yields in Group V of 48.8 bu/A.

SOYBEAN WEED CONTROL RESEARCH

R.J. Habetz and J.L. Griffin

INTRODUCTION

Red rice (Oryza sativa L.), a major weed problem in the rice producing area of southwest Louisiana, and other weed species that, at times, can be hard to control are the reason for ongoing weed control research at the Rice Research Station. Research with herbicides that have been shown to control weed species, to see if lower rates applied at specific timing, is essential. With the ever increasing need for lowered cost input, studies were conducted to control cocklebur (Xanthium strumarium L.), pitted morningglory (Ipomea lacunosa L.), and mexicanweed (texasweed) (Caperonia palustris L.) at lower rates. Since most equipment is used for drill-planted soybeans, studies were conducted on both drill- and row-planted soybeans. With interest in stale seedbed planting, tests were conducted for annual grass and broadleaf weed control using burndown herbicides.

A study for the control of annual grasses and redweed (Melochia corchorifolia L.) with canopy (metribuzin + chlorimuron) as a burndown herbicide and sicklepod (Cassia obtusifolia L.) with an experimental herbicide were also conducted.

Specific information for each experiment is individually presented followed by a table of results.

Weed control ratings for all experiments are based on a scale of 0 to 100% where 0 equals no control and 100 equals complete control.

Experiment:	**Preplant Postemergence Burndown Comparison Test**
Location:	**Rice Research Station**
Soil Type:	**Crowley silt loam**
Variety/Seeding Rate:	**Centennial, 50 lb/A**
Planting Date:	**June 18, 1992**
Row Spacing:	**30 in**
Plot Size:	**4 rows x 25 ft (treat inside 2 rows)**
Treated:	**June 18 (burndown); July 16 (Fusilade 2000)**
Weed Size:	**Annual grass, 8-10 in; Redweed, 3-4 in**
Sprayer:	**Tractor compressed air, 20 GPA, 11003 nozzles, 25 psi**
Rated:	**July 15**
Rainfall:	**1st week after planting, .10 in; 2nd week, 4.68 in; 3rd week, 0 in**
Experimental Design:	**Randomized complete block, four replications**

Table 1. Weed control using postemergence herbicides on a stale seedbed. Rice Research Station, Crowley, LA. 1992.

Treatment[1]	Rate of Application	Rate Unit	Weed Control 7/15
			-----(%)----
Gramoxone Extra	1.0	pt/A	26.3
Gramoxone Extra	2.0	pt/A	50.0
Gramoxone Extra	3.0	pt/A	62.5
Ignite	.38	lb ai/A	68.3
Ignite	.50	lb ai/A	80.0
Ignite	.75	lb ai/A	87.5
Roundup D-Pak	10.0	oz/A	76.3
Roundup D-Pak	15.0	oz/A	87.0
Roundup D-Pak	20.0	oz/A	90.8
TouchDown	.50	lb ai/A	41.3
TouchDown	.75	lb ai/A	91.3
TouchDown	1.0	lb ai/A	94.8
Check	-	-	-
LSD (0.05)			12.9
CV (%)			13.69

[1] X-77 nonionic surfactant added at 0.25% (v/v) to all treatments. Fusilade 2000 applied for control of grass regrowth.

Experiment:	**Canopy Burndown Test**
Location:	**Rice Research Station**
Soil Type:	**Crowley silt loam**
Variety/Seeding Rate:	**Centennial, 50 lb/A**
Planting Date:	**June 17, 1992**
Row Spacing:	**30 in**
Plot Size:	**3 rows x 25 ft (treat 2 rows)**
Treated:	**June 17**
Weed Size:	**Annual grass, 3-4 in; Redweed, 2 in**
Sprayer:	**Tractor compressed air, 20 GPA, 11003 nozzles, 25 psi**
Rated:	**July 16**
Rainfall:	**1st week after planting, .10 in; 2nd week, 4.68 in; 3rd week, 0 in**
Experimental Design:	**Randomized complete block, four replications**

Table 2. Canopy with burndown herbicides for control of annual grasses (AG) and redweed (RW) on a stale seedbed. Rice Research Station, Crowley, LA. 1992.

Treatment[1]	Rate of Application	Rate Unit	Weed Control 7/16 AG	Weed Control 7/16 RW
			----(%)-----	
Canopy	.0	oz/A	0.0	0.0
Canopy	.50	oz/A	10.0	26.3
Canopy	2.25	oz/A	21.3	56.3
Canopy	3.00	oz/A	16.3	83.3
Canopy	4.50	oz/A	11.3	85.5
Canopy	6.00	oz/A	7.5	93.3
Canopy + Gramoxone Super	0.0 + .50	oz/A + pt/A	17.5	6.3
Canopy + Gramoxone Super	.50 + .50	oz/A + pt/A	26.3	61.3
Canopy + Gramoxone Super	2.25 + .50	oz/A + pt/A	25.0	74.8
Canopy + Gramoxone Super	3.00 + .50	oz/A + pt/A	47.5	87.0
Canopy + Gramoxone Super	4.50 + .50	oz/A + pt/A	28.3	95.3
Canopy + Gramoxone Super	6.00 + .50	oz/A + pt/A	13.8	60.0
Canopy + Roundup	.0 + .75	oz/A + lb ai/A	26.3	11.3
Canopy + Roundup	.50 + .75	oz/A + lb ai/A	45.0	59.8
Canopy + Roundup	2.25 + .75	oz/A + lb ai/A	65.0	93.8
Canopy + Roundup	3.00 + .75	oz/A + lb ai/A	53.3	95.0
Canopy + Roundup	4.50 + .75	oz/A + lb ai/A	63.8	96.0
Canopy + Roundup	6.00 + .75	oz/A + lb ai/A	60.5	96.5
LSD (0.05)			20.1	18.1
CV (%)			46.93	19.34

[1] X-77 nonionic surfactant added at 0.25% (v/v) to all treatments.

Comments: Rainfall occured immediately after treatment application. This had an effect on burndown herbicides but helped move Canopy into the soil.

Experiment: Red Rice Control with Postemergence Herbicides

Location: Rice Research Station

Soil Type: Crowley silt loam

Plot Size: 10 x 40 ft

Treated: July 28, 1992

Weed Size: Red rice, 3-6 in

Sprayer: Backpack CO_2, 15 GPA, 11002 nozzles, 30 psi

Rated: Aug 11

Experimental Design: Randomized complete block, four replications

Table 3. Red rice control using postemergence herbicides. Rice Research Station, Crowley, LA. 1992.

Treatment[1]	Rate of Application	Application Time	Weed Control 8/11
	--lb ai/A--		-----(%)----
Bugle	.12	POT	68.8
Bugle + Fusilade 2000	.06 + .094	POT	75.0
Fusilade 2000	.25	POT	86.3
Select	.08	POT	77.5
Select	.094	POT	81.3
Assure II	.056	POT	80.0
Untreated Check	-	-	0.0
LSD (0.05)			6.0
CV (%)			6.02

[1] Agridex crop oil concentrate added at 1 qt/A to all treatments.

Experiment: XRM-5313 (Treflan/DE-498) for Sicklepod Control

Location: Rice Research Station

Soil Type: Crowley silt loam

Variety/Seeding Rate: Centennial, 50 lb/A

Planting Date: May 22, 1992

Row Spacing: 30 in

Plot Size: 4 rows x 25 ft (treat inside 2 rows)

Treated: May 22, PPi; June 26, POT

Weed Size: 3-4 in

Sprayer: Backpack CO_2, 15 GPA, 11002 nozzles, 30 psi

Rated: July 2

Rainfall: 1st week after planting, 2.98 in; 2nd week, 1.46 in; 3rd week, 2.08 in

Experimental Design: Randomized complete block, four replications

Table 4. XRM-5313 (Treflan/DE-498) for control of sicklepod in soybeans. Rice Research Station, Crowley, LA. 1992.

Treatment	Rate of Application	Application Time	Weed Control 7/2
	--lb ai/A--		-----(%)----
XRM-5313	0.69	PPI	43.8
XRM-5313	0.91	PPI	38.8
XRM-5313	1.03	PPI	55.0
Treflan	0.85	PPI	27.5
Scepter	0.125	PPI	
Treflan	0.85	PPI	45.0
Canopy	0.38	PPI	
Treflan	0.85	PPI	27.5
Lexone	0.38	PPI	
XRM-5313	0.91	PPI	91.3
Classic	0.008	POT	
X-77	0.25	POT	
Treflan	0.85	PPI	91.3
Lexone	0.38	PPI	
Classic	0.008	POT	
X-77	0.25	POT	
Treflan	0.85	PPI	87.5
Classic	0.008	POT	
X-77	0.25	POT	
Weedy Check	-	-	0.0
LSD (0.05)			21.9
CV (%)			29.7

Experiment:	**Soybean Broadleaf Tankmix Test**
Location:	**5-H Farms**
Soil Type:	**Silt loam**
Variety/Seeding Rate:	**Asgrow 6785, 90 lb/A**
Planting Date:	**June 20, 1992**
Row Spacing:	**7 in**
Plot Size:	**5 x 25 ft**
Treated:	**July 17**
Weed Size:	**2-3 in**
Sprayer:	**Tractor compressed air, 20 GPA, 11003 nozzles, 25 psi**
Rated:	**Aug 3**
Experimental Design:	**Randomized complete block, four replications**

Table 5. Controlling mexicanweed in soybeans with post overtop broadleaf tankmix herbicides. Rice Research Station, Crowley, LA. 1992.

Treatment[1]	Rate of Application	Weed Control 8/3
	--lb ai/A--	-----(%)----
Storm	.75	70.5
Cobra	.20	63.8
Scepter	.125	79.5
Reflex	.375	78.5
Classic	.008	59.0
Cobra + Classic	.10 + .008	55.0
Cobra + Classic	.20 + .004	69.5
Cobra + Classic	.10 + .004	57.5
Cobra + Reflex	.10 + .375	74.3
Cobra + Reflex	.20 + .188	71.3
Cobra + Reflex	.10 + .188	65.8
Cobra + Scepter	.10 + .125	69.0
Cobra + Scepter	.20 + .06	80.0
Cobra + Scepter	.10 + .06	75.5
Classic + Scepter	.004 + .125	84.5
Classic + Scepter	.008 + .06	75.8
Classic + Scepter	.004 + .06	82.8
Classic + Reflex	.004 + .375	64.5
Classic + Reflex	.008 + .188	63.5
Classic + Reflex	.004 + .188	56.5
Scepter + Reflex	.06 + .375	78.8
Scepter + Reflex	.125 + .188	78.3
Scepter + Reflex	.06 + .188	73.5
Weedy Check	-	0.0
LSD (.05)		17.8
CV (%)		18.61

[1] X-77 nonionic surfactant added at 0.25% (v/v) to all treatments.

Experiment:	**Off-Station Mexicanweed Rate x Timing Study**
Location:	**5-H Farms**
Soil Type:	**Silt loam**
Variety/Seeding Rate:	**Asgrow 6785, 90 lb/A**
Planting Date:	**June 20, 1992**
Row Spacing:	**7 in**
Plot Size:	**5 x 25 ft**
Treated:	**July 7, POT 1; July 14, POT 2 and 4; July 23, POT 3 and 5; July 30, POT 6**
Weed Size:	**POT 1, 1 in; POT 2 and 4, 2-3 in; POT 3 and 5, 4-6 in; POT 6, 6-8 in**
Sprayer:	**Tractor compressed air, 20 GPA, 11003 nozzles, 25 psi**
Rated:	**POT 1, July 21; POT 2 and 4, July 28; POT 3 and 5, Aug 6; POT 6, Aug 13**
Experimental Design:	**Randomized complete block, four replications**

Table 6. Application of rate and timing of broadleaf herbicides for the control of mexicanweed in soybeans. Rice Research Station, Crowley, LA. 1992.

Treatment[1]	Rate of Application	Application Time	Weed Control[2] 14 DAP
	--lb ai/A--		-----(%)-----
Storm	.38	POT 1	89.5
Storm	.38	POT 2	55.8
Storm	.38	POT 3	43.8
Storm	.75	POT 4	48.3
Storm	.75	POT 5	75.8
Storm	.75	POT 6	36.3
Cobra	.10	POT 1	91.8
Cobra	.10	POT 2	66.8
Cobra	.10	POT 3	44.0
Cobra	.20	POT 4	69.0
Cobra	.20	POT 5	56.8
Classic	.20	POT 6	30.5
Classic	.004	POT 1	71.3
Classic	.004	POT 2	45.0
Classic	.004	POT 3	34.0
Classic	.008	POT 4	49.5
Classic	.008	POT 5	49.5
Scepter	.008	POT 6	39.8
Scepter	.06	POT 1	91.3
Scepter	.06	POT 2	87.3
Scepter	.06	POT 3	71.8
Scepter	.125	POT 4	92.3
Reflex	.125	POT 5	88.3
Reflex	.125	POT 6	52.0
Reflex	.188	POT 1	93.3
Reflex	.188	POT 2	89.0
Reflex	.188	POT 3	56.0
Reflex	.375	POT 4	91.0
Check	.375	POT 5	88.0
LSD (0.05)	.375	POT 6	43.8
CV (%)	-	-	0.0
			13.7 15.53

[1] X-77 nonionic surfactant added at 0.25% (v/v).
[2] 14 DAP = 14 days after post treatment.

Experiment:	**Cocklebur and Morninglory Rate x Timing Test**
Location:	**Rice Research Station**
Soil Type:	**Crowley silt loam**
Variety/Seeding Rate:	**Centennial, 50 lb/A**
Planting Date:	**July 6, 1992**
Row Spacing:	**30 in**
Plot Size:	**3 rows x 25 ft (treat 2 rows)**
Treated:	**July 22, POT 1; July 30, POT 2 and 4; Aug 10, POT 3 and 5; Aug 18, POT 6**
Weed Size:	**POT 1, 1 in; POT 2 and 4, 2-3 in; POT 3 and 5, 4-6 in; POT 6, 6-8 in**
Sprayer:	**Tractor compressed air, 20 GPA, 11003 nozzles, 25 psi**
Rated:	**POT 1, Aug 5; POT 2 and 4, Aug 13; POT 3 and 5, Aug 24; POT 6, Sep 1**
Experimental Design:	**Randomized complete block, four replications**

Table 7. Application of rate and timing of broadleaf herbicides for the control of cocklebur (CB) and pitted morningglory (MG) in soybeans. Rice Research Station, Crowley, LA. 1992.

Treatment[1]	Rate of Application	Application Time	Weed Control[2] 14 DAP	
			CB	MG
	--lb ai/A--		------%------	
Storm	.38	POT 1	79.0	76.0
Storm	.38	POT 2	87.5	86.0
Storm	.38	POT 3	76.3	77.3
Storm	.75	POT 4	91.0	86.5
Storm	.75	POT 5	76.5	78.0
Storm	.75	POT 6	72.5	75.0
Cobra	.10	POT 1	77.5	76.8
Cobra	.10	POT 2	83.3	78.8
Cobra	.10	POT 3	71.5	77.0
Cobra	.20	POT 4	89.3	81.3
Cobra	.20	POT 5	81.0	82.8
Cobra	.20	POT 6	76.0	75.5
Classic	.004	POT 1	72.8	76.3
Classic	.004	POT 2	87.8	86.0
Classic	.004	POT 3	83.3	84.5
Classic	.008	POT 4	91.0	88.8
Classic	.008	POT 5	87.3	87.5
Classic	.008	POT 6	70.8	75.5
Scepter	.06	POT 1	89.5	72.5
Scepter	.06	POT 2	91.3	73.8
Scepter	.06	POT 3	86.5	70.0
Scepter	.125	POT 4	95.3	82.0
Scepter	.125	POT 5	90.5	79.0
Scepter	.125	POT 6	87.8	76.0
Reflex	.188	POT 1	80.5	74.8
Reflex	.188	POT 2	81.8	81.5
Reflex	.188	POT 3	75.5	78.5
Reflex	.375	POT 4	91.5	88.8
Reflex	.375	POT 5	86.8	85.8
Reflex	.375	POT 6	80.5	83.3
Check	-	-	0.0	0.0
LSD (0.05)			10.9	11.0
CV (%)			9.57	10.11

[1] X-77 nonionic surfactant added at 0.25% (v/v).
[2] 14 DAP = 14 days after post treatment.

INTERNATIONAL RICE TRAINING PROGRAM

Joseph A. Musick

The Rice Research Station has cooperated for a number of years with the Foreign Training Division of the International Agricultural Development Service by providing an information training program for international leaders, government officials, farmers, students, and others interested in the production, processing, and marketing of rice.

Data regarding the classification of visitors according to countries are presented in Table 1. A total of 58 participants, representing 11 countries, were guests at the Rice Research Station in 1992. This was a decrease of 117 participants compared with 1991. Brazil provided the largest number of visitors (13) this year.

Table 1. Number of participants by country. Rice Research Station, Crowley, LA. 1992.

Country	Number of participants
Argentina	8
Brazil	13
China	5
Costa Rica	7
Germany	8
Japan	7
Philippines	5
South Africa	2
South Korea	1
Uruguay	1
Venezuela	1
TOTAL	58

Table 2 presents information regarding the number of participants according to sponsoring organizations. The largest number was sponsored by private companies (26).

Subject matter of interest to the participants varied from general rice production practices to specific interests, such as plant breeding, water management, processing, marketing, and control of rice diseases, insects, and weeds. There was also interest in crawfish, soybeans, biotechnology, rice genetics, milling, and grading.

Table 2. Number of visitors by sponsoring organizations. Rice Research Station, Crowley, LA. 1992.

Sponsoring organization	Number sponsored
Governments (Foreign)	24
Private Companies	26
Self	3
USIA/USDA	5
TOTAL	58

AQUACULTURE RESEARCH

ANNUAL SUMMARY OF ENVIRONMENTAL CONDITIONS AND CRAWFISH PRODUCTION

W.R. McClain, K.R. Taylor, and J.J. Sonnier

Following (Table 1) is the average weekly data for environmental conditions and crawfish catch, 1991-92 season, crawfish research project, Rice Research Station, Crowley, LA. The summary is composed of averages across all experimental plots and management conditions.

Pond History: All experimental ponds were in production the previous season. Brood crawfish from previous treatments were randomly mixed and distributed in all ponds prior to water draw-down in May 1991.

Soil Type: Crowley silt loam

Water Source: Well water that traveled through 3600 feet of earthen canals prior to its entrance to crawfish ponds

Pond Area: Sixteen 0.4-acre ponds
Four 0.5-acre ponds
Two 1.0-acre ponds

Forage Crops: Rice ('Mars'): 1.6 acres
Rice ('Mars') with supplemental feed: 1.6 acres
Sorghum-Sudangrass Hybrid ('Pioneer 855F'): 1.6 acres
Rice/Sudangrass Mixture: 1.6 acres
Ratoon Rice ('Mars'), managed regrowth after grain harvest: 4 acres

Permanent Flood Date: 1 Oct 1991

Crawfish Harvest: Trapping began 3 Feb 1992 and continued through 20 May 1992. Crawfish were harvested a total of 53 days, twice during the last 5 days, for a total of 58 trap-runs per season. Thirty traps per acre were used for a total of 1740 trap-sets/A per season.

Crawfish Grades: All crawfish harvested were subjected to a grader (passive, water type), and sorted into 3 size grade categories as follows: "Export grade" - < 15 count/lb, "Restaurant grade" - 15-22 count/lb, "Peeler grade" - > 22 count/lb.

Trap Type: 3-funnel pyramid

Bait Used: Manufactured bait (Purina, Purina Mills, Inc., St. Louis, MO, and Acadiana Choice, Peoples Moss Gin, Inc., Palmetto, LA)

Table 1. Annual summary of average weekly environmental conditions and crawfish production. Rice Research Station, Crowley, LA. 1992.

Weeks	Average Weekly Soil Temp.[1] Min.	Max.	Average Weekly Air Temp. Min.	Max.	Average Weekly Water Temp. Min.	Max.	Average Weekly D.O.[2] (mg/l)	Average Monthly Forage Biomass (g/m²)	Weekly Total Water Pumped (gal/A)	Weekly Total Rainfall (inches)	Average Weekly Crawfish Dip Cnts (#/dip)	Average Weekly Crawfish Harvest (lb/A)	Average Weekly Crawfish Size (cnt/lb)	No. Days Harvested (day/wk)
	°F													
June 1-7	78.1	94.9	72.9	90.4						1.77				
June 8-14	75.0	85.6	70.6	84.7						2.58				
June 15-21	78.6	93.3	73.6	89.9						.81				
June 22-28	78.1	91.9	72.4	90.1						1.90				
June 29-July 5	78.4	92.0	73.0	90.3						1.89				
July 6-12	77.7	87.9	73.7	86.9						1.76				
July 13-19	80.1	95.1	75.4	91.1						1.46				
July 20-26	79.1	92.9	74.1	90.3						.75				
July 27-Aug 2	80.1	93.7	73.7	89.4						1.20				
Aug 3-9	80.1	94.3	72.3	89.1						.18				
Aug 10-16	77.3	87.4	72.0	87.1						2.10				
Aug 17-23	78.0	93.0	73.0	91.7						.60				
Aug 24-30	79.9	92.6	71.6	90.9						.32				
Aug 31-Sept 6	77.3	85.7	72.9	86.6						3.00				
Sept 7-13	76.1	89.0	72.3	89.0						.21				
Sept 14-20	73.9	92.4	70.7	90.6						.50				
Sept 21-27	71.9	84.9	61.9	83.7						.57				
Sept 28-Oct 4	70.6	85.7	61.4	85.1				388.26	346,286	0.00				
Oct 5-11	64.9	81.9	52.3	79.4	56.5	75.7	5.4		116,571	0.00				
Oct 12-18	67.1	86.6	51.0	85.6	62.9	76.8	3.4		137,143	0.00	.42			
Oct 19-25	69.7	78.7	58.7	84.3	66.5	79.2	2.5		82,286	1.50	.72			
Oct 26-Nov 1	70.9	80.1	66.9	81.3	69.4	79.3	2.9	392.98	27,429	3.80	1.26			
Nov 2-8	47.4	61.9	36.4	58.0	44.8	59.5	8.3		82,286	0.00	.43			
Nov 9-15	46.7	59.4	40.0	62.3	50.4	61.4	7.5		27,429	0.00	.78			
Nov 16-22	61.4	70.0	58.0	73.9	61.1	69.9	3.7		27,429	1.50	.43			
Nov 23-29	49.1	61.6	41.4	64.7	46.9	65.3	7.3			0.00	.94			
Nov 30-Dec 6	55.6	68.1	50.6	69.7	47.0	68.9	6.0	371.91		1.10	.84			

(continued)

Table 1. Continued.

