CONTENTS

103rd Annual Research Report

Rice Research Station

Crowley, Louisiana
2011

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CAPTIONS FOR PICTURES ON THE FRONT COVER OF 103RD ANNUAL REPORT

Harvesting headrow seed production of the medium-grain rice variety 'Caffey.'

Crawfish retained by parallel bars of grader during a grading feasibility study.

Sheath blight lesions on maturing rice leaves.

Experimental plot combines harvesting rice research plots.

Aerial seeding of smooth cordgrass at an off-site location on Marsh Island.

103^{rd} Annual Research Report

RICE RESEARCH STATION

Crowley, Louisiana

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Louisiana State University Agricultural Center
William B. Richardson, Chancellor

Louisiana Agricultural Experiment Station
John Russin, Vice Chancellor and Director

Louisiana Cooperative Extension Service
Paul D. Coreil, Vice Chancellor and Director

Southwest Region/Rice Research Station
Steve D. Linscombe, Regional Director/Resident Coordinator

TABLE OF CONTENTS

Page

INTRODUCTION

Research at the Rice Research Station, Crowley, Louisiana, is conducted by scientists with the LSU AgCenter's Louisiana Agricultural Experiment Station. The 2011 rice research program included breeding/variety development, biotechnology, variety testing, fertilization, soil and water management, cultural practices, weed control, insect control, and disease investigations. 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, forages, and multi-cropping of crawfish with agronomic crops. Another important area of work is the production and distribution of foundation seed. The Rice Research Station also conducts research studies in improving species for coastal restoration. In addition, the statewide rice extension agronomist conducts numerous educational programs from the Rice Research Station. Although most research work was performed by members of the Rice Station faculty, several faculty members from the Baton Rouge campus conducted research at this station.

The research activities of this station include both fundamental and applied research, although the latter predominates because of the mission of the Rice Research Station. Research accomplishments and general progress of the Rice Station during 2011 are presented in this report representing the 103rd Annual Research Report of the Rice Research Station, Louisiana Agricultural Experiment Station, and LSU Agricultural Center. It is significant that this research facility has been providing new technology to the Louisiana rice industry for more than 100 years.

In addition to research responsibilities of the Rice Research Station faculty and cooperators, a large number of farmers, extension personnel, and others were trained and otherwise contacted during 2011. Approximately 500 people attended the annual Rice Research Station field day to view plots and participate in discussions of research findings. Field days also were conducted in Evangeline, Jefferson Davis, Richland, and Vermilion parishes. In addition, the faculty 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 2011.

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 2011 are listed.

MONTHLY RAINFALL DATA
RICE RESEARCH STATION - CROWLEY, LA
2011

DATE	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	YEAR TOTAL
1	.11	.08											
2		.44					.65		.02				
3					1.23				1.46		.20		
4					.04		.64		3.69				
5	.90	.60		.10					.70			.05	
6	Trace		1.35			.18	1.55					.12	
7		.53				.01	2.90					.01	
8							.01						
9			.13				.19				.74		
10	.47	.62				.21							
11													
12													
13							.22	.14					
14					.16								
15			.10				.27	.56				.06	
16				.12			.02				1.08	.20	
17	.46						.29					.18	
18													
19	.33						.85	.45	.84	.07			
20							.07		.04				
21	.02					.19	.02					.20	
22		.06				.31	.75					1.27	
23		.02				1.51	.03		.72		.98	.36	
24		.08					.57			.12			
25	1.85	.02					.13	.70				.27	
26				3.35		.02	.30					.41	
27					.02		.60				.49	.41	
28	.01	.01					.60			.51	.08		
29									.19			.01	
30			.13									.01	
31	1.00						.30						
MONTH TOTAL	5.15	2.46	1.71	3.57	1.45	2.43	10.96	1.85	7.66	0.70	3.57	3.56	45.07
2010	1.61	5.92	1.63	0.54	5.54	5.40	8.91	5.53	1.63	1.78	4.52	3.30	46.31

RICE BREEDING

GENETIC IMPROVEMENT OF RICE FOR LOUISIANA PRODUCTION[1]

S.D. Linscombe, X.Y. Sha, K.F. Bearb, R.R. Dilly, Jr., B.W. Theunissen,
S.J. Theunissen, R.E. Zaunbrecher, B.J. Henry, and H.L. Hoffpauir

INTRODUCTION

The primary objective of the Rice Breeding Project is the development of superior varieties for the Louisiana rice industry. The Breeding Project is developing improved genotypes of both long- and medium-grain types, which are both important in the state and region. A major area of emphasis is the development of Clearfield varieties of both long- and medium-grain types. The project is also placing major emphasis on the development of special purpose types. Work is also progressing on incorporating the Clearfield trait in the Jazzman and Jazzman-2 varieties.

In addition to the primary objective of varietal development, the Breeding Project also conducts other research that may have direct and/or indirect contributions for varietal development. Included here are studies on milling quality, mutation breeding, date of planting, and herbicide tolerance of new varieties and experimental lines.

The 2011 rice breeding nursery included more than 96,000 breeding rows, 360 F_1 transplant populations, and 430 space planted F_2 populations. About 450 new crosses were made. On- and off-station testing included more than 5,000 yield plots. Yield testing included the Cooperative Uniform Regional Rice Nursery, which contained 200 experimental lines and checks (50 Louisiana entries). The commercial-advanced test was conducted at the Rice Research Station and four off-station locations.

The preliminary yield testing program evaluated over 1,000 lines (mainly of F_5 and F_6 generations), most for the first time. In addition to yield testing, these lines were also evaluated for seedling vigor, milling characteristics, quality parameters, and numerous other agronomic characteristics.

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

COMMERCIAL-ADVANCED TEST

The Commercial-Advanced trial (CA) is a multi-location test conducted by the Rice Breeding Project in the major rice growing regions in Louisiana. The objective of this trial is to evaluate the adaptation and stability of commercial rice varieties and advanced experimental lines for a number of important agronomic and yield characteristics.

Test locations in 2011 included the Rice Research Station (RRS) at Crowley and four on-farm test sites in Jefferson Davis, Evangeline, Vermilion, and Acadia parishes. The test in Richland Parish was conducted in cooperation with the Rice Agronomy Project.

Sixty entries were tested in a randomized complete block design with three replications. Varieties and hybrids were seeded at 90 lb/A and 38 lb/A, respectively. Planting dates were: RRS, March 22; Evangeline, March 29: Vermilion, March 17; Acadia, April 8; and Jefferson Davis, March 11. Harvest dates were: RRS, July 29; Evangeline, August 17; Vermilion, August 3; Acadia, August 24; and Jefferson Davis, August 1. Results from these trials are shown in Tables 1-6.

Table 1. Entry number, pedigree, grain type, and source information for entries in the Commercial-Advanced Trial, 2011.

Entry	Pedigree	Grain Type†	Source‡
201	CL111	L	LAES
202	CL131	L	LAES
203	CL142 (ARKANSAS)	L	AAES
204	CL151	L	LAES
205	CL152	L	LAES
206	CL161	L	LAES
207	CL162 (MISSISSIPPI)	L	MAFES
208	CL181 (ARKANSAS)	L	AAES
209	CL261	M	LAES
210	COCODRIE	L	LAES
211	CHENIERE	L	LAES
212	CATAHOULA	L	LAES
213	CYPRESS	L	LAES
214	WELLS	L	AAES
215	REX	L	AAES
216	TEMPLETON	L	AAES
217	TAGGERT	L	AAES
218	ROY J	L	AAES
219	JAZZMAN	L(A)	LAES
220	JAZZMAN-2	L(A)	LAES
221	JES	L	AAES
222	NEPTUNE	M	LAES
223	JUPITER	M	LAES
224	CAFFEY	M	LAES
225	LAH10	M	LAES
226	BENGAL	M	LAES

Continued.

Table 1. Continued.

Entry	Pedigree	Grain Type†	Source‡
227	CFX18//CCDR/9770532 DH2/3/9502008-A//…	L	LAES
228	CCDR/JEFF/3/CFX18//CCDR/9770532 DH2	L	LAES
229	LFTE/BNGL	M	LAES
230	BNGL/9502065//EARL	M	LAES
231	EARL/4/BNGL/3/SMARS/MARS//MARS	M	LAES
232	9502008-A//AR 1188/CCDR/3/…	L	LAES
233	9502008/3/MBLE//LMNT/20001-5/4/CFX-18//…	L	LAES
234	CPRS/KBNT//9502008-A/3/TRNS	L	LAES
235	CPRS/9502008-A/3/CFX 29//AR 1142/LA 2031	L	LAES
236	9502008-A/DREW//CLR 20	L	LAES
237	CPRS//82CAY21/TBNT/3/CFX 29//…	L	LAES
238	AR 1188/CCDR//9502008/LGRU	L	LAES
239	CFX-18//CPRS/KBNT/3/CFX-29/CCDR	L	LAES
240	LGRU/LCSN/3/CFX-18//CCDR/9770532 DH2	L	LAES
241	9502008-A//AR 1188/CCDR/3/CFX-26/9702128	L	LAES
242	CFX18/LM-1/3/9502008-A//AR 1188/CCDR	L	LAES
243	CCDR/JEFF/3/CFX-18//CCDR/9770532 DH2	L	LAES
244	9502008-A//AR 1188/CCDR/3/CFX-26/9702128	L	LAES
245	CCDR/CLPY 003	L	LAES
246	CCDR//9502008/LGRU	L	LAES
247	CPRS//L-205/DLLA	L	LAES
248	CCDR/3/9502008-A//AR1188/CCDR	L	LAES
249	RU0602103/3/9502008-A//AR1188/CCDR	L	LAES
250	CPRS/KBNT//9502008-A	L	LAES
251	CCDR/JEFF/3/9502008//AR1142/MBLE	L	LAES
252	9502008//AR1188/CCDR/3/CCDR	L	LAES
253	WELLS/CTHL	L	LAES
254	9502008-A/DREW/3/9502008-A//AR1188/CCDR	L	LAES
255	CPRS/KBNT//9502008-A/3/RU0602180	L	LAES
256	CCDR/JEFF//0402128	L	LAES
257	NWBT/KATY//9902207x2/3/JSMN/DLLA//…	L	LAES
258	BNGL/CL161	M	LAES
259	MARS//M201/MARS/5/STRN//MERC/…	M	LAES
260	BNGL//MERC/RICO/3/MERC/RICO//BNGL	M	LAES

† L = Long grain and M = Medium grain, (A) = Aromatic.

‡ AAES - Rice Research and Extension Center, Arkansas Agricultural Experiment Station, Stuttgart, AR; LAES - Rice Research Station, Louisiana Agricultural Experiment Station, LSU Agricultural Center, Crowley, LA; MAFES - Delta Research and Extension Center, Mississippi Agricultural and Forestry Experiment Station, Stoneville, MS; TAES, USDA, Texas A&M Research and Education Center, Texas Agricultural Experiment Station, U.S. Department of Agriculture, Beaumont, TX.

Table 2. Grain and milling yields and agronomic performance of entries in the 2011 Commercial-Advanced Trial. Acadia Parish, LA.

ENT	SOURCE	PEDIGREE	HDT	HTE	YIELD
225	LAH10	LAH10	88	47	7146
258	0902082	BNGL/CL161	84	42	6907
221	JES	JES	91	42	6542
217	TGRT	TAGGERT	97	46	6476
227	1102103	CFX18//CCDR/9770532 DH2/3/9502008-A//…	80	40	5990
259	1002168	MARS//M201/MARS/5/STRN//MERC/…	83	37	5976
249	1102031	RU0602103/3/9502008-A//AR1188/CCDR	87	44	5784
209	CL261	CL261	83	41	5760
224	CFFY	CAFFEY	88	35	5740
250	1102034	CPRS/KBNT//9502008-A	85	42	5673
245	1102097	CCDR/CLPY 003	79	39	5633
229	1002071	LFTE/BNGL	83	35	5481
204	CL151	CL151	84	43	5470
232	0902088	9502008-A//AR 1188/CCDR/3/…	85	42	5392
228	1102106	CCDR/JEFF/3/CFX18//CCDR/9770532 DH2	81	40	5386
246	1002128	CCDR//9502008/LGRU	90	42	5350
215	REX	REX	91	42	5343
223	JPTR	JUPITER	91	35	5342
240	1102082	LGRU/LCSN/3/CFX-18//CCDR/9770532 DH2	72	40	5246
212	CHTL	CATAHOULA	87	45	5245
203	CL142	CL142 (ARKANSAS)	87	46	5145
255	1102137	CPRS/KBNT//9502008-A/3/RU0602180	83	41	5142
244	1102094	9502008-A//AR 1188/CCDR/3/CFX-26/9702128	77	38	5127
211	CHNR	CHENIERE	85	40	5121
216	TMPT	TEMPLETON	94	42	5108
242	1102088	CFX18/LM-1/3/9502008-A//AR 1188/CCDR	78	39	5050
210	CCDR	COCODRIE	85	41	5020
252	1102128	9502008//AR1188/CCDR/3/CCDR	85	43	5002
256	1102140	CCDR/JEFF//0402128	81	41	4993
251	1102125	CCDR/JEFF/3/9502008//AR1142/MBLE	85	39	4980
234	1002189	CPRS/KBNT//9502008-A/3/TRNS	86	39	4955
201	CL111	CL111	75	40	4908
243	1102091	CCDR/JEFF/3/CFX-18//CCDR/9770532 DH2	76	39	4888
248	1102028	CCDR/3/9502008-A//AR1188/CCDR	82	40	4884
205	CL152	CL152	86	43	4883
235	1002011	CPRS/9502008-A/3/CFX 29//AR 1142/LA 2031	85	44	4882
254	1102134	9502008-A/DREW/3/9502008-A//AR1188/CCDR	86	42	4838

Continued.

Table 2. Continued.

ENT	SOURCE	PEDIGREE	HDT	HTE	YIELD
241	1102085	9502008-A//AR 1188/CCDR/3/CFX-26/9702128	78	40	4790
214	WLLS	WELLS	95	43	4757
247	0802140	CPRS//L-205/DLLA	89	40	4740
260	0902162	BNGL//MERC/RICO/3/MERC/RICO//BNGL	93	36	4523
236	1002088	9502008-A/DREW//CLR 20	78	40	4472
230	1102162	BNGL/9502065//EARL	87	36	4414
239	1102051	CFX-18//CPRS/KBNT/3/CFX-29/CCDR	86	44	4407
226	BNGL	BNGL	91	36	4406
222	NPTN	NEPTUNE	92	34	4402
213	CPRS	CYPRESS	88	43	4322
238	0702085	AR 1188/CCDR//9502008/LGRU	84	41	4274
233	1002085	9502008/3/MBLE//LMNT/20001-5/4/CFX-18//…	80	39	4264
237	1002103	CPRS//82CAY21/TBNT/3/CFX 29//…	83	37	4196
207	CL162	CL162 (MISSISSIPPI)	83	42	4086
219	JZMN	JAZZMAN	95	41	4049
257	1002146	NWBT/KATY//9902207x2/3/JSMN/DLLA//…	83	37	4017
206	CL161	CL161	86	42	3942
220	JZMN2	JAZZMAN-2	85	37	3916
231	1102165	EARL/4/BNGL/3/SMARS/MARS//MARS	91	34	3824
202	CL131	CL131	85	37	3329
208	CL181	CL181 (ARKANSAS)	85	37	3315
218	ROY J	ROY J	103	44	3311
253	1102131	WELLS/CTHL	90	39	3298
CV					
LSD					

[1] Subjective rating 0 to 9, where 0 = excellent, 9 = poor.

Table 3. Grain and milling yields and agronomic performance of entries in the 2011 Commercial-Advanced yield trial. Evangeline Parish, LA.

ENT	SOURCE	PEDIGREE	HDT	HTE	YIELD
209	CL261	CL261	76	35	5782
207	CL162	CL162 (MISSISSIPPI)	72	36	5525
244	1102094	9502008-A//AR 1188/CCDR/3/CFX-26/9702128	71	35	5318
206	CL161	CL161	78	34	5292
203	CL142	CL142 (ARKANSAS)	77	38	5092
258	0902082	BNGL/CL161	77	36	4976
253	1102131	WELLS/CTHL	76	35	4864
205	CL152	CL152	79	36	4816
201	CL111	CL111	74	34	4751
229	1002071	LFTE/BNGL	78	34	4695
259	1002168	MARS//M201/MARS/5/STRN//MERC/…	73	34	4630
212	CHTL	CATAHOULA	78	37	4568
208	CL181	CL181 (ARKANSAS)	78	33	4474
243	1102091	CCDR/JEFF/3/CFX-18//CCDR/9770532 DH2	72	35	4458
215	REX	REX	80	36	4390
217	TGRT	TAGGERT	82	38	4217
236	1002088	9502008-A/DREW//CLR 20	73	34	4142
240	1102082	LGRU/LCSN/3/CFX-18//CCDR/9770532 DH2	76	36	4011
211	CHNR	CHENIERE	80	34	3964
218	ROY J	ROY J	83	35	3949
223	JPTR	JUPITER	81	33	3939
213	CPRS	CYPRESS	79	34	3616
204	CL151	CL151	78	35	3586
245	1102097	CCDR/CLPY 003	73	35	3426
241	1102085	9502008-A//AR 1188/CCDR/3/CFX-26/9702128	76	34	3330
242	1102088	CFX18/LM-1/3/9502008-A//AR 1188/CCDR	78	34	3286
247	0802140	CPRS//L-205/DLLA	82	34	3281
224	CFFY	CAFFEY	80	34	3214
214	WLLS	WELLS	83	34	3081
230	1102162	BNGL/9502065//EARL	78	34	2855
234	1002189	CPRS/KBNT//9502008-A/3/TRNS	75	33	2751
231	1102165	EARL/4/BNGL/3/SMARS/MARS//MARS	80	30	2743
260	0902162	BNGL//MERC/RICO/3/MERC/RICO//BNGL	78	31	2658
235	1002011	CPRS/9502008-A/3/CFX 29//AR 1142/LA 2031	77	36	2617
226	BNGL	BNGL	79	33	2520
202	CL131	CL131	77	31	2479
225	LAH10	LAH10	80	43	2428

Continued.

Table 3. Continued.

ENT	SOURCE	PEDIGREE	HDT	HTE	YIELD
219	JZMN	JAZZMAN	81	32	2405
233	1002085	9502008/3/MBLE//LMNT/20001-5/4/CFX-18//…	74	35	2394
228	1102106	CCDR/JEFF/3/CFX18//CCDR/9770532 DH2	74	36	2344
250	1102034	CPRS/KBNT//9502008-A	80	34	2270
252	1102128	9502008//AR1188/CCDR/3/CCDR	79	34	2195
227	1102103	CFX18//CCDR/9770532 DH2/3/9502008-A//…	77	34	2193
238	0702085	AR 1188/CCDR//9502008/LGRU	78	36	2176
221	JES	JES	82	40	2084
246	1002128	CCDR//9502008/LGRU	83	34	1843
222	NPTN	NEPTUNE	82	30	1817
237	1002103	CPRS//82CAY21/TBNT/3/CFX 29//…	73	38	1761
254	1102134	9502008-A/DREW/3/9502008-A//AR1188/CCDR	77	35	1753
256	1102140	CCDR/JEFF//0402128	79	37	1628
255	1102137	CPRS/KBNT//9502008-A/3/RU0602180	80	36	1565
257	1002146	NWBT/KATY//9902207x2/3/JSMN/DLLA//…	79	31	1413
249	1102031	RU0602103/3/9502008-A//AR1188/CCDR	78	36	1402
216	TMPT	TEMPLETON	83	34	1211
210	CCDR	COCODRIE	80	34	1198
239	1102051	CFX-18//CPRS/KBNT/3/CFX-29/CCDR	79	33	1151
251	1102125	CCDR/JEFF/3/9502008//AR1142/MBLE	79	34	1123
248	1102028	CCDR/3/9502008-A//AR1188/CCDR	78	35	979
232	0902088	9502008-A//AR 1188/CCDR/3/…	76	34	959
220	JZMN2	JAZZMAN-2	80	30	468
CV					
LSD					

[1] Subjective rating 0 to 9, where 0 = excellent, 9 = poor.

Table 4. Grain and milling yields and agronomic performance of entries in the 2011 Commercial-Advanced yield trial. Evangeline Parish, LA.

ENT	SOURCE	PEDIGREE	VIG[1]	HDT	HTE	YIELD	WHOLE	TOTAL
225	LAH10	LAH10	7	90	50	10907	55.3	66.7
222	NPTN	NEPTUNE	5	89	35	10741	60.4	65.5
218	ROY J	ROY J	4	87	41	10529	55.3	70.3
224	CFFY	CAFFEY	5	88	36	10422	58.3	65.9
217	TGRT	TAGGERT	5	88	44	10061	51.9	68.3
231	1102165	EARL/4/BNGL/3/SMARS/MARS//MARS	6	89	33	9960	58.5	65.7
219	JZMN	JAZZMAN	5	88	43	9956	60.5	68.5
223	JPTR	JUPITER	5	89	37	9948	59.2	65.6
260	0902162	BNGL//MERC/RICO/3/MERC/RICO//BNGL	6	90	33	9901	58.8	66.3
226	BNGL	BNGL	4	89	35	9767	60.5	67.7
229	1002071	LFTE/BNGL	5	86	33	9673	63.6	69.4
214	WLLS	WELLS	4	85	40	9428	57.8	69.7
215	REX	REX	3	85	39	9408	57.3	67.9
230	1102162	BNGL/9502065//EARL	5	85	35	9325	62.4	67.7
238	0702085	AR 1188/CCDR//9502008/LGRU	5	82	35	9312	60.4	71.3
216	TMPT	TEMPLETON	4	88	40	9295	61.9	69.3
258	0902082	BNGL/CL161	5	87	37	9187	67.5	70.7
203	CL142	CL142 (ARKANSAS)	5	83	41	9090	57.8	70.7
211	CHNR	CHENIERE	5	85	36	9076	61.9	71.9
212	CHTL	CATAHOULA	5	83	33	8994	59.5	70.6
259	1002168	MARS//M201/MARS/5/STRN//MERC/…	5	86	35	8914	63.4	67.9
250	1102034	CPRS/KBNT//9502008-A	6	85	36	8855	56.9	68.6
246	1002128	CCDR//9502008/LGRU	5	84	34	8528	62.0	70.1
255	1102137	CPRS/KBNT//9502008-A/3/RU0602180	5	85	34	8425	59.1	69.2
253	1102131	WELLS/CTHL	5	81	33	8346	60.9	71.0
249	1102031	RU0602103/3/9502008-A//AR1188/CCDR	4	85	36	8339	60.7	70.5
254	1102134	9502008-A/DREW/3/9502008-A//AR1188/CCDR	5	82	34	8281	58.3	69.9
248	1102028	CCDR/3/9502008-A//AR1188/CCDR	5	83	35	8263	57.0	67.7
210	CCDR	COCODRIE	5	84	35	8257	58.2	69.6
245	1102097	CCDR/CLPY 003	5	79	34	8174	58.6	70.0
251	1102125	CCDR/JEFF/3/9502008//AR1142/MBLE	5	83	33	8159	63.0	72.4
209	CL261	CL261	4	84	38	8102	66.7	70.0
204	CL151	CL151	5	84	36	8100	61.6	70.8
202	CL131	CL131	4	82	32	8063	62.1	72.0
256	1102140	CCDR/JEFF//0402128	5	84	36	8026	56.7	70.2
241	1102085	9502008-A//AR 1188/CCDR/3/CFX-26/9702128	6	80	34	7953	58.9	69.6
247	0802140	CPRS//L-205/DLLA	5	87	37	7818	59.8	68.8

Continued.

Table 4. Continued.

ENT	SOURCE	PEDIGREE	VIG[1]	HDT	HTE	YIELD	WHOLE	TOTAL
213	CPRS	CYPRESS	5	85	38	7760	61.2	69.0
221	JES	JES	6	86	35	7664	60.4	67.4
207	CL162	CL162 (MISSISSIPPI)	4	79	38	7608	57.3	69.0
205	CL152	CL152	6	84	34	7559	61.1	69.5
244	1102094	9502008-A//AR 1188/CCDR/3/CFX-26/9702128	4	79	34	7358	59.0	70.7
234	1002189	CPRS/KBNT//9502008-A/3/TRNS	5	81	34	7347	61.4	70.9
227	1102103	CFX18//CCDR/9770532 DH2/3/9502008-A//…	4	81	33	7340	61.4	71.0
257	1002146	NWBT/KATY//9902207x2/3/JSMN/DLLA//…	5	82	33	7283	64.6	71.8
220	JZMN2	JAZZMAN-2	5	85	33	7265	62.9	69.7
242	1102088	CFX18/LM-1/3/9502008-A//AR 1188/CCDR	6	81	33	7201	58.9	68.4
235	1002011	CPRS/9502008-A/3/CFX 29//AR 1142/LA 2031	4	84	37	7186	60.5	71.1
208	CL181	CL181 (ARKANSAS)	5	83	32	7137	59.2	69.7
252	1102128	9502008//AR1188/CCDR/3/CCDR	5	85	32	7053	60.8	70.7
201	CL111	CL111	4	79	35	7007	56.0	69.8
232	0902088	9502008-A//AR 1188/CCDR/3/…	5	83	35	6963	59.9	69.9
233	1002085	9502008/3/MBLE//LMNT/20001-5/4/CFX-18//…	5	83	34	6546	58.1	70.4
237	1002103	CPRS//82CAY21/TBNT/3/CFX 29//…	6	77	34	6495	60.9	69.7
239	1102051	CFX-18//CPRS/KBNT/3/CFX-29/CCDR	5	84	34	6375	62.7	72.0
228	1102106	CCDR/JEFF/3/CFX18//CCDR/9770532 DH2	4	80	34	6358	59.1	67.9
243	1102091	CCDR/JEFF/3/CFX-18//CCDR/9770532 DH2	4	78	34	6333	56.5	70.4
206	CL161	CL161	4	84	36	6264	64.8	71.3
240	1102082	LGRU/LCSN/3/CFX-18//CCDR/9770532 DH2	4	80	35	6043	62.2	71.3
236	1002088	9502008-A/DREW//CLR 20	4	82	36	5931	60.2	70.1
CV								
LSD								

[1] Subjective rating 0 to 9, where 0 = excellent, 9 = poor.

Table 5. Grain and milling yields and agronomic performance of entries in the 2011 Commercial-Advanced yield trial. Vermilion Parish, LA.

ENT	SOURCE	PEDIGREE	VIG[1]	HDT	HTE	YIELD	RATOON	TOTAL YIELD
204	CL151	CL151	5	86	38	10007	2051	12058
258	0902082	BNGL/CL161	4	91	38	9677	2283	11960
225	LAH10	LAH10	6	94	46	9973	1890	11863
209	CL261	CL261	4	89	38	9069	2591	11660
260	0902162	BNGL//MERC/RICO/3/MERC/RICO//BNGL	5	96	33	8313	3294	11607
227	1102103	CFX18//CCDR/9770532 DH2/3/9502008-A//…	5	85	36	9477	1903	11380
228	1102106	CCDR/JEFF/3/CFX18//CCDR/9770532 DH2	5	84	37	9286	1997	11283
203	CL142	CL142 (ARKANSAS)	5	89	43	9022	2225	11247
237	1002103	CPRS//82CAY21/TBNT/3/CFX 29//…	6	85	35	8976	2242	11219
242	1102088	CFX18/LM-1/3/9502008-A//AR 1188/CCDR	5	86	35	9065	2141	11206
201	CL111	CL111	4	79	36	8881	2167	11048
241	1102085	9502008-A//AR 1188/CCDR/3/CFX-26/9702128	6	86	37	9179	1803	10982
205	CL152	CL152	6	90	37	8806	2166	10971
243	1102091	CCDR/JEFF/3/CFX-18//CCDR/9770532 DH2	5	83	34	9126	1794	10919
245	1102097	CCDR/CLPY 003	6	85	35	8741	2108	10850
236	1002088	9502008-A/DREW//CLR 20	5	85	36	8746	2040	10786
232	0902088	9502008-A//AR 1188/CCDR/3/…	6	89	35	8874	1782	10656
207	CL162	CL162 (MISSISSIPPI)	4	85	39	8690	1938	10628
235	1002011	CPRS/9502008-A/3/CFX 29//AR 1142/LA 2031	5	88	37	8939	1646	10585
234	1002189	CPRS/KBNT//9502008-A/3/TRNS	6	86	35	8428	2097	10525
244	1102094	9502008-A//AR 1188/CCDR/3/CFX-26/9702128	5	84	35	8668	1717	10384
223	JPTR	JUPITER	5	94	35	8305	2032	10336
208	CL181	CL181 (ARKANSAS)	5	86	34	8299	2015	10314
224	CFFY	CAFFEY	5	94	35	7547	2668	10215
226	BNGL	BNGL	4	93	34	7751	2446	10197
233	1002085	9502008/3/MBLE//LMNT/20001-5/4/CFX-18//…	5	88	36	8387	1712	10098
240	1102082	LGRU/LCSN/3/CFX-18//CCDR/9770532 DH2	5	85	38	8443	1488	9931
206	CL161	CL161	5	89	36	8318	1578	9896
221	JES	JES	5	95	34	7603	2291	9894
214	WLLS	WELLS	4	93	37	7807	2063	9870
215	REX	REX	4	94	37	7191	2516	9706
211	CHNR	CHENIERE	6	92	33	7506	2115	9621
230	1102162	BNGL/9502065//EARL	6	90	35	7421	2157	9578
202	CL131	CL131	5	87	32	8045	1444	9489
216	TMPT	TEMPLETON	4	97	38	7247	2202	9449
217	TGRT	TAGGERT	4	96	40	6841	2582	9424
231	1102165	EARL/4/BNGL/3/SMARS/MARS//MARS	6	93	32	7055	2366	9421

Continued.

Table 5. Continued.

ENT	SOURCE	PEDIGREE	VIG[1]	HDT	HTE	YIELD	RATOON	TOTAL YIELD
218	ROY J	ROY J	4	97	40	6531	2820	9350
253	1102131	WELLS/CTHL	5	91	31	6821	2504	9325
239	1102051	CFX-18//CPRS/KBNT/3/CFX-29/CCDR	7	91	35	7576	1621	9197
254	1102134	9502008-A/DREW/3/9502008-A//AR1188/CCDR	6	89	34	7417	1654	9071
256	1102140	CCDR/JEFF//0402128	6	92	34	7314	1690	9004
222	NPTN	NEPTUNE	5	97	33	5923	2789	8712
212	CHTL	CATAHOULA	5	90	35	6963	1662	8625
210	CCDR	COCODRIE	5	94	36	6912	1670	8581
229	1002071	LFTE/BNGL	7	92	34	7595	880	8475
259	1002168	MARS//M201/MARS/5/STRN//MERC/…	5	92	33	6538	1900	8438
247	0802140	CPRS//L-205/DLLA	5	96	36	6375	2014	8388
257	1002146	NWBT/KATY//9902207x2/3/JSMN/DLLA//…	5	89	31	6429	1946	8375
252	1102128	9502008//AR1188/CCDR/3/CCDR	5	90	34	6839	1453	8292
251	1102125	CCDR/JEFF/3/9502008//AR1142/MBLE	5	90	34	6632	1629	8261
246	1002128	CCDR//9502008/LGRU	6	95	33	6180	2081	8261
255	1102137	CPRS/KBNT//9502008-A/3/RU0602180	5	93	34	6344	1859	8202
250	1102034	CPRS/KBNT//9502008-A	5	93	34	6031	2162	8193
248	1102028	CCDR/3/9502008-A//AR1188/CCDR	5	92	32	6407	1722	8128
213	CPRS	CYPRESS	5	94	35	6428	1587	8015
238	0702085	AR 1188/CCDR//9502008/LGRU	5	93	36	6144	1853	7996
249	1102031	RU0602103/3/9502008-A//AR1188/CCDR	6	92	34	6440	1459	7900
219	JZMN	JAZZMAN	5	96	35	6405	1273	7678
220	JZMN2	JAZZMAN-2	5	95	32	5330	1682	7011
CV								
LSD								

[1] Subjective rating 0 to 9, where 0 = excellent, 9 = poor.

Table 6. Grain and milling yields and agronomic performance of entries in the 2011Commercial -Advanced yield trial. Rice Research Station, Crowley, LA.