Weeks	Average Weekly Soil Temp.[1] Min.	Max.	Average Weekly Air Temp. Min.	Max.	Average Weekly Water Temp. Min.	Max.	Average Weekly D.O.[2] (mg/l)	Average Monthly Forage Biomass (g/m²)	Weekly Total Water Pumped (gal/A)	Weekly Total Rainfall (inches)	Average Weekly Crawfish Dip Cnts (#/dip)	Average Weekly Crawfish Harvest (lb/A)	Average Weekly Crawfish Size (cnt/lb)	No. Days Harvested (day/wk)
	°F													
Dec 7-13	58.1	65.1	56.4	71.3	58.1	68.5	3.7			.20				
Dec 14-20	52.7	61.7	45.4	63.7	49.3	66.7	6.7			1.00	.80			
Dec 21-27	55.0	62.0	48.0	66.1	—.—	—.—	—.—			.20	—.—			
Dec 28-Jan 3	51.5	58.0	38.8	58.7	46.9	65.3	7.8	302.37	54,857	0.00	—.—			
Jan 4-10	53.1	61.0	45.6	64.4	49.1	60.8	6.1		27,429	3.70	.92			
Jan 11-17	47.3	56.1	35.4	56.0	44.4	61.7	9.2			.90	.58			
Jan 18-24	43.0	53.4	33.7	52.0	39.9	54.5	10.2			4.30	.17			
Jan 25-31	50.9	56.6	45.4	59.3	49.7	58.6	7.2	241.43		2.00	.54			
Feb 1-7	49.6	58.6	43.4	61.1	43.7	70.7	9.5			3.60	.87	59.84	22.2	3
Feb 8-14	49.4	60.7	44.1	64.7	46.0	66.0	5.0		27,429	0.00	.87	37.96	23.2	3
Feb 15-21	57.7	67.7	52.9	71.7	56.3	78.8	3.4		27,429	2.60	1.37	53.12	23.2	4
Feb 22-28	54.6	64.7	50.7	67.1	52.7	79.3	4.2			1.00	.94	60.80	23.8	3
Feb 29-Mar 6	58.4	69.1	55.1	74.7	50.0	82.4	2.3	250.23	27,429	.70	—.—	60.80	24.0	3
Mar 7-13	57.7	69.0	50.7	68.4	50.9	78.8	4.6		8,571	0.00	.66	82.80	24.8	3
Mar 14-20	58.4	72.7	53.4	73.7	56.8	78.8	4.3		96,000	.70	—.—	78.36	24.9	4
Mar 21-27	55.6	72.0	46.6	69.6	50.0	84.2	4.1			0.00	1.20	68.05	24.6	3
Mar 28-Apr 3	59.6	71.9	53.3	70.4	55.4	87.8	7.3	139.53	69,818	.90	1.07	66.04	24.4	3
Apr 4-10	58.7	74.0	51.4	73.1	51.8	92.3	3.3			1.10	—.—	66.18	24.5	3
Apr 11-17	67.0	82.6	62.4	82.1	68.5	91.0	4.2		87,273	.10	.49	78.61	25.5	3
Apr 18-24	66.0	81.6	60.4	82.0	66.8	87.2	4.5		34,909	.90	.29	74.07	24.9	3
Apr 25-May 1	63.3	76.7	56.4	75.0	60.8	86.9	6.1	64.51		1.70	.33	71.27	24.8	3
May 2-8	55.0	79.0	58.0	78.7	—.—	—.—	—.—			1.55		56.33	25.1	3
May 9-15	66.6	82.9	64.1	82.3	64.4	92.3	4.0		34,909	0.00		124.08		5
May 16-22	72.9	90.0	67.7	86.9	71.6	90.5	3.6		128,000	.20		43.71		4
May 23-31	72.3	85.8	66.6	83.3				42.16		3.80				
TOTAL									1,470,912	60.65		1084.02[3]		53

[1] Soil temperature was measured at a depth of 4 inches.
[2] Dissolved oxygen readings were taken about 8:00 a.m.
[3] Percent of total yield according to size grade categories were: "Export grade" = 11.42%; "Restaurant grade" = 32.15%; "Peeler grade" = 56.43%.

EVALUATION OF SORGHUM-SUDANGRASS HYBRID AS A CRAWFISH FORAGE CROP

W.R. McClain, K.R. Taylor, J.J. Sonnier

INTRODUCTION

Crawfish production in Louisiana typically depends solely on a forage-based food system to supply all the nutrition for culturing crawfish. Rice is a reliable forage crop and is considered the standard agronomic crop for this purpose. It can yield 3,000 to 4,000 lb/A dry matter, and because it is a semi-aquatic plant, it tends to persist longer than other species that are less adapted to wet conditions. It is often planted solely for crawfish production, and also, because it exhibits good regrowth potential, it is used in crop rotation practices where crawfish production subsequently follows the grain harvest.

An interest has developed recently in the use of a sorghum-sudangrass hybrid as a crawfish forage crop. This plant displays extremely fast growth rates, produces a remarkable amount of forage dry matter, is very drought resistant, and may prove more reliable for late summer stand establishment. Therefore, this study was conducted to compare sorghum-sudangrass with rice as a crawfish forage crop.

Pond Area: Twelve 0.4-acre ponds

Forage Crop(s): Rice ('Mars') and Sorghum-Sudangrass Hybrid ('Pioneer 855F'): Forage types were used as treatment factors

Planting Date: 1 Aug 1991

Seeding Rate: Rice, 110 lb/A; Sorghum-Sudangrass, 35 lb/A; Rice/Sudangrass mixture - Rice at 55 lb/A and Sorghum-Sudangrass at 17.5 lb/A

Seeding Method: Broadcast then lightly covered

Fertilizer: 20-10-10 at 300 lb/A preplant incorporated; 21-0-0 at 250/A (topdress), 11 Sept

Herbicide(s): Rice - Stam + Basagran (4 qt + 3 pt/A) at tillering
Sorghum-Sudangrass - Atrazine (3 pt/A) pre-emergent
Rice/Sudangrass mixture - none

Insecticide: Sevin (1.5 qt/A) for control of armyworms

Permanent Flood: 1 Oct

Crawfish Harvest: 3 Feb - 20 May 1992 (Total of 58 trap runs)

Trap Type and Density: 3-funnel pyramid at 30 traps/A

Crawfish Grades: All crawfish harvested were subjected to a grader (passive, water type), and sorted into 3 size grade categories as follows: "Export grade" - < 15 count/lb, "Restaurant" - 15-22 count/lb, "Peeler" - > 22 count/lb.

Exp. Design: Randomized complete block (four replications)

Treatments: Rice, Sorghum-Sudangrass, Rice/Sorghum-Sudangrass mixture

Parameters: Crawfish production, Dip-net sweep counts, Forage biomass, Forage persistence, Dissolved oxygen

Comments: No significant differences due to forage type were observed for dissolved oxygen in crawfish ponds (Table 1). However, the trend was for ponds planted with sorghum-sudangrass to average lower values of dissolved oxygen, especially during the fall and late spring. It must be noted though, that only rarely did oxygen levels drop below the critical level of 1.0-1.5. The numbers and trends of juvenile crawfish observed from dip-net sweeps indicate no adverse consequences from the lower oxygen readings. The dip-net sweep counts in the sorghum-sudangrass ponds had a tendency to be higher, although not significantly so.

Forage profiles (Table 1) indicate that sorghum-sudangrass achieved higher standing forage biomass than rice, although its growth was mostly achieved prior to flood-up. Rice had considerably lower values at flood-up but continued to grow and started its decline only after a killing frost in December. Its disappearance rate was faster than that of sorghum-sudangrass. Rice had disappeared completely by May, whereas sorghum-sudangrass had higher amounts of vegetative substrate persisting during spring, a highly critical time for producers.

Although other parameters demonstrate some differences that may be due to forage type, the production data reveals that yield and average size of crawfish are similar, regardless of forage type (Table 2). Under the conditions of this study, sorghum-sudangrass performed equally as well as rice in regards to yields and average size of crawfish in each grade category as well as total annual yield. There appeared to be no advantage, under the conditions of this experiment, to mixing rice and sorghum-sudangrass in the same field.

Table 1. Effects of forage type on monthly averages of standing forage biomass (lb/A), dissolved oxygen (mg/l), and dip-net sweep counts (# crawfish/dip). Rice Research Station, Crowley, LA. 1992.

Forage type	Flood-up	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May
				Forage biomass					
Rice	436	1887	2381	3397	2087	2329	825	259	0
Sorghum-Sudangrass	6058	6477	3796	2605	3313	3386	3321	1931	1893
Rice/Sudangrass Mix	3170	2001	3837	2419	1677	2774	1388	1381	704
				Dissolved Oxygen					
Rice	------	5.4	7.4	7.1	9.1	5.5	3.6	5.3	4.0
Sorghum-Sudangrass	------	3.5	5.1	4.5	7.5	5.2	3.8	5.0	3.3
Rice/Sudangrass Mix	------	2.3	5.1	4.5	7.9	5.2	3.0	4.0	2.7
				Dip-net sweep counts					
Rice	------	0.4	0.5	0.8	0.5	0.6	1.0	0.3	----
Sorghum-Sudangrass	------	1.5	1.1	1.2	1.0	1.6	1.1	0.5	----
Rice/Sudangrass Mix	------	1.1	1.0	1.3	0.8	0.9	1.2	0.6	----

Table 2. Effects of forage type on mean total yields (lb/A) and average size (# crawfish/lb) of crawfish according to size grades. Rice Research Station, Crowley, LA. 1992.

Treatment	Export Grade Yield	(count/lb)	Restaurant Grade Yield	(count/lb)	Peeler Grade Yield	(count/lb)	Total
Rice	48.3	(12.8)	329.8	(21.3)	679.3	(28.7)	1057.4
Sorghum-Sudangrass	48.5	(13.2)	322.5	(22.0)	641.3	(29.4)	1012.3
Rice/Sudangrass Mix	71.8	(13.0)	329.1	(21.0)	586.7	(28.7)	987.7

EFFECTS OF SUPPLEMENTAL FEED ON CRAWFISH PRODUCTION

W.R. McClain, K.R. Taylor, J.J. Sonnier

INTRODUCTION

Established forage crops, and in some cases native vegetation, is the primary food resources used in crawfish production in Louisiana. It has recently been shown that the nutrients from plant sources must be cycled through one or more trophic levels prior to substantial use by crawfish. It is the microbially enriched detritus and, probably more importantly, the larger organisms associated with detritus that supply the bulk of the required nutrition for crawfish. Recent studies have indicated that a forage-based food system may at times be nutritional deficient and inadequate for maximum crawfish production. Production increases have been achieved by supplementing forage-based systems with prepared feeds, and in some experiments, crawfish growth rate has increased with supplemental feed. However, the evidence that the use of supplemental feed increases the percentage of larger crawfish from commercial ponds is lacking.

Because of the price differential and a high market value for the larger grades of crawfish, production of higher percentages of larger crawfish is a major priority with producers. Therefore, this study examined the effects of supplemental feed on yields of three common size grades of crawfish as well as on total production.

Pond Area: Eight 0.4-acre ponds

Forage Crop(s): Rice ('Mars')

Planting Date: 1 Aug 1991

Seeding Rate: Rice - 110 lb/A

Seeding Method: Broadcast then lightly covered

Fertilizer: 20-10-10 at 300 lb/A preplant incorporated
21-0-0 at 250/A (topdress), 11 Sept

Herbicide(s): Stam + Basagran (4 qt + 3 pt/A) at tillering

Insecticide: Sevin (1.5 qt/A), 11 Sept for control of armyworms

Permanent Flood: 1 Oct

Crawfish Harvest: 3 Feb - 20 May 1992 (Total of 58 trap runs)

Trap Type and Density: 3-funnel pyramid at 30 traps/A

Crawfish Grades: All crawfish harvested were subjected to a grader (passive, water type), and sorted into 3 size grade categories as follows: "Export grade" - < 15 count/lb, "Restaurant grade" - 15-22 count/lb, "Peeler grade" - > 22 count/lb.

Feed: 25% protein complete feed (Rex Miiiing Co., New Iberia, LA)
Fed 9 March - 15 May

Exp. Design: Randomized complete block (four replications)

Treatments: Rice only, rice + supplemental feed (20 lb/A, 3 days/week, M-W-F)

Parameters: Crawfish production, Dip-net sweep counts, Forage biomass

Comments: Results showed that total production was increased 225 lb/A when ponds planted in rice where supplemented with feed under the conditions of this study (Table 1). This indicates that there can be nutritional shortages with forage-based food systems only. When annual production was evaluated, it was only the smaller size grade (Peeler) that yielded significantly greater amounts due to supplemental feed. The data was further analyzed in two parts. The harvest yields were summarized just prior to the initiation of feeding (8 Mar) for a total of 5 weeks and again at the end of the study, but only for yields accumulated during the 10-week feeding period (Table 2). The data clearly indicates that the increased production is likely a result of the feed. When evaluating the results from the feeding period only, it shows that the increased production due to the supplemental feed occurs in the two smaller size grades only. The average crawfish size in each grade category is similar, and the yields of each grade as a percent of the total harvest are similar for each treatment.

The resulting 225 lb/A increase (21%) in crawfish production occurred from 600 lb/A of applied feed over the 10-week period. A partial budget was determined, and based on a cost of $18/cwt for the feed, a price of $0.48/lb for the increased crawfish production was necessary to "break even" on the feed cost alone. Although little is known of the biological and economic intricacies of utiiizing supplemental feeds in crawfish aquaculture, it is likely that a modified harvest strategy is necessary for maximum efficiency. It may be that an intermittent harvest strategy would allow a larger number of individuals time to achieve further growth with supplemental feed before they are harvested. This needs further investigation.

The potential of supplemental feed to spare the vegetative substrates in crawfish ponds is not clear from this data (Table 3).

Table 1. Effects of supplemental feed on mean total yields (lb/A) and average size (# crawfish/lb) of crawfish according to size grades. Rice Research Station, Crowley, LA. 1992.

Treatment	Export Grade Yield	(count/lb)	Restaurant Grade Yield	(count/lb)	Peeler Grade Yield	(count/lb)	Total
Rice Only	48.3[a]	(12.8[a])	329.8[a]	(21.3[a])	679.3[b]	(28.7[a])	1057.4[b]
Rice + Feed	44.8[a]	(12.9[a])	418.4[a]	(21.6[a])	818.9[a]	(28.3[a])	1282.1[a]

* Means followed by the same letter within a column do not significantly differ (Duncan's MRT, P=.05).

Table 2. Effects of supplemental feed on mean total yields (lb/A) and average size (# crawfish/lb) of crawfish according to size grades before and after the feeding period. Rice Research Station, Crowley, LA. 1992.

Treatment	Export Grade Yield	(count/lb)	Restaurant Grade Yield	(count/lb)	Peeler Grade Yield	(count/lb)	Total[1]
	Before feeding						
Rice Only	24.9	(12.3)	108.8	(21.3)	133.1	(29.0)	266.7[a]
Rice + Feed	22.7	(12.5)	102.5	(21.5)	137.7	(29.4)	262.9[a]
	After feeding						
Rice Only	23.4	(13.0)	221.1	(21.3)	546.2	(28.6)	790.7[b]
Rice + Feed	22.1	(13.0)	315.9	(21.5)	681.2	(28.4)	1019.2[a]

[1] Means followed by the same letter within a sub-column do not significantly differ (Duncan's MRT, P=.05).

Table 3. Effects of supplemental feed on monthly averages of standing forage biomass (lb/A) and dip-net sweep counts (# crawfish/dip). Rice Research Station, Crowley, LA. 1992.

Forage type	Flood-up	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May
	Forage biomass								
Rice	436	1887	2381	3397	2087	2329	825	259	0
Rice + Feed	1621	1836	4239	3980	3044	2668	1094	369	0
	Dip-net sweep counts								
Rice	------	0.4	0.5	0.8	0.5	0.6	1.0	0.3	--
Rice + Feed	------	0.5	0.4	0.4	0.4	1.6	1.0	0.4	--

EFFECTS OF FORAGE TYPE AND SUPPLEMENTAL FEED ON CRAWFISH GROWTH

W.R. McClain, K.R. Taylor, J.J. Sonnier

INTRODUCTION

Applied pond production studies are good at determining the effects of certain management approaches on end-result production parameters. This is often necessary when the end result of cause/effect relationships are more important than "how" or "why" certain factors are affected. Many factors interact to achieve the end results in pond production studies. However, it is often good to minimize the possible interactions in order to examine more closely the cause/effect relationship of only a few parameters. For this reason, an experiment was designed to utilize small enclosures placed in crawfish ponds where density, recruitment, harvest, food resources, and growth time could be controlled to more closely examine the effect on crawfish growth from 4 food resources and 2 densities. Other factors were desired to resemble typical pond culture conditions. The food resource treatments consisted of those used in the previous studies; Evaluation of sorghum-sudangrass as a crawfish forage crop, and Effects of supplemental feed on crawfish production.

Pond Area: Four 0.4-acre ponds

Forage Crop(s): Rice ('Mars'), Sorghum-Sudangrass Hybrid ('Pioneer 855F'), and Rice + Sorghum-Sudangrass mixture

Planting Date: 1 Aug 1991

Seeding Rate: Rice, 110 lb/A; Sorghum-Sudangrass, 35 lb/A; Rice/Sudangrass mixture - Rice at 55 lb/A and Sorghum-Sudangrass at 17.5 lb/A

Seeding Method: Broadcast then lightly covered

Fertilizer: 20-10-10 at 300 lb/A preplant incorporated; 21-0-0 at 250/A (topdress), 11 Sept

Herbicide(s): Rice - Stam + Basagran (4 qt + 3 pt/A) at tillering; Sorghum-Sudangrass - Atrazine (3 pt/A) pre-emergent; Rice/Sudangrass mixture - none

Insecticide: Sevin (1.5 qt/A) for control of armyworms

Permanent Flood: 1 Oct

Feed: 25% protein complete feed (Rex Milling Co., New Iberia, LA)

Enclosures: Cylindrical small-mesh (5 mm) wire, 0.5 m^2 surface area, placed over forage substrates in ponds

Experiments: Fall - 15 Oct 1991 - 6 Jan 1992; Spring - 11 Feb 1992 - 5 May 1992

Exp. Design: 4 X 2 factorial design (six replications)

Treatments: Food Resource (Factor 1) - Rice, Rice + Supplemental feed (20 lb/A, 3 days/wk, M,W,F), Sorghum-Sudangrass, Rice/Sorghum-Sudangrass mixture Crawfish Density (Factor 2) - 2 crawfish/m^2, 10 crawfish/m^2

Parameters: Crawfish weight gain, Standing density, Normalized biomass increase, Crawfish survival

Comments: An examination of the data (Table 1) reveals that low density and the presence of supplemental feed have the highest positive impact on crawfish size, weight gain, and normalized biomass increase. In general, growth was faster at the lower density (2 crawfish/m^2), when supplemental feed was present, during the spring growth period, and during the growth interval prior to the 12-week weigh period. The supplemental feed seems less effective during the fall and more effective during the spring. It appears effective at increasing weight gain at both densities during the spring. Crawfish receiving supplemental feed at the higher densities generally approximates the size of crawfish in the lower densities that received no supplemental feed. There appears little difference in growth responses of crawfish due to forage type, although variations exist, but no trends are obvious.

Table 1. Mean growth, standing densities and normalized biomass increase of juvenile crawfish contained in small-mesh wire enclosures at different densities and with different food resources in crawfish ponds. Rice Research Station, Crowley, LA. 1992.

	Initial Density	Average Initial Weight	Average Final Weight	Average Weight Gain	Average Daily Gain	Average Weight Gain	6-Week Average Density	Final Standing Density	Normalized[1] Biomass Increase	(N)	Average End Density
	(# crawfish/m²)	(g)				(% of initial wt)	(lb/A)				(# crawfish/m²)
FALL - 6 WEEKS											
Rice & Feed	2	.220	7.28[a]	7.06[a]	.168[a]	3209[a]	66.88	129.85	7.06[a]	(4)	2.0
Rice	2	.195	5.89[a]	5.69[a]	.135[a]	2921[a]	54.26	105.05	5.69[a]	(4)	2.0
Sorghum-Sudangrass	2	.200	4.53[a]	4.33[a]	.103[a]	2165[a]	42.20	80.83	4.33[a]	(4)	2.0
Rice/S.-Sudangrass	2	.184	4.66[a]	4.47[a]	.106[a]	2433[a]	43.20	83.11	4.47[a]	(5)	2.0
Rice & Feed	10	.187	5.36[a]	5.17[a]	.123[a]	2766[a]	195.18	376.51	4.03[a]	(6)	8.3
Rice	10	.174	4.43[a]	4.25[a]	.101[a]	2446[a]	188.74	363.27	3.90[a]	(5)	9.2
Sorghum-Sudangrass	10	.198	3.98[a]	3.78[a]	.090[a]	1910[a]	169.04	322.15	3.41[a]	(6)	9.0
Rice/S.-Sudangrass	10	.187	4.29[a]	4.11[a]	.098[a]	2194[a]	133.98	256.25	2.68[a]	(6)	7.0
FALL - 12 WEEKS											
Rice & Feed	2	7.31	18.45[a]	11.13[a]	.265[a]	152[a]	229.81	329.12	11.14[a]	(4)	2.0
Rice	2	7.23	14.06[a]	6.83[a]	.163[a]	94[a]	189.99	250.92	6.83[a]	(6)	2.0
Sorghum-Sudangrass	2	4.88	17.35[a]	12.46[a]	.297[a]	255[a]	198.32	309.52	12.46[a]	(4)	2.0
Rice/S.-Sudangrass	2	5.03	15.15[a]	10.12[a]	.241[a]	201[a]	180.12	270.42	10.12[a]	(4)	2.0
Rice & Feed	10	5.30	10.39[a]	5.09[b]	.121[a]	96[b]	631.25	837.10	4.08[a]	(6)	9.0
Rice	10	4.39	7.11[b]	2.72[c]	.065[a]	62[b]	441.97	543.75	1.71[b]	(6)	8.7
Sorghum-Sudangrass	10	3.97	10.70[a]	6.72[a]	.160[a]	170[a]	608.95	892.13	6.03[a]	(6)	9.3
Rice/S.-Sudangrass	10	4.18	10.38[a]	6.21[ab]	.148[a]	148[a]	617.41	879.16	5.68[a]	(5)	9.6

Continued.

Table 1. Continued.

	Initial Density	Average Initial Weight	Average Final Weight	Average Weight Gain	Average Daily Gain	Average Weight Gain	6-Week Average Density	Final Standing Density	Normalized[1] Biomass Increase	(N)	Average End Density
	(# crawfish/m²)	(g)				(% of initial wt)	(lb/A)				(# crawfish/m²)
SPRING - 6 WEEKS											
Rice & Feed	2	1.00	15.56[a]	14.56[a]	.347[a]	1456[a]	147.74	277.63	14.56[a]	(1)	2.0
Rice	2	1.02	6.75[b]	5.74[b]	.136[b]	562[b]	69.34	120.53	5.74[b]	(4)	2.0
Sorghum-Sudangrass	2	---	---	---	---	---	---	---	---	---	---
Rice/S.-Sudangrass	2	1.20	8.93[b]	7.74[b]	.184[b]	644[b]	90.37	159.42	7.74[b]	(2)	2.0
Rice & Feed	10	1.11	7.51[a]	6.40[a]	.152[a]	577[a]	384.91	670.35	6.40[a]	(4)	10.0
Rice	10	1.09	4.65[b]	3.56[b]	.085[b]	327[b]	216.48	350.04	2.83[b]	(5)	8.4
Sorghum-Sudangrass	10	1.07	4.81[b]	3.74[b]	.089[b]	349[b]	245.18	400.21	3.42[b]	(4)	9.5
Rice/S.-Sudangrass	10	1.17	5.73[b]	4.56[b]	.108[b]	390[b]	258.33	427.68	3.62[b]	(4)	8.5
SPRING - 12 WEEKS											
Rice & Feed	2	9.91	23.72[a]	13.81[a]	.329[a]	139[a]	389.68	551.63	21.01[a]	(3)	2.0
Rice	2	7.23	16.48[b]	9.25[ab]	.220[ab]	128[a]	243.06	336.72	11.64[a]	(6)	2.0
Sorghum-Sudangrass	2	6.60	11.57[b]	4.98[b]	.118[b]	75[a]	204.69	269.35	8.50[a]	(5)	2.0
Rice/S.-Sudangrass	2	8.44	17.11[b]	8.66[ab]	.206[ab]	103[a]	227.94	305.24	8.66[a]	(4)	2.0
Rice & Feed	10	7.60	14.86[a]	7.27[a]	.173[a]	96[a]	969.80	1285.17	6.81[a]	(5)	9.6
Rice	10	4.54	8.75[bc]	4.21[b]	.100[b]	93[a]	553.93	728.96	3.62[b]	(6)	9.3
Sorghum-Sudangrass	10	4.84	6.81[c]	1.97[c]	.047[c]	41[b]	457.61	535.90	1.17[c]	(6)	9.0
Rice/S.-Sudangrass	10	5.35	10.62[b]	5.26[b]	.125[b]	98[a]	609.90	806.13	3.69[b]	(6)	8.7

[1] Normalized biomass increase = $\frac{(W_f \times N_f) - (W_i \times N_i)}{N_i}$ where: N_f = final number of crawfish per enclosure; W_f = final mean weight of crawfish per enclosure; N_i = initial number of crawfish per enclosure; and W_i = initial mean weight of crawfish per enclosure.

[a] Means followed by the same letter within a column for each density/food resource category do not significantly differ (Duncan's MRT, P = .05).

EFFECTS OF POPULATION DENSITY ON CRAWFISH GROWTH

W.R. McClain, K.R. Taylor, J.J. Sonnier

INTRODUCTION

With the recent advent of crawfish grading practices in Louisiana and the substantial price differential according to size, there is an economic advantage for the production of larger crawfish. The effects of population density on the harvestable size of crawfish has been underestimated in the past and only recently has come to light. It was often thought that water quality and nutrition played the dominant roles in determining crawfish size at harvest. Population density, even with adequate nutrition and water quality, is now known to play a significant role in determining growth rate and size at maturity. However, there is little documentation of density optimums, tolerances, and thresholds and their effects at different growth stages of crawfish and times of the year. Therefore, this study was undertaken where crawfish could be contained in enclosures at different densities and growth monitored under typical pond culture conditions.

Pond Area: One 0.4-acre pond

Forage Crop(s): Rice ('Mars')

Planting Date: 1 Aug 1991

Seeding Rate: 110 lb/A

Seeding Method: Broadcast then lightly covered

Fertilizer: 20-10-10 at 300 lb/A preplant incorporated;
21-0-0 at 250/A (topdress), 11 Sept

Herbicide(s): Rice - Stam + Basagran (4 qt + 3 pt/A) at tillering

Insecticide: Sevin (1.5 qt/A) for control of armyworms

Permanent Flood: 1 Oct 1991

Enclosures: Cylindrical small-mesh (5 mm) wire, 0.5 m^2 surface area, placed over forage substrates in pond

Experiments: Fall: 15 Oct 1991 - 6 Jan 1992; Spring: 11 Feb 1992 - 5 May 1992

Exp. Design: Completely random design (six replications)

Treatments: Crawfish density - 2, 4, 6, 10, 14, and 18 crawfish/m^2

Parameters: Crawfish weight gain, Standing density, Normalized biomass increase

Comments: The data (Table 1) shows a very profound effect of density on crawfish growth; as density increases, growth decreases proportionally. Density's affect on crawfish growth was greater in the spring and with the older age group (12-week data). At the 6-week weigh period, growth was most affected by densities over 4-6 crawfish/m^2 while densities over 2 crawfish/m^2 affected growth at the 12-week weigh period. Population densities of 10 or more crawfish/m^2 drastically reduced weight gain, especially in the older age group.

Table 1. Mean growth, standing densities and normalized biomass increase of juvenile crawfish contained in small-mesh wire enclosures at different densities in a typical rice-forage crawfish pond. Rice Research Station, Crowley, LA. 1992.

Initial Density	Average Initial Weight	Average Final Weight	Average Weight Gain	Average Daily Gain	Average Weight Gain	6-Week Average Density	Final Standing Density	Normalized[1] Biomass Increase	(N)	Average End Density
(# crawfish/m²)	(g)				(% of initial wt.)	(lb/A)				(# crawfish/m²)
FALL - 6 WEEKS										
2	.195	5.89	5.69	.135	2921	54.26	105.05	5.69	(4)	2.0
4	.180	6.83	6.65	.158	3694	105.17	204.70	5.56	(4)	3.5
6	.182	5.63	5.45	.130	2993	126.55	244.66	4.39	(5)	5.2
10	.174	4.43	4.25	.101	2446	188.74	363.27	3.90	(5)	9.2
14	.180	4.50	4.32	.103	2400	241.53	464.58	3.54	(4)	11.5
18	.188	3.63	3.44	.082	1831	276.08	524.81	3.08	(6)	16.4
FALL - 12 WEEKS										
2	7.23	14.06	6.83	.163	94	189.99	250.92	6.83	(6)	2.0
4	6.52	11.59	5.07	.121	78	274.79	355.82	3.46	(4)	3.5
6	5.08	9.00	3.92	.093	77	350.03	446.64	3.26	(5)	5.6
10	4.39	7.11	2.72	.065	62	441.97	543.75	1.71	(6)	8.7
14	4.10	6.13	2.03	.049	50	573.94	688.28	1.41	(5)	12.4
18	3.63	5.88	2.25	.053	62	705.70	871.72	1.80	(6)	16.7
SPRING - 6 WEEKS										
2	1.02	6.75	5.73	.136	562	69.34	120.53	5.74	(4)	2.0
4	1.15	7.30	6.14	.146	535	131.92	228.34	5.25	(4)	3.5
6	1.17	5.78	4.62	.110	394	186.08	309.70	4.62	(4)	6.0
10	1.09	4.65	3.56	.085	327	216.48	350.04	2.83	(5)	8.4
14	1.11	4.52	3.41	.081	307	340.22	545.95	3.26	(5)	13.6
18	1.05	3.59	2.54	.060	242	358.44	554.84	2.41	(6)	17.3

Continued.

Table 1. Continued.

Initial Density	Average Initial Weight	Average Final Weight	Average Weight Gain	Average Daily Gain	Average Weight Gain	6-Week Average Density	Final Standing Density	Normalized[1] Biomass Increase	(N)	Average End Density
(# crawfish/m²)	(g)				(% of initial wt.)	(lb/A)				(# crawfish/m²)
SPRING - 12 WEEKS										
2	7.23	16.48	9.25	.220	128	243.06	336.72	11.64	(6)	2.0
4	6.63	15.55	8.92	.212	134	436.98	611.89	10.52	(5)	4.0
6	5.75	13.06	7.31	.174	127	444.76	615.66	5.74	(6)	5.3
10	4.54	8.75	4.21	.100	93	553.93	728.96	3.62	(6)	9.3
14	4.54	8.06	3.52	.084	78	728.99	934.50	2.94	(6)	13.0
18	3.61	5.64	2.03	.048	56	698.06	848.86	1.68	(6)	17.0

[1] Normalized biomass increase = $\frac{(W_f \times N_f) - (W_i \times N_i)}{N_i}$ where: N_f = final number of crawfish per enclosure; W_f = final mean weight of crawfish per enclosure; N_i = initial number of crawfish per enclosure; and W_i = initial mean weight of crawfish per enclosure.

EFFECTS OF RELAYING CRAWFISH INTO COMMERCIAL RICE FIELDS PLANTED IN TYPICAL AND NON-TYPICAL SEEDBEDS

W.R. McClain, P.K. Bollich, and D.C. Huffman

INTRODUCTION

A common problem in Louisiana crawfish culture is the production of small, low-market-value crawfish. This most often occurs late in the season (late spring) when ponds have been depleted of their vegetative resource. As a consequence, crawfish growth ceases or slows considerably and producers harvest very small crawfish which puts them at a major economic disadvantage.

There are over 115,000 acres devoted to crawfish production and over 500,000 acres devoted to rice production in Louisiana. Because of common resource requirements for both commodities, many producers of crawfish also cultivate rice. Crawfish culture is frequently used by rice producers in their rotational practices. For example, rice is often planted on fallow ground in early spring; after grain harvest, the fields are flooded for crawfish production. Following crawfish (May-June), the fields are planted in soybeans which are harvested the next fall, after which, the fields are left fallow until rice is planted the following spring. Many times different fields will have the same rotational plan but will be "out of synch" with each other (i.e., during the spring, producers may have crawfish ponds near newly established rice fields).

Producers who are harvesting small, low-market-value crawfish in the spring due to forage depletions and who have newly establish rice fields may have an advantage in "relaying." The vegetative growth phase (April - July) of commercial rice can be a valuable resource for obtaining additional growth and increasing the market value of crawfish. An earlier study of integrating crawfish and rice in this non-traditional approach proved successful in not only increasing the market value of crawfish but in obtaining very favorable rice yields as well.

This study repeated the earlier protocol of relaying crawfish into rice planted in a typically prepared seedbed where a fallow field was conventionally tilled prior to water seeding with rice. Additionally, the relay procedure was evaluated by transferring crawfish into a non-typical rice operation. This scenario involved planting rice in a stale seedbed where the ground was neither fallow nor tilled. More specifically, rice was water seeded in a partially drained crawfish pond, after which the remainder of the water was discharged.

Field Area: Six 1-acre fields

Forage Crop(s): Rice ('Mars')

Planting Date: 23 Mar 1992

Seeding Rate: 150 lb/A

Seeding Method: Water seeded (pre-sprouted seed)

Fertilizer: Tilled seedbed: 23-12-12 at 400 lb/A, preplant incorporated;
45-0-0 at 75 lb/A (topdressed), 15 May
Stale seedbed: 23-12-12 at 400 lb/A, 5 May;
45-0-0 at 100 lb/A (topdressed), 10 June

Herbicide(s): Tilled seedbed: Stam + Basagran (3 qt + 1 pt/A), 22 Apr;
Stale seedbed: Stam + Basagran (4 qt + 2 pt/A), 1 May

Insecticide: None

Permanent Flood: 23 Apr (5-6 inches gradually increased to 8-10 inches by 11 May)

Relay: 11 May - 20 May (1,000 lb/A)

Relay Crawfish: Average size - 32.3 crawfish/lb, purchased from commercial operation

Rice Stage at Relaying: Tillering

Crawfish Harvest: 22 June - 10 July (Total of 19 trap days) 32 traps/A

Crawfish Grades: "Export" - < 15 count/lb, "Restaurant" - 15-19 count/lb, "Peeler" - > 19 count/lb

Feed: None

Bait: Manufactured

Rice Harvest: 31 July

Market Prices: Crawfish: Export grade - $0.85/lb, Restaurant grade - $0.50/lb, Peeler grade - $0.35/lb
Rice: Market value - $6.50/cwt, Deficiency payment - $4.21/cwt

Exp. Design: Forced randomization (two replications)

Treatments: Tilled seedbed - no relay, Tilled seedbed - relay, Stale seedbed - relay

Parameters: Crawfish production, Rice production

Comments: Utilizing stands of commercial rice during the vegetative growth stage as a readily available resource for relaying crawfish appears both biologically and economically effective. Average crawfish size in this study was increased 195% (from 32.3 to 16.6 crawfish/lb). Although only 67.4 and 49.4% of the amounts of crawfish stocked were retrieved from the two treatments in this study (Table 1), sizes and percent yields from each grade category were similar. Mortality (7-day) rates of crawfish relayed into the conventionally tilled and stale seedbed fields were estimated at 37.4 and 38.0%, respectively. An additional 35% mortality was estimated in the stale seedbed field due to the application of 45-0-0 fertilizer. Crawfish remaining in the fields after harvest would serve as brood stock for the subsequent crawfish season.

Average rice yields in the control fields were good (above the state average) considering the lack of pesticides used. Rice yields were significantly lower in the relay fields due to loss of yield in the trapping lanes. Comparisons of sub-sample yield measurements from rice-only fields and relay fields were not significantly different, indicating that crawfish had no negative impact on intrinsic rice yield.

Based on expenses and incomes used in this experiment, results of the economic analysis (Table 2) indicated that net returns may be increased considerably if relaying occurs in conventionally established rice fields. The loss of rice yield due to area loss from trapping lanes was more than offset by the economic gain from crawfish. However, when rice was planted behind crawfish in stale seedbeds and relaying attempted, low rice and crawfish yields caused poor economic returns.

Regardless of the biological results of this nontraditional approach to rice/crawfish culture, the economic benefits is highly dependent on price differentials. For example, if the value of stocker crawfish was increased by only $0.05/lb without income increases, the spread between net returns of rice/crawfish (in conventionally tilled seedbeds) and rice only would decrease from $68/A to approximately $18/A.

Table 1. Average crawfish size and yield for each grade of crawfish harvested and average rice yield for each treatment. Rice Research Station, Crowley, LA. 1992.

Grade	Rice/Crawfish (tilled seedbed) Avg. size	Avg. yield	% of total	Rice/Crawfish (stale seedbed) Avg. size	Avg. yield	% of total	Rice only
	(count/lb)	(lb/A)		(count/lb)	(lb/A)		(lb/A)
Export	14.3	243	36	13.8	183	37	—
Restaurant	17.6	384	57	16.9	282	57	—
Peeler	25.5	47	7	25.8	29	6	—
Total		674[a]			494[b]		
Rice Yield		4343[b]			2193[c]		5408[a]

* Means followed by the same letter within a row do not significantly differ (Duncan's MRT, P=.05).

Table 2. Summary of estimated cost and returns per acre for rice only and rice/crawfish relay operations. Rice Research Station, Crowley, LA. 1992.

Item	Rice/Crawfish (tilled seedbed)	Rice/Crawfish (stale seedbed)	Rice only
	(Dollars)		
INCOME			
Crawfish (Export)	207	156	—
Crawfish (Restaurant)	192	141	—
Crawfish (Peeler)	16	10	—
Rice	282	143	351
Deficiency payment	180	180	180
Rice check-off	-3	-1	-3
TOTAL INCOME	874	629	528
DIRECT EXPENSES			
Custom (Airplane, drying, storage)	99	64	117
Bait	19	19	—
Fertilizer	43	43	43
Herbicide	30	35	30
Labor	32	21	22
Other (sacks, etc.)	3	2	—
Seed (crawfish)	200	200	—
Seed (rice)	23	23	23
Diesel fuel	44	30	44
Gasoline	3	3	2
Repair and maintenance	43	33	42
Interest on Op. Cap.	10	7	7
TOTAL DIRECT EXPENSES	549	480	330
RETURNS ABOVE DIRECT EXPENSES	325	149	198
FIXED EXPENSES	138	126	79
TOTAL SPECIFIED EXPENSES	687	606	409
RETURNS ABOVE TOTAL SPECIFIED EXPENSES	187	23	119

FORAGE CROPS BIOTECHNOLOGY RESEARCH

S. S. Croughan

The current emphasis of this project is to finish the evaluations of alfalfa and bermudagrass somaclones produced during earlier research. Fall armyworms (FAW) (*Spodoptera frugiperda*) were reared in a controlled environment incubator. The FAW complete a life cycle approximately once a month. Newly hatched larvae were placed two per cup on an artificial diet. After about 2 weeks the larvae pupated. Pupae were gently sterilized, and then placed in 1-gallon buckets that contained moistened vermiculite. The buckets were covered with cheesecloth. Adult moths emerged in about 7 days, at which time they were fed a honey/beer/ascorbic acid solution in addition to water. The adults began laying eggs within a week and the cheesecloth cover was changed daily to collect eggs. Neonate larvae hatched within 3 days and were used to maintain the colony and conduct resistance tests.

For mass screening of somaclones, 6 - 10 replicate cuttings of each somaclone and parent line from which it was derived were grown in 2-inch pots with vermiculite. Neonate larvae were used to infest greenhouse benches. Benches were then covered with netting, and amount of defoliation (100 = total defoliation, 50 = half of plant consumed, 0 = no defoliation) was determined after 5 - 8 days. Relative differences (comparing somaclone to parent from which it was derived for each mass screen) were used to identify somaclones for further testing, since absolute amount of defoliation varied with the weather conditions for each run of the mass screening. Most somaclones were tested in several mass screenings. Table 1 shows data from some of the tested somaclones that are potentially more resistant than the parent from which they were derived. Somaclones that consistently performed well (e.g. B1148 and B1018) were selected for further testing.

Cultures of the fungus *Bipolaris cynodontis*, the agent of leaf spot disease in bermudagrass, were maintained at the Red River Research Station. Spore suspensions were sent to the Rice Research Station for use in mass screenings of bermudagrass somaclones. Four cuttings of each somaclone and the parent from which it was derived were grown in 2-inch pots in vermiculite. Three cuttings of each were misted with the spore suspension, while the remaining replicate was misted with water as a control. No disease symptoms were observed on the control plants. After 4 - 8 days, plants were rated for amount of disease symptoms (0 = no symptoms, 5 = severe disease symptoms). Table 2 shows results on some of the somaclones that are potentially more resistant. Some somaclones (e.g. B61) were more resistant to FAW and leaf spot disease and this material will be increased for field testing.

Collaborators: P.D. Colyer, S.S. Quisenberry, J.T. Simons, and B. Marquis

Table 1. Fall armyworm defoliation of selected superior bermudagrass somaclones and their parental checks. Over 800 somaclones were screened.

Bermudagrass line	Rate of defoliation	Bermudagrass line	Rate of defoliation
parent	84	parent	60
B1148	65	B1148	10
parent	56	parent	78
B1018	36	B591	41
		B1206	23
parent	30		
B822	13	parent	79
B1026	13	B915	44
B1018	13		
B1162	10	parent	51
B1139	9	B1117	18
B1133	8	B1268	23
B1159	6		
B1136	2	parent	63
B1138	1	B1372	21
B1137	1	B1320	20
		B1172	8
Parent	68		
B912	32	parent	76
		B1411	29
parent	61		
B61	28	parent	55
		B1401	17
parent	31	B1415	16
B783	6	B1431	19
		B1422	18
parent	40	B1439	8
B226	18		
B407	18		

Rate of defoliation: 0 = no defoliation, 50 = half of plant defoliated, 100 = plant totally defoliated.

Table 2. Leaf spot disease resistance of selected superior bermudagrass somaclones and their parental checks. Over 240 somaclones were screened.

Bermudagrass line	disease rating
parent	2.7
B191	1.0
parent	4.0
B1214	2.0
B1291	1.7
B1210	1.7
B1316	1.3
parent	2.8
B88	1.7
B1564	1.7
B837	1.7
B1243	1.7
B127	1.7
B128	1.7
B1562	1.3
B40	1.3
B920	1.0
B1189	1.0
parent	4.3
B61	1.7
parent	3.3
B17	1.0
parent	3.7
B364	1.5
B372	1.3
B369	1.0

Disease ratings: 0 = no symptoms, 5 = severe symptoms

SOYBEAN BIOTECHNOLOGY RESEARCH

S. S. Croughan

Two main methods for somaclone production were used. These methods used either 2,4-dichlorophenoxyacetic acid (2,4-D) or naphthaleneacetic acid (NAA) as the auxin source. Some varieties respond to either auxin while others only respond to one. Over 600 somaclones have been regenerated and seed was collected. Several hundred somaclones were planted in the field for seed production at the Rice Research Station. Seed was also given to Dr. Harville, LAES soybean breeder, for seed increase and initial field evaluations. A new method for production of somaclonal variants was initiated. This involves using either the hypocotyl or the first leaf as the explant source instead of immature cotyledons. When using immature cotyledons, plants must be grown in the greenhouse or field to the beginning of the pod formation stage before material is usable. This restricts the time of year for field grown material to a short time during the growing season, or requires large amounts of space in the greenhouse for greenhouse-grown material. By using either the hypocotyl or first leaf, seeds can be germinated aseptically in culture dishes in incubators, and explant material is available within 2 weeks. This can be conducted year round for more flexibility.

The anther culture system for soybeans made significant progress in developing a system for potential use in soybean breeding. Over 27,000 anthers were plated on various media combinations. High rates of callus formation with desirable callus types were obtained. Early stages of shoot and root differentiation occurred. Many media modifications were developed with a focus on the effects of cytokinins and the interaction of three different cytokinins on regeneration potential. About 150 crosses with soybeans from different maturity groups were made to obtain early generation material to work with. F1 seed will be grown in the greenhouse to use for anther culture.

Research on genetically engineering soybeans using protoplasts continued. Comparisons between protoplasts from hypocotyls and immature pods were made to assess the best method. New nurse cultures were selected for improving the viability of protoplast-derived callus. Also, changes in osmotic potential of culture media and temperature of enzyme digestion were modified to optimize protoplast development. Improved plasmid DNA was prepared for transformation research. New marker genes were inserted to improve the transformation method.

Collaborators: B. Harville, J. Jaynes, S. Yao, Q. Xie, J.T. Simons, and B. Marquis

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This research is supported in part by funds provided by Louisiana producers through the Louisiana Soybean and Grain Research and Promotion Board.

BLACKBIRD MANAGEMENT IN RICE[1]

FEASIBILITY OF ATTRACTING AND BAITING BLACKBIRD FLIGHTLINES WITH 2% DRC-1339-TREATED BROWN RICE AT SIMULATED RICE FIELDS IN VERMILION PARISH, LOUISIANA

J.F. Glahn, E.A. Wilson, and J.A. Musick

The effectiveness of using simulated rice fields for attracting blackbirds from flightlines and the subsequent baiting of these sites with DRC-1339 baits was assessed for reducing spring roosting blackbirds in Vermilion Parish, Louisiana. The potential nontarget hazards associated with this activity was also assessed. Eight of nine simulated rice fields, consisting of prepared rice fields seeded with 204 to 227 kg of dehulled (brown) rice, were effective in attracting blackbirds to fields and adjacent levee bait sites. Most significant blackbird use, primarily red-winged blackbirds (Agelaius phoeniceus), occurred at six fields located on or near blackbird flight paths that followed canals and major roads to and from coastal roosting areas. During 2 to 4 days of prebaiting, peak blackbird numbers landing in these six fields ranged between 440 and 18,000 birds and averaged 22% of flightline populations passing over fields. Blackbirds consumed untreated rice from all or portions of levees of eight fields to warrant baiting these areas with 2% DRC-1339-treated brown rice, diluted 1:27 with untreated rice. Estimated blackbird consumption of the DRC-1339-treated bait mixture ranged from 25 to 112 kg per site on eight sites during 4 to 18 days of baiting. Based on a total of 432 kg of treated bait consumed, approximately 0.5 million blackbirds could have theoretically been killed. Probably in response to baiting, blackbird populations on flightlines over bait sites were reduced by up to 80% in most cases. Also, in response to baiting and migration, blackbird roosting populations in the treated area following baiting were reduced by approximately 70%. However, a reduction exceeding 90% in blackbird roosting populations in an untreated control area, located 19 km east of the treated area, precluded inferences about treatment effects. Although 28 nontarget species, primarily shorebirds, were observed on simulated rice fields at a rate of 20.2 birds/h, baiting only levees and field edges appeared to limit nontarget bait exposure to such species as killdeer (Charadrius vociferus), meadowlarks (Sturnella magna), and cardinals (Cardinalis cardinalis) to 0.5 birds/h. Based on these data and nontargets found dead, nontarget impact appeared similar to that previously reported for DRC-1339 rice baits. Although baiting levees of simulated rice fields may provide an effective means of controlling blackbird populations, the complex roosting behavior of blackbirds in Vermilion Parish may require a more extensive baiting effort than described here to achieve desired results.

[1] This project is supported in part by funds provided by rice producers through the Louisiana Rice Research Board.

ECONOMICS OF ENTERPRISE SELECTION AND WHOLE FARM DECISION MAKING IN THE LOUISIANA RICE GROWING AREAS[1]

Arthur M. Heagler and G. Grant Giesler[2]

Enterprise budget projections for 1993 were developed for rice, soybeans, milo, corn, wheat, and wheat-soybean double cropping systems. A summary of the enterprise budgeting analysis for rice in Louisiana is presented in Table 1. Budgeting results for the other enterprises in Southwest Louisiana are shown in Table 2. Owner-operator and tenant-operator situations were budgeted for each enterprise, and other than for rice, all enterprises were valued at a projected market price. Rice income was calculated by adding the product of the loan price of $6.50 per hundredweight and the actual yield to the deficiency payment. The deficiency payment was calculated by multiplying the area average proven yield times the difference between the target price and the loan value, $4.21 per hundredweight.

Under these assumptions, sufficient revenue was available to cover direct expenditures for all rice enterprises. All other enterprises yielded positive returns over direct expenses with the exception of tenant operator soybeans, milo, and wheat. Direct expenditures were defined to be seed, fuel, fertilizer, labor, chemicals, maintenance on equipment, and interest on operating capital. Total specified expenses include direct expenditures, the annualized cost of replacing capital assets, and interest on non-operating capital. Those enterprises that did not generate sufficient income to cover total specified expenses were all soybean, wheat and milo enterprises, the corn and wheat-soybean tenant situations and both rice second cutting situations. It should be noted that total specified expenses do not include an estimation of per acre overhead costs. When these costs are included, only the owner-operator Central rice and owner-operator Northeast rice (both drill and water planted) show positive returns.

Detailed enterprise budgets and supporting data were published in A.E.A. Information Series Number 111, January, 1993.

Service enterprise budgets were prepared for several alternative rice irrigation systems in Louisiana. For Southwest Louisiana, cost estimates were developed for diesel, electric, and natural gas power systems. Deep well and surface water sources for each of the above power systems were evaluated. Per acre inch direct irrigation costs with water planted rice for a deep well water source were estimated to be approximately $1.93, $2.91, and $1.58 for diesel, electric, and natural gas systems, respectively. Total per acre inch irrigation costs for deep well systems were estimated to be approximately $2.84, $3.66, and $2.48 for diesel, electric, and natural gas power units, respectively. Per acre inch direct irrigation costs for water planted rice with a surface irrigation water source were estimated to be approximately $0.85, $1.11, and $0.68 for diesel, electric, and natural gas systems, respectively. Total per acre inch

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[1]Research supported in part by funds provided by Louisiana rice producers through the Louisiana Rice Research Board.

[2]Professor and Research Associate, respectively. Department of Agricultural Economics and Agribusiness, Louisiana Agricultural Experiment Station, Louisiana State University Agricultural Center, Baton Rouge, Louisiana.

irrigation costs for surface systems were estimated to be approximately $1.35, $1.51, and $1.17 for diesel, electric, and natural gas power units, respectively.

For Northeast Louisiana, cost estimates were developed for diesel and electric power systems using both deep well and surface water sources. Per acre inch direct irrigation costs with drill planted rice for a deep well water source were estimated to be approximately $0.62 and $0.91 for diesel and electric systems, respectively. Total per acre inch irrigation costs for deep well systems were estimated to be approximately $1.02 and $1.21 for diesel and electric power units, respectively. Per acre inch direct irrigation costs for drill planted rice with a surface water source were estimated to be approximately $ 0.52 and $0.55 for diesel and electric systems, respectively. Total per acre inch irrigation costs for surface systems were estimated to be approximately $0.81 and $0.75 for diesel and electric power units, respectively. For Central Louisiana, cost estimates were developed for water planted rice with a deep well water source and a diesel power unit. Per acre inch direct and total irrigation costs for this system were $1.04 and $1.55, respectively.