ENT	SOURCE	PEDIGREE	VIG[1]	HDT	HTE	YIELD	RATOON	TOTAL YIELD	WHOLE	TOTAL
235	1002011	CPRS/9502008-A/3/CFX 29//AR 1142/LA 2031	4	78	35	9651	1672	11323	57.7	68.3
201	CL111	CL111	4	72	31	8918	2252	11170	57.8	68.7
207	CL162	CL162 (MISSISSIPPI)	4	74	37	9072	2061	11133	58.4	68.3
204	CL151	CL151	5	78	34	9721	1384	11105	56.0	65.6
225	LAH10	LAH10	6	86	45	8673	2401	11074	59.1	66.8
209	CL261	CL261	4	80	34	8917	2088	11005	66.6	69.5
258	0902082	BNGL/CL161	5	83	35	9013	1465	10478	66.6	70.6
228	1102106	CCDR/JEFF/3/CFX18//CCDR/9770532 DH2	5	76	32	8454	2018	10472	60.3	68.0
221	JES	JES	5	80	33	9292	1110	10402	60.4	67.7
233	1002085	9502008/3/MBLE//LMNT/20001-5/4/CFX-18//…	4	77	32	8440	1950	10390	62.0	69.6
243	1102091	CCDR/JEFF/3/CFX-18//CCDR/9770532 DH2	4	73	31	8440	1808	10247	61.5	70.0
237	1002103	CPRS//82CAY21/TBNT/3/CFX 29//…	6	74	31	7812	2428	10240	58.4	68.4
234	1002189	CPRS/KBNT//9502008-A/3/TRNS	5	76	31	8158	2004	10162	58.2	67.4
244	1102094	9502008-A//AR 1188/CCDR/3/CFX-26/9702128	5	73	31	8139	1956	10095	61.6	68.7
240	1102082	LGRU/LCSN/3/CFX-18//CCDR/9770532 DH2	5	77	32	8429	1663	10091	60.9	68.6
202	CL131	CL131	4	77	29	8590	1400	9990	60.1	66.8
216	TMPT	TEMPLETON	4	77	32	6760	3037	9797	58.9	68.5
236	1002088	9502008-A/DREW//CLR 20	5	76	32	7823	1971	9793	59.8	66.8
227	1102103	CFX18//CCDR/9770532 DH2/3/9502008-A//…	5	75	31	7856	1872	9728	60.1	68.4
203	CL142	CL142 (ARKANSAS)	4	79	38	8299	1337	9636	52.1	66.7
232	0902088	9502008-A//AR 1188/CCDR/3/…	6	76	24	8013	1464	9476	57.9	66.6
205	CL152	CL152	5	78	32	7522	1886	9408	60.7	68.7
206	CL161	CL161	5	78	32	7178	1869	9047	60.1	68.4
241	1102085	9502008-A//AR 1188/CCDR/3/CFX-26/9702128	6	75	30	7229	1647	8876	59.4	67.5
247	0802140	CPRS//L-205/DLLA	4	80	33	6281	2457	8738	61.1	68.8

Continued.

Table 6. Continued.

ENT	SOURCE	PEDIGREE	VIG[1]	HDT	HTE	YIELD	RATOON	TOTAL YIELD	WHOLE	TOTAL
223	JPTR	JUPITER	5	85	30	6737	1881	8618	55.2	59.1
208	CL181	CL181 (ARKANSAS)	5	78	30	7311	1268	8578	57.4	66.8
215	REX	REX	4	78	33	6155	2377	8532	54.2	63.5
245	1102097	CCDR/CLPY 003	6	75	29	6641	1586	8228	56.2	68.4
213	CPRS	CYPRESS	5	77	30	6536	1581	8117	60.3	66.8
217	TGRT	TAGGERT	5	78	34	6350	1757	8106	45.8	64.5
242	1102088	CFX18/LM-1/3/9502008-A//AR 1188/CCDR	6	76	31	6410	1683	8093	55.2	65.7
219	JZMN	JAZZMAN	4	80	35	6580	1475	8054	62.7	69.2
224	CFFY	CAFFEY	4	81	32	6508	1541	8049	62.1	67.6
214	WLLS	WELLS	4	77	32	6498	1546	8044	50.9	68.6
239	1102051	CFX-18//CPRS/KBNT/3/CFX-29/CCDR	6	78	30	6490	1523	8013	61.0	70.6
218	ROY J	ROY J	4	79	32	6113	1786	7898	53.2	67.7
211	CHNR	CHENIERE	5	77	30	6049	1735	7784	59.6	70.0
226	BNGL	BNGL	4	83	31	6755	837	7592	64.3	69.0
246	1002128	CCDR//9502008/LGRU	5	75	29	5408	2157	7565	61.4	69.8
252	1102128	9502008//AR1188/CCDR/3/CCDR	4	75	29	5987	1550	7536	59.6	68.8
210	CCDR	COCODRIE	4	76	29	5644	1864	7508	58.9	70.1
248	1102028	CCDR/3/9502008-A//AR1188/CCDR	5	75	30	5857	1612	7469	56.6	68.7
255	1102137	CPRS/KBNT//9502008-A/3/RU0602180	4	72	29	5690	1772	7461	55.5	68.8
222	NPTN	NEPTUNE	4	84	30	5475	1939	7414	60.9	67.6
212	CHTL	CATAHOULA	4	75	29	5881	1433	7314	55.4	71.5
253	1102131	WELLS/CTHL	4	70	29	5272	1768	7040	58.2	69.9
238	0702085	AR 1188/CCDR//9502008/LGRU	5	75	28	5360	1676	7036	57.7	67.5
251	1102125	CCDR/JEFF/3/9502008//AR1142/MBLE	4	72	30	5813	1218	7031	59.6	68.5
249	1102031	RU0602103/3/9502008-A//AR1188/CCDR	5	75	30	5294	1627	6922	61.0	69.7

Continued.

Table 6. Continued.

ENT	SOURCE	PEDIGREE	VIG[1]	HDT	HTE	YIELD	RATOON	TOTAL YIELD	WHOLE	TOTAL
220	JZMN2	JAZZMAN-2	4	76	27	5186	1721	6907	61.3	68.0
256	1102140	CCDR/JEFF//0402128	5	75	30	5248	1508	6756	54.6	69.6
260	0902162	BNGL//MERC/RICO/3/MERC/RICO//BNGL	5	83	27	5353	1310	6663	63.1	68.3
231	1102165	EARL/4/BNGL/3/SMARS/MARS//MARS	5	83	26	5027	1475	6503	60.3	66.9
250	1102034	CPRS/KBNT//9502008-A	6	75	30	4980	1447	6427	55.5	68.1
230	1102162	BNGL/9502065//EARL	5	79	31	4924	1316	6240	58.3	63.6
259	1002168	MARS//M201/MARS/5/STRN//MERC/…	4	79	29	5431	665	6096	64.2	67.0
229	1002071	LFTE/BNGL	4	79	30	5432	462	5894	62.8	68.0
254	1102134	9502008-A/DREW/3/9502008-A//AR1188/CCDR	5	72	29	4583	1220	5803	54.9	69.6
257	1002146	NWBT/KATY//9902207x2/3/JSMN/DLLA//…)	5	66	27	3931	1413	5345	60.6	69.8
CV										
LSD										

[1] Subjective rating 0 to 9, where 0 = excellent, 9 = poor.

CLEARFIELD EXPERIMENTAL LINES

S.D. Linscombe, X.Y. Sha, K.F. Bearb, B.W. Theunissen,
S.J. Theunissen, R.R. Dilly Jr., B.J. Henry, and H.L. Hoffpauir

Clearfield Multi-Location Trial

The Clearfield Multi-Location Trial is conducted by the Rice Breeding Project in the major rice growing regions in Louisiana. The objective of this trial is to evaluate the adaptation and stability of advanced experimental Clearfield lines for a number of important agronomic and yield characteristics.

Test locations in 2011 included the Rice Research Station (RRS) at Crowley and four on-farm test sites in Jefferson Davis, Evangeline, Vermilion, and Richland parishes. The test in Richland Parish was conducted in cooperation with the Rice Agronomy Project.

Twenty-two entries were tested in a randomized complete block design with three replications. Varieties were seeded at 90 lb/A. Planting dates were: RRS, March 22; Evangeline, March 29: Vermilion, March 17; Jefferson Davis, March 11; and Richland, April 13. Harvest dates were: RRS, July 29; Evangeline, August 17; Vermilion, August 3; Jefferson Davis, August 1; and Richland, September 1. Results from these trials are shown in Tables 1-5.

Table 1. Grain and milling yields and agronomic performance of entries in the 2011 Clearfield multi-location trial. Evangeline Parish, LA.

ENT	PEDIGREE	HDT	HTE	YIELD
022	CL261	79	37	6843
021	CL152	79	38	6299
010	9502008-A//AR 1188/CCDR/3/CFX-26/9702128	74	36	6269
006	BNGL/CL161	80	40	6211
018	9502008-A/DREW//CLR 20/3/9502008-A/DREW//CLR 20	78	37	6188
016	KATY/CPRS//JKSN/3/AR 1188/CCDR/4/CFX-26/9702128	71	36	5751
019	CL111	73	38	5706
007	LGRU/LCSN/3/CFX-18//CCDR/9770532 DH2	74	36	5670
008	9502008-A//AR 1188/CCDR/3/CFX-26/9702128	74	36	5222
009	CCDR/JEFF/3/CFX-18//CCDR/9770532 DH2	71	35	4791
014	KATY/CPRS//NWBT/…/3/9502008/4/CLR 9/5/…	74	34	4646
011	CCDR//CLPY 003	72	36	4642
017	9502008-A/DREW//CFX 26/WELLS	74	35	4490
004	9502008-A/DREW//CLR 20	75	38	4223
003	CPRS/9502008-A/3/CFX 29//AR 1142/LA 2031	77	37	3690
002	9502008/3/MBLE//LMNT/20001-5/4/CFX-18//…	78	39	3672
005	CPRS//82CAY21/TBNT/3/CFX 29//…	75	36	3661
020	CL151	75	37	3610
013	CCDR/JEFF/3/CFX-18//CCDR/9770532 DH2	73	38	3271
015	CLPY 003 (CL 006)//CFX-26/9702128	78	34	2646
001	9502008-A//AR1188/CCDR/3/…	76	37	2500
012	CFX-18//CCDR/9770532 DH2/3/9502008-A//…	74	34	1511
LSD				

[1] Subjective rating 0 to 9, where 0 = excellent, 9 = poor.

Table 2. Grain and milling yields and agronomic performance of entries in the 2011 Clearfield multi-location trial. Jefferson Davis Parish, LA.

ENT	PEDIGREE	VIG[1]	HDT	HTE	YIELD	WHOLE	TOTAL
006	BNGL/CL161	4	89	37	8864	66.9	70.5
016	KATY/CPRS//JKSN/3/AR 1188/CCDR/4/CFX-26/9702128	5	80	32	8292	59.2	70.0
011	CCDR//CLPY 003	6	81	31	8181	57.7	69.7
022	CL261	4	84	36	8017	63.6	67.3
008	9502008-A//AR 1188/CCDR/3/CFX-26/9702128	6	80	32	8017	62.6	71.2
021	CL152	6	84	37	7825	60.5	69.2
010	9502008-A//AR 1188/CCDR/3/CFX-26/9702128	5	79	33	7700	60.6	71.0
003	CPRS/9502008-A/3/CFX 29//AR 1142/LA 2031	5	85	36	7612	60.7	71.0
012	CFX-18//CCDR/9770532 DH2/3/9502008-A//…	5	80	33	7588	58.4	70.3
002	9502008/3/MBLE//LMNT/20001-5/4/CFX-18//…	5	85	34	7508	61.6	69.6
020	CL151	5	83	34	7503	59.7	70.4
018	9502008-A/DREW//CLR 20/3/9502008-A/DREW//CLR 20	4	83	34	7175	59.7	69.9
017	9502008-A/DREW//CFX 26/WELLS	6	82	32	7158	58.8	69.2
019	CL111	4	80	35	7110	55.1	69.6
005	CPRS//82CAY21/TBNT/3/CFX 29//…	6	80	34	7051	61.7	70.4
001	9502008-A//AR1188/CCDR/3/…	5	85	33	6919	60.8	70.8
014	KATY/CPRS//NWBT/…/3/9502008/4/CLR 9/5/…	6	81	33	6879	60.5	70.1
004	9502008-A/DREW//CLR 20	5	84	36	6812	62.2	70.3
009	CCDR/JEFF/3/CFX-18//CCDR/9770532 DH2	4	77	32	6578	55.4	70.1
013	CCDR/JEFF/3/CFX-18//CCDR/9770532 DH2	6	81	33	6528	61.0	69.8
007	LGRU/LCSN/3/CFX-18//CCDR/9770532 DH2	5	80	36	6420	59.3	69.8
015	CLPY 003 (CL 006)//CFX-26/9702128	6	83	32	6320	56.1	68.0
CV							
LSD							

[1] Subjective rating 0 to 9, where 0 = excellent, 9 = poor.

Table 3. Grain and milling yields and agronomic performance of entries in the 2011 Clearfield multi-location trial. Richland Parish, LA.

ENT	PEDIGREE	HDT	HTE	YIELD
007	LGRU/LCSN/3/CFX-18//CCDR/9770532 DH2	96	44	9719
009	CCDR/JEFF/3/CFX-18//CCDR/9770532 DH2	92	41	9062
019	CL111	94	43	8939
018	9502008-A/DREW//CLR 20/3/9502008-A/DREW//CLR 20	95	44	8903
011	CCDR//CLPY 003	91	42	8895
016	KATY/CPRS//JKSN/3/AR 1188/CCDR/4/CFX-26/9702128	90	41	8844
012	CFX-18//CCDR/9770532 DH2/3/9502008-A//…	97	42	8632
013	CCDR/JEFF/3/CFX-18//CCDR/9770532 DH2	94	43	8632
020	CL151	95	42	8524
015	CLPY 003 (CL 006)//CFX-26/9702128	93	40	8456
010	9502008-A//AR 1188/CCDR/3/CFX-26/9702128	92	41	8272
021	CL152	98	42	8049
005	CPRS//82CAY21/TBNT/3/CFX 29//…	95	42	7996
006	BNGL/CL161	98	43	7951
014	KATY/CPRS//NWBT/…/3/9502008/4/CLR 9/5/…	94	41	7487
004	9502008-A/DREW//CLR 20	97	44	7469
003	CPRS/9502008-A/3/CFX 29//AR 1142/LA 2031	96	44	7419
008	9502008-A//AR 1188/CCDR/3/CFX-26/9702128	91	41	7283
001	9502008-A//AR1188/CCDR/3/…	98	43	7263
002	9502008/3/MBLE//LMNT/20001-5/4/CFX-18//…	97	44	7181
017	9502008-A/DREW//CFX 26/WELLS	95	41	7026
022	CL261	92	42	6601
CV				
LSD				

[1] Subjective rating 0 to 9, where 0 = excellent, 9 = poor.

Table 4. Grain and milling yields and agronomic performance of entries in the 2011 Clearfield multi-location trial. Rice Research Station, Crowley, LA.

ENT	PEDIGREE	VIG[1]	HDT	HTE	YIELD	RATOON	TOTAL YIELD	WHOLE	TOTAL
020	CL151	4	78	34	10177	1209	11386	55.4	65.6
022	CL261	4	80	33	9194	2068	11262	66.1	68.9
019	CL111	4	73	33	8988	2138	11126	57.7	68.5
018	9502008-A/DREW//CLR 20/3/9502008-A/DREW//CLR 20	4	75	31	8825	1856	10681	59.9	68.2
008	9502008-A//AR 1188/CCDR/3/CFX-26/9702128	5	75	34	8140	2020	10160	60.0	69.1
007	LGRU/LCSN/3/CFX-18//CCDR/9770532 DH2	4	77	33	8310	1847	10157	61.3	69.8
021	CL152	5	78	33	7865	2285	10150	61.2	69.8
010	9502008-A//AR 1188/CCDR/3/CFX-26/9702128	5	75	30	7722	2103	9825	63.0	70.8
006	BNGL/CL161	5	85	35	8284	1457	9741	66.9	71.0
012	CFX-18//CCDR/9770532 DH2/3/9502008-A//…	4	76	31	7771	1885	9655	60.2	69.5
017	9502008-A/DREW//CFX 26/WELLS	4	75	30	7615	2032	9647	59.8	69.0
009	CCDR/JEFF/3/CFX-18//CCDR/9770532 DH2	4	75	31	7992	1639	9631	61.5	69.9
005	CPRS//82CAY21/TBNT/3/CFX 29//…	5	77	32	7873	1743	9616	60.2	68.1
003	CPRS/9502008-A/3/CFX 29//AR 1142/LA 2031	5	79	33	8153	1457	9609	59.5	68.5
004	9502008-A/DREW//CLR 20	5	77	34	7647	1876	9522	59.1	68.0
002	9502008/3/MBLE//LMNT/20001-5/4/CFX-18//…	5	78	35	7841	1665	9506	60.9	68.7
011	CCDR//CLPY 003	4	75	29	7770	1706	9476	56.9	68.4
016	KATY/CPRS//JKSN/3/AR 1188/CCDR/4/CFX-26/9702128	5	75	30	7895	1486	9381	61.1	69.2
013	CCDR/JEFF/3/CFX-18//CCDR/9770532 DH2	5	77	32	7783	1564	9347	60.8	69.4
015	CLPY 003 (CL 006)//CFX-26/9702128	5	77	32	7874	1427	9300	52.4	64.8
014	KATY/CPRS//NWBT/…/3/9502008/4/CLR 9/5/…	6	76	31	7057	1992	9049	59.3	67.6
001	9502008-A//AR1188/CCDR/3/…	5	77	32	7215	1367	8582	59.6	68.3
CV									
LSD									

[1] Subjective rating 0 to 9, where 0 = excellent, 9 = poor.