Detailed results of the irrigation cost analysis are reported in A.E.A. Information Series Number 111, January 1993.

1991 yield and cultural practice data from an ongoing study evaluating different methods of water weevil control, were analyzed during early 1992. The methods of water weevil control examined were 1) check plot, 2) one treatment of carbofuran, 3) water removal seven days after threshold infestation level, reflood in 14 days, 4) water removal seven days after threshold infestation level, reflood in 15 days, 5) water removal seven days after threshold infestation level, reflood in 16 days, and 6) water removal seven days after threshold infestation level, reflood in 17 days. The highest yields were associated with treatment 2, followed by treatments 5, 3, 4, 6, and 1, respectively. Using procedures analogous to those utilized in A.E.A. Information Series 111, enterprise budgets incorporating cultural practices specific to each treatment were constructed for each regime. Results show that although treatment 2 possessed the highest direct and total costs, its higher yield was more than sufficient to offset those higher costs. Therefore, treatment 2 had higher net returns than the other treatments. Analysis of results from this year and two previous years suggests that, depending on current year weather patterns, a system of control practices is preferred to a specific practice. A summary of the economic analysis is provided in Table 3. A related study analyzed the impact of planting date and treatment with carbofuran on yields and net returns. Results show that carbofuran increases yields and net returns within each date, but the impact of planting date on net returns overshadows the positive effects of treatment with carbofuran. Table 4 presents a summary of the economic analysis.

During 1992, work has continued on resolving the disparity in rice production cost projections that exist between the Economic Research Service (ERS) and Land Grant Universities in the Delta States. The American Agricultural Economics Association Task Force on cost of production methodology (composed of University and ERS economists) met in Tucson and also in Baltimore during the year. Some progress has been made in resolving differences in methodology used by the ERS and Land Grant Universities. Considerable progress has been made in resolving minor differences in cost of production methodology between the Land Grant Universities.

Table 1. A Summary of Projected Costs and Returns per Acre for Rice Production in Louisiana, 1993.

Crop Description	Yield Per Acre	Unit	Total Income	Direct Expenses	Returns Over Direct Expenses	Fixed Expenses	Total Expenses	Returns Over Total Expenses
			---------- Dollars per Acre ----------					
Rice Enterprises: a/								
Southwest Louisiana								
Water Plant, Owner b/	46.10	cwt.	476.48	371.09	105.39	79.22	450.31	26.17
Water Plant, Tenant c/	27.66	cwt.	285.89	237.05	48.84	47.14	284.19	1.70
Drill Plant, Owner b/	48.55	cwt.	492.26	353.74	138.52	82.45	436.19	56.07
Drill Plant, Tenant c/	29.13	cwt.	295.36	223.46	71.90	50.37	273.83	21.53
Second Cutting, Owner b/	12.00	cwt.	77.28	67.78	9.50	17.59	85.37	-8.09
Second Cutting, Tenant c/	7.20	cwt.	57.36	39.87	17.49	17.59	57.46	-.10
Northeast La								
Water Plant, Owner b/	48.60	cwt.	474.18	291.28	182.90	63.25	354.53	119.65
Water Plant, Tenant c/	29.16	cwt.	284.51	236.00	48.51	47.40	283.40	1.11
Drill Plant, Owner b/	48.60	cwt.	474.18	287.61	186.57	67.58	355.19	118.99
Drill Plant, Tenant c/	29.16	cwt.	284.51	230.13	54.38	51.73	281.86	2.65
Central Louisiana								
Water Plant, Owner b/	45.00	cwt.	451.46	309.42	142.04	60.69	370.11	81.35

a/ Income for rice was calculated by adding the product of the loan price of $6.50 per hundredweight and the actual yield to the deficiency payment. The deficiency payment was calculated by multiplying proven yield times the difference between the target price and the loan value, $4.21 per hundredweight.

b/ Land costs are not included for the owner-operator.

c/ Rental arrangements for rice in Southwest Louisiana were 1/5 crop share for land and 1/5 crop share for water with both landlord and waterlord paying 1/5 of fertilizer, chemicals, and drying and storage costs and the waterlord paying all of the irrigation fuel. Rental arrangements for rice in Northeast Louisiana were 1/5 crop share for land and 1/5 crop share for water with the waterlord paying all irrigation fuel costs and both the landlord and waterlord paying 1/5 of the drying and storage costs.

Table 2. A Summary of Projected Costs and Returns per Acre for Soybean, Corn, Milo Wheat, and Wheat-Soybean Double Crop Production, Southwest Louisiana, 1993.a/

Crop Description	Yield Per Acre	Unit	Total Income	Direct Expenses	Returns Over Direct Expenses	Fixed Expenses	Total Expenses	Returns Over Total Expenses
			Dollars per Acre					
Soybean Enterprises:								
6-Row, Owner b/	24.50	bu.	132.30	119.72	12.58	33.62	153.34	-21.04
6-Row, Tenant c/	19.60	bu.	105.84	118.32	-12.48	33.62	151.94	-46.10
Drill Plant, Owner b/	27.00	bu.	145.80	126.28	19.52	32.26	158.54	-12.74
Drill Plant, Tenant c/	21.60	bu.	116.64	124.69	-8.05	32.26	156.95	-40.31
Corn Enterprises:								
6-Row, Owner b/	100.00	bu.	225.00	171.57	53.43	39.71	211.28	13.72
6-Row, Tenant c/	80.00	bu.	180.00	167.77	12.23	39.71	207.48	-27.48
Milo Enterprises:								
Drill Plant, Owner b/	37.00	cwt.	133.20	114.67	18.53	29.30	143.97	-10.77
Drill Plant, Tenant c/	29.60	cwt.	106.56	114.88	-8.32	29.30	144.18	-37.62
Wheat Enterprises:								
Drill Plant, Owner b/	34.00	bu.	105.40	91.52	13.88	27.08	118.60	-13.20
Drill Plant, Tenant c/	27.20	bu.	84.32	91.73	-7.41	27.08	118.81	-34.49
Wheat-Soybean Double Crop								
Wheat-Soybean, Owner b/	34+25	bu.	240.40	159.34	81.06	49.67	209.01	31.39
Wheat-Soybean, Tenant c/	27.2+20	bu.	192.32	159.87	32.45	49.67	209.54	-17.22

a/ Crop Prices used were $5.40 per bushel for soybeans, $2.25 per bushel for corn, $3.60 per hundredweight for milo, and $3.10 per bushel for wheat.

b/ Land costs are not included for owner-operators.

c/ Rental arrangements for soybeans, corn, milo and wheat were 1/5 crop share for land with the landlord paying 1/5 of any drying and storage costs.

Table 3. Water Management Study Average yields and projected income, costs, and returns per hectare and benefit-cost and cost-income ratios, Rice Research Station, Crowley, LA, 1991 (1992 price projections).[a/]

TREATMENT	CARBOFURAN	CHECK	16 DAY	14 DAY	17 DAY	15 DAY
YIELD (kg/ha)	4892	3606	3857	3701	3665	3679
GROSS REVENUE ($/ha)	1145	960	996	974	969	971
DIRECT COSTS ($/ha)	876	785	814	809	807	808
RETURNS OVER DIRECT COSTS ($/ha)	269	175	182	165	162	163
FIXED COSTS ($/HA)	210	210	215	216	215	215
TOTAL COSTS	1086	995	1029	1025	1022	1023
NET RETURNS OVER TOTAL COSTS	59	-35	-33	-51	-53	-52
BENEFIT/COST RATIO	1.054	0.965	0.968	0.950	0.948	0.949
COST/INCOME RATIO	0.949	1.036	1.033	1.052	1.055	1.054

[a/] Carbofuran = carbofuran applied (0.556 kg [A.I.] per ha) at rice water weevil threshold (5 larvae per core) 9 July 1991; Check = no treatment; 14 Day = water removal @ 7 days post threshold (12 July 1991), reflooded 29 July 1991; 15 Day = water removal @ 7 days post threshold (12 July 1991), reflooded 30 July 1991; 16 day = water removal @ 7 days post threshold (12 July 1991), reflooded 31 July 1991; 17 Day = water removal @ 7 days post threshold (12 July 1991), reflooded 1 August 1991.

Table 4. Planting Date Study Average yields and projected income, costs, and returns per hectare and benefit-cost and cost-income ratios, Rice Research Station, Crowley, LA, 1991 (1992 price projections).[a/]

	DATE 1:		DATE 2:		DATE 3:	
TREATMENT	TREATED	UNTREATED	TREATED	UNTREATED	TREATED	UNTREATED
YIELD (kg/ha)	8795	8086	7955	6770	4835	4195
GROSS REVENUE ($/ha)	1704	1602	1584	1414	1136	1045
DIRECT COSTS ($/ha)	939	871	901	813	767	703
RETURNS OVER DIRECT COSTS ($/ha)	765	731	683	601	369	342
FIXED COSTS ($/HA)	210	210	206	206	206	206
TOTAL COSTS	1149	1081	1107	1020	974	909
NET RETURNS OVER TOTAL COSTS	555	521	476	394	163	136
BENEFIT/COST RATIO	1.484	1.482	1.430	1.387	1.167	1.149
COST/INCOME RATIO	0.674	0.675	0.699	0.721	0.857	0.870

[a/] Treated plots, carbofuran (0.556 [A.I.] per ha); Date 1 planted 5 April 1991, Date 1 treated 16 May 1991; Date 2 planted 25 April 1991, Date 2 treated 29 May 1991; Date 3 planted 16 May 1991, Date 3 treated 14 June 1991.

RICE INSECTS RESEARCH

GRANULAR INSECTICIDES: EVALUATION OF NUMBERED COMPOUNDS FROM RHONE-POULENC

W.C. Rice, G.B. Trahan, and P.A. Bollich

Location: Rice Research Station, Crowley, LA

Soil Type: Crowley silt loam; pH: 6.0-6.5

Variety: Mars

Seeding Rate: 100 lb/A

Planting Method and Date: Rice was drill seeded using a Kincaid drill on Apr 21, 1992 with a row spacing of 7-inch centers.

Experimental Design: No. Reps, 4; No. Trts, 6

Plot Size: 49 inches x 15 ft

Water Management: A flush was done on Apr 24 to induce germination and a permanent flood was applied on May 20.

Fertilization: Preplant incorporation of 13-13-13 fertilizer at a rate of 60-60-60 using a Kincaid drill on Apr 21. The plots were topdressed by hand at the rate of 60-0-0 on June 8.

Herbicide: Propanil was applied at a rate of 4 lb ai/A on May 14 using a CO_2 sprayer equipped with a 110015 nozzle at a pressure of 24 psi.

Insecticide: (IF MULTIPLE TREATMENTS, SEE PROTOCOL)

Two numbered compounds from Rhone-Poulenc RP-54A and RP-Cmpd. 2 were applied using shaker jars at the following respective rates, 0.05 ai/A for RP-54A and 0.025, 0.05, and 0.075 ai/A for RP-Cmpd. 2. Carbofuran was applied at a rate of 0.6 lb ai/A. All insecticides were applied on June 8.

Sampling: The plots were sampled on June 2, 15, 22, and 29, July 7, 13, and 20 corresponding to a minus 6 days after treatment (dat), 7, 14, 21, 29, 35, and 42 dat, respectively. Five core samples were pulled per plot.

Harvested: A Kubota combine was used to harvest whole plots on Aug 20. Following harvest the plots were reflooded on Aug 21 and fertilizer 21% nitrogen was applied at 45 lb/A on Aug 21.

Comments: This is the second year of study for 54A and the first year of study for RP-Cmpd. 2. Insecticides were applied when larval counts reached or exceeded economic injury level (eil).

Furadan plots prior to application of 3G at 0.6 al/A reached a mean of 8 larvae/core, which was reduced to a mean of 1 larvae/core for approximately 4 weeks before gradually increasing to 3 larvae/core at the end of the study (Table 1).

Effects of RP-54A at 0.05 al/A on larval counts showed a 2-week delay with respect to carbofuran in reducing larval counts to the same level. Two weeks later larval counts dropped to zero and remained for the rest of the study (Table 1).

The RP-Cmpd. 2 at all rates showed an even longer delay in reducing larval counts. RP-Cmpd. 2 at 0.05 al/A reached the level of effectiveness of RP-54A in reducing larval counts 29 days after application RP-Cmpd. 2 at 0.075 al/A reached this level of effectiveness at 21 days after application while RP-Cmpd. 2 required 35 days after application to achieve a similar effect (Table 1).

Control showed a normal progression of larvae larval counts peaking early after flood and gradually declining representing movement of larvae through their developmental stage to pupua and to adults. Note the tremendous sustained pressure on the rice plant throughout the growing season (Table 1).

A significant increase in yield was observed with all Rhone-Poulenc's experimental compounds over that of control plots (Table 2). The yield response for RP compounds was not as great as that observed with carbofuran. However, the data clearly suggest that potential for increasing yield using these compounds exists. The timing of application of these compounds needs to be altered since 1) the RP compounds larvicidal activity starts later than carbofuran and 2) the larvicidal activity of the RP compounds last longer than that of carbofuran.

Table 1. Effects of Rhone-Poulenc compounds on rice water weevil larvae. Rice Research Station, Crowley, LA. 1992.

Trt No	Treatment Name	Rate	Rice Water Weevil # Larvae/Core June 2 -6 DAT	June 15 7 DAT	June 22 14 DAT	June 29 21 DAT	July 7 29 DAT	July 13 35 DAT	July 20 42 DAT
01	RP-Cmpd. 2	.025	11 a	38 a	22 b	10 b	4 b	3 b	2 bc
02	RP-Cmpd. 2	.05	9 a	30 c	14 c	5 c	2 b	1 cd	2 bc
03	RP-Cmpd. 2	.075	9 a	25 d	14 c	4 cd	1 b	1 cd	1 cd
04	RP-54A	.05	10 a	16 e	2 d	1 d	0 b	0 d	0 d
05	Furadan 3 g	0.6	8 a	1 f	1 d	1 d	1 b	2 bc	3 b
06	Control		11 a	33 b	29 a	25 a	13 a	7 a	5 a
LSD (.05) =			4	3	3	4	3	1	1
Standard Dev.=			2.36390	2.02525	2.28589	2.58025	2.29073	.948214	.909457
CV =			24.16	8.54	16.83	33.69	63.78	36.47	41.65
Block F			3.740	0.999	0.341	0.287	0.347	0.598	0.755
Block Prob (F)			0.0345	0.4202	0.7963	0.8343	0.7920	0.6260	0.5365
Treatment F			1.101	176.692	93.081	50.856	18.351	28.495	12.002
Treatment Prob (F)			0.4004	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001

Means followed by same letter do not significantly differ (P=.05, Duncan's MRT)

Table 2. Effects of Rhone-Poulenc compounds on yield. Rice Research Station, Crowley, LA. 1992.

Trt No	Treatment Name	Rate	Plant height	Grain moisture	Yield
			-(cm)-		-(lb/A)-
01	RP-Cmpd. 2	.025	106 b	16.2 a	5342 b
02	RP-Cmpd. 2	.05	107 b	16.8 a	5545 b
03	RP-Cmpd. 2	.075	106 b	17.0 a	5465 b
04	RP-54A	.05	108 ab	16.8 a	5255 b
05	Furadan 3 g	0.6	110 a	17.0 a	6010 a
06	Control		92 c	15.8 a	3849 c
LSD (.05)			3	1.2	452
Standard Dev.			1.7502	.77032	300.07
CV			1.67	4.64	5.72

Means followed by same letter do not significantly differ (P=.05, Duncan's MRT).

EVALUATION OF COMPOUND NTN33893, SEED TREATMENT FOR CONTROL OF THE RICE WATER WEEVIL

W.C. Rice, G.B. Trahan, and P.A. Bollich

Location: Rice Research Station, Crowley, LA

Soil Type: Crowley silt loam; pH: 6.0-6.5

Variety: Lemont, seed was treated with NTN 33893 at 1.6 and 3.0 fl oz/100 wt

Seeding Rate: 100 lb/A

Planting Method and Date: Drill seeded using a cone planter, May 12; Row spacing, 7-inch centers

Experimental Design: No. Reps, 4; No. Trts, 4

Plot Size: 49 inches x 16 ft

Water Management: A flush was done on May 12 to induce germination with additional flushes on May 18 and 20 to facilitate the emergence of the seedlings. Permanent flood was applied on June 6 and subsequently drained on Aug 21.

Fertilization: A motorized gandy was used to apply 23-12-12 at a rate of 120-60-60 on June 4.

Herbicide: Propanil was applied at a rate of 4 lb ai/A on June 1 using a CO_2 sprayer equipped with a 110015 nozzle at a pressure of 24 psi.

Insecticide: (IF MULTIPLE TREATMENTS, SEE PROTOCOL)

Furadan 3G was applied on June 22 at a rate of 0.6 lb ai/A using a shake jar.

Fungicide: Benlate was applied on July 11 by airplane at a rate of 1 lb ai/A.

Sampling: The plots were sampled on June 18 and 25 and July 10 and 15. Five core samples were pulled per plot.

Harvested: Whole plots were harvested on Sept 2 using a Kubota combine.

Comments: NTN 33893 is a seed treatment which potentially offers reduced cost of application for the control of the RWW. NTN 33893 provided significant control of the rice water weevil (RWW) larvae at both application rates when compared with the RWW larvae counts from the control plots (Table 1). Only one exception was noted, at the low rate on the last sampling date, no significant RWW larvae control was observed. Carbofuran control of RWW larvae was observed by June 25 and continued throughout the course of the study. Carbofuran provided for more effective control of RWW larvae on July 10 than did the NTN compounds. A significant yield response was observed between carbofuran and the control plots (Table 2). Interestingly, the lower application rate of NTN 33893 gave the best yield response and overlapped statistically with both the control and carbofuran-treated plots. This suggests that RWW control may be more important at a younger growth stage of the plants. A larger plot trial will be done to determine if a significant yield response can be observed.

Table 1. Effect of NTN 33893 on rice water weevil larvae. Rice Research Station, Crowley, LA. 1992.

Trt No	Treatment Name	Rate	Rice water weevil larvae counts June 18	June 25	July 10	July 15
			(#/core)			
01	NTN	1.6	1 b	9 b	16 b	15 a
02	NTN	3.0	1 b	6 c	16 b	11 b
03	FUR	0.6	8 a	6 bc	9 c	9 b
04	CHECK		8 a	23 a	26 a	17 a
LSD (.05)			2	3	4	4
Standard Dev.			1.37437	2.03662	2.60959	2.22887
CV			31.24	18.47	15.51	17.24
Block F			2.389	4.231	1.743	2.059
Block Prob (F)			0.1364	0.0401	0.2277	0.1761
Treatment F			32.432	64.099	30.660	10.115
Treatment Prob(F)			0.0001	0.0001	0.0001	0.0031

Means followed by same letter do not significantly differ (P=.05, Duncan's MRT).

Table 2. Effect of NTN 33893 on yield of Lemont treated seed. Rice Research Station, Crowley, LA. 1992.

Trt No	Treatment Name	Rate	Plant height	Yield
			-(cm)-	-(lb/A)-
01	NTN	1.6	82.3 a	5161 ab
02	NTN	3.0	82.9 a	4820 b
03	FUR	0.6	84.3 a	5461 a
04	CHECK		81.0 a	4710 b
LSD (.05)	=		3.5	588
Standard Dev.	=		2.20321	367.879
CV	=		2.67	7.30
Block F			2.309	0.616
Block Prob(F)			0.1450	0.6216
Treatment F			1.501	3.438
Treatment Prob(F)			0.2795	0.0654

Means followed by same letter do not significantly differ (P=.05, Duncan's MRT).

ALTERNATIVE APPLICATION STRATEGIES USING CARBOFURAN FOR THE CONTROL OF THE RICE WATER WEEVIL -- LOCATION 1

W.C. Rice, G.B. Trahan, and P.A. Bollich

Location: Rice Research Station, Crowley, LA

Soil Type: Crowley silt loam; pH: 6.0-6.5

Variety: Mars

Seeding Rate: 100 lb/A

Planting Method and Date: Rice was drill seeded using a Kincaid drill on Apr 21, 1992 with a row spacing of 7-inch centers.

Experimental Design: No. Reps, 4; No. Trts, 4

Plot Size: 49 inches x 15 ft

Water Management: A flush was done on Apr 24 to induce germination with a second flush being applied on May 8 to facilate emergence of the seedlings and a permanent flood was applied on May 20. Drainage was on Aug 7.

Fertilization: Preplant incorporation of 13-13-13 fertilizer at a rate of 60-60-60 using a Kincaid drill on Apr 21. The plots were topdressed with 21-0-0 by hand at the rate of 60-0-0 on June 8.

Herbicide: Propanil was applied at a rate of 4 lb ai/A on May 14 using a CO_2 sprayer equipped with a 110015 nozzle at a pressure of 24 psi.

Insecticide: (IF MULTIPLE TREATMENTS, SEE PROTOCOL)

This study is evaluating different methods and application times of the insecticide carbofuran. The forms of carbofuran liquid or granular and application strategies are as follows. Standard application of granular carbofuran is at economic injury level and was applied at a rate of 0.6 lb ai/A on June 9. Liquid carbofuran was applied preflood on May 20 at a rate of 1 lb ai/A and later was also impregnated on fertilizer and applied on June 9 at a rate of 1 lb ai/A.

Sampling: The plots were sampled on June 5, 15, 22, and 29, July 6, and 13. Five core samples were pulled per plot.

Fungicide: Benlate applied July 1 at 1 lb al/A by airplane.

Harvested: A Kubota combine was used to harvest whole plots on Aug 20. Following harvest the plots were reflooded on Aug 21 and fertilizer 21% nitrogen was applied at 45 lb/A on Aug 21. Ratoon harvest on Nov 16.

Comments: No significant yield increases were observed with any of the carbofuran treatments over that of the check plots (Table 1). This fact is reflected in that the rice water weevil larvae counts are not significantly different and are barely at economic injury level (Table 2). As with Location 3 of this test, lower RWW larvae counts were observed than with Location 2 (See Locations 2 and 3 reports).

Table 1. Effect on yield of alternative application methods of carbofuran. Rice Research Station, Crowley, LA. 1992.

Trt No	Treatment Name	Rate	Grain moisture	Plant height	Yield[1]
				-(cm)-	-(lb/A)-
01	FUR 4F Pre	.5	13.45 b	98.5 a	5235 a
02	FUR 4F Imp	1.0	13.28 b	99.9 a	5416 a
03	FUR 3G	0.6	14.23 a	100.2 a	5610 a
04	CHECK		13.82 ab	99.6 a	5533 a
LSD (.05)			0.72	4.0	569
Standard Dev.			.447834	2.47977	355.861
CV			3.27	2.49	6.53
Block F			1.309	1.004	1.053
Block Prob (F)			0.3305	0.4346	0.4158
Treatment F			3.553	0.366	0.843
Treatment Prob (F)			0.0607	0.7796	0.5040

Means followed by same letter do not significantly differ (P=.05, Duncan's MRT).
[1] Yield corrected to lb/A at 12% moisture.

Table 2. Effect of alternative methods of carbofuran for the control of the rice water weevil. Rice Research Station, Crowley, LA. 1992.

Trt No	Treatment Name	Rate	Rice Water Weevil Larvae Counts					
			June 5	June 15	June 22	June 29	July 06	July 13
01	FUR 4F Pre	.5	8 a	6 a	4 a	4 a	3 a	3 a
02	FUR 4F Imp	1.0	5 a	6 a	6 a	4 a	3 a	3 a
03	FUR 3G	0.6	6 a	3 a	2 a	2 a	3 a	2 a
04	CHECK		8 a	6 a	4 a	6 a	3 a	2 a
LSD (.05)			9	16	11	9	2	1
Standard Dev.			5.61706	10.0434	6.84513	5.49426	1.42916	.879394
CV			82.76	189.95	174.96	145.06	48.65	34.49
Block F			0.473	0.260	0.167	0.306	0.896	1.164
Block Prob (F)			0.7085	0.8526	0.9162	0.8203	0.4802	0.3761
Treatment F			0.386	0.105	0.254	0.330	0.044	1.681
Treatment Prob (F)			0.7656	0.9549	0.8568	0.8040	0.9871	0.2398

Means followed by same letter do not significantly differ (P=.05, Duncan's MRT).

ALTERNATIVE APPLICATION STRATEGIES USING CARBOFURAN FOR THE CONTROL OF THE RICE WATER WEEVIL -- LOCATION 2

W.C. Rice, G.B. Trahan, and P.A. Bollich

Location: East Carroll Parish, Buford Perry Farm

Soil Type: Sharkey clay; pH: 6.9

Variety: Lemont

Seeding Rate: 100 lb/A

Planting Method and Date: Drill seeded, Apr 30

Experimental Design: No. Reps, 4; No. Trts, 4

Plot Size: 7 x 25 ft

Water Management: Flushed, May 13 and 18; flooded, June 18; and drained, Sept 4

Fertilization: N source, ammonium sulfate; 13.6 lb/A zinc (preplant incorporated); 0.54 lb/A zinc (foliar), June 5

Herbicide: 5.0 lb ai/A Stam (propanil), June 13; 0.6 oz ai/A Londax (bensulfuron-methyl), June 26; 3.5 lb ai/A Ordram (molinate), June 26; 0.4 oz ai/A Londax, July 11

Insecticide: (IF MULTIPLE TREATMENTS, SEE PROTOCOL)

This study is evaluating different methods and application times of the insecticide carbofuran. The forms of carbofuran liquid or granular and application strategies are as follows. Standard application of granular carbofuran is at economic injury level and was applied at a rate of 0.6 lb ai/A on July 8. Liquid carbofuran was applied preflood on June 18 at a rate of 1 lb ai/A and later was also impregnated on fertilizer and applied on July 8 at a rate of 1 lb ai/A.

Sampling: The plots were sampled on July 8, 21, and 30. Five core samples were pulled per plot.

Harvested: Sept 19

Comments: A significant yield response was observed between the carbofuran preflood treatment and the control plots. The other carbofuran treatments overlapped statistically, both with the check and the carbofuran preflood treatments

(Table 1). Again, immediate rice water weevil (RWW) larval control was observed with carbofuran as a preflood treatment (Table 2). Stand application of carbofuran (treatment at economic injury level) did not provide a significant yield increase while it was effective in controlling the RWW larvae. This suggests that early control of RWW on young rice plants is more effective than controlling RWW larvae on older plants for improving yield.

Table 1. East Carroll Parish field study of Furadan compounds. Buford Perry Farm, LA. 1992.

Trt No	Treatment Name	Rate	Plant Height	Yield
			--(cm)--	-(lb/A)-
01	FURADAN 4F prf	0.5	89.8 a	8457 a
02	FURADAN IMPRG	1.0	88.6 a	7676 ab
03	FURADAN 3G pof	0.6	87.8 a	8015 ab
04	CHECK		84.8 a	7286 b
LSD (.05)			4.9	963
Standard Dev.			3.04889	602.002
CV			3.47	7.66
Block F			1.835	0.899
Block Prob (F)			0.2110	0.4789
Treatment F			1.895	2.735
Treatment Prob (F)			0.2010	0.1057

Means followed by same letter do not significantly differ (P=.05, Duncan's MRT).

Table 2. East Carroll Parish field study of Furadan compounds. Buford Perry Farm, LA. 1992.

Trt No	Treatment Name	Rate	Rice water weevil Larvae Counts July 8	July 22	July 30
			----------(#/core)----------		
01	FURADAN 4F prf	0.5	3 b	4 b	3 b
02	FURADAN IMPRG	1.0	18 a	2 b	2 b
03	FURADAN 3G pof	0.6	25 a	4 b	4 b
04	CHECK		18 a	12 a	9 a
LSD (.05)			10	5	5
Standard Dev.			6.02258	3.03100	2.93807
CV			37.85	59.58	69.54
Block F			2.781	0.147	2.833
Block Prob (F)			0.1023	0.9291	0.0986
Treatment F			9.856	8.557	4.089
Treatment Prob (F)			0.0033	0.0053	0.0436

Means followed by same letter do not significantly differ (P=.05, Duncan's MRT).

ALTERNATIVE APPLICATION STRATEGIES USING CARBOFURAN FOR THE CONTROL OF THE RICE WATER WEEVIL -- LOCATION 3

W.C. Rice, G.B. Trahan, and P.A. Bollich

Location: Vermilion Parish, Errol Lounsberry Farm

Soil Type: Crowley silt loam; pH: 5.2

Variety: Lemont

Seeding Rate: 150 lb/A

Planting Method and Date: Water seeded, Mar 27, 1992, with a row spacing of 7-inch centers.

Experimental Design: No. Reps, 4; No. Trts, 4

Plot Size: 7 x 25 ft

Water Management: Flooded, Mar 26; drained, Mar 30; reflooded, Apr 3; harvest drainage, July 13; second crop flooded, July 31; harvest drainage, Sept 28

Fertilization: 45 lb/A P_2O_5 and K_2O ppl; N source, ammonium sulfate; 0.54 lb/A zinc (foliar), Apr 1; second crop, 75 lb N/A

Herbicide: 1.0 oz al/A Londax (bensulfuron-methyl), Apr 23; 3.5 lb al/A Ordram (molinate), May 15

Insecticide: (IF MULTIPLE TREATMENTS, SEE PROTOCOL)

This study is evaluating different methods and application times of the insecticide carbofuran. The forms of carbofuran liquid or granular and application strategies are as follows. Standard application of granular carbofuran is at economic injury level and was applied at a rate of 0.6 lb al/A on May 6. Liquid carbofuran was applied preflood on Apr 3 at a rate of 1 lb ai/A and later was also impregnated on fertilizer and applied on May 6 at a rate of 1 lb ai/A.

Sampling: The plots were sampled on May 5, 13, 20, and 28. Five core samples were pulled per plot.

Harvested: Main crop, July 28; second crop, Oct 12

Comments: No significant difference in the yield of either the first or second crop or total crop yield was observed between the various carbofuran treatments and the check plots (Table 1). This was a signficant difference in the control of rice water weevil larvae from the carbofuran preflood treatment on May 5 with respect to the other carbofuran treatments by May 13 with respect to the controls; however, by May 28, all treatments had low rice water weevil larvae counts (Table 2).

Table 1. Lake Arthur field study of Furadan compounds. Errol Lounsberry Farm, Vermilion Parish. 1992.

Trt No	Treatment Name	Rate	Plant Height	Yield 1st Crop	Yield 2nd Crop	Yield Total
			-(cm)-	----------(lb/A)----------		
01	Fur 4f prf	.5	73.9 a	6363 a	1449 a	7812 a
02	Fur 4f imprg p	1	73.8 a	6453 a	1543 a	7996 a
03	Fur 3g pof	.6	74.3 a	6894 a	1406 a	8300 a
04	Chk		73.6 a	6309 a	1340 a	7648 a
LSD (.05)			4.0	747	439	997
Standard Dev.			2.52549	467.048	274.644	623.606
CV			3.42	7.18	19.15	7.85
Block F			3.302	0.875	0.760	0.708
Block Prob (F)			0.0715	0.4895	0.5445	0.5708
Treatment F			0.047	1.302	0.386	0.803
Treatment Prob (F)			0.9856	0.3325	0.7658	0.5228

Means followed by same letter do not significantly differ (P=.05, Duncan's MRT).

Table 2. Effects of alternative applications of carbofuran on rice water weevil larvae. Errol Lounsberry Farm, Vermilion Parish. 1992.

Trt No	Treatment Name	Rate	Rice Water Weevil Larvae Counts May 5	May 13	May 20	May 28
			----------(#/core)----------			
01	Fur 4f prf	.5	4 b	4 b	1 a	1 a
02	Fur 4f imprg p	1	10 a	3 b	0 b	1 a
03	Fur 3g pof	.6	11 a	4 b	0 b	0 a
04	Chk		11 a	10 a	2 a	1 a
LSD (.05)			5	3	0	1
Standard Dev.			2.86492	1.57162	.286744	.491031
CV			32.84	29.79	31.86	59.52
Block F			1.885	0.857	10.054	1.590
Block Prob (F)			0.2026	0.4976	0.0031	0.2590
Treatment F			5.934	14.344	19.054	2.032
Treatment Prob (F)			0.0162	0.0009	0.0003	0.1799

Means followed by same letter do not significantly differ (P=.05, Duncan's MRT).

EVALUATION OF RICE LINES REGENERATED FROM ANTHER CULTURE FOR TOLERANCE TO THE RICE WATER WEEVIL

K.F. N'Guessan, S.S. Quisenberry, W.C. Rice,
G.B. Trahan, and P.A. Bollich

Location: Rice Research Station, Crowley, LA

Soil type: Crowley silt loam

Seeding rate: 3 g/row

Planting method and date: Drill seeded, 8 May 1992; row spacing was 10-inch

Plot size: Six 7-ft rows (7 x 4 ft)

Water management: Flushed, 12, 18, and 22 May; permanent flood, 5 June

Fertilization: 120-60-60 lb [AI]/A of N P K applied with a motorized gandy spreader, 4 June

Herbicide: Propanil 4 lb [AI]/A applied with a CO_2 backpack sprayer delivering 15 GPA at 26 psi, 1 June

Treatments: Seven anther culture lines (952836, 953508, 953509, 953510, 953511, 953527, 953541), one susceptible check (Mars), and one moderately tolerant check (WC1403)

Experimental design: Split-plot design with six replicates. The whole plots were the rice lines and the subplots were two levels of insecticide (treated and untreated). The subplots were arranged in strips across each replicate to facilitate insecticide treatment. Carbofuran (1 lb [AI]/A) was applied to subplots in experiment.

Harvested: 4 Sept

Comment: Seven anther culture lines selected from a 1990 preliminary field screening and evaluated in 1991 for tolerance to the rice water weevil (RWW) were reevaluated in 1992. Research was conducted under field conditions. Tolerance was determined using replicated carbofuran-treated and untreated plots. Tolerance predictors included RWW larval populations, root pruning damage (assessed through visual rating), and grain yield. Carbofuran treatment had a significant effect on larval population ($df = 1,5$; $F = 216.5$, $P < 0.0001$). Significant ($df = 8,40$; $F = 4.49$, $P < 0.0006$) differences were found in larval populations among the lines evaluated (Table 1). Root damage ratings were high overall at 28 d postflood in the

untreated plots for all the lines evaluated (Fig. 1). There was a significant interaction between line and sampling date, indicating that the change in root biomass between 28 and 42 d postflood was not the same for all the lines tested. Lines 952836 and 953527 displayed a decrease in root damage ratings from 28 to 42 d postflood, suggesting that lines 952836 and 953527 have potential for recovering from larval root pruning damage. Root damage ratings were relatively constant within dates and overall low in the treated plots (Fig. 2). Yield differences among the lines evaluated were not significant (df = 8,35; $F = 1.7$, $P > 0.13$) (Table 2). There was a significant line by insecticide interaction for grain yield (df = 8,40; $F = 3.07$, $P < 0.0087$), suggesting that the lines evaluated responded differently to carbofuran treatment with regard to grain yield. When grain yield of the treated and untreated plots were compared, lines 95-2836 and 95-3527 did not show significant differences (Fig. 3), indicating that they are tolerant to the RWW.

Table 1. Mean number of rice water weevil larvae per core in rice anther culture lines evaluated for tolerance. Rice Research Station, Crowley, LA. 1992.

Cultivar/line	No. Weevil larvae/core (mean ± SE)	
	Untreated	Treated
952836	36.4 ± 2.6a	5.2 ± 0.8a
953508	20.1 ± 2.4b	4.2 ± 0.7a
953509	31.8 ± 3.5ab	3.1 ± 0.9a
953510	23.4 ± 2.8b	5.3 ± 1.4a
953511	21.8 ± 2.1b	3.8 ± 0.6a
953527	25.2 ± 2.9ab	3.5 ± 0.5a
953541	22.3 ± 1.5b	6.0 ± 1.2a
LEMONT	-	-
MARS	33.2 ± 2.5ab	6.0 ± 1.3a
WC1403	32.5 ± 2.8ab	6.0 ± 1.2a

Means followed by the same letter within column are not significantly different ($P > 0.05$, Tukey's Studentized Range [HSD] Test [SAS Institute 1985]).

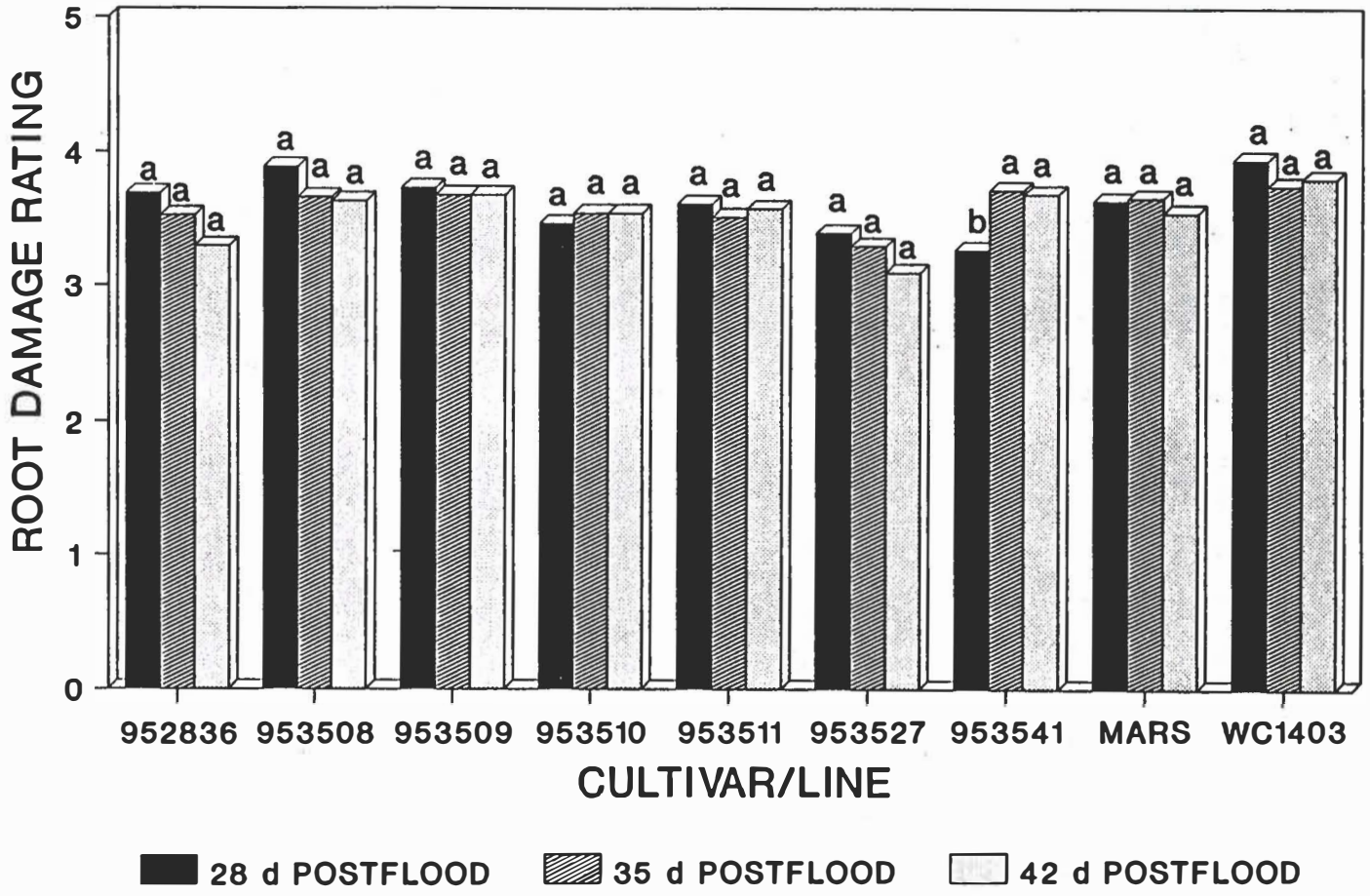

Fig. 1. Root damage ratings at 28, 35, and 42 d postflood of plants in untreated plots of rice anther culture lines evaluated for tolerance to the rice water weevil, Crowley, La., 1992. Bars with the same letters within lines indicates means are not significantly different ($P > 0.05$), Tukey's Studentized Range (HSD) Test.

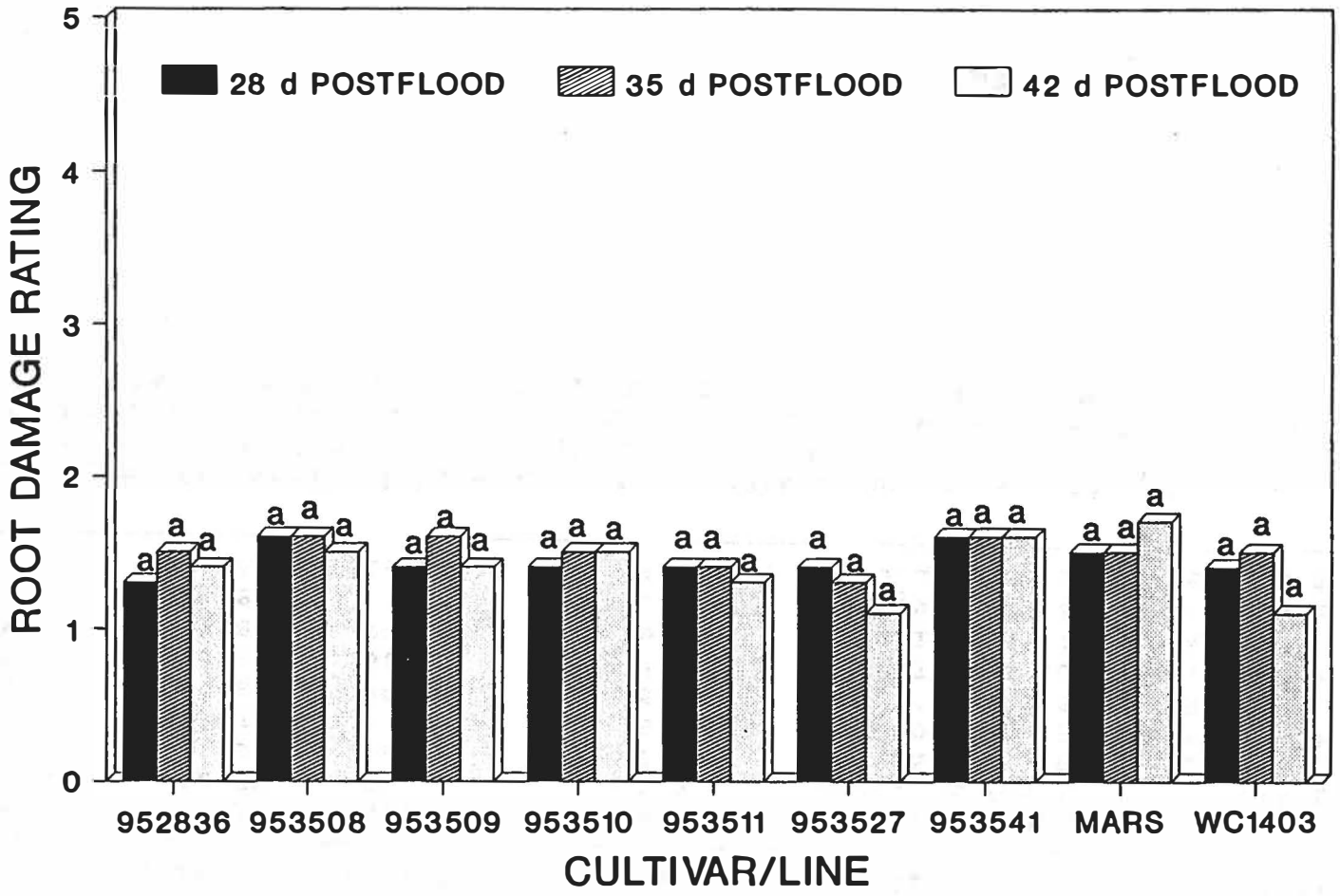

Fig. 2. Root damage ratings at 28, 35, and 42 d postflood of plants in treated plots of rice anther culture lines evaluated for tolerance to the rice water weevil, Crowley, La., 1992. Bars with the same letters within lines indicates means are not significantly different ($P > 0.05$), Tukey's Studentized Range (HSD) Test.

Table 2. Height and yield of rice anther culture lines evaluated for tolerance to the rice water weevil. Rice Research Station, Crowley, LA. 1992.

Cultivar/ line	Height (cm)			Grain yield (kg/ha)	
	Treated	Untreated	% Ht diff[1]	Treated	Untreated
95-2836	154.16	143.44	6.8*	5726.7 ± 420.4a	5355.3 ± 347.3a
95-3508	84.77	79.72	5.9*	5049.9 ± 408.1a	4260.6 ± 275.1a
95-3509	85.36	79.31	7.1*	5374.5 ± 499.0a	4491.3 ± 327.2a
95-3510	86.72	80.72	6.2*	5375.0 ± 428.5a	4431.3 ± 463.1a
95-3511	84.83	79.16	6.6*	5976.0 ± 421.5a	5458.8 ± 473.6a
95-3527	111.26	106.20	4.6*	5768.7 ± 267.0a	5430.5 ± 388.0a
95-3541	84.88	75.83	10.5*	5803.1 ± 389.1a	4409.0 ± 307.6a
MARS	104.83	101.83	2.8*	5745.9 ± 274.6a	4616.9 ± 288.7a
WC1403	125.53	119.20	4.9*	5005.3 ± 235.1a	4355.2 ± 318.0a

[1] % Ht diff = ([treated height - untreated height]/treated height)*100.
* Indicates significant at $P < 0.05$ (Paired T test).
Means followed by the same letter within column are not significantly different ($P > 0.05$, Tukey's Studentized Range [HSD] Test [SAS Institute 1985]).

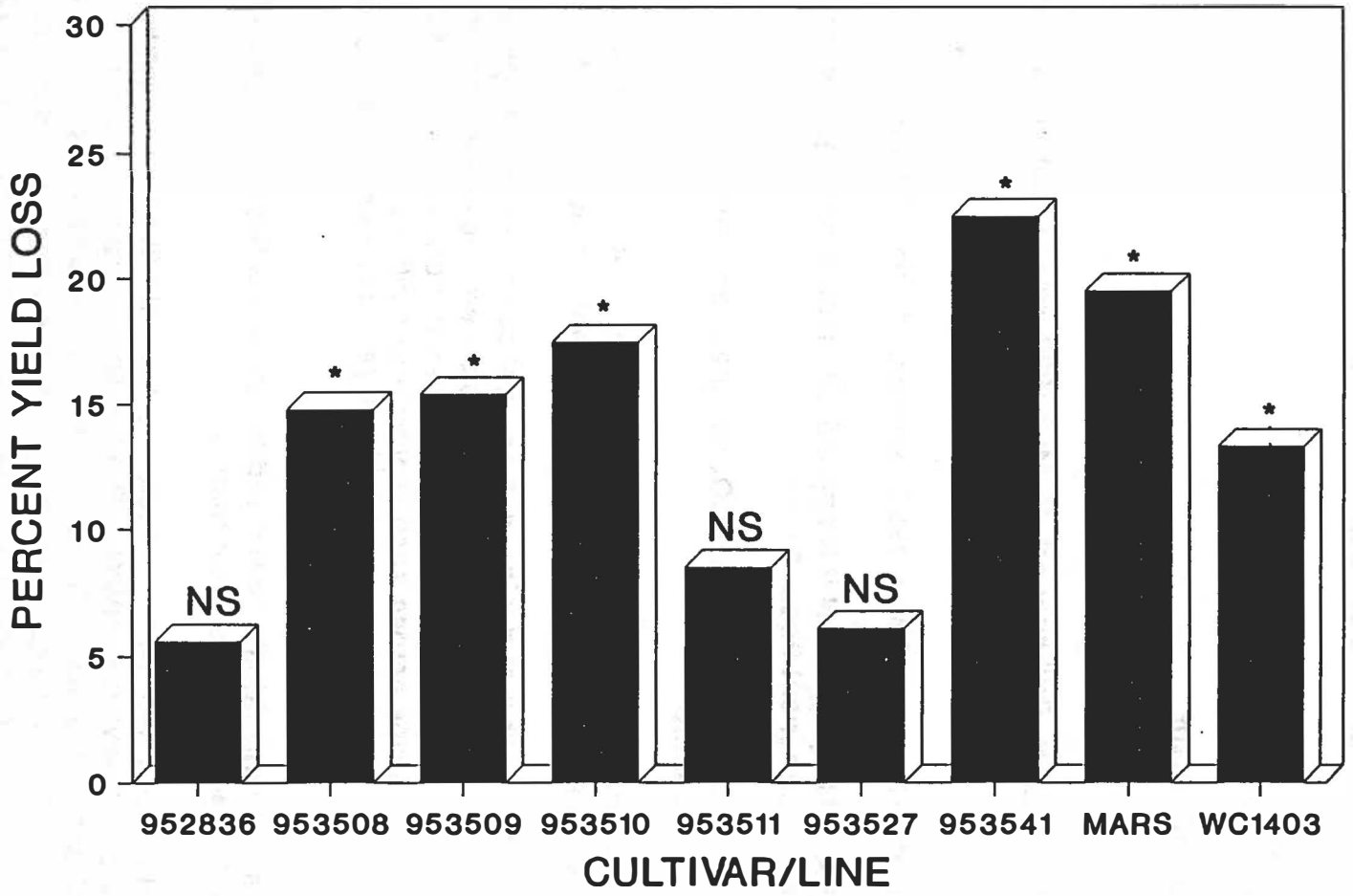

Fig. 3. Percent yield differences between treated and untreated plots of rice anther culture lines evaluated for tolerance to the rice water weevil, Crowley, La., 1992. Bars with * indicates that yield difference is significant ($P < 0.05$).