Table 5. Grain and milling yields and agronomic performance of entries in the 2011 Clearfield multi-location trial. Vermilion Parish, LA.

ENT	PEDIGREE	VIG[1]	HDT	HTE	YIELD	RATOON	TOTAL YIELD
003	CPRS/9502008-A/3/CFX 29//AR 1142/LA 2031	5	89	37	9697	2263	2300
012	CFX-18//CCDR/9770532 DH2/3/9502008-A//…	6	85	36	9578	2174	2210
011	CCDR//CLPY 003	6	84	34	9291	2236	2270
015	CLPY 003 (CL 006)//CFX-26/9702128	6	89	35	9299	2125	2161
010	9502008-A//AR 1188/CCDR/3/CFX-26/9702128	5	85	34	9317	2037	2071
013	CCDR/JEFF/3/CFX-18//CCDR/9770532 DH2	5	84	37	9318	1840	1877
016	KATY/CPRS//JKSN/3/AR 1188/CCDR/4/CFX-26/9702128	6	85	38	9274	1859	1897
008	9502008-A//AR 1188/CCDR/3/CFX-26/9702128	6	87	38	8856	2266	2304
001	9502008-A//AR1188/CCDR/3/…	6	88	37	9208	1896	1933
020	CL151	5	87	37	9559	1514	1551
006	BNGL/CL161	4	91	38	8895	2170	2207
019	CL111	5	83	36	8815	2167	2203
018	9502008-A/DREW//CLR 20/3/9502008-A/DREW//CLR 20	5	87	36	8926	2046	2082
005	CPRS//82CAY21/TBNT/3/CFX 29//…	6	86	35	8800	2020	2055
009	CCDR/JEFF/3/CFX-18//CCDR/9770532 DH2	5	83	34	9050	1767	1801
007	LGRU/LCSN/3/CFX-18//CCDR/9770532 DH2	5	84	37	8902	1836	1873
022	CL261	4	91	37	8180	2536	2574
017	9502008-A/DREW//CFX 26/WELLS	5	83	35	8693	2021	2056
021	CL152	6	91	38	8576	2108	2145
002	9502008/3/MBLE//LMNT/20001-5/4/CFX-18//…	6	88	38	8711	1779	1818
014	KATY/CPRS//NWBT/…/3/9502008/4/CLR 9/5/…	6	87	35	8357	1876	1910
004	9502008-A/DREW//CLR 20	6	88	39	8345	1643	1682
CV							
LSD							

[1] Subjective rating 0 to 9, where 0 = excellent, 9 = poor.

CLEARFIELD PRELIMINARY YIELD TEST

The Clearfield preliminary yield trials consist primarily of promising breeding nursery material that is ready to be tested in replicated yield trials. The material in these trials was screened for agronomic and grain characteristics in nurseries prior to this phase of testing. Promising experimental lines were evaluated for seedling vigor, maturity, plant height, lodging resistance, grain yield of main crop, and disease resistance.

Tests were conducted using standard agronomic practices (except that no fungicides were applied) at the Rice Research Station at Crowley, LA. A randomized complete block design was applied to arrange test entries. The plot size was 4.66 x 16 ft. Seeding rate was 90 lb/A. This test was drill seeded on March 23 and harvested on July 20-22. Data are presented in Tables 1 to 12.

Table 1. Grain and milling yields and agronomic performance of entries in the 2011 Clearfield Preliminary Yield test. Group 1. Rice Research Station, Crowley, LA.

ENT	PEDIGREE	VIG[1]	HDT	HTE	YIELD	RATOON	TOTAL YIELD	WHOLE	TOTAL
025	CL111	4	72	34	9636	1854	11490	56.9	68.6
024	CCDR/9502008-A/3/CFX-18//CCDR/9770532 DH2	4	76	32	9712	1574	11286	57.2	68.5
019	CHENIERE//CFX-26/9702028	5	77	30	9347	1681	11028	61.0	67.7
023	CCDR/9502008-A/3/CFX-18//CCDR/9770532 DH2	4	77	33	9505	1510	11015	61.4	69.1
021	CCDR/JEFF/3/CFX-18//CCDR/9770532 DH2	5	77	32	8875	1776	10652	64.8	71.4
022	CCDR/9502008-A/3/CFX-18//CPRS/KBNT	4	71	32	8979	1365	10344	59.8	70.3
013	CL 131/EP 227	4	79	32	8626	1551	10176	56.5	68.6
018	CHENIERE/3/CFX-18//CPRS/KBNT	5	78	34	8938	1191	10129	55.8	70.1
020	CCDR/JEFF/3/CFX-18//CCDR/9770532 DH2	6	77	29	8537	1548	10085	62.0	69.8
010	CL 131//CCDR/9502008-A	5	80	32	8665	1312	9978	60.1	70.2
007	DREW/JEFF//CFX-18/3/TRNS	4	78	31	8477	1306	9783	53.0	69.1
011	CL 131/3/9502008-A//AR 1188/CCDR	4	77	31	8662	992	9654	62.9	70.0
017	CCDR/JEFF//CFX-18	5	77	30	8240	1409	9649	63.3	70.4
012	CL 131/TRNS	5	79	31	8346	1266	9612	59.6	69.3
014	CL 131/EP 227	5	86	35	8651	868	9519	62.8	72.0
006	CFX-29//AR 1142/LA 2031/5/AR 1179/3/CPRS//…	5	79	29	8444	785	9229	57.1	69.1
009	CFX-18//CCDR/9770532 DH2/3/CFX-18//CCDR/…	5	79	32	7983	1020	9003	60.5	69.7
003	CFX-29//AR 1142/LA 2031/3/CL 131	5	79	31	7802	1106	8908	61.3	68.4
001	CFX-29//AR 1142/LA 2031/3/CL 131	5	77	30	7923	804	8727	57.4	67.8
002	CFX-29//AR 1142/LA 2031/3/CL 131	6	78	31	7815	907	8722	60.4	69.3
005	CFX-29//AR 1142/LA 2031/3/CL 131	5	78	28	7854	767	8621	57.8	67.1
015	CCDR//CFX-29/CCDR	5	75	30	6676	1675	8350	64.5	71.4
004	CFX-29//AR 1142/LA 2031/3/CL 131	6	77	33	7756	591	8346	61.2	69.0
008	CFX-18//CCDR/9770532 DH2/3/CFX-18//CCDR/…	5	80	29	7296	884	8180	62.8	70.8
016	CPRS/3/CFX-29//AR 1142/LA 2031	5	77	28	6262	1265	7527	62.5	69.8
CV									
LSD									

[1] Subjective rating 0 to 9, where 0 = excellent, 9 = poor.

Table 2. Grain and milling yields and agronomic performance of entries in the 2011 Clearfield Preliminary Yield test. Group 2. Rice Research Station, Crowley, LA.

ENT	PEDIGREE	VIG[1]	HDT	HTE	YIELD	RATOON	TOTAL YIELD	WHOLE	TOTAL
050	CL151	5	78	34	10572	1678	12251	55.0	67.8
045	CCDR//CFX-29/CCDR	5	71	32	10016	2079	12095	60.9	69.2
038	CFX-26/9702128//CFX-26/9702128	4	76	30	9822	1663	11485	54.8	65.9
044	CL 131/3/9502008-A//AR 1188/CCDR	4	78	31	9290	1747	11037	61.7	69.7
033	KATY/CPRS//JKSN/3/AR 1188/CCDR/4/CFX-26/…	5	78	31	9447	1565	11012	61.8	69.9
028	9502008-A//AR 1188/CCDR/3/WELLS/CFX-18	4	78	33	9172	1700	10872	53.5	64.6
042	DREW/CFX-18//CFX-29/CCDR	4	79	34	9585	1277	10862	63.4	70.6
031	CCDR/LGRU//CFX-29/CCDR	5	76	30	9395	1439	10834	59.7	69.1
036	CLPY 003 (CL 006)//CFX-26/9702128	5	77	29	9229	1554	10783	60.9	69.4
037	CFX-26/9702128//CFX-26/9702128	5	74	31	9184	1480	10665	61.3	69.0
049	CHENIERE//WELLS/CFX-18	5	77	34	8588	1837	10425	61.3	69.9
035	9502008-A//AR 1188/CCDR/3/CFX-29/CCDR	4	74	31	8534	1839	10374	62.1	69.7
027	9502008-A//AR 1188/CCDR/3/WELLS/CFX-18	4	76	33	8940	1359	10299	57.3	65.6
034	KATY/CPRS//JKSN/3/AR 1188/CCDR/4/CFX-26/…	4	75	29	8704	1590	10295	64.1	69.7
047	CCDR/JEFF//CFX-18	5	76	31	8421	1778	10199	61.6	70.2
032	CPRS/KBNT//9502008-A/3/CFX-29/CCDR	4	74	32	8613	1502	10115	57.0	67.6
048	CCDR/JEFF//CFX-18	4	77	31	8464	1575	10039	61.4	70.1
026	CCDR/9502008-A/3/CFX-18//CCDR/9770532 DH2	4	76	29	8575	1356	9931	64.5	70.6
040	WELLS/CFX-18//CCDR/9502008-A	6	75	31	8434	1296	9729	57.7	66.9
039	CFX-26/9702128/3/CFX-29//AR 1142/LA 2031	6	77	31	8381	1319	9700	62.2	69.5
043	CFX-18//CCDR/9770532 DH2/3/DREW/CFX-18	5	78	32	8058	1545	9603	55.7	67.2
041	CFX-18//CCDR/9770532 DH2/3/CCDR/9502008-A	4	73	29	7811	1789	9600	62.3	70.4
046	CPRS/3/CFX-29//AR 1142/LA 2031	5	81	35	8452	1061	9513	61.1	70.9
029	CCDR/LGRU//WELLS/CFX-18	5	76	30	7446	1636	9082	61.8	69.8
030	CCDR/LGRU/3/CFX-18//CCDR/9770532 DH2	5	76	31	7429	1465	8893	63.2	70.0
CV									
LSD									

[1] Subjective rating 0 to 9, where 0 = excellent, 9 = poor.

Table 3. Grain and milling yields and agronomic performance of entries in the 2011 Clearfield Preliminary Yield test. Group 3. Rice Research Station, Crowley, LA.

ENT	PEDIGREE	VIG[1]	HDT	HTE	YIELD	RATOON	TOTAL YIELD	WHOLE	TOTAL
070	CCDR/JEFF/3/CFX-18//CPRS/KBNT	4	75	31	9832	1687	11519	59.4	67.7
053	CCDR/9502008-A/3/CFX-18//CCDR/9770532 DH2	4	72	31	9978	1329	11307	61.3	68.8
052	CCDR/JEFF/3/CFX-18//CPRS/KBNT	4	77	32	9575	1705	11280	64.2	70.4
056	KATY/CPRS//JKSN/3/AR 1188/CCDR/4/CFX-26/9702128	5	70	31	9326	1606	10932	60.0	69.8
075	CL131	4	78	31	9539	1336	10874	59.6	68.5
051	CCDR/JEFF/3/CFX-18//CCDR/9770532 DH2	5	77	31	9437	1408	10844	59.9	68.7
063	NWBT/KATY//9902207x2/3/CFX-24	4	75	32	9040	1712	10751	61.3	70.1
057	KATY/CPRS//JKSN/3/AR 1188/CCDR/4/CFX-18//...	5	72	32	9121	1427	10548	62.8	71.0
073	9502008-A/DREW/3/CFX-18/CCDR/9770532 DH2	4	75	30	8925	1621	10547	61.5	69.8
055	CPRS/KBNT//9502008-A/3/CFX-29/CCDR	5	73	32	8952	1557	10509	60.6	68.9
058	9502008-A//AR 1188/CCDR/3/CFX-29/CCDR	5	77	31	8800	1612	10412	62.4	70.6
064	CCDR/4/CPRS/3/MBLE//LMNT/…/5/WELLS/CFX-18	4	76	29	8976	1310	10286	62.0	70.9
066	CL 131/FRANCIS	5	78	31	8658	1434	10092	57.3	69.5
074	9502008-A/DREW/3/CFX-18/CCDR/9770532 DH2	5	72	32	8529	1536	10065	59.5	66.3
069	CHENIERE//WELLS/CFX-18	5	78	33	8904	1090	9994	60.5	67.8
062	0043676/AC105DH3//CFX 18	5	76	29	8593	1384	9977	62.8	69.2
060	CFX-18//CCDR/9770532 DH2/3/9502008-A//…	4	77	30	8120	1775	9895	62.8	70.5
059	CFX-26/9702128//DREW/CFX-18	5	76	28	8117	1551	9668	60.7	70.6
071	CCDR/JEFF/3/CFX-18//CPRS/KBNT	5	78	31	8286	1345	9631	63.2	70.3
054	CCDR/LGRU/3/CFX-18//CCDR/9770532 DH2	5	76	30	7956	1475	9431	62.4	69.1
061	9502008-A/TACAURI//CLR 5	5	78	33	8084	1333	9417	62.8	69.6
068	CHENIERE//WELLS/CFX-18	5	71	32	8041	1352	9394	60.8	70.6
067	CHENIERE//WELLS/CFX-18	5	76	32	7611	1514	9125	61.9	72.4
065	CL 131/FRANCIS	4	76	36	7502	1422	8924	61.5	68.5
072	9502008-A/DREW/3/CFX-18/CCDR/9770532 DH2	5	75	29	7026	1522	8548	63.9	70.9
CV									
LSD									

[1] Subjective rating 0 to 9, where 0 = excellent, 9 = poor.

Table 4. Grain and milling yields and agronomic performance of entries in the 2011 Clearfield Preliminary Yield test. Group 4. Rice Research Station, Crowley, LA.

ENT	PEDIGREE	VIG[1]	HDT	HTE	YIELD	RATOON	TOTAL YIELD	WHOLE	TOTAL
088	CPRS/KBNT//9502008-A/3/CFX-18//CCDR/…	5	75	31	10950	1653	12603	58.2	67.0
087	CPRS/KBNT//9502008-A/3/CFX-18//CCDR/…	5	73	30	10198	1376	11573	60.9	67.5
084	CCDR/LGRU/3/CFX-18//CCDR/9770532 DH2	48	75	32	9791	1641	11432	59.2	68.3
098	CCDR/JEFF//CFX-26/9702128	4	74	33	10050	1365	11415	57.1	65.6
094	CCDR//CLPY 003	5	70	31	9677	1590	11267	60.4	69.1
100	CL261	4	79	34	9381	1626	11006	63.3	66.6
096	CCDR//CFX-26/9702128	5	76	31	9093	1812	10906	61.6	69.1
086	CPRS/KBNT//9502008-A/3/CFX-18//CCDR/…	4	78	30	9604	1187	10791	56.9	67.2
076	9502008-A/DREW//DREW/CFX-18	48	70	31	9468	1261	10730	57.4	68.5
095	CCDR//CFX-26/9702128	4	77	31	9097	1567	10664	62.7	69.2
080	CCDR/LGRU/3/CFX-18//CCDR/9770532 DH2	48	75	32	9030	1447	10477	62.3	70.3
099	CCDR/JEFF//CFX-26/9702128	5	77	32	8964	1494	10458	54.5	66.6
078	9502008-A/DREW//DREW/CFX-18	48	69	32	9041	1383	10423	54.0	66.4
093	CCDR//CLPY 003	5	79	30	8798	1546	10345	56.3	67.6
081	CCDR/LGRU/3/CFX-18//CCDR/9770532 DH2	48	77	33	8646	1603	10249	63.8	70.0
082	CCDR/LGRU/3/CFX-18//CCDR/9770532 DH2	48	75	30	8904	1345	10248	60.8	69.8
092	CL 131/FRANCIS	4	76	31	8695	1428	10122	56.9	66.9
091	9502008-A//AR 1188/CCDR/3/CCDR/CLR 11	5	76	31	8548	1497	10045	61.7	69.8
079	CCDR/LGRU/3/CFX-18//CCDR/9770532 DH2	48	74	30	8454	1532	9986	61.1	68.9
077	9502008-A/DREW//DREW/CFX-18	49	71	31	8531	1433	9963	58.3	68.9
097	CCDR//CFX-26/9702128	5	77	30	8509	1436	9945	61.7	69.2
083	CCDR/LGRU/3/CFX-18//CCDR/9770532 DH2	48	76	30	8264	1344	9608	60.1	68.8
089	9502008-A//AR 1188/CCDR/3/CCDR/CLR 11	5	77	28	8110	1242	9353	62.1	69.3
085	CPRS/KBNT//9502008-A/3/CFX-18//CCDR/…	48	75	31	8151	1141	9292	57.7	67.7
090	9502008-A//AR 1188/CCDR/3/CCDR/CLR 11	5	76	29	7448	1257	8704	56.0	67.2
CV									
LSD									

[1] Subjective rating 0 to 9, where 0 = excellent, 9 = poor.