EVALUATION OF RICE LINES REGENERATED FROM TISSUE CULTURE FOR TOLERANCE TO THE RICE WATER WEEVIL

K.F. N'Guessan, S.S. Quisenberry, W.C. Rice,
G.B. Trahan, and P.A. Bollich

Location: Rice Research Station, Crowley, LA

Soil type: Crowley silt loam

Seeding rate: 3 g/row

Planting method and date: Drill seeded, 19 May 1992; row spacing was 10-inch

Plot size: Six 7-ft rows (7 x 4 ft)

Water management: Flushed, 22 May 1992; permanent flood, 12 June

Fertilization: 120-60-60 lb [AI]/A of N P K applied with a motorized gandy spreader before permanent flood, 11 June

Herbicide: Propanil 4 lb/A applied with a CO_2 backpack sprayer delivering 15 GPA at 26 psi, 9 June

Treatments: Five tissue culture lines (67, 93, 112, 120, 4754), one susceptible check (Mars), and one moderately tolerant check (WC1403)

Experimental design: Split-plot design with six replicates. The whole plots were the rice lines and the subplots were two levels of insecticide (treated and untreated). The subplots were arranged in strips across each replicate to facilitate insecticide treatment. Carbofuran (1 lb [AI]/A) was applied to subplots in experiment.

Harvested: Plots were individually harvested by hand late Sept through early October according to plant maturity.

Comment: A field experiment was conducted to evaluate five tissue culture lines for tolerance to rice water weevil (RWW). The five lines were selected from a 1990 preliminary field screening test. Tolerance was assessed using RWW larval population, root pruning damage, plant height, and grain yield. Both line and insecticide effects were significant on RWW larval populations (line: df = 6,30, F = 4.92, P < 0.0013; insecticide: df = 1,5, F = 353.73, P < 0.0001) (Table 1). There was a significant line by insecticide interaction for larval population, suggesting that the lines evaluated responded differently to carbofuran treatment. Thus, some of the lines may be resistant to the RWW. Line 120 was the least infested, averaging significantly lower larval population than Mars.

Table 1. Mean number of rice water weevil larvae per core in rice tissue culture lines evaluated for tolerance. Rice Research Station, Crowley, LA. 1992.

Cultivar/line	Larvae/core (mean ± SE)	
	Untreated	Treated
67	46.5 ± 4.1bc	10.6 ± 1.7a
93	39.0 ± 3.3c	9.3 ± 1.3a
112	43.3 ± 2.5bc	9.8 ± 2.9a
120	34.7 ± 2.4c	8.1 ± 1.8a
4754	61.6 ± 3.4a	7.9 ± 1.0a
Mars	56.0 ± 3.4ab	10.4 ± 1.6a
WC1403	48.3 ± 2.5abc	9.7 ± 2.3a

Means followed by the same letter within column are not significantly different ($P > 0.05$, Tukey's Studentized Range (HSD) Test [SAS Institute 1985]). Analysis of variance results in untreated plots were: (df = 6,30), $F = 8.67$, $P < 0.0001$. Differences in treated plots were not significant ($P > 0.05$).

Plants in the treated plots were significantly ($P < 0.05$) taller than plants in the untreated plots (Table 2). There was no interaction between line and insecticide for plant height, indicating that height increase due to carbofuran treatment was the same for all the lines tested.

Root damage ratings in the untreated plots were high for most of the lines at 28 d postflood (Fig. 1). There was no line by insecticide interaction for root ratings, but there was a significant interaction between line and root sampling date, indicating that change in ratings from 28 d postflood to 42 d postflood was not the same for all the lines evaluated. There was a significant decrease in root damage ratings for lines 93, 112, and 4754 from 28 d to 42 d postflood, suggesting that these lines recovered from root pruning damage. Root damage ratings in the treated plots were relatively constant within sampling dates and did not exceed a rating of two for any of the dates (Fig. 2). This indicates that less than 1/3 of the roots were pruned in the treated plots compared with almost the entire root system pruned in the untreated plots.

Yield data are presented in Table 2. There was a significant line by insecticide interaction for grain yield (df= 6,34; $F = 3.96$; $P < 0.0041$), indicating that yield response to carbofuran treatment was not the same for all the lines evaluated. There were also significant yield differences among the lines tested (df = 6,29; $F = 26.07$; $P < 0.0001$). Lines 112 and 4754 averaged higher yields than the susceptible check (Mars). When yields of untreated and treated plots were compared within individual lines, lines 112 and 4754 did not show significant differences, suggesting that these lines are tolerant to the RWW. In addition, yield differences between treated and untreated plots were lowest for lines 112 and 4754.

Table 2. Height and yield of rice tissue culture lines evaluated for tolerance to the rice water weevil. Rice Research Station, Crowley, LA. 1992.

Cultivar/ line	Height (cm)			Grain yield (kg/ha) (mean ± SE)		
	Treated	Untreated	% Ht diff[1]	Treated	Untreated	% Yd diff[2]
67	114.0	109.3	4.1*	7084.5 (311.9)	5896.5 (331.6)	16.2*
93	122.0	115.6	5.2*	6632.3 (289.3)	5628.2 (208.9)	14.7*
112	123.2	115.2	6.3*	7856.2 (151.8)	7111.4 (458.5)	9.4NS
120	112.0	103.9	7.3*	7528.3 (254.9)	6380.0 (418.6)	15.4*
4754	112.3	104.9	6.6*	9361.9 (264.0)	8893.1 (422.0)	4.9NS
Mars	113.7	107.8	5.2*	7774.8 (430.0)	6280.1 (273.2)	18.6*
WC1403	124.9	119.0	4.6*	5051.5 (405.2)	4534.3 (334.9)	9.8NS

[1] % Ht diff = ([treated height-untreated height]/treated height)*100.
[2] % Yd diff = ([treated yield - untreated yield]/treated yield)*100.
* Indicates significant at $\underline{P} < 0.05$ (Paired T test).

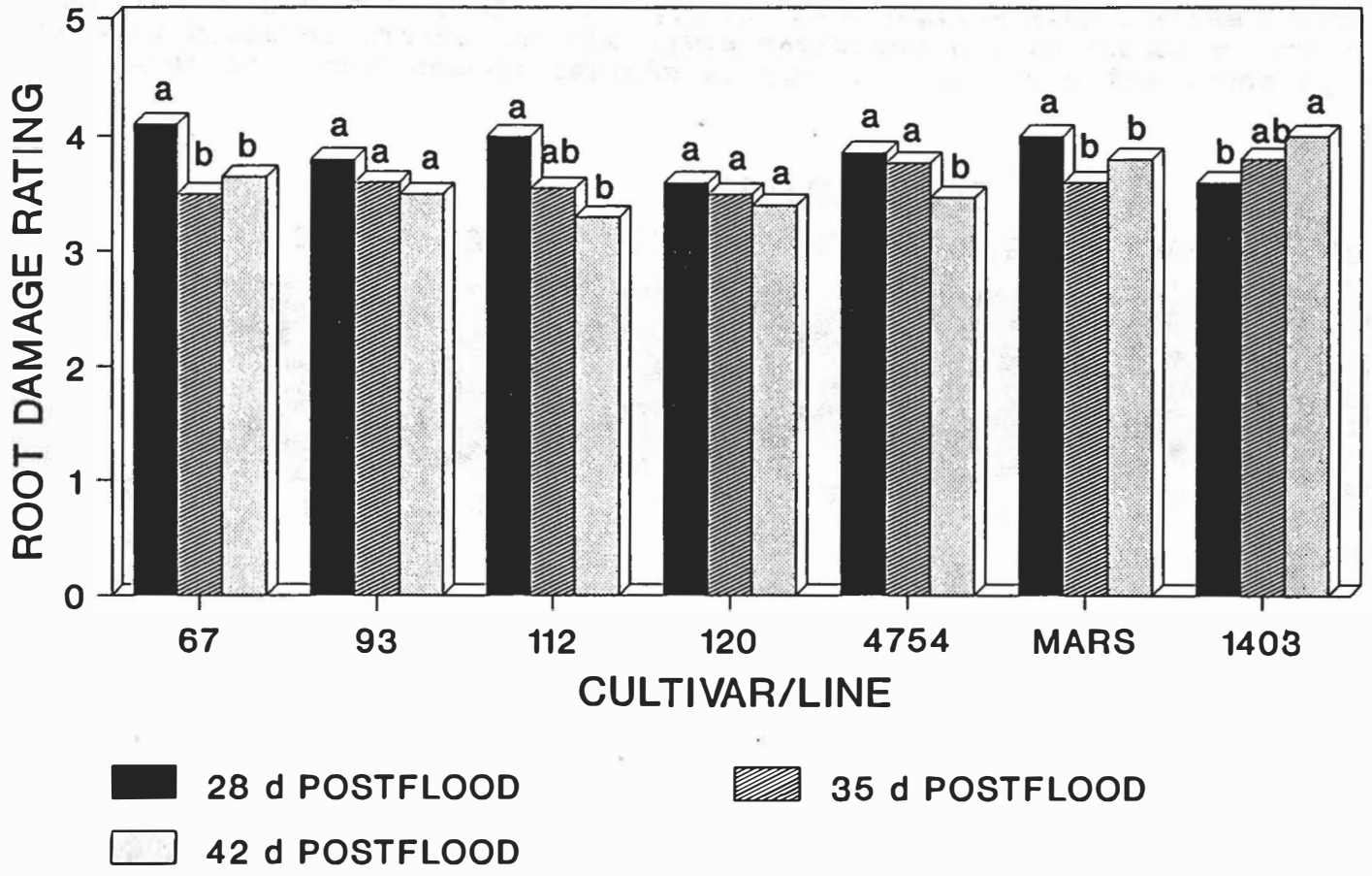

Fig. 1. Root damage ratings at 28, 35, and 42 d postflood of plants in untreated plots of tissue culture lines evaluated for tolerance to the rice water weevil, Crowley, La., 1992. Bars with the same letters within lines indicates means are not significantly different ($P > 0.05$), Tukey's Studentized Range (HSD) Test.

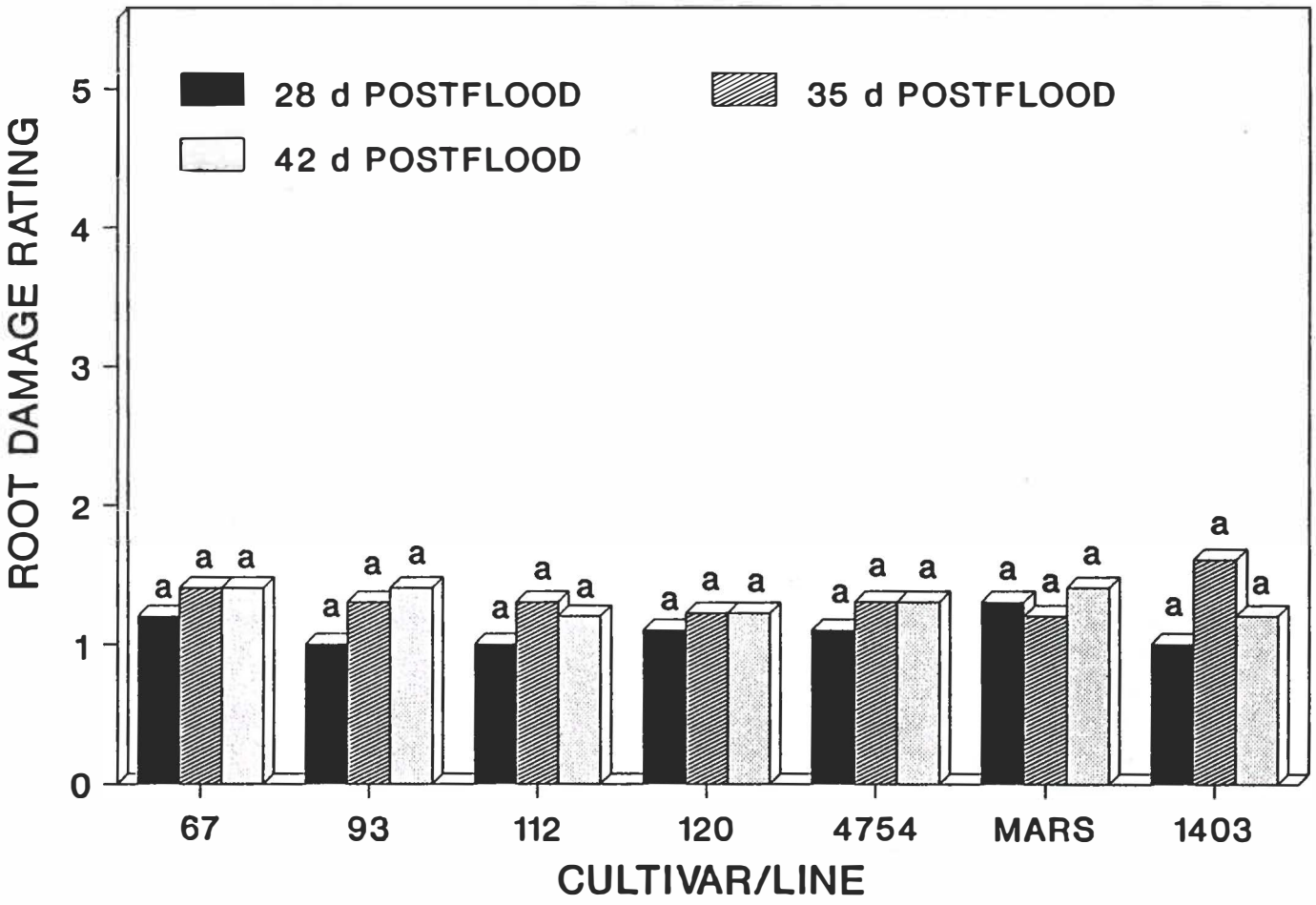

Fig. 2. Root damage ratings at 28, 35, and 42 d postflood of plants in treated plots of tissue culture lines evaluated for tolerance to the rice water weevil, Crowley, La., 1992. Bars with the same letters within lines indicates means are not significantly different ($P > 0.05$), Tukey's Studentized Range (HSD) Test.

EVALUATION OF SELECTED RICE LINES FOR RESISTANCE TO THE RICE WATER WEEVIL

K.F. N'Guessan, S.S. Quisenberry, W.C. Rice,
G.B. Trahan, and P.A. Bollich

Location: Rice Research Station, Crowley, LA

Soil type: Crowley silt loam

Seeding rate: 3 g/row

Planting method and date: Drill seeded, 19 May 1992; row spacing was 10-inch

Plot size: 7-ft single rows

Water management: Flushed, 22 May; permanent flood, 12 June

Fertilization: 120-60-60 lb [AI]/A N P K applied with a motorized gandy spreader, 11 June

Herbicide: Propanil 4 lb [AI]/A applied with a CO_2 backpack sprayer delivering 15 GPA at 24.5 psi, 9 June

Treatments: Nine rice lines (8936825, Gulfmont, URN141, URN166, URN175, TX12630, TX12685, TX13079, WC502805) of various origin, including world collection lines and Uniform Regional Nurseries, and two susceptible checks (Lemont and Mars)

Experimental design: Randomized block design with five replicates

Comment: Rice lines from various origin were evaluated in the field for resistance to the rice water weevil (RWW). The number of RWW larvae was used to determine resistance. The various lines tested differed significantly (df = 10,39; $F = 11.9$, $P < 0.0001$) in number of RWW larvae. Three lines (TX12630, TX12685, TX13079) had significantly ($P < 0.05$) lower larval populations than both susceptible checks, Mars and Lemont (Table 1), indicating that they are resistant to the RWW.

The number of larvae in each size category were compared to determine whether the mechanism of resistance is antibiosis or antixenosis (Fig. 1). A cultivar averaging high populations of small larvae, reduced number of medium, and little or no large larvae at 21 d of permanent flooding would be suspected to have antibiotic activity against the larvae. In this study, lines TX12630, TX12685 and TX13079, which showed resistance to the RWW, have more large than small and medium larvae, indicating that larval growth is normal in these lines. Thus, the mechanism of resistance appeared to be antixenosis. The low larval populations associated with lines TX12630, TX12685, and TX13079 may be attributed to nonpreference for adult oviposition rather than larval mortality. However, because egg data were not recorded in this study, further studies are needed to elucidate the cause of low RWW larval populations in lines TX12630, TX12685, and TX13079.

Table 1. Mean number of rice water weevil larvae per core in selected rice lines evaluated for resistance. Rice Research Station, Crowley, LA. 1992.

Cultivar/line	Larvae/core
8936825	49.9 ± 4.2a
Gulfmont	43.0 ± 2.8a
TX12630	23.8 ± 1.7b
TX12685	23.4 ± 1.4b
TX13079	21.4 ± 1.8b
URN141	38.3 ± 3.1a
URN166	46.1 ± 5.8a
URN175	42.2 ± 2.5a
WC502805	42.8 ± 2.3a
LEMONT	43.2 ± 3.0a
MARS	49.5 ± 2.7a

Means followed by the same letter within column are not significantly different ($P > 0.05$, Tukey's Studentized Range [HSD] Test [SAS Institute 1985]). Analysis of variance results were: (df=10,39), $F = 11.9$, $P < 0.0001$.

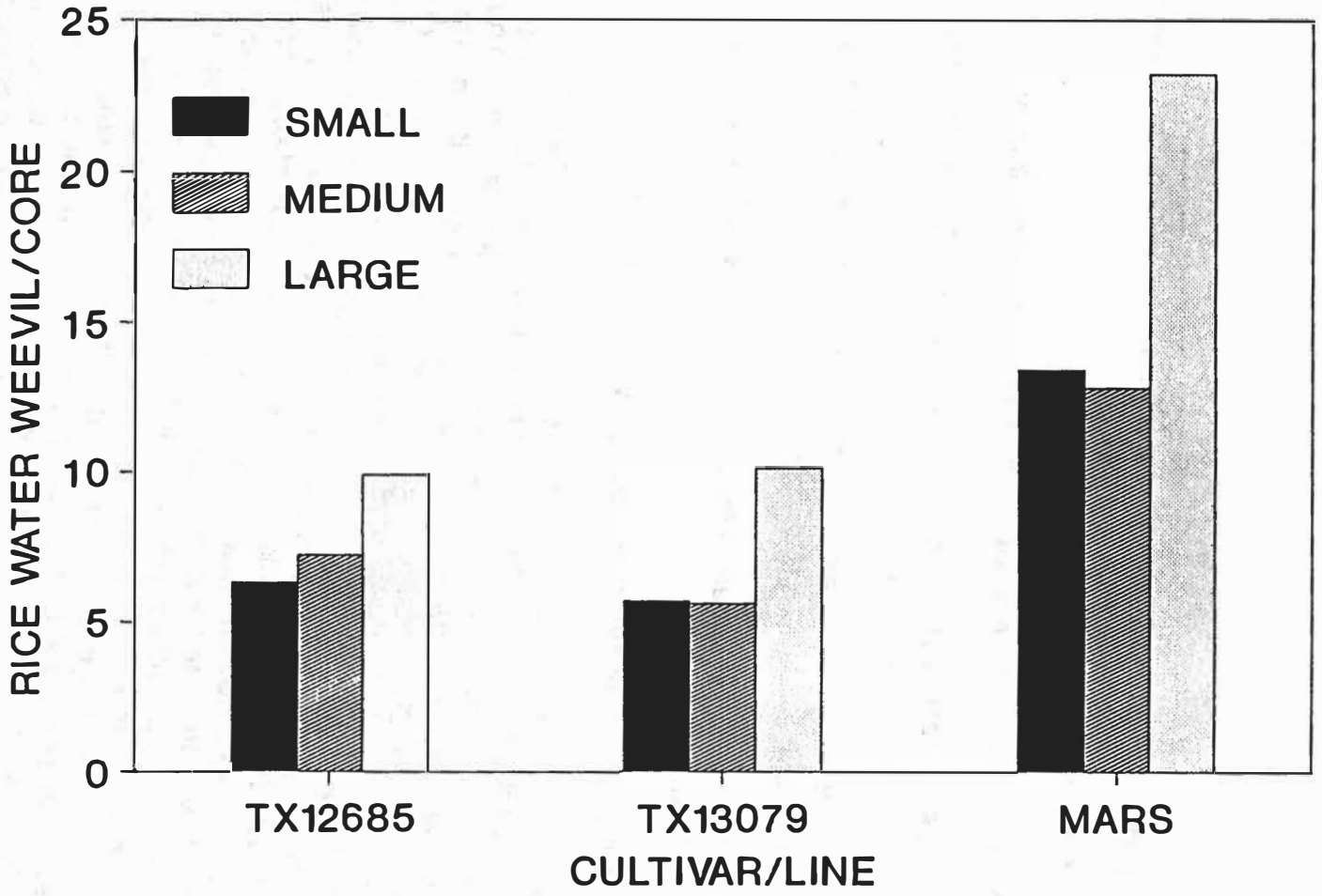

Fig. 1. Rice water weevil larval populations in different size categories for selected rice lines evaluated for resistance, Crowley, La., 1992.

FIELD EVALUATION OF SELECTED TISSUE CULTURE LINES FOR RESISTANCE TO THE RICE WATER WEEVIL

K.F. N'Guessan, S.S. Quisenberry, W.C. Rice, G.B. Trahan, and P.A. Bollich

Location: Rice Research Station, Crowley, LA

Soil type: Midland silt loam

Seeding rate: 3 g/row

Planting method and date: Drill seeded, 17 June 1992; row spacing was 10-inch

Plot size: Single 7-ft rows

Water management: Flushed, 19 and 24 June; permanent flood, 8 July

Fertilization: 120-60-60 lb [AI]/A of N P K applied with a motorized gandy spreader before permanent flood, 11 June

Herbicide: Propanil 5 lb [AI]/A, applied with a CO_2 backpack sprayer delivering 15 GPA at 26 psi, 23 June and 6 July

Treatments: Four tissue culture lines (185, 244, 2051, 2232) and one susceptible check (Mars)

Experimental design: Randomized block design with five replicates

Comment: A field experiment was conducted to evaluate four tissue culture lines for resistance to rice water weevil (RWW). Resistance was assessed using RWW larval populations on roots of the lines evaluated. For each line tested, the number of small, medium, and large (large + pupae) larvae were assessed, and the total population levels were determined. The total larval populations differed significantly ($df = 5,80$; $F = 3.50$; $P < 0.0066$) among the lines evaluated (Fig. 1). Lines 244 and 2232 had significantly ($P < 0.05$) lower numbers of RWW larvae than the susceptible check (Mars), suggesting that they are at least moderately resistant to the RWW. Lines 185 and 2051 also had lower larval populations than Mars, although differences were not significant. Assessment of the larval populations by size categories showed that the trend in larval size distribution of the test lines was similar to that of the check cultivar (Mars). All the test lines, as well as the check cultivar, had more large larvae than small or medium larvae (Fig. 1.), indicating that larval growth and development were not affected by plant resistance characteristics. This suggests that larval antibiosis was not the mechanism of resistance in lines 244 and 2232. Thus, the mechanism of resistance may be nonpreference for adult oviposition since all the lines had an equal chance to be infested in the field. However, because egg data were not taken in this study, further studies are needed to elucidate the mechanism of resistance in lines 244 and 2232.