Table 5. Grain and milling yields and agronomic performance of entries in the 2011 Clearfield Preliminary Yield Test, Group 5, Rice Research Station, Crowley, LA.

ENT	PEDIGREE	VIG[1]	HDT	HTE	YIELD	RATOON	TOTAL YIELD	WHOLE	TOTAL
109	9502008-A//AR 1188/CCDR/3/CFX-26/9702128	4	76	29	9879	1725	11604	61.7	70.3
124	CFX-26/9702128//CCDR/JEFF	4	76	30	9909	1688	11598	57.7	66.9
121	WELLS/CFX-18//DREW/CFX-18	4	69	33	9604	1656	11259	58.7	68.4
122	CFX-26/9702128//EP 144	4	75	31	9477	1594	11071	54.2	65.4
111	LGRU/LCSN/3/CFX-18//CCDR/9770532 DH2	4	72	31	9617	1442	11059	58.8	69.1
112	LGRU/LCSN/3/CFX-18//CCDR/9770532 DH2	5	74	32	9405	1421	10827	61.6	69.9
123	CFX-26/9702128//EP 144	4	75	32	9610	1172	10782	53.9	64.6
117	WELLS/CFX-18/3/CFX-18//CCDR/9770532 DH2	4	79	33	9279	1400	10678	50.5	67.2
108	9502008-A//AR 1188/CCDR/3/CFX-26/9702128	5	77	32	9116	1525	10641	62.0	70.3
119	WELLS/CFX-18//CFX-29/CCDR	4	72	32	9369	1196	10565	61.0	68.2
101	CCDR/9502008-A//CFX-26/9702128	5	70	30	9071	1481	10552	62.7	70.8
104	9502008-A//AR 1188/CCDR/3/CFX-26/9702128	4	71	30	9246	1258	10504	58.0	68.7
116	WELLS/CFX-18/3/CFX-18//CCDR/9770532 DH2	4	78	34	9331	1149	10480	57.9	68.2
118	WELLS/CFX-18/3/CFX-18//CCDR/9770532 DH2	4	77	34	8947	1470	10418	55.5	67.3
102	CCDR/9502008-A//CFX-26/9702128	5	68	31	8810	1550	10361	61.7	70.2
106	KATY/CPRS//JKSN/3/AR 1188/CCDR/4/CFX-26/…	4	78	31	8837	1464	10302	62.8	70.9
125	CL161	5	77	33	8780	1507	10286	63.4	69.9
113	CPRS/NWBT//KATY/3/CCDR/4/CFX-18/CCDR/…	5	71	30	8585	1695	10280	63.5	70.5
110	LGRU/LCSN/3/CFX-18//CCDR/9770532 DH2	4	76	31	8847	1421	10268	62.9	70.6
103	CCDR/9502008-A//CFX-26/9702128	5	75	31	8789	1408	10197	60.7	69.6
114	CPRS/NWBT//KATY/3/CCDR/4/CFX-18/CCDR/…	4	77	30	8876	1078	9954	61.6	70.0
107	9502008-A//AR 1188/CCDR/3/CLPY 003	4	76	30	8602	1311	9913	62.3	69.9
115	CLPY 003 (CL 006)//CFX-26/9702128	5	75	31	8112	1583	9695	61.4	69.2
120	WELLS/CFX-18//DREW/CFX-18	4	76	29	8113	1476	9589	61.1	69.4
105	9502008-A/DREW//CFX-24/98IM2251	4	75	30	6486	1382	7868	63.9	70.8
CV									
LSD									

[1] Subjective rating 0 to 9, where 0 = excellent, 9 = poor.

Table 6. Grain and milling yields and agronomic performance of entries in the 2011 Clearfield Preliminary Yield Test, Group 6, Rice Research Station, Crowley, LA.

ENT	PEDIGREE	VIG[1]	HDT	HTE	YIELD	RATOON	TOTAL YIELD	WHOLE	TOTAL
149	CFX-26/9702128/3/CFX-18//CCDR/9770532 DH2	5	76	33	9430	1496	10926	58.6	68.3
127	CFX18/LM-1/3/9502008-A//AR 1188/CCDR	5	75	31	9378	1482	10860	54.0	66.7
130	CFX-18//CCDR/9770532 DH2/3/CFX-26/9702128	5	71	30	9276	1356	10632	61.5	69.3
136	CFX-18//CCDR/9770532 DH2/3/CCDR/JEFF	4	72	30	9017	1442	10459	60.6	69.2
126	CFX18/LM-1/3/9502008-A//AR 1188/CCDR	5	75	32	9028	1369	10397	55.4	66.0
134	CFX-18//CCDR/9770532 DH2/3/CCDR/JEFF	5	73	31	8926	1456	10382	62.7	69.6
138	CFX-18//CCDR/9770532 DH2/3/CFX-24/98IM2251	5	71	31	9208	1135	10343	64.3	70.2
133	WELLS/CFX-18//CFX-26/9702128	5	72	30	9039	1291	10330	58.4	67.8
128	CFX18/LM-1/3/9502008-A//AR 1188/CCDR	5	75	31	8639	1513	10152	54.5	65.4
131	CFX-18//CCDR/9770532 DH2/3/CFX-26/9702128	6	71	29	8521	1475	9995	62.5	71.4
129	CFX-26/9702128/3/9502008-A//AR 1188/CCDR	5	77	32	8559	1430	9989	59.4	69.7
137	CFX-18//CCDR/9770532 DH2/3/CCDR/JEFF	5	71	30	8619	1361	9980	60.5	68.9
146	CFX-29/CCDR//DREW/CFX-18	5	75	30	8150	1595	9745	60.8	68.7
144	DREW/CFX-18//CFX-29/CCDR	5	76	30	8563	1100	9663	59.2	63.4
140	DREW/CFX-18	5	73	31	8156	1433	9589	58.2	68.8
135	CFX-18//CCDR/9770532 DH2/3/CCDR/JEFF	5	72	31	7954	1360	9314	58.5	68.8
150	CL181	5	76	30	8105	1041	9146	55.0	67.8
142	DREW/CFX-18//CFX-26/9702128	6	79	34	8018	948	8966	59.9	67.2
145	CFX-29/CCDR//CFX-26/9702128	5	74	30	7687	1197	8884	61.3	70.2
148	CFX-26/9702128//DREW	6	72	33	7742	1137	8879	58.7	68.6
132	WELLS/CFX-18//CFX-26/9702128	6	76	29	7380	1421	8801	60.8	68.6
141	DREW/CFX-18//WELLS/CFX-18	5	71	31	7148	1599	8747	59.4	69.4
139	DREW/CFX-18	6	79	32	6816	1312	8128	61.3	68.2
143	DREW/CFX-18//WELLS	6	77	29	7059	937	7996	60.8	69.4
147	CFX-18//WELLS/CFX-18	7	77	33	5893	1185	7077	59.2	68.6
CV									
LSD									

[1] Subjective rating 0 to 9, where 0 = excellent, 9 = poor.

Table 7. Grain and milling yields and agronomic performance of entries in the 2011 Clearfield Preliminary Yield Test, Group 7, Rice Research Station, Crowley, LA.

ENT	PEDIGREE	VIG[1]	HDT	HTE	YIELD	RATOON	TOTAL YIELD	WHOLE	TOTAL
175	CL152	5	77	33	9110	1732	10842	59.7	69.3
153	CFX-29/CCDR//CCDR/CLR 11	5	77	32	9163	1301	10464	60.4	69.6
174	CCDR/JEFF//CFX-24/98IM2251	5	77	31	8443	1628	10071	57.1	68.7
154	CFX-29/CCDR//CCDR/CLR 11	5	74	33	8462	1419	9881	61.8	70.3
171	CCDR/JEFF//CFX-24/98IM2251	4	76	34	8457	1413	9870	62.4	68.6
164	CFX-24/98IM2251//CFX-26/9702128	5	77	35	8401	1346	9747	59.2	68.6
161	CFX-24/98IM2251//CFX-26/9702128	6	76	32	8134	1519	9654	63.7	71.1
155	CCDR/CLR 11//CFX-29/CCDR	6	75	30	8397	1256	9653	63.6	70.6
165	CFX-24/98IM2251//CFX-29/CCDR	5	77	30	7930	1610	9540	61.4	69.0
169	TRNS/CL 131	5	76	31	7919	1549	9468	63.1	71.3
167	CFX-18//CPRS/KBNT/3/CFX-29/CCDR	5	77	35	8001	1447	9448	61.3	70.2
173	CCDR/JEFF//CFX-24/98IM2251	5	77	32	7847	1473	9320	57.1	68.5
158	CCDR/CLR 11//CFX-29/CCDR	7	75	29	8110	1147	9257	59.6	71.1
151	CFX-26/9702128/3/CFX-18//CCDR/9770532 DH2	4	73	31	7676	1500	9176	63.5	70.5
152	CFX-29/CCDR//CCDR/CLR 11	7	77	30	7743	1416	9158	62.8	70.3
166	CFX-18//CPRS/KBNT/3/CFX-29/CCDR	5	79	32	7384	1625	9009	62.0	70.1
163	CFX-24/98IM2251//CFX-26/9702128	6	75	30	6958	2017	8975	60.2	69.7
159	WELLS/CFX-18/5/9502008/3/CPRS//82CAY21/…	5	75	32	7897	1078	8974	61.7	70.7
157	CCDR/CLR 11//CFX-29/CCDR	7	75	30	7733	1004	8737	59.3	71.6
162	CFX-24/98IM2251//CFX-26/9702128	5	76	29	6918	1800	8718	63.4	70.7
172	CCDR/JEFF//CFX-24/98IM2251	6	78	33	7113	1373	8486	61.1	69.8
156	CCDR/CLR 11//CFX-26/9702128	6	75	28	7124	1329	8454	58.3	70.5
170	TRNS/CL 131	5	77	33	6653	1509	8162	62.8	69.7
168	DREW/CFX-18//CCDR/JEFF	7	75	30	6562	1222	7784	62.4	70.6
160	CFX-29//AR 1142/LA 2031/3/CCDR/CLR 11	7	80	33	6610	1144	7753	53.1	68.8
CV									
LSD									

[1] Subjective rating 0 to 9, where 0 = excellent, 9 = poor.

Table 8. Grain and milling yields and agronomic performance of entries in the 2011 Clearfield Preliminary Yield Test, Group 8, Rice Research Station, Crowley, LA.

ENT	PEDIGREE	VIG[1]	HDT	HTE	YIELD	RATOON	TOTAL YIELD	WHOLE	TOTAL
195	CPRS/KBNT//9502008-A/3/CFX-18//CCDR/9770532 DH2	5	77	33	10217	1716	11933	57.8	67.9
198	CPRS/9901081/3/9502008-A/TACAURI//CFX-18	4	78	31	9839	1379	11218	53.2	67.2
177	9502008-A//AR 1188/CCDR/3/CFX-24/98IM2251	5	78	34	9583	1364	10947	59.3	69.4
196	CPRS/KBNT//9502008-A/3/CCDR//CFX 26/WELLS	4	76	31	9300	1569	10869	61.6	69.7
188	CL 131/3/9502008-A//AR 1188/CCDR	4	77	32	9751	1024	10775	57.6	67.7
199	CPRS/9901081/3/9502008-A/TACAURI//CFX-18	5	68	34	8559	2020	10580	55.1	65.6
200	CL142	5	77	38	8785	1546	10331	52.4	67.5
192	LMNT/3/9502008-A/TACAURI//CFX-18	4	76	31	8774	1508	10282	58.2	68.3
197	CPRS/9901081/3/9502008-A/TACAURI//CFX-18	5	70	31	8552	1713	10264	58.3	68.9
193	LMNT/3/9502008-A/TACAURI//CFX-18	5	77	32	8684	1455	10139	58.5	68.4
194	LMNT/3/9502008-A/TACAURI//CFX-18	4	76	35	8644	1423	10067	53.1	65.4
183	CL 131/3/CFX-18//CCDR/9770532 DH2	6	75	31	9074	950	10024	59.5	68.2
185	CL 131/CCDR	5	76	30	8842	1152	9994	58.9	69.1
187	CL 131/3/9502008-A/DREW//CFX 26/WELLS	5	78	30	8486	1199	9685	61.6	68.7
186	CL 131/CCDR	5	76	30	8614	1066	9680	55.7	68.8
179	CFX-18//CCDR/9770532 DH2/3/CFX-26/9702128	5	75	30	8260	1381	9641	59.6	69.5
184	CL 131/3/CFX-18//CCDR/9770532 DH2	5	78	31	8341	1269	9609	57.9	68.6
182	CL 131/3/CFX-18//CCDR/9770532 DH2	5	79	32	8288	1245	9532	59.3	68.5
176	9502008-A//AR 1188/CCDR/3/CFX-24/98IM2251	6	77	35	8452	1062	9514	52.4	68.4
178	WELLS/CFX-18//DREW/CFX-18	5	76	33	8108	1271	9379	61.3	69.1
180	CFX-18//CCDR/9770532 DH2/3/CFX-26/9702128	5	76	32	8077	1283	9361	59.8	69.8
189	CL 131/CL 171	4	78	33	7818	1364	9182	60.3	69.6
181	CL 131/3/CFX-18//CCDR/9770532 DH2	6	76	32	8110	900	9010	57.4	67.5
190	CL 131/3/9502008-A/TACAURI//CFX-18	6	76	30	7059	892	7951	58.8	68.4
191	LMNT/3/9502008-A/TACAURI//CFX-18	6	77	29	6371	883	7254	46.5	68.0
CV									
LSD									

[1] Subjective rating 0 to 9, where 0 = excellent, 9 = poor.

Table 9. Grain and milling yields and agronomic performance of entries in the 2011 Clearfield Preliminary Yield Test, Group 9, Rice Research Station, Crowley, LA.

ENT	PEDIGREE	VIG[1]	HDT	HTE	YIELD	RATOON	TOTAL YIELD	WHOLE	TOTAL
219	CPRS/KBNT//9502008-A/5/KATY/CPRS//NWBT/…/3/…	4	75	31	10027	1507	11533	57.9	67.7
221	CPRS/KBNT//9502008-A/5/TACAURI/3/CPRS//…	4	74	31	9716	1256	10972	60.0	69.2
210	CFX-18//CCDR/9770532 DH2/3/FRANCIS/CLR 13	4	77	32	9488	1312	10800	62.5	70.9
212	CL 151/3/9502008-A/TACAURI//CFX-18	4	76	29	9154	1627	10782	59.9	69.0
224	CCDR/JEFF/4/CCDR/3/CFX 29/AR 1142/LA 2031	4	77	33	9436	1307	10742	61.4	69.7
208	9502008/CPRS/5/TACAURI/3/CPRS//82CAY21/TBNT/4/…	4	79	32	9207	1462	10668	61.1	69.6
201	9502008-A//AR 1188/CCDR/5/KATY/CPRS//NWBT/…	4	76	30	9174	1461	10635	61.4	69.8
214	9502008-A/TACAURI//CLR 5/3/CCDR/CLR 11	5	76	34	8851	1665	10517	61.6	69.6
225	URN 103	5	73	32	9118	1324	10442	61.0	69.3
202	9502008-A//AR 1188/CCDR/5/KATY/CPRS//NWBT/…	6	77	35	9007	1416	10423	60.7	69.1
209	9502008/CPRS/5/TACAURI/3/CPRS//82CAY21/TBNT/4/…	5	77	33	9021	1397	10418	60.4	69.5
222	CPRS/3/CCDR//CFX 26/WELLS	4	78	31	9067	1348	10415	64.2	70.6
220	CPRS/KBNT//9502008-A/5/KATY/CPRS//NWBT/…/3/…	5	76	31	9001	1315	10316	58.3	67.4
213	9502008-A/TACAURI//CLR 5/3/CCDR/CLR 11	4	77	33	8623	1402	10025	62.5	70.1
207	9502008-A/TACAURI//CFX-18/4/CPRS/3/CFX 29//…	5	77	31	8148	1672	9820	60.2	67.6
216	9502008-A/TACAURI//CLR 5/3/9502008-A/TACAURI//…	4	73	31	8663	1034	9698	63.0	71.1
217	CCDR/5/KATY/CPRS//NWBT/…/3/9502008/4/CLR 9	5	77	31	8125	1531	9656	59.8	70.3
223	CPRS/3/9502008-A/TACAURI//CFX-18	5	77	30	8037	1564	9601	61.4	69.9
203	9502008-A/TACAURI//CFX-18/3/SPRING	5	72	31	8269	1235	9504	61.2	69.8
211	CL 161//FRAN/CCDR	4	78	32	8169	1197	9367	62.2	70.2
206	9502008-A/TACAURI//CFX-18/4/CPRS/3/CFX 29//…	5	71	34	7917	1028	8945	57.0	67.9
215	9502008-A/TACAURI//CLR 5/3/9502008-A/TACAURI//…	4	74	30	7395	1170	8565	62.9	70.8
204	9502008-A/TACAURI//CFX-18/3/SPRING	6	76	30	7165	1018	8184	60.1	69.0
205	9502008-A/TACAURI//CFX-18/3/SPRING	5	76	29	6825	1152	7977	59.8	69.8
218	LMNT/3/9502008-A/TACAURI//CFX-18	6	75	31	6518	1055	7573	52.8	64.2
CV									
LSD									

[1] Subjective rating 0 to 9, where 0 = excellent, 9 = poor.

Table 10. Grain and milling yields and agronomic performance of entries in the 2011 Clearfield Preliminary Yield Test, Group 10, Rice Research Station, Crowley, LA.

ENT	PEDIGREE	VIG[1]	HDT	HTE	YIELD	RATOON	TOTAL YIELD	WHOLE	TOTAL
231	KATY/CPRS//NWBT/…/3/9502008/4/CLR 9/5/…	4	77	31	9243	1695	10937	58.8	67.2
247	KATY/CPRS//NWBT/…/3/9502008/4/CLR 9/5/…	5	75	31	9176	1727	10903	58.6	67.6
248	KATY/CPRS//NWBT/…/3/9502008/4/CLR 9/5/…	5	76	31	9051	1826	10877	58.6	68.0
238	9502008-A//AR 1188/CCDR/5/TACAURI/3/CPRS//…	5	77	31	8927	1567	10495	56.4	67.2
243	KATY/CPRS//NWBT/…/3/9502008/4/CLR 9/5/CCDR/3/…	4	76	31	8683	1782	10464	57.7	68.3
228	KATY/CPRS//NWBT/…/3/9502008/4/CLR 9/5/…	5	76	32	8935	1448	10383	57.8	69.4
249	KATY/CPRS//NWBT/…/3/9502008/4/CLR 9/5/…	5	76	30	8316	2053	10369	59.6	68.3
233	CHENIERE//CFX-26/9702128	5	78	34	8672	1647	10318	64.2	71.7
237	CHENIERE/3/9502008-A/TACAURI//CLR 5	5	72	31	8757	1560	10318	56.8	69.2
227	KATY/CPRS//NWBT/…/3/9502008/4/CLR 9/5/…	4	76	31	8832	1329	10161	61.7	69.5
244	KATY/CPRS//NWBT/…/3/9502008/4/CLR 9/5/CCDR/3/…	5	77	32	8070	1993	10063	57.4	68.2
226	KATY/CPRS//NWBT/…/3/9502008/4/CLR 9/5/…	6	78	30	8322	1738	10060	57.0	69.8
229	KATY/CPRS//NWBT/…/3/9502008/4/CLR 9/5/…	4	78	31	8547	1391	9938	61.2	69.5
230	KATY/CPRS//NWBT/…/3/9502008/4/CLR 9/5/…	4	77	30	8450	1412	9862	60.8	69.0
239	9502008-A//AR 1188/CCDR/5/TACAURI/3/CPRS//…	6	73	29	8197	1595	9792	59.3	68.7
232	CHENIERE//CFX-26/9702128	5	78	31	8050	1526	9577	58.7	69.5
234	CHENIERE/CL 161	6	77	31	7877	1685	9562	62.6	71.5
240	9502008-A/TACAURI//CFX-18/3/CHENIERE	5	77	31	7754	1711	9464	57.9	68.9
235	CHENIERE/CL 161	6	75	31	7914	1458	9372	58.5	68.4
250	CL162	7	78	36	7590	1662	9252	51.9	66.4
242	9502008-A/TACAURI//CFX-18/3/CHENIERE	5	77	31	7584	1660	9244	57.5	68.6
245	KATY/CPRS//NWBT/…/3/9502008/4/CLR 9/5/…	5	75	30	7943	1281	9224	60.5	68.3
241	9502008-A/TACAURI//CFX-18/3/CHENIERE	6	77	30	7521	1502	9023	58.9	69.4
236	CHENIERE/CL 161	4	78	31	7496	1471	8968	63.3	70.6
246	KATY/CPRS//NWBT/…/3/9502008/4/CLR 9/5/…	6	77	31	7241	1527	8768	57.2	68.2
CV									
LSD									

[1] Subjective rating 0 to 9, where 0 = excellent, 9 = poor.

Table 11. Grain and milling yields and agronomic performance of entries in the 2011 Clearfield Preliminary Yield Test, Group 11, Rice Research Station, Crowley, LA.

ENT	PEDIGREE	VIG[1]	HDT	HTE	YIELD	RATOON	TOTAL YIELD	WHOLE	TOTAL
252	KATY/CPRS//NWBT/…/3/9502008/4/CLR 9/5/…	4	76	32	9919	1540	11459	60.1	69.7
251	KATY/CPRS//NWBT/…/3/9502008/4/CLR 9/5/…	5	77	32	9616	1623	11240	56.4	68.2
275	URN 011	6	78	34	9593	1567	11160	56.8	67.7
268	CL 131/3/CFX-18//CCDR/9770532 DH2	4	76	31	9464	1648	11112	61.1	69.8
258	9502008-A/TACAURI//CFX-18/3/CCDR/CLR 11	5	76	32	9124	1651	10774	60.0	69.1
255	9502008-A/TACAURI//CFX-18/3/CCDR/CLR 11	5	76	30	9258	1273	10531	61.1	70.3
262	9502008-A/TACAURI//CFX-18/3/9502008-A/TACAURI//..	6	76	32	8406	1815	10221	59.1	68.4
259	9502008-A/TACAURI//CFX-18/3/9502008-A/TACAURI//..	5	75	32	8641	1512	10153	63.4	70.7
267	9502008-A//AR 1188/CCDR/3/CPRS/KBNT//WELLS CFX 18	5	77	32	8368	1658	10026	62.1	70.5
272	9502008-A//AR 1188/CCDR/3/CCDR/CLR 11	5	76	31	8369	1597	9967	62.2	70.5
253	FRANCIS/CLR 13/3/9502008-A/DREW//WELLS/CFX 18	4	77	33	8353	1515	9868	62.9	69.7
260	9502008-A/TACAURI//CFX-18/3/9502008-A/TACAURI//..	5	76	33	8027	1783	9810	62.4	70.5
254	9502008-A/TACAURI//CFX-18/5/KATY/CPRS//NWBT/…	5	77	32	8308	1497	9805	62.5	69.7
266	9502008-A//AR 1188/CCDR/3/CPRS/KBNT//WELLS CFX 18	5	75	30	8282	1517	9799	54.6	68.8
265	9502008-A//AR 1188/CCDR/4/CCDR/3/CFX 29/…	5	75	30	8208	1570	9778	63.2	70.9
261	9502008-A/TACAURI//CFX-18/3/9502008-A/TACAURI//..	6	75	30	8010	1738	9748	63.3	70.5
257	9502008-A/TACAURI//CFX-18/3/CCDR/CLR 11	6	75	30	8180	1455	9635	62.1	70.2
274	WELLS/CFX-18//CFX-29/CCDR	6	76	30	8073	1501	9574	58.6	70.0
270	9502008-A/DREW/3/CFX-18/CCDR/9770532 DH2	5	76	30	7819	1737	9556	58.2	69.6
264	9502008-A//AR 1188/CCDR/4/CCDR/3/CFX 29/…	6	75	31	8274	1277	9551	56.8	69.1
256	9502008-A/TACAURI//CFX-18/3/CCDR/CLR 11	6	76	30	7286	1977	9263	64.6	71.2
269	9502008-A//AR 1188/CCDR/3/CFX-29//AR 1142/LA 2031	5	75	31	7229	1600	8829	60.9	70.0
273	9502008-A//AR 1188/CCDR/3/CLPY 003	6	72	33	7180	1609	8789	61.6	70.6
271	CPRS/KBNT//9502008-A/3/CFX-18//CCDR/9770532 DH2	6	75	30	7133	1640	8773	62.6	70.5
263	9502008-A//AR 1188/CCDR/4/CCDR/3/CFX 29/…	6	73	29	7193	1176	8369	57.9	69.6
CV									
LSD									

[1] Subjective rating 0 to 9, where 0 = excellent, 9 = poor.

Table 12. Grain and milling yields and agronomic performance of entries in the 2011 Clearfield Preliminary Yield Test, Group 12, Rice Research Station, Crowley, LA.

ENT	PEDIGREE	VIG[1]	HDT	HTE	YIELD	RATOON	TOTAL YIELD	WHOLE	TOTAL
284	CL 131/3/CPRS/KBNT//9502008-A	4	78	32	9656	1533	11189	58.4	68.5
290	CFX-18//CCDR/9770532 DH2/3/CPRS/KBNT//9502008-A	5	73	32	9316	1764	11080	55.4	67.9
300	URN 042	5	80	35	9076	1530	10607	65.8	69.4
299	KATY/CPRS//NWBT/…/3/9502008/4/CLR 9/4/WELLS=CFX-18	5	77	32	9080	1500	10580	56.5	68.1
297	KATY/CPRS//NWBT/…/3/9502008/4/CLR 9/5/KATY/CPRS//…	4	77	31	8641	1929	10570	59.8	69.4
285	CL 131/3/CPRS/KBNT//9502008-A	5	78	29	8837	1394	10231	65.5	69.6
286	CL 131/3/CPRS/KBNT//9502008-A	5	77	31	8868	1356	10224	58.1	68.6
280	NWBT/KATY//9902207x2/3/CFX-18//…	5	76	35	8557	1366	9924	59.2	69.0
295	WELLS/CFX-18/5/KATY/CPRS//NWBT/…/3/9502008/4/CLR 9	4	72	31	8024	1725	9749	61.4	69.2
293	KATY/CPRS//NWBT/…/3/9502008/4/CLR 9/5/KATY/CPRS//…	4	77	31	8097	1646	9742	59.6	68.9
296	9502008-A/DREW//CLR 20/5/9502008/3/CPRS//82CAY21/…/4/CFX-18	5	75	30	7949	1751	9700	59.5	69.9
294	9502008-A/DREW//CLR 20/3/9502008-A/DREW//CLR 20	4	73	31	7978	1710	9688	60.0	69.9
287	CL 131/CHENIERE	5	78	29	8272	1334	9605	60.4	69.4
281	CCDR/9770532DH2/5/AR 1179/3/CPRS//…/4/CFX-18	5	78	31	8136	1330	9466	61.8	70.4
291	CCDR/CFX-18/3/9502008-A/DREW//CLR 20	6	77	32	7905	1477	9381	62.3	71.0
288	CL 131/CHENIERE	4	77	30	8170	1179	9348	59.4	69.0
282	CCDR/9770532DH2/5/AR 1179/3/CPRS//…/4/CFX-18	5	78	31	8279	1054	9333	61.0	70.0
276	CFX-18//CCDR/9770532 DH2/3/WELLS/CFX-18	5	73	31	7977	1346	9323	62.8	70.8
277	CCDR/CLR 11//CFX-26/9702128	6	71	29	8215	1025	9240	54.8	69.7
278	CCDR/CLR 11//CFX-26/9702128	5	75	29	7968	1245	9213	58.9	71.3
283	DREW/JEFF//CFX-18/3/MBLE//TQNG/MBLE…	5	77	30	7341	1820	9162	60.3	69.3
298	KATY/CPRS//NWBT/…/3/9502008/4/CLR 9/5/KATY/CPRS//…	6	78	30	7466	1577	9043	57.7	68.7
292	CCDR/CFX-18/3/9502008-A/DREW//CLR 20	5	76	29	7445	1578	9023	62.8	70.7
279	CCDR/CLR 11//CFX-29/CCDR	5	75	29	7443	1310	8753	58.5	70.0
289	SPRING//DREW/CLR 13	6	77	30	6476	2047	8523	52.6	67.2
CV									
LSD									

[1] Subjective rating 0 to 9, where 0 = excellent, 9 = poor.

PRELIMINARY YIELD TEST

Preliminary yield trials consist primarily of promising breeding nursery material that is ready to be tested in replicated yield trials. The material in these trials was screened for agronomic and grain characteristics in nurseries prior to this phase of testing. Promising experimental lines were evaluated for seedling vigor, maturity, plant height, lodging resistance, grain yield of main crop, and disease resistance.

Tests were conducted using standard agronomic practices (except that no fungicides were applied) at the Rice Research Station at Crowley, LA. A randomized complete block design was applied to arrange test entries. The plot size was 4.66 x 16 ft. Seeding rate was 90 lb/A. This test was drill seeded on March 15 and harvested on August 2. Data are presented in Tables 1 to 12.

Table 1. Grain and milling yields and agronomic performance of entries in the 2011 Preliminary Yield Trial, Group 1, Crowley, LA.

ENT	PEDIGREE	VIG[1]	HDT	HTE	YIELD
525	CL151	5	84	36	8740
512	LGRU//CCDR/9770532 DH2	4	85	34	6922
506	9502008/AR1121//CPRS//82CAY21/TBNT	7	86	33	6565
515	CCDR//0047272/0046181	5	80	31	6237
511	TRNS/CCDR	6	81	29	6154
520	CPRS//CCDR/JEFF	5	85	34	5803
510	TRNS//CCDR/JEFF	6	83	32	5788
502	9502008/CPRS//MBLE	5	85	31	5339
509	TRNS//9502008-A/DREW	5	79	29	5153
519	CPRS/3/CCDR/LGRU/LCSN	5	84	29	4753
516	CCDR//9502008-A/DREW	6	82	32	4735
513	9302065//9502008-A/DREW	5	87	29	4571
504	CPRS//82CAY21/TBNT/3/9502008/3/CPRS//…	7	84	30	4554
518	CPRS//9502008-A/DREW	6	82	30	4505
514	CCDR/3/NWBT/KATY//9902207X2	6	81	31	4417
522	9502008/3/MBLE//LMNT/20001-5/4/CCDR	5	83	31	4321
507	9502008/AR1121//CPRS/KBNT	5	80	30	4037
517	CPRS//9502008-A/DREW	6	81	30	3989
523	9502008/3/MBLE//LMNT/20001-5/4/…	6	85	31	3936
505	CHENIERE/4/9502008/3/CPRS//82CAY21/TBNT	6	86	31	3929
524	CCDR/JEFF//CCDR/JEFF	6	85	32	3645
501	TACAURI/3/CPRS//82CAY21/TBNT/4/MBLE	6	90	31	3482
521	CCDR/4/CPRS/3/MBLE//LMNT/…/5/LGRU	6	84	29	3451
503	CCDR/KBNT	6	86	29	3187
508	CH1/3/CPRS//82CAY21/TBNT/4/CCDR	7	82	28	2825
CV					
LSD					

[1] Subjective rating 0 to 9, where 0 = excellent, 9 = poor.

Table 2. Grain and milling yields and agronomic performance of entries in the 2011 Preliminary Yield Trial, Group 2, Crowley, LA.

ENT	PEDIGREE	VIG[1]	HDT	HTE	YIELD
550	CL111	5	80	34	10947
529	CHNR/3/NWBT/KATY//9902207X2	5	88	31	6958
542	9502008//KATY/902207x2/3/0047272/0046181	5	85	31	6496
526	CCDR/JEFF/4/9502008/3/MBLE//LMNT/20001-5	5	83	32	6462
548	9502008-A//AR 1142/MBLE/3/CCDR/JEFF	5	82	31	6353
545	9502008//KATY/902207x2/3/AC111DH3/…	5	79	30	6146
549	9502008-A//AR 1142/MBLE/3/9502008-A/DREW	5	79	30	6119
530	CHNR//9502008-A/DREW	6	86	31	6083
528	CHNR/4/TACAURI/3/CPRS//82CAY21/TBNT	7	89	32	6071
540	9502008-A/DREW//AC111DH3/AC468DH2	5	85	31	5936
527	CCDR/JEFF/3/9502008-A//AR 1188/CCDR	6	83	30	5907
546	9502008-A/DREW//LMNT	5	83	29	5856
539	9502008-A/DREW//CCDR/JEFF	6	81	31	5720
533	CHNR/3/9502008-A//AR 1142/MBLE	7	91	29	5540
547	9502008-A/DREW/4/TACAURI/3/CPRS//…	6	83	31	5513
532	CHNR//9502008-A/DREW	6	87	32	5376
541	9502008//KATY/902207x2/3/9502008-A/DREW	6	84	30	4737
543	9502008//KATY/902207x2/3/0047272/0046181	6	83	31	4730
536	CHNR/3/MBLE/TQNG/MBLE(MCR02YT-1534)	7	94	31	4594
544	9502008//KATY/902207x2/3/MBLE//TQNG/MBLE	6	87	30	4458
534	CHNR/3/9502008-A//AR 1142/MBLE	7	86	29	4122
537	CHNR//AC111DH3/AC468DH2	7	88	31	3932
531	CHNR//9502008-A/DREW	6	86	30	3914
538	9502008-A/DREW//CCDR/JEFF	6	80	29	3773
535	CHNR/3/9502008-A//AR 1142/MBLE	7	85	30	3631
CV					
LSD					

[1] Subjective rating 0 to 9, where 0 = excellent, 9 = poor.