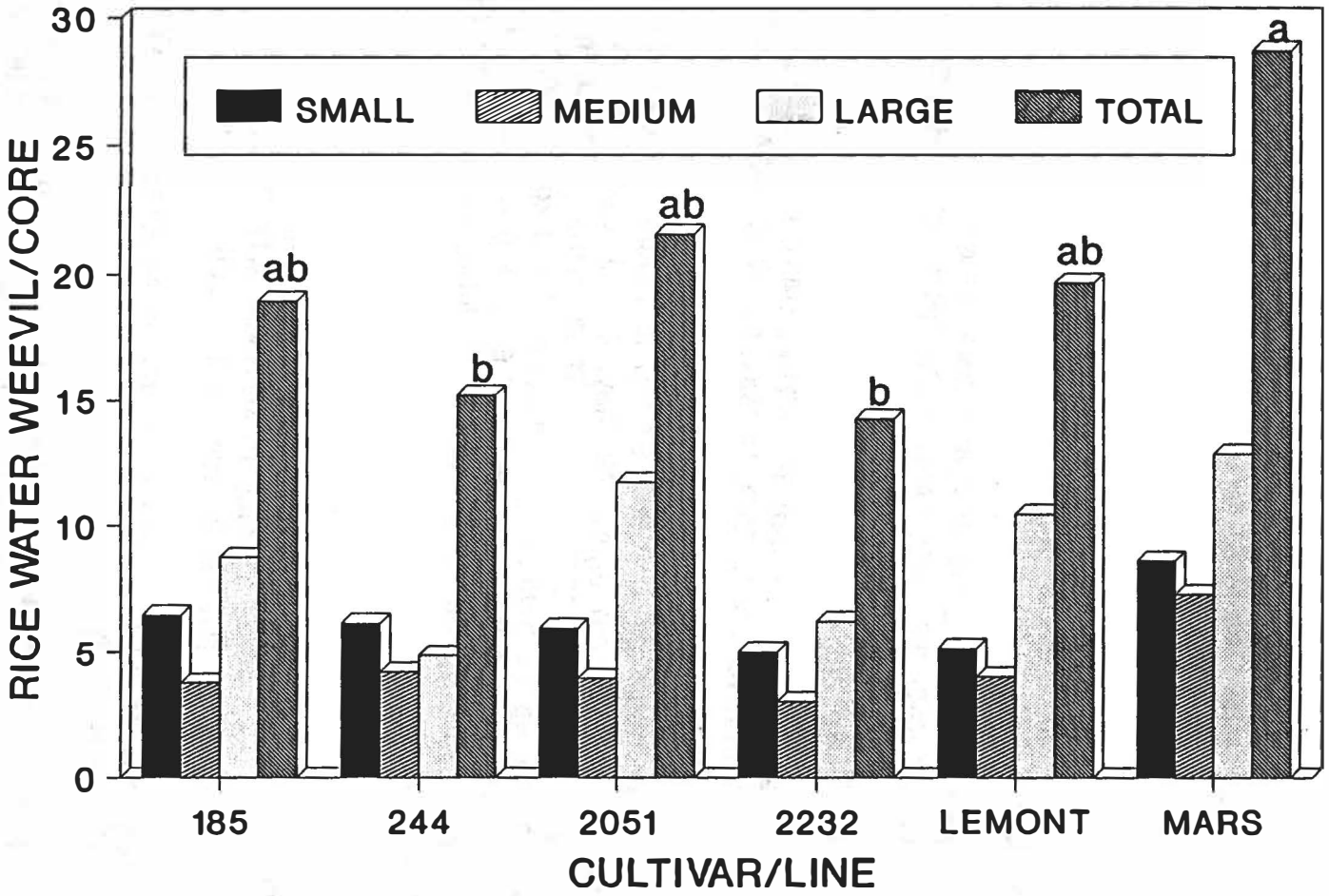

Fig. 1. Mean number of rice water weevil larvae and pupae per core in rice tissue culture lines evaluated for resistance, Crowley, La. 1992. Bars with the same letters indicates means are not significantly different ($P > 0.05$, Tukey's Studentized Range [HSD] Test.

CONTROLLING RICE WATER WEEVIL USING PLANTING DATE AS A CULTURAL TACTIC

R.A. Thompson, S.S. Quisenberry, F.K. N'Guessan, W.C. Rice, G.B. Trahan, and P.A. Bollich

Location: Rice Research Station, Crowley, LA

Soil Type: Midland silt loam

Variety: 'Lemont'

Seeding Rate: 167 kg/ha (150 lb/A)

Planting Method: Hand seeded: PLANTING-DATE ONE, 16 Apr; PLANTING-DATE TWO, 7 May; PLANTING-DATE THREE, 28 May

Plot Size: 6.1 x 1.2 m (20 x 4 ft)

Water Management: Permanently flooded: PLANTING-DATE ONE, 23 Apr; PLANTING-DATE TWO, 14 May; PLANTING-DATE THREE, 4 June

Fertilization: PLANTING-DATE ONE: 67:67:67 kg/ha (60:60:60 lb/A), 23 Apr; 67:0:0 kg/ha (60:0:0 lb/A), 22 May; 67:0:0 kg/ha (60:0:0 lb/A), 9 July. PLANTING-DATE TWO: 67:67:67 kg/ha (60:60:60 lb/A), 14 May; 67:0:0 kg/ha (60:0:0 lb/A), 8 June; 67:0:0 kg/ha (60:0:0 lb/A), 9 July. PLANTING-DATE THREE: 67:67:67 kg/ha (60:60:60 lb/A), 4 June; 67:0:0 kg/ha (60:0:0 lb/A), 25 June; 67:0:0 kg/ha (60:0:0 lb/A), 16 July

Herbicide: None

Insecticide: Carbofuran (0.56 kg[AI]/ha) applied using a shaker-jar. PLANTING-DATE ONE, 25 May; PLANTING-DATE TWO, 8 and 30 June; PLANTING-DATE THREE, 25 June and 30 July

Harvested: 12 Aug, 4 Sept, and 21 Sept for PLANTING-DATES ONE, TWO, and THREE, respectively

Experimental Design: The experiment was arranged in a spiit-plot design consisting of three main plots (planting date) and two subplot treatments (carbofuran treated and untreated)

Comments: This was the second year of a 2-year study. Rice water weevil larval infestation was higher in the carbofuran-treated subplots for PLANTING-DATE ONE than the other two planting dates (Fig. 1). However, larval populations in the carbofuran-treated subplots of PLANTING-DATE ONE declined 1 week after treatment and remained near threshold (5 larvae/core) for the rest of the sampling period. In PLANTING-DATES TWO and THREE, the larval populations resurged at least once after carbofuran treatment, necessitating a second application of insecticide.

The main plot treatment effect was significant for all yield indicators, with significant carbofuran treatment by planting date interactions for all indicators except height. There were yield differences among planting dates with significant yield decline from the first to the third planting date.

In the subplot treatment effects, there were no significant height differences between carbofuran-treated and untreated plants for PLANTING-DATE ONE, but height differences were significant for the other planting dates (Table 1). Similarly, there were no significant differences between subplot treatments for the other yield indicators on PLANTING-DATE ONE. However, for PLANTING-DATES TWO AND THREE, all the yield indicators, straw weight in PLANTING-DATE THREE, showed significant differences between treatments (Table 1).

There was no yield loss from rice water weevil infestation on the first planting date, but yields in non-carbofuran-treated subplots were significantly reduced at later planting dates. The findings from this study were that early seeding of rice in southwest Louisiana can be used as a cultural technique to effectively avoid or reduce the damaging effects of the rice water weevil.

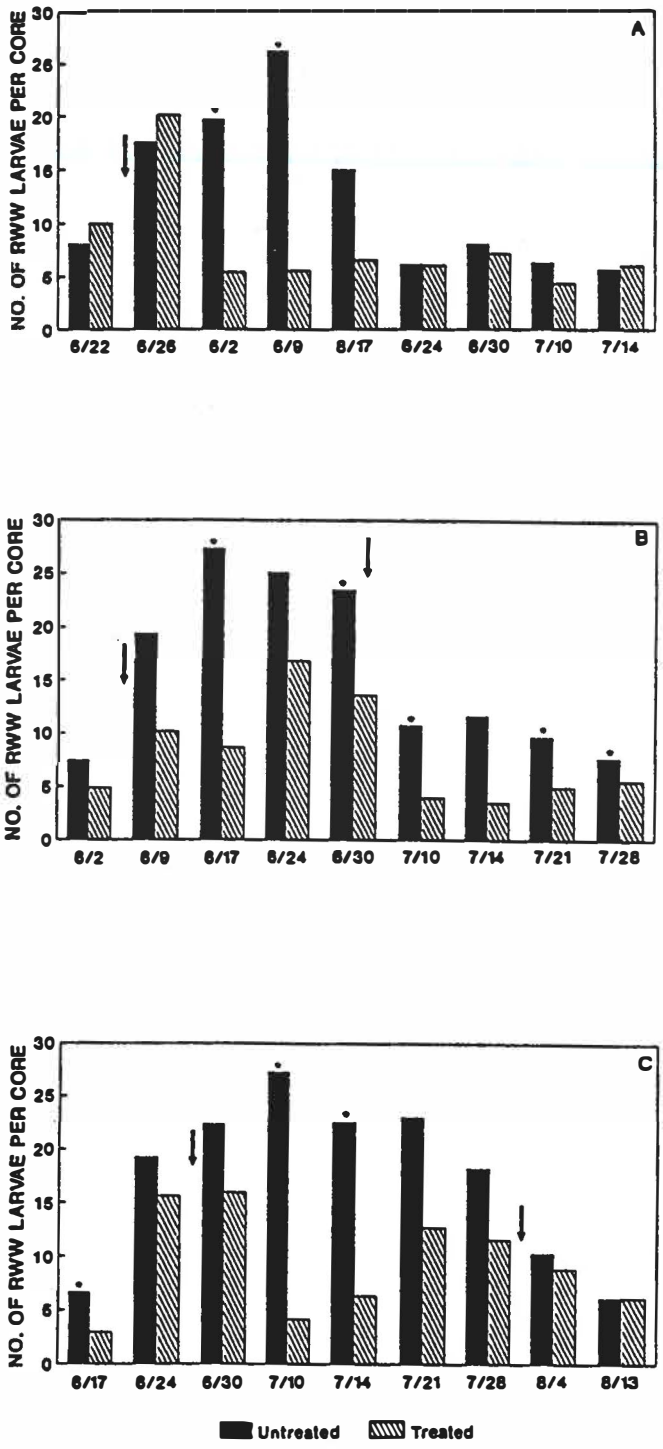

Fig. 1. Mean numbers of rice water weevils (RWW) per core, Rice Research Station, 1992. (A) PLANTING-DATE ONE; (B) PLANTING-DATE TWO; (C) PLANTING-DATE THREE. Dates of carbofuran application are indicated by ↓. Significantly different means within a sample date ($P > 0.05$) are denoted by *.

Table 1. Plant height and yield responses (mean ± SE) in rice with planting date and carbofuran treatments for control of the rice water weevil. Rice Research Station, Crowley, LA. 1992.

Planting[a] date	Treatment[b]	Plant ht cm	Total wt[c]/ha, kg	Straw wt/ha, kg	Grain yield/ha, kg
1	Treated	69.2 ± 0.7	10011.1 ± 436.1	5276.6 ± 242.4	4734.1 ± 227.5
	Untreated	67.4 ± 0.7	10215.0 ± 324.8	5494.2 ± 204.1	4720.5 ± 133.0
2	Treated	73.3 ± 0.8*	11826.1 ± 334.0*	7303.7 ± 201.1*	4522.4 ± 152.7*
	Untreated	67.1 ± 1.0	9708.8 ± 246.8	6333.6 ± 159.6	3375.2 ± 145.8
3	Treated	72.2 ± 0.7*	10384.3 ± 383.0*	6439.4 ± 259.6	3944.8 ± 138.3*
	Untreated	66.5 ± 0.8	8559.2 ± 301.1	5737.4 ± 254.2	2821.8 ± 91.0

* Denotes significant means within planting date by column ($P > 0.05$).
[a] Planting dates: PLANTING-DATE ONE, 16 Apr; PLANTING-DATE TWO, 7 May; and PLANTING-DATE THREE, 28 May 1992.
[b] Treated = carbofuran applied (0.56 kg/[AI]/ha) at rice water weevil threshold (5 larvae per core).
[c] Total wt = Straw wt + Grain wt.

WATER MANAGEMENT AS A CULTURAL CONTROL TACTIC FOR RICE WATER WEEVIL

R.A. Thompson, S.S. Quisenberry, W.C. Rice,
G.B. Trahan, and P.A. Bollich

Location: Rice Research Station, Crowley, LA

Soil Type: Crowley silt loam

Variety: 'Lemont'

Seeding Rate: 167 kg/ha (150 lb/A)

Planting Method: Water-seeded by hand on 25 May 1992;
Row Spacing: 17.6 cm (7-inch)

Experimental Design: Randomized block design; four replications; six treatments: Carbofuran, continuous flood with one application of carbofuran; Control, continuous flood without carbofuran (untreated control); Drain 1, water removal 3 days after core samples indicated the need for rice water weevil control (threshold = 5 larvae per core) with reflood when soil in plots had cracked; Drain 2, water removal at threshold with reflood 1 day after Drain 1; Drain 3, water removal at threshold with reflood 2 days after Drain 1; Drain 4, water removal at threshold with reflood 3 days after Drain 1.

Plot size: 7.6 x 1.2 m (25 x 4 ft)

Water Management: Drained, 28 May; permanently flooded, 2 June

Fertilization: 67:67:67 kg/ha (60:60:60 lb/A), 21 May;
84 kg/ha (75 lb/A) N, 9 July

Herbicide: None

Insecticide: Carbofuran, 0.56 kg[AI]/ha (0.5 lb[AI]/A) applied to treated plots, 19 June

Harvested: 21 Sept

Comments: This report is the second year of a 2-year study designed specifically to look at impact on rice plants and yields of 1-3 days delay in reflooding of fields, after water removal. Also, the study compared the efficacy of water removal on rice water weevil juvenile populations with that of carbofuran treatment.

The larval population reached threshold on 19 June and water was removed from the Drain 3, 4, 5, and 6 plots on 22 June. Drain 3 was reflooded on 6 July and the others at their respective dates. There was a reduction of rice water weevil larval population by both carbofuran and water removal, but there was a resurgence in the population after reflooding (Fig. 1). This observation was confirmed by the post-flood core samples that indicated a disproportional number of small to medium larvae indicating a new infestation (Table 1). There were no differences among treatments for any of the yield indicators (Table 2).

Although recent studies provided evidence that water removal may be a feasible alternative control tactic to carbofuran (Morgan et al. 1989, Quisenberry et al. 1992), the results of this study found that the tactic was unreliable under rainy conditions or if rice water weevil reinfestation occurred after water removal. Hesler et al. (1992) observed that the utility of drainage may be limited because substantial oviposition can occur after reflooding. However, the data did not indicate any rice yield reduction in up to 3 days delay in reflooding fields. The benefits from using water management as a rice water weevil control tactic are unpredictable.

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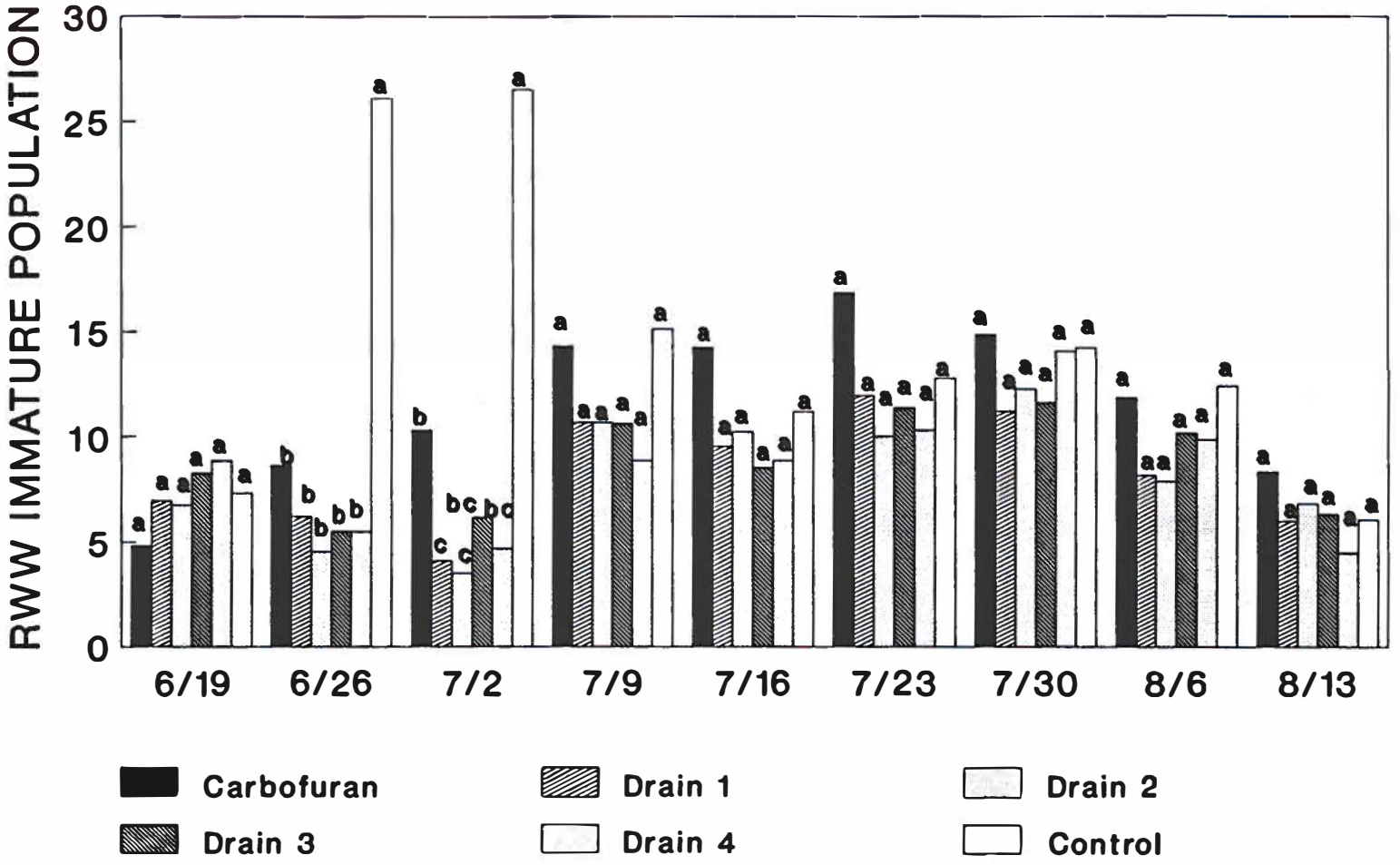

Fig. 1. Mean numbers of rice water weevil (RWW) larvae per core. Bars with the same letter within sampling dates are not significantly different ($P > 0.05$; Tukey's studentized range test)

Table 1. Mean numbers of rice water weevil immatures (larvae/pupae) as distributed by size[1], before, during and after drainage treatments. Rice Research Station, Crowley, LA, 1992.

	1 wk before drainage				2nd wk of drainage				1 wk after reflooding			
Treatments[2]	sml	med	lrg	pup	sml	med	lrg	pup	sml	med	lrg	pup
Carbofuran	3.2a	1.5a	0.2a	0a	5.0b	2.0b	2.7b	0.7a	8.1a	3.1a	2.7ab	0.6ab
Drain 1	4.9a	1.6a	0.5a	0a	2.2bc	1.2b	0.8b	0.1ab	5.8a	3.3a	1.7b	0.0b
Drain 2	4.8a	1.5a	0.6a	0a	1.9c	1.4b	0.3b	0.0b	5.4a	3.2a	1.9ab	0.2b
Drain 3	5.8a	1.9a	0.6a	0a	3.9bc	1.8b	0.5b	0.0b	6.9a	2.3a	1.5b	0.0b
Drain 4	6.3a	1.6a	1.0a	0a	2.5bc	1.7b	0.5b	0.0ab	5.3a	2.4a	1.2b	0.0b
Control	5.8a	1.4a	0.2a	0a	10.7a	6.5a	8.5a	0.8a	6.4a	3.4a	4.3a	1.1a

[1]sml = small, med = medium, lrg = large and pup = pupae.

Means followed by the same letter within a column are not significantly different ($P > 0.05$; Tukey's studentized range [HSD] {SAS Institute 1985} test).

[1] Carbofuran = Carbofuran applied (0.56 [AI]/ha) at rice water weevil threshold (19 June); Drain 1 = plots drained 3 days after rice water weevil threshold (22 June) with reflood 6 July; Drain 2 = plots drained 22 June with 1 day reflood after Drain 1 was reflooded (7 July); Drain 3 = plots drained 22 June with 2 day delayed reflood (8 July); Drain 4 = plots drained 22 June with 3 day delayed reflood (9 July).

Table 2. Plant height and yield indicators (mean ± SE) in rice with water management and carbofuran treatments for control of rice water weevil. Rice Research Station, Crowley, LA, 1992.

Treatment[1]	Plant ht, cm	Total wt/ha, kg	Straw wt/ha, kg	Grain yield/ha, kg
Carbofuran	70.3 ± 0.8	9316.5 ± 425.0	5680.1 ± 253.3	3636.4 ± 188.3
Drain 1	66.9 ± 0.7	8469.4 ± 274.0	5427.3 ± 214.1	3042.1 ± 108.2
Drain 2	67.1 ± 0.5	8614.3 ± 309.4	5502.7 ± 197.9	3111.6 ± 139.7
Drain 3	69.7 ± 0.4	9724.5 ± 240.6	6190.2 ± 187.0	3534.3 ± 106.0
Drain 4	68.2 ± 0.9	9893.1 ± 282.0	6631.8 ± 202.1	3261.3 ± 194.5
Control	68.3 ± 0.8	8873.7 ± 333.1	5766.6 ± 210.3	3107.1 ± 168.6

ANOVA results were not significant ($P < 0.05$).

[1] Carbofuran = Carbofuran applied (0.56 [AI]/ha) at rice water weevil threshold (19 June); Drain 1 = plots drained 3 days after rice water weevil threshold (22 June) with reflood 6 July; Drain 2 = plots drained 22 June with 1 day reflood after Drain 1 was reflooded (7 July); Drain 3 = plots drained 22 June with 2 day delayed reflood (8 July); Drain 4 = plots drained 22 June with 3 day delayed reflood (9 July).

Total wt = Straw wt + Grain yield

EFFECT OF RICE PLANT DENSITY ON RICE WATER WEEVIL (COLEOPTERA: CURCULIONIDAE) OVIPOSITION AND JUVENILE POPULATIONS

R.A. Thompson, S.S. Quisenberry, W.C. Rice, G.B. Trahan, and P.A. Bollich

Location: Rice Research Station, Crowley, LA

Soil Type: Midland silt loam

Variety: 'Lemont'

Seeding Rate: 90, 67.5, 45, and 22.5 kg/ha (80, 60, 40, and 20 lb/A), 18 June 1992

Planting Method: Drill-seeded with a drop-seed planter, 18 June 1992; Row spacing: 17.6 cm (7-inch)

Experimental Design: Randomized block design; four replications; four treatments: 10, 20, 30, and 40 plants per meter row length (I.e. approx. 50, 100, 150, and 200 plants per square meter)

Plot Size: 4.6 x 1.2 m (16 x 4 ft)

Water Management: Flushed, 19 June and 6 July; permanently flooded, 9 July

Fertilization: 134:67:67 kg/ha (120:60:60 lb/A), 7 July

Herbicide: Propanil applied @ 4.5 kg [AI]/ha (4 lb [AI]/A), 23 June; propanil + bentazon 1.2 liter[AI]/ha (1 pt[AI]/A), 6 July

Insecticide: None

Harvested: 28 Oct; Hege combine

Comments: This year represented the final year of a 3-year study that examined the influence of plant spacing on rice water weevil oviposition and immature populations. The late planting in 1992 caused poor stand establishment, which may have influenced the validity of some of the oviposition data (Table 1). Plant spacing had a significant effect on the number of eggs per plant on both sample dates. There was a trend towards more eggs per plant at lower plant densities. However, plant spacing had a significant effect on the number of eggs per m^2 on the second sample date only, but there was a trend towards more eggs per unit area with higher plant densities on both sample dates.

Table 1. Number of rice water weevil eggs (mean ± SE) deposited per unit area and per plant. Rice Research Station, Crowley, LA, 1992.

Date	No. of Plants sampled within a quadrat	Treatment	Eggs/m^2	Eggs per plant
16 July	4.0	10 plants/m	605 ± 124.3	17.5 ± 2.1
	9.0	20 plants/m	771 ± 187.0	7.9 ± 1.4
	11.0	30 plants/m	781 ± 120.9	6.9 ± 0.6
	10.0	40 plants/m	892 ± 514.2	7.2 ± 2.1
23 July	4.0	10 plants/m	34 ± 20.8	0.8 ± 0.5
	11.0	20 plants/m	304 ± 28.7	2.8 ± 0.4
	15.0	30 plants/m	359 ± 78.7	2.2 ± 0.4
	21.0	40 plants/m	288 ± 55.9	1.3 ± 0.1

Analysis of variance results at $P > 0.05$ were (df = 3,9): 16 July- Eggs/m^2, $F = 0.16$, $P > 0.05$; Eggs per plant, $F = 13.65$, $P < 0.05$: 23 July, Eggs/m^2, $F = 6.33$, $P < 0.05$; Eggs per plant, $F = 7.37$, $P < 0.05$.