Table 3. Grain and milling yields and agronomic performance of entries in the 2011 Preliminary Yield Trial, Group 3, Crowley, LA.

ENT	PEDIGREE	VIG[1]	HDT	HTE	YIELD
575	CHENIERE	5	83	33	6166
565	CCDR/4/CPRS/3/MBLE//LMNT/…/5/CCDR	5	79	31	5738
568	9502008-A//AR 1188/CCDR/3/9502008-A//...	4	76	30	5646
569	9502008-A//AR 1188/CCDR/3/9502008-A//...	5	78	30	5427
570	9502008-A//AR 1188/CCDR/3/CPRS/KBNT//...	4	75	31	5326
573	KATY/CPRS//JKSN/3/AR 1188/CCDR/4/0043752/..	5	80	34	5268
574	KATY/CPRS//JKSN/3/AR 1188/CCDR/4/0043752/..	5	79	31	5226
564	AC110DH2/AC108DH2/4/KATY/CPRS//JKSN/3/…	5	79	30	5143
553	9502008-A/DREW//9502008-A/DREW	5	83	30	5118
563	AC110DH2/AC108DH2//9502008-A/DREW	5	82	31	4936
567	9502008-A//AR 1188/CCDR/3/9502008-A//...	5	80	32	4934
572	WELLS//9502008-A/DREW	5	82	30	4788
557	DREW/CCDR//CCDR/9770532DD2	5	82	32	4745
552	9502008-A//AR 1142/MBLE/3/CCDR/LGRU/LCSN	5	80	30	4710
566	KATY/CPRS//JKSN/3/AR 1188/CCDR/4/CCDR//...	5	82	29	4459
571	9502008-A//AR 1188/CCDR/3/CCDR/LGRU/LCSN	5	80	30	4359
561	AC110DH2/AC108DH2//CCDR/JEFF	5	83	32	4329
551	9502008-A//AR 1142/MBLE/3/9502008-A/DREW	5	73	29	4219
560	AC110DH2/AC108DH2/3/CPRS/KBNT//9502008-A	6	80	30	4157
558	DREW/CCDR//CCDR/9770532DD2	5	80	31	4034
562	AC110DH2/AC108DH2//9502008-A/DREW	5	84	30	3975
559	DREW/CCDR//CCDR/9770532DD2	6	88	31	3967
555	DREW/CCDR//CCDR	6	85	29	3479
554	DREW/CCDR//CCDR	7	86	32	3186
556	DREW/CCDR//CCDR/JEFF	7	90	31	2351
CV					
LSD					

[1] Subjective rating 0 to 9, where 0 = excellent, 9 = poor.

Table 4. Grain and milling yields and agronomic performance of entries in the 2011 Preliminary Yield Trial, Group 4, Crowley, LA.

ENT	PEDIGREE	VIG[1]	HDT	HTE	YIELD
579	TRNS/TRNS	6	81	33	6657
583	TRNS//CCDR/9502008-A	6	84	34	5640
581	TRNS/3/CPRS/KBNT//9502008-A	7	87	32	5318
600	CATAHOULA	5	80	35	5148
595	CCDR//CCDR/JEFF	5	78	31	4834
592	CCDR/3/CPRS/KBNT//9502008-A	5	79	29	4785
588	CCDR/CHENIERE	5	82	33	4757
596	CCDR//CCDR/JEFF	5	80	32	4714
587	CCDR/CHENIERE	6	82	33	4699
590	CCDR//CCDR/9502008-A	5	76	31	4690
597	CCDR//CCDR/JEFF	5	82	32	4669
593	CCDR/3/CPRS/KBNT//9502008-A	5	80	30	4585
586	CCDR/CHENIERE	5	82	32	4420
582	TRNS/3/CPRS/KBNT//9502008-A	8	88	32	4292
594	CCDR/3/CPRS/KBNT//9502008-A	6	85	30	4275
599	CCDR/3/CPRS/KBNT//9502008-A	5	81	30	4240
585	CCDR/CHENIERE	6	89	31	4236
576	MBLE/3/CPRS/KBNT//9502008-A	6	84	29	4229
589	CCDR/CHENIERE	6	85	32	4204
591	CCDR/CHENIERE	6	82	31	4082
577	MBLE/3/CPRS/KBNT//9502008-A	7	84	29	3924
580	TRNS/TRNS	8	86	30	3780
584	9302065/EP 227	5	90	29	3467
598	CCDR//CCDR/JEFF	7	85	32	3276
578	TRNS//CCDR/JEFF	7	84	32	2763
CV					
LSD					

[1] Subjective rating 0 to 9, where 0 = excellent, 9 = poor.

Table 5. Grain and milling yields and agronomic performance of entries in the 2011 Preliminary Yield Trial, Group 5, Crowley, LA.

ENT	PEDIGREE	VIG[1]	HDT	HTE	YIELD
621	CCDR/JEFF//CPRS	5	83	31	7759
624	CCDR/JEFF//TRNS	5	30	31	6886
618	CHENIERE//CCDR/JEFF	5	81	32	6734
617	CCDR/JEFF/3/9502008-A//AR 1188/CCDR	4	76	31	6336
619	CHENIERE//CCDR/JEFF	5	82	33	6170
622	CCDR/JEFF//CPRS	5	82	31	5641
620	CHENIERE/3/9502008-A//AR 1188/CCDR	5	84	29	5469
614	CCDR/JEFF/5/DREW/3/KBNT//KATY/CPRS/4/WELLS	5	78	30	5357
610	CCDR/JEFF/3/9502008-A//AR 1188/CCDR	5	78	31	5256
602	CPRS/KBNT//9502008-A/3/9502008-A//AR 1188/CCDR	5	76	30	5037
601	CCDR/3/CPRS/KBNT//9502008-A	5	80	31	5015
612	CCDR/JEFF/5/DREW/3/KBNT//KATY/CPRS/4/WELLS	5	79	32	4979
611	CCDR/JEFF/3/9502008-A//AR 1188/CCDR	5	82	32	4937
623	CCDR/JEFF//CPRS	6	87	31	4524
613	CCDR/JEFF/5/DREW/3/KBNT//KATY/CPRS/4/WELLS	6	80	30	4421
625	URN 048	6	82	31	4290
603	CPRS/KBNT//9502008-A/3/9502008-A//AR 1188/CCDR	5	78	31	4260
608	CPRS/MBLE	6	86	33	4252
616	CCDR/JEFF/5/DREW/3/KBNT//KATY/CPRS/4/WELLS	7	82	30	4229
615	CCDR/JEFF/5/DREW/3/KBNT//KATY/CPRS/4/WELLS	6	80	29	3961
607	CPRS/MBLE	6	87	31	3849
604	CPRS/KBNT//9502008-A3CCDR/9502008-A	6	82	31	3545
609	CCDR/JEFF/3/9502008-A//AR 1188/CCDR	6	82	31	3432
605	CPRS/KBNT//9502008-A/3/CCDR/JEFF	6	84	32	3034
606	CPRS//CCDR/JEFF	7	86	34	2648
CV					
LSD					

[1] Subjective rating 0 to 9, where 0 = excellent, 9 = poor.

Table 6. Grain and milling yields and agronomic performance of entries in the 2011 Preliminary Yield Trial, Group 6, Crowley, LA.

ENT	PEDIGREE	VIG[1]	HDT	HTE	YIELD
640	9502008-A//AR 1188/CCDR/3/CCDR/JEFF	4	77	32	6452
644	9502008-A//AR 1188/CCDR/3/9502008-A/AR 1188/…	5	76	33	5650
643	9502008-A//AR 1188/CCDR/3/9502008-A/AR 1188/…	5	78	33	5602
636	CCDR/9502008-A/3/950208-A//ARLL88/CCDR	5	79	30	5077
645	9502008-A//AR 1188/CCDR/3/CCDR/9502008-A	5	78	32	4897
635	CCDR/9502008-A/3/950208-A//ARLL88/CCDR	5	79	33	4882
642	9502008-A//AR 1188/CCDR/3/DREW	6	82	33	4852
646	9502008-A//AR 1188/CCDR/3/LGRU	6	78	32	4639
629	CCDR/JEFF//9502008-A/DREW	6	81	32	4591
630	CCDR/JEFF//9502008-A/DREW	5	74	29	4567
650	COCODRIE	5	81	31	4480
627	CCDR/JEFF//CPRS	5	80	30	4479
639	9502008-A//AR 1188/CCDR/3/CCDR/JEFF	5	78	31	4415
638	9502008-A//AR 1188/CCDR/3/CCDR/9502008-A	6	78	32	4382
647	9502008-A//AR 1188/CCDR/3/CCDR/9502008-A	5	78	31	4358
634	CCDR/JEFF//CCDR/9502008-A	5	84	33	4318
626	CCDR/JEFF//TRNS	7	83	29	4308
648	9502008-A//AR 1188/CCDR/3/CCDR/9502008-A	5	80	30	4249
628	CCDR/JEFF//9502008-A/DREW	5	80	30	4108
649	9502008-A//AR 1188/CCDR/3/CCDR/9502008-A	5	78	30	4107
631	CCDR/JEFF//9502008-A/DREW	6	83	30	4051
637	CCDR/9502008-A//TRNS	6	78	31	4023
641	9502008-A//AR 1188/CCDR/3/DREW	6	85	30	3564
632	CCDR/JEFF/4/CPRS/NWBT//KATY/3/CCDR	6	80	31	3523
633	CCDR/JEFF/4/CPRS/NWBT//KATY/3/CCDR	7	82	31	3200
CV					
LSD					

[1] Subjective rating 0 to 9, where 0 = excellent, 9 = poor.

Table 7. Grain and milling yields and agronomic performance of entries in the 2011 Preliminary Yield Trial, Group 7, Crowley, LA.

ENT	PEDIGREE	VIG[1]	HDT	HTE	YIELD
675	CL151	5	83	37	9246
661	9502008-A//AR 1188/CCDR/3/9502008-A/AR 1188/…	4	75	32	5989
657	9502008-A//AR 1188/CCDR/3/SPRING	4	81	33	5759
664	CCDR/LGRU//CCDR	5	78	32	5662
654	9502008-A//AR 1188/CCDR/3/CCDR/JEFF	5	78	31	5647
656	9502008-A//AR 1188/CCDR/3/CCDR/JEFF	5	76	32	5599
665	CCDR/LGRU/4/KATY/CPRS//JKSN/3/AR 1188/CCDR	5	78	32	5562
658	9502008-A//AR 1188/CCDR/3/SPRING	5	78	31	5528
663	KATY/CPRS//JKSN/3/AR 1188/CCDR/4/KATY/CPRS//…	5	78	33	5520
660	9502008-A//AR 1188/CCDR/3/CCDR/9502008-A	5	76	31	5311
671	CPRS/KBNT//9502008-A/3/KATY/CPRS//JKSN/3/…	5	72	31	5271
668	CCDR/LGRU/5/CCDR/4/NWBT/KATY/3/82CAY21/…	5	80	31	5201
653	9502008-A/DREW/3/9502008-A//AR 1188/CCDR	5	79	29	5195
652	9502008-A/DREW//CCDR/JEFF	4	75	30	5158
655	9502008-A//AR 1188/CCDR/3/CCDR/JEFF	5	79	32	5156
670	CCDR/LGRU//9502008-A/DREW	5	76	32	5143
662	KATY/CPRS//JKSN/3/AR 1188/CCDR/4/KATY/CPRS//…	4	75	33	5134
659	9502008-A//AR 1188/CCDR/3/SPRING	5	80	30	5118
672	KATY/CPRS//JKSN/3/AR 1188/CCDR/4/CCDR/JEFF	4	76	32	5099
667	CCDR/LGRU/5/CCDR/4/NWBT/KATY/3/82CAY21/…	5	79	32	5064
666	CCDR/LGRU/4/KATY/CPRS//JKSN/3/AR 1188/CCDR	5	78	33	5053
674	KATY/CPRS//JKSN/3/AR 1188/CCDR/4/CCDR/LGRU	5	78	31	4797
651	9502008-A/DREW//CCDR/JEFF	5	75	30	4248
673	KATY/CPRS//JKSN/3/AR 1188/CCDR/4/CCDR/JEFF	5	80	30	4126
669	CCDR/LGRU/5/CCDR/4/NWBT/KATY/3/82CAY21/…	6	84	31	4025
CV					
LSD					

[1] Subjective rating 0 to 9, where 0 = excellent, 9 = poor.

Table 8. Grain and milling yields and agronomic performance of entries in the 2011 Preliminary Yield Trial, Group 8, Crowley, LA.

ENT	PEDIGREE	VIG[1]	HDT	HTE	YIELD
700	CL111	7	84	36	7889
676	KATY/CPRS//JKSN/3/AR 1188/CCDR/4/9502008-A//…	5	77	31	5095
690	CPRS/KBNT//9502008-A /4/NWBT/KATY//9902207x2/3/9502008-A/DREW	5	78	31	5094
695	AR 1142/JODN/4/NWBT/KATY/3/82CAY21/…/5/CPRS/KBNT/DREW	5	82	28	4903
679	9502008-A//AR 1188/CCDR/3/CCDR	5	78	31	4730
691	CPRS/KBNT//9502008-A /4/NWBT/KATY//9902207x2/3/9502008-A/DREW	5	79	30	4661
693	CCDR/JEFF/4/NWBT/KATY//9902207x2/3/CCDR	6	79	34	4598
692	CPRS/4/NWBT/KATY//9902207x2/3/CPRS	5	84	32	4525
687	9502008/CPRS//CPRS/9901081	5	80	31	4413
677	KATY/CPRS//JKSN/3/AR 1188/CCDR/4/9502008-A//…	5	80	32	4405
683	9502008-A//AR 1188/CCDR/3/9502008/CPRS	5	78	33	4262
694	CCDR/JEFF//TRNS	5	79	31	4254
680	9502008-A//AR 1188/CCDR/3/CCDR/9502008-A	5	82	33	4096
689	CPRS/KBNT//9502008-A /3/CCDR/JEFF	6	80	29	3829
686	9502008/CPRS//CPRS/9901081	6	81	31	3728
685	9502008-A//AR 1188/CCDR/3/9502008/CPRS	6	83	33	3675
688	CPRS/KBNT//9502008-A /3/CCDR/JEFF	6	77	33	3637
678	9502008-A//AR 1188/CCDR/3/CCDR	6	83	31	3593
699	9502008-A/DREW/3/NWBT/KATY//9902207x2/4/CHENIERE	5	78	31	3525
696	9502008-A/DREW/3/NWBT/KATY//9902207x2/4/CHENIERE	6	83	33	3286
697	CPRS/KBNT//9502008-A /4/NWBT/KATY//9902207x2/3/…	6	83	31	3218
698	AR 1142/JODN/4/NWBT/KATY/3/82CAY21/…/5/NWBT/…	6	84	31	3050
681	CPRS/NWBT//KATY/3/CCDR/4/9502008-A/DREW	7	84	32	2934
684	9502008-A//AR 1188/CCDR/3/9502008/CPRS	6	84	31	2915
682	CPRS/NWBT//KATY/3/CCDR/4/9502008-A/DREW	7	84	27	2776
CV					
LSD					

[1] Subjective rating 0 to 9, where 0 = excellent, 9 = poor.

Table 9. Grain and milling yields and agronomic performance of entries in the 2011 Preliminary Yield Trial, Group 9, Crowley, LA.