Throughout the sampling period in 1992, no significant statistical differences were observed among plant density treatments for the populations of rice water weevil immatures (Fig. 1). However, grain yields were significantly lower in 10 and 20 plants per meter row treatments than the higher plant density treatments (Table 2). In previous years, there were no yield differences among the treatments. The exception in 1992 was attributed to poor stand establishment and excessive weed growth. Hot weather conditions are unfavorable for rice stand establishment and plant growth (Anonymous 1987). The adverse conditions caused poor tiller development that was observed in all the treatments (Table 3).

Rolston and Rouse (1964) found that there was a direct relationship between the number of larvae per unit area and plant stand density. They also observed that the number of larvae per plant decreased with increase in plant density. The results of this study showed that same relationship with respect to oviposition and rice water weevil immatures during the first 2 weeks of sampling. The conclusion from the study was that rice plant density may influence rice water weevil oviposition and larval populations during the first 2 weeks of permanent flood.

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Rolston L.H. and P. Rouse. 1964. Some factors influencing larval infestations of rice water weevil. J. Kansas Entomol. Soc. 37: 29-35.

Table 2. Rice plant height and yield (mean ± S.E) as influenced by plant and insect density. Rice Research Station, Crowley, LA, 1992.

Treatment	Height, cm	Yield, kg/ha
10 plants/m	69.3 ± 1.1b	976.1 ± 174.1b
20 plants/m	73.3 ± 0.5a	1762.9 ± 240.1b
30 plants/m	74.6 ± 1.2a	3223.9 ± 184.4a
40 plants/m	74.9 ± 0.6a	3593.1 ± 265.6a

Means followed by the same letter within a column are not significantly different ($P > 0.05$; Tukey's studentized range [SAS institute 1985] tests).

Planted 18 June 1992.

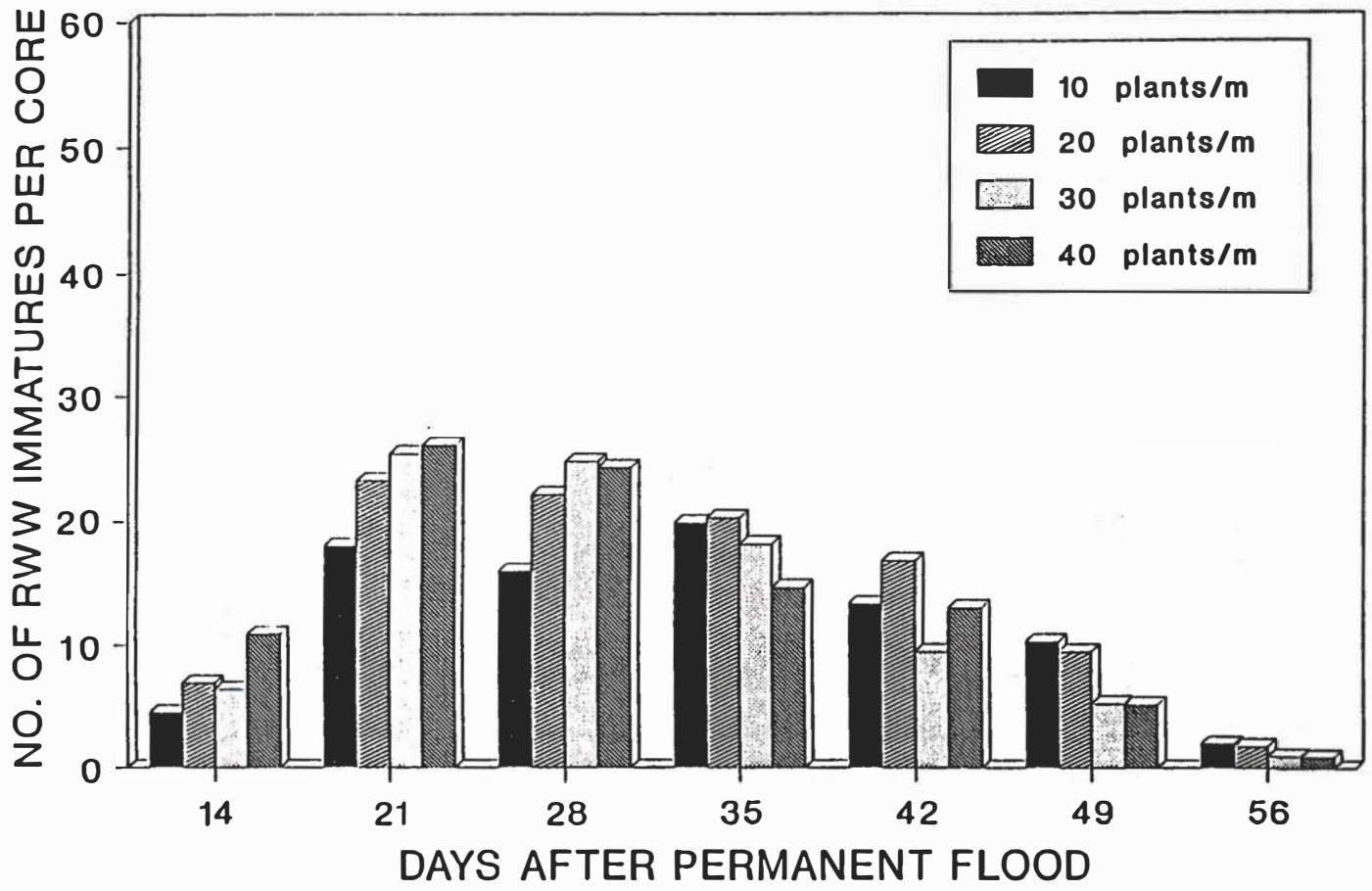

Fig. 1. Mean numbers of rice water weevil (RWW) immatures per core as influenced by plant density.

Table 3. Number of tillers (mean ± SE) per rice plant. Rice Research Station, Crowley, LA, 1992.

Treatment	Sampling date (weeks after permanent flood)		
	3 wk	5 wk	7 wk
10 plants/m	2.1 ± 0.3	4.0 ± 0.6	2.0 ± 0.3
20 plants/m	2.3 ± 0.3	2.4 ± 0.3	1.8 ± 0.4
30 plants/m	1.7 ± 0.2	2.6 ± 0.3	1.8 ± 0.3
40 plants/m	1.5 ± 0.2	1.9 ± 0.2	1.4 ± 0.3

Analysis of variance results were not significant for any of the sampling dates (1 wk, $F = 1.24$; df = 3, 9; $P > 0.05$: 5 wk, $F = 3.05$; df = 3, 9; $P > 0.05$: 7 wk, $F = 0.75$; df = 3, 9; $P > 0.05$).

Planted, 18 June; permanently flooded, 9 July 1992.

RELEASE OF A VIRUS FOR LONG-TERM SUPPRESSION OF VELVETBEAN CATERPILLAR IN SOYBEAN

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INTRODUCTION

Viruses are becoming a tool in insect pest management. They have several advantages over chemical insecticides, the main one being their safety to all non-target organisms, including humans, wildlife, livestock, plants, and even beneficial insects. Natural and genetically engineered strains of viruses are primarily being developed as potential microbial insecticides, to be used like chemical insecticides. However, research also is being directed toward their use for season-long or even permanent suppression of insect pest populations, or, in other words, as classical biocontrol agents.

The velvetbean caterpillar, Anticarsia gemmatalis, is a major, though sporadic, pest of soybean in southern Louisiana. Velvetbean caterpillar is a tropical insect. Thus, this insect cannot overwinter in Louisiana, and new infestations every year are begun by adults that migrate into Louisiana. This migration habit is an advantage to the insect for several reasons, one being that such movement helps it escape many host-specific mortality agents. One such natural mortality agent is called a nuclear polyhedrosis virus, or NPV. Previous research has indicated that the NPV of velvetbean caterpillar (AgNPV) occurs naturally in South America but not in Louisiana.

The overall purpose of this research was to determine whether the AgNPV could be released into soybean to act as a permanent mortality agent in velvetbean caterpillar populations. We proposed that a single release would permanently reduce the pest populations by 25%, a level at which the virus acts in Brazil. This level of mortality should eliminate the need for a proportion of insecticide applications if growers adhere to recommended treatment thresholds. Secondary goals were to determine the effect of crop rotation on viral persistence and to determine whether the virus could spread outside a release plot.

MATERIALS AND METHODS

The AgNPV originally was isolated in Brazil. The virus was produced in large amounts by infecting velvetbean caterpillar reared in the laboratory, collecting the dead insects, and semi-purifying the virus by filtration and centrifugation.

An eight-acre field on the Rice Research Station was divided into three equal sections, and a 48 X 48 ft plot was established in the exact middle of each section. The virus was suspended in water and applied onto the soybean plants in two of the plots with a backpack CO_2 sprayer on 30 August 1990. The unsprayed section was a control, planted to soybean in 1991 and 1992 as well as in 1990. One of the sections containing a virus-sprayed plot (hereafter referred to as the "no rotation" treatment section) also was planted in soybean during all three years. The other section containing a virus-treated plot (the "rotation" treatment section) was fallow in 1991 (heavy rains prevented planting of an alternate crop) and was again planted to soybean in 1992.

Velvetbean caterpillars as well as predatory and parasitic insects were sampled inside and outside the plots. Four 40-sweep, random samples were collected weekly during the soybean season inside each plot. In addition, sampling sites were established in the four cardinal compass directions outside each plot in order to determine whether the virus was spreading. One 40-sweep sample was collected at each site. Velvetbean caterpillars were returned to the laboratory, placed in individual rearing cups with artificial diet, and kept at 80° F until they died or pupated. Tissue from each dead insect was checked by phase microscopy to determine whether the insect was killed by NPV. All predatory and parasitic arthropods were frozen in individual cups until they could be bioassayed to determine whether they were carrying the virus.

Every predatory or parasitic arthropod sampled in 1990 was bioassayed individually to check for contamination by AgNPV. Each insect or spider was identified to genus or species, then macerated in distilled water. The homogenate from each arthropod was fed to 10 neonatal velvetbean caterpillars, which were then reared on artificial diet until they died or pupated. NPV disease in the dead bioassay caterpillars was confirmed by phase microscopy, as above. If at least one of the 10 bioassay larvae died from NPV disease, that particular predator or parasite was counted as being contaminated with AgNPV.

At certain times of year, soil samples were collected inside the plots and at the "virus-spread" sample sites outside each plot. Four random samples were collected inside each plot on each date, and one random sample at each distance and direction outside the plots. The soil samples were returned to the laboratory and frozen until they could be bioassayed. Each soil sample was ground to a fine consistency and suspended in distilled water through several steps of centrifugation. Each final slurry was fed on soybean leaf discs to 60 neonatal velvetbean caterpillar. Those that ate the leaf disc within 2 days were placed in individual rearing cups with artificial diet and observed for viral mortality, as above. These percentages of mortality were compared to standard curves determined by adding known amounts of virus to sterilized soil.

RESULTS AND DISCUSSION

The initial release of the AgNPV resulted in season-long viral epizootics and reduction of velvetbean caterpillar populations in 1990. The virus often caused 70-80% mortality in the sprayed plots (Table 1), and the numbers of velvetbean caterpillars in those plots was significantly ($P<0.05$) lower than in the control area during most of the season (Table 2). Thus, a single spray gave season-long pest population reduction, and the virus was reproducing and establishing itself in the sprayed plots.

The virus also spread outside the sprayed plots during the 1990 season. It was detected as viral infections in velvetbean caterpillars at increasing distances from the sprayed plots as the season progressed (Table 3). It spread at a rate of approximately 1 m per day in all directions. Furthermore, the virus was detected contaminating arthropod predators and parasites of velvetbean caterpillar at almost exactly the same distances (Table 3). Thus, there is strong correlative evidence that predators and parasites were feeding on infected caterpillars and then transporting the virus as they moved around the field. NPVs are known to survive passage through the guts of many types of animals, though they do not infect these animals. The predatory Hemiptera (true bugs) and spiders were the two groups most heavily implicated in transport of the virus around the field, based on the numbers of individuals from these groups that were contaminated with NPV (Table 4).

Large amounts of virus accumulated in the soil of the sprayed plots due to viral replication in host insects during the course of the season (Table 5). There were tens of thousands of viral particles in every gram of soil immediately after the soybean season (October 24). This viral population declined rapidly over winter, and there were only a few hundred particles per gram by the time (6 August 1991) that velvetbean caterpillars usually begin infesting soybean (Table 5). Although the virus spread outside the sprayed plots, the accumulation of virus in soil decreased as distance from these plots increased (Table 6).

Although there were only a few hundred virus particles per gram of soil in August 1991, this was still sufficient to initiate viral infections in velvetbean caterpillars, more than one year after the virus was originally released (Table 7). The insect numbers were relatively low in 1991, yet prevalence of the viral diseases was as high as 49% by September 24. Virus in 1991 also was killing the insects where it had spread outside the plots during the first year, but the percentage killed decreased as distance from the original sprayed plot increased (Table 8). A small amount of virus had spread to the control area by this time, probably due to transport by farm machinery (Table 7).

The virus reproduced itself to even greater amounts in soil by the end of the second (1991) season than it had by the end of 1990 (Table 5). By November, 1991, 328X as much virus was detected in soil of the unrotated plot as in the rotated plot, because there were no velvetbean caterpillars, and thus no viral infections and viral replication, in the plot that was fallow in 1991 (Table 5).

The third year, 1992, had very low populations of velvetbean caterpillar (Table 9) and thus was not a good year for the virus to

Table 1. Effect of 1990 viral (NPV) release on prevalence of mortality caused by NPV disease in velvetbean caterpillar (VBC) populations during 1990.

Days after viral Release	Percent Infection by NPV		
	Control	NPV-Spray Plot, Crop Rotation[1]	NPV-Spray Plot, No Rotation[1]
0[2]	0 a	0 a	0 a
8	0 a	74 b	78 b
14	0 a	76 c	62 b
20	0 a	72 b	81 b
27	0 a	73 c	57 b
34	0 a	41 b	51 b
41	0 a	46 b	44 b

Same letter horizontally indicates no significant difference.

[1] At this time in the experiment there is no difference between the "Rotation" and "No Rotation" plots.

[2] Sample taken immediately before viral spray treatment, 30 August 1990.

Table 2. Effect of 1990 viral (NPV) release on velvetbean caterpillar (VBC) populations during 1990.

Days after viral Release	No. VBC Larvae per 40 Sweeps		
	Control	NPV-Spray Plot, Crop Rotation[1]	NPV-Spray Plot, No Rotation[1]
0[2]	19 a	19 a	17 a
8	15 a	10 a	11 a
14	19 a	14 a	15 a
20	33 a	8 b	3 b
27	25 a	9 b	5 b
34	23 a	6 b	8 b
41	11 a	4 b	4 b

Same letter horizontally indicates no significant difference.

[1] At this time in the experiment there is no difference between the "Rotation" and "No Rotation" plots.

[2] Sample taken immediately before viral spray treatment, 30 August 1990.

Table 3. Mean distance and maximum distance, by date, at which velvetbean caterpillar (VBC) NPV was detected outside of viral release plots after 1990 spray treatment.

Days After Viral Release	Detection in Infected VBC		Detection in Contaminated Predators, Parasites	
	Mean Dist.[1]	Max. Dist.	Mean Dist.[1]	Max. Dist.
1	0.6	1.5	0	0
8	9.5	16.8	14.0	16.8
20	21.3[2]	21.3[2]	21.3[2]	21.3[2]
34	31.1	35.1	32.9	35.1
41	32.9	44.2	39.6	44.2
Mean m/day	0.8	1.1	1.0	1.1

All distances are in units of meters

[1] n = 8
[2] Sampling did not stay ahead of spreading virus.

Table 4. Percentage (number examined) of velvetbean caterpillars infected with NPV and of predatory and parasitic arthropods contaminated with the virus.

Arthropod	Control Section	NPV-Treated Plots	Sites Sampled Outside Sprayed Plots
Lepidoptera			
NOCTUIDAE			
Anticarsia gemmatalis	0 (750)	71.7 (367)	30.4 (3380)
Hemiptera			
PENTATOMIDAE			
Podisus maculiventris	0 (51)	84.8 (33)	52.9 (259)
NABIDAE			
Nabis roseipennis	0 (16)	40.0 (25)	31.9 (91)
Nabis capsiformis	0 (10)	46.2 (13)	27.7 (47)
REDUVIIDAE			
Sinea diadema and *Atrachelus cinereus cinereus*[1]	0 (6)	71.4 (7)	34.8 (69)
Zelus cervicalis	--	100 (3)	52.6 (19)
Unidentified (wheel bug)	--	--	0 (2)
LYGAEIDAE			
Geocoris punctipes	0 (42)	31.6 (38)	30.1 (176)

Table 4 (Continued)

Coleoptera			
CARABIDAE			
Callerida decora	0 (2)	50.0 (6)	20.0 (10)
Diptera			
TACHINIDAE			
Archytas apicifer	--	100 (2)	0 (2)
Unidentified sp.	--	--	25.0 (4)
Hymenoptera			
FORMICIDAE			
Solenopsis richteri	--	0 (2)	0 (5)
CHALCIDIDAE			
Brachymeria ovata	--	0 (1)	40.0 (10)
BRACONIDAE			
Meteorus sp.	--	0 (1)	0 (5)
ENCYRTIDAE			
Copidosoma truncatellum (Dalman)	--	--	0 (2)[2]
Spiders			
ARANEIDAE			
Neoscona sp. A	0 (2)	--	--
Neoscona sp. B	0 (9)	43.8 (16)	37.5 (88)

Table 4 (Continued)

LYCOSIDAE			
Unidentified species (*Schizocosa* or *Lycosa*)	0 (2)	37.5 (32)	25.3 (99)
OXYOPIDAE			
Oxyopes sp.	--	62.5 (8)	39.3 (28)
SALTICIDAE			
Phidippus sp.	--	--	33.3 (3)
THOMISIDAE			
Misumenops sp. A	0 (5)	100 (3)	27.5 (40)
Misumenops sp. B	--	33.3 (3)	22.2 (18)
Misumenops sp. C	0 (1)	22.2 (9)	12.5 (16)
Misumenops sp. D	--	66.7 (3)	54.5 (11)
Unidentified spiders (Probably 8 spp.)	--	25.0 (4)	0 (11)
GRAND TOTAL (Excluding *A. gemmatalis*)	0 (146)	48.8 (209)	36.1 (1015)

[1] Two species, not distinguished while data were being collected.
[2] The parasites from two lepidopteran, mummified larvae were bioassayed. In each case, large numbers of the parasite were combined in the bioassay.

Table 5. Persistence of velvetbean caterpillar NPV in soil after viral release on 30 August 1990.

Date	Mean PIB/g soil[1] (n≥4) Control	NPV Spray, Crop Rotated	NPV Spray, No Rotation
6/14/90	0	0	0
	NPV released; first growing season completed		
10/24/90	0	35,455	17,935
4/10/91	<1.0	4,371	2,961
8/ 6/91	<1.0	758	624
	Second growing season completed		
11/ 6/91	<1.0	539	176,749
4/29/92	0	125	4,163
8/13/92	Soil bioassays in progress		
10/21/92	Soil bioassays in progress		

[1] PIB = viral polyhedral inclusion bodies; based on bioassay and standard curve, $Y = 0.473X + 3.348$, where Y = probit % mortality and X = log PIB/g soil.

Table 6. Accumulation of velvetbean caterpillar NPV in soil at various distances outside the virus-release plots. The virus was sprayed into the plots on 30 August 1990, and soil samples were collected on 10 April 1991.

Distance from Viral Release Plot (m)	Mean PIB/g soil[1] (n ≥ 4)
0.0	3,598
6.1	877
15.2	795
30.5	224
45.7	131
99.1	<1

[1] PIB = viral polyhedral inclusion bodies; based on bioassay and standard curve, Y = 0.473X + 3.348, where Y = probit % mortality and X = log PIB/g soil.

Table 7. Mean numbers of velvetbean caterpillar and % infection by NPV in 1991, one year after viral release.

	Control Plot		Virus-Spray Plot	
Date	Insects per Sweep	% Infected (n)	Insects per Sweep	% Infected (n)
9/10	0.06	0.0 (9)	0.05	12.5 (8)
9/17	0.01	0.0 (2)	0.08	16.7 (12)
9/24	0.09	14.3 (14)	0.28	48.9 (45)
10/ 1	0.69	1.8 (111)	1.13	20.6 (180)
10/ 8	0.61	1.0 (97)	0.74	13.6 (118)
10/15	0.73	0.0 (116)	0.64	31.1 (103)
10/21	0.29	0.0 (46)	0.41	29.2 (65)

Table 8. Mean, season-long, percent infection of velvetbean caterpillars by NPV at various distances outside viral release plots during 1991 soybean season. Release plots were sprayed with virus on 30 August 1990.

Distance (ft) from Virus-Release plot	Mean Percent Infection
25	22.6
50	18.9
75	15.4
100	12.4
150	4.7

Table 9. Mean number of velvetbean caterpillars in experimental plots in 1992, two years after viral release.

Date	Control Plot[1]	Unrotated Plot[2]	Rotated Plot[3]
9/15	0.03	0.06	0.04
9/23	0.23	0.16	0.16
9/29	0.34	0.38	0.24
10/ 7	0.19	0.15	0.04
10/13	0.13	0.02	0.03

[1] Soybeans in plot untreated in 1990; soybeans in 1991 and 1992.
[2] Soybeans in plot sprayed with NPV in August 1990; soybeans in 1991 and 1992.
[3] Soybeans in plot sprayed with NPV in August 1990; fallow in 1991; soybeans in 1992.

be ingested by the insects and thus replicate itself. In spite of these poor conditions, the virus still was killing insects more than two years after its release (Table 10). Even more interesting, the virus was still killing insects in the section of the field that was fallow in 1991. Lying fallow for a year and having a much smaller virus population in the soil (Table 5) only seemed to delay development of the disease in the insect populations by approximately one week (Table 10).

Thus, this experiment has demonstrated the feasibility of releasing the AgNPV in small spots within a soybean field, resulting in spread of the virus to become a permanent mortality agent of velvetbean caterpillar in that field. This experiment is being repeated and will be completed during 1993 at the Central Stations of the LSU Agricultural Center. Thus far, the results at Central Stations are supporting those at the Rice Research Station. In view of these encouraging results, efforts are being initiated to obtain funding and EPA approval to release this virus throughout an entire parish in Louisiana.

Table 10. Percent infection (n) of velvetbean caterpillars by NPV during 1992, two years after viral release. Insects were sampled inside the original experimental plots as well as at distances ranging from 25 - 100 ft outside the plots.

	Control Section[1]		Unrotated Section[2]		Rotated Section[3]	
Date	Plot	Outside Plot	Plot	Outside Plot	Plot	Outside Plot
9/15	0 (5)	0 (7)	11.1 (9)	0 (10)	0 (6)	0 (15)
9/23	0 (36)	0 (41)	7.7 (26)	1.1 (93)	3.8 (26)	0 (106)
9/29	0 (54)	0 (85)	13.3 (60)	5.5 (146)	7.9 (38)	1.4 (214)
10/7	0 (31)	0 (41)	20.8 (24)	11.4 (105)	14.2 (7)	5.5 (109)
10/13	0 (21)	0 (22)	0 (3)	30.2 (43)	40.0 (5)	17.2 (64)

[1] Soybeans in plot untreated in 1990; soybeans in 1991 and 1992.
[2] Soybeans in plot sprayed with NPV in August 1990; soybeans in 1991 and 1992.
[3] Soybeans in plot sprayed with NPV in August 1990; fallow in 1991; soybeans in 1992.

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THE RICE RESEARCH STATION IS ESPECIALLY INDEBTED TO MR. H.F. MORRIS, JR., HERMAN E. WILSON FEED AND FERTILIZER LABORATORY, FOR THE CHEMICAL ANALYSES OF RESEARCH SAMPLES. DR. L. LAMOTTE, DEPARTMENT OF EXPERIMENT STATISTICS, AND HIS STAFF AIDED IN THE RESEARCH PROGRAM THROUGH THEIR HELP IN THE PLANNING AND STATISTICAL ANALYSES OF RESEARCH DATA.