ENT	PEDIGREE	VIG[1]	HDT	HTE	YIELD
708	MEDARK/EARL	6	87	31	4907
723	JPTR/4/MERC/RICO//BNGL/3/SMARS/SMARS/?	6	91	31	4903
720	BNGL//MERC/RICO/3/EARL/4/JPTR	6	91	30	4791
725	JUPITER	6	92	31	4570
718	BNGL//MERC/RICO/3/EARL/4/JPTR	6	88	31	4429
702	JPTR/MEDARK	6	92	31	4264
722	JPTR/4/MERC/RICO//BNGL/3/SMARS/SMARS/?	6	92	31	4147
719	BNGL//MERC/RICO/3/EARL/4/JPTR	6	90	29	4125
716	JPTR/4/MERC/RICO//MERC/3/MERC/…	6	89	32	4062
717	BNGL/MERC/RICO/3/MERC/RICO//BNGL/4/JPTR	6	87	30	4030
724	JPTR/4/MERC/RICO//BNGL/3/SMARS/SMARS/?	6	92	29	4006
701	JPTR/MEDARK	6	93	30	3930
714	JPTR/4/MERC/RICO//BNGL/3/SMARS/SMARS/…	7	91	27	3726
715	JPTR/4/MERC/RICO//MERC/3/MERC/…	6	86	31	3591
704	BNGL//MERC/RICO/3/EARL/4/JPTR	7	91	31	3510
703	9865216DH2/EARL//EARL	6	92	32	3435
707	BNGL//MERC/RICO/3/EARL/4/EARL	6	90	29	3174
721	BNGL//MERC/RICO/3/EARL/4/JPTR	6	90	30	3166
706	BNGL//MERC/RICO/3/EARL/4/EARL	7	89	29	3142
705	BNGL//MERC/RICO/3/EARL/4/EARL	7	89	30	3110
709	MEDARK/EARL	7	89	27	2897
711	JPTR/4/MERC/RICO//BNGL/3/SMARS/SMARS/?	7	88	27	2765
713	JPTR/4/MERC/RICO//BNGL/3/SMARS/SMARS/…	8	92	30	2350
712	BNGL//EARL/CBNT	6	92	26	2001
710	LFTE/JPTR	7	89	28	1984
CV					
LSD					

[1] Subjective rating 0 to 9, where 0 = excellent, 9 = poor.

Table 10. Grain and milling yields and agronomic performance of entries in the 2011 Preliminary Yield Trial, Group 10, Crowley, LA.

ENT	PEDIGREE	VIG[1]	HDT	HTE	YIELD
749	BNGL/MERC/RICO/3/MERC/RICO//BNGL/4/61764DH3	5	86	31	5196
738	BNGL/MERC/RICO/3/MERC/RICO//BNGL/4/EARL/…	5	88	31	5187
727	JPTR/4/MERC/RICO//BNGL/3/SMARS/SMARS/?	6	91	32	5136
734	BNGL//MERC/RICO/3/MERC/RICO//BNGL/4/MDRK	6	90	30	5116
737	BNGL/MERC/RICO/3/MERC/RICO//BNGL/4/EARL/…	5	88	32	4824
728	JPTR/4/MERC/RICO//BNGL/3/SMARS/SMARS/?	6	93	31	4693
747	BNGL/MERC/RICO/3/MERC/RICO.//BNGL/4/...	6	90	31	4650
730	JPTR/4/MERC/RICO//BNGL/3/SMARS/SMARS/?	7	92	30	4345
735	BNGL//MERC/RICO/3/MERC/RICO//BNGL/4/MDRK	7	89	31	4075
746	BNGL/MERC/RICO/3/MERC/RICO.//BNGL/4/...	5	85	32	3976
726	JPTR/4/MERC/RICO//BNGL/3/SMARS/SMARS/?	6	92	30	3864
732	JPTR/4/BNGL/3/MERC/RICO//BNGL	7	92	30	3806
729	JPTR/4/MERC/RICO//BNGL/3/SMARS/SMARS/?	7	92	31	3766
750	NEPTUNE	5	90	28	3630
731	JPTR/4/MERC/RICO//BNGL/3/SMARS/SMARS/?	8	93	30	3614
740	LFTE/4/BNGL/MERC/RICO/3/MERC/RICO//BNGL	7	90	32	3437
748	Earl/4/MERC/RICO//MERC/3/MERC/…	6	91	31	3183
736	BNGL/MERC/RICO/3/MERC/RICO//BNGL/4/EARL/…	7	88	32	3077
745	JPTR/MARS//LFTE	6	87	32	2891
743	EARL/JPTR	5	95	30	2842
739	LFTE/4/BNGL/MERC/RICO/3/MERC/RICO//BNGL	6	84	30	2759
741	LFTE/4/BNGL/MERC/RICO/3/MERC/RICO//BNGL	7	91	30	2741
733	JPTR/4/BNGL/3/MERC/RICO//BNGL	8	92	28	2686
742	EARL/JPTR	6	88	30	2415
744	MUTATED F2 MG	7	87	32	2183
CV					
LSD					

[1] Subjective rating 0 to 9, where 0 = excellent, 9 = poor.

Table 11. Grain and milling yields and agronomic performance of entries in the 2011 Preliminary Yield Trial, Group 11, Crowley, LA.

ENT	PEDIGREE	VIG[1]	HDT	HTE	YIELD
762	LFTE/4/KATY/CPRS/3/CPRS/LMNT/6/…	8	88	30	4585
766	NPTN/4/BNGL//../3/MERC/RICO//BNGL	5	89	31	3781
775	CAFFEY	5	89	29	3720
758	ORIN//MERC/RICO/3/9602134/4/MERC/RICO//…	6	87	32	3610
754	JPTR/4/BNGL//MERC/RICO/3/MERC/RICO//BNGL	7	91	29	3458
760	MDRK/4/MERC/RICO//BNGL/3/SMARS/MARS/…	6	89	29	3331
773	EARL/9902028//JPTR	7	93	31	3263
768	9502065/3/MERC//MERC/…/4/BNGL//../3/MERC/…	7	87	31	3024
767	NPTN/4/BNGL//../3/MERC/RICO//BNGL	6	90	30	2960
765	NPTN/4/BNGL//../3/MERC/RICO//BNGL	7	88	29	2886
759	ORIN//MERC/RICO/3/9602134/4/MERC/RICO//…	7	89	28	2738
753	JPTR/4/BNGL//MERC/RICO/3/MERC/RICO//BNGL	7	91	29	2734
774	EARL/9902028//JPTR	7	90	30	2717
757	JPTR/4/MERC/RICO//MERC/3/MERC/…	8	91	31	2708
756	JPTR/4/MERC/RICO//MERC/3/MERC/…	7	86	28	2695
755	JPTR/4/MERC/RICO//MERC/3/MERC/…	8	89	29	2680
752	BNGL//MERC/RICO/3/MERC/…/4/KOKOHUROSE	7	94	26	2561
771	BNGL//../3/MERC/RICO//BNGL/4/BNGL//../3/MERC/RICO//BNGL	6	89	29	2461
769	9502065/3/MERC//MERC/…/4/BNGL//../3/MERC/…	8	86	32	2384
751	BNGL/MERC/RICO/3/MERC/RICO//BNGL/4/ORIN//…	6	93	28	2369
764	NPTN/4/BNGL//../3/MERC/RICO//BNGL	7	93	29	2184
772	BNGL//../3/MERC/RICO//BNGL/4/BNGL//../3/MERC/RICO//BNGL	7	92	28	2018
761	ORIN/3/MERC/CAM9/MARS/4/BNGL	7	88	30	1890
770	BNGL/9502065/4/BNGL/MERC/RICO/3/MERC/RICO//BNGL	7	90	30	1654
763	NPTN//EARL/9902028	8	94	27	1592
CV					
LSD					

[1] Subjective rating 0 to 9, where 0 = excellent, 9 = poor.

Table 12. Grain and milling yields and agronomic performance of entries in the 2011 Preliminary Yield Trial, Group 12, Crowley, LA.

ENT	PEDIGREE	VIG[1]	HDT	HTE	YIELD
800	CL261	5	84	35	7567
793	BNGL//MERC/RICO/3/MERC/RICO//BNGL/4/JPTR	6	91	32	3675
791	NEPTUNE/JPTR	6	94	30	3619
790	BNGL/MERC/RICO/3/MERC/RICO//BNGL/4/JPTR	7	90	30	3599
785	BNGL/FRAN//JPTR	6	92	30	3427
799	9502065/3/MERC//MERC/…/4/BNGL	7	87	30	3197
778	MERC/RICO//BNGL/3/SMARS/SMARS/…/4/BNGL/9502065	6	88	32	3172
787	BNGL//MERC/RICO//3/MERC/RICO//BNGL/4/9502065/3/MERC/RICO//BNGL	6	90	30	3151
798	NEPTUNE/JPTR	6	88	29	3139
795	BNGL/SHORT RICO/4/ORIN//…/5/BNGL/SHORT RICO/4/9502065/3/…	6	89	28	2873
781	BNGL//MERC/RICO/3/MERC/RICO//BNGL/4/BNGL/9502065	7	90	29	2654
782	BNGL//MERC/RICO/3/EARL/4/BNGL//.../3/MERC/RICO//BNGL	6	87	30	2566
789	Mutated Medium Grain	6	87	32	2291
792	NEPTUNE/4/9502065/3/MERC//MERC/…	6	93	32	2288
796	BNGL/SHORT RICO/4/ORIN//…/5/BNGL/SHORT RICO/4/9502065/3/…	7	91	28	2272
784	BNGL/FRAN//JPTR	7	93	29	2248
786	BNGL/MERC/RICO/3/MERC/RICO//BNGL/4/LFTE	6	90	30	2075
780	9502065/3/MERC//MERC/…/4/BNGL//MERC/RICO/3/MERC/RICO//BNGL	7	88	31	2048
776	BNGL//MERC/RICO/3/MERC/RICO//BNGL/4/EARL/9902028	5	92	28	2040
794	BNGL/SHORT RICO/4/ORIN//…/5/BNGL/MERC/RICO/3/MERC/RICO//BNGL	6	88	29	1973
788	BNGL//MERC/RICO/3/EARL/4/JPTR	7	94	29	1964
779	BNGL//MERC/RICO/3/EARL/4/JPTR	7	93	28	1729
797	BNGL/SHORT RICO/4/ORIN//…/5/NEPTUNE	6	84	30	1692
777	BNGL//MERC/RICO/3/..//BNGL/6/BRAZ/TBNT/3/../4/BNGL/5/BNGL/RICO	6	94	27	1602
783	BNGL//MERC/RICO/3/EARL/4/BNGL//.../3/MERC/RICO//BNGL	6	91	29	1412
CV					
LSD					

[1] Subjective rating 0 to 9, where 0 = excellent, 9 = poor.

COOPERATIVE UNIFORM REGIONAL RICE NURSERY

The Uniform Regional Rice Nursery (URN) is a multi-state yield nursery conducted by public rice breeders at research locations in Arkansas, Louisiana, Mississippi, Texas, California, and Missouri to evaluate experimental lines and commercial varieties. Entries are exposed to different environments over a wide, diverse growing region and allow researchers to evaluate their adaptation in a single row.

The 2011 URN test included 200 experimental lines and varieties planted in six states. The randomized complete block design was applied, with three replications for groups 1-4 and two replications for groups 5-7. Seeding rates were 90 lb for varieties.

The 2011 URN results from the Rice Research Station will be reported. All plots were drill seeded on March 22-23. The test was harvested on July 28. Tests were conducted using standard agronomic practices (except that no fungicides were applied). Tables 1-7 show grain and milling yield and agronomic performance (seedling vigor, days to 50% heading, plant height, and lodging percentage) of entries in the 2011 URN at the Rice Research Station.

Table 1. Grain and milling yields and agronomic performance of entries in the 2011 Uniform Regional Rice Nursery, Group 1, Rice Research Station, Crowley, LA.

ENT	SOURCE	PEDIGREE	VIG[1]	HDT	HTE	YIELD	RATOON	TOTAL YIELD	WHOLE	TOTAL
018	CL151	CL151	4	76	35	11156	1252	12408	55.8	64.0
011	1002011	CPRS/9502008-A/3/CFX 29//AR 1142/LA 2031	4	78	35	10249	1202	11451	57.2	66.3
017	CL111	CL111	3	71	33	9816	1499	11315	54.4	65.6
002	0902088	9502008-A//AR1188/CCDR/3/…	4	76	33	9833	1321	11153	58.5	66.4
008	1002189	CPRS/KBNT//9502008-A/3/TRNS	4	76	31	9373	1605	10978	58.9	67.1
005	1002085	9502008/3/MBLE//LMNT/20001-5/4/CFX-18//…	3	75	30	9097	1811	10908	52.9	66.0
014	1104014	CFX-18(CL161)/9904053	4	79	35	10081	804	10885	58.0	66.6
015	1104015	248CO16E-1	4	77	32	9348	1057	10404	59.3	66.4
004	0801142	KBNT/Q36194	4	77	35	8805	909	9713	57.4	67.1
016	1004016	RSMT//RXMT/IR36	4	78	32	8256	1143	9399	49.6	62.0
010	0701124	DREW/UA99-167	3	68	31	8083	1181	9264	54.3	66.5
020	CTHL	CTHL	4	74	30	7695	1368	9063	57.1	68.6
007	0801081	LGRU//KATY/STBN/3/LGRU	4	71	35	7405	1449	8854	45.8	63.9
013	1001167	LGRU//LMNT/RA73/3/LGRU/4/WLLS/5/CYBT	5	66	31	7172	1410	8582	47.6	66.2
001	0801133	FRNS/6/LBNT/9902/3/DAWN/9695//STBN/4/LGRU/5/DREW	4	74	32	7630	938	8568	54.6	65.9
019	9903092	PRESIDIO (PRSD)	5	73	28	6569	1891	8460	59.2	67.3
006	0803190	CPRS/CCDR	4	76	29	7041	913	7954	58.0	67.5
012	0803147	LCSN/LGRU	5	75	28	6566	1308	7874	52.1	64.9
009	0903141	CPRS/9901081	4	75	30	6254	1175	7429	55.0	66.7
003	1003178	CF4-69/CCDR	6	75	32	3965	819	4784	52.4	65.6
CV										
LSD										

[1] Subjective rating 0 to 9, where 0 = excellent, 9 = poor.

Table 2. Grain and milling yields and agronomic performance of entries in the 2011 Uniform Regional Rice Nursery, Group 2, Rice Research Station, Crowley, LA.

ENT	SOURCE	PEDIGREE	VIG[1]	HDT	HTE	YIELD	RATOON	TOTAL YIELD	WHOLE	TOTAL
039	CL162	CL162	3	73	35	10048	1942	11990	54.3	64.9
033	1004033	CFX-18(CL161)/0004054	4	79	34	9886	1105	10991	54.0	63.5
037	JPTR	JUPITER	5	85	31	8623	1643	10266	54.0	59.0
021	1001099	RU0401067/IRAT 13//STG03F5-04-062	5	85	31	8403	1221	9624	47.1	58.4
030	1001102	RU0401084/IRAT 13//STG03F5-04-062	5	83	32	8473	1146	9619	57.5	64.5
038	WLLS	WELLS	3	76	33	7676	1870	9546	44.4	63.8
025	0802140	CPRS//L-205/DLLA	4	80	33	7526	2007	9533	54.1	63.1
040	FRNS	FRANCIS	4	76	32	8409	1055	9464	46.0	59.6
027	0801167	FRNS/6/LBNT/9902/3/DAWN/9695//STBN/4/…	4	76	31	7799	1184	8983	48.0	61.5
034	1102034	CPRS/KBNT//9502008-A	4	74	29	6978	1933	8911	56.5	67.4
022	1002128	CCDR//9502008/LGRU	5	75	32	7020	1885	8905	57.4	66.6
035	1004197	GFMT//NWBT/KATY	4	75	28	7008	1595	8603	53.9	67.0
031	1102031	RU0602103/3/9502008-A//AR1188/CCDR	4	74	30	7035	1550	8584	59.1	67.6
026	0803092	CCDR/LQ275a	4	80	32	7248	1047	8295	45.1	64.6
024	0801124	MDRK/PI 312777//JING 185-7	5	80	29	6681	1217	7898	57.9	62.0
028	1102028	CCDR/3/9502008-A//AR1188/CCDR	5	74	28	6602	1233	7835	54.4	67.1
029	0803153	CPRS/CCDR	5	74	31	6418	1214	7633	52.3	65.1
032	0703190	CCDR/L202	5	69	31	5646	1436	7083	50.5	67.1
023	1003126	LGRU/LSCN/CF4-85	6	75	30	4851	1705	6556	54.7	63.6
036	1004157	CPRS//LGRU/PI568891	5	66	30	5448	982	6429	45.1	65.5
CV										
LSD										

[1] Subjective rating 0 to 9, where 0 = excellent, 9 = poor.

Table 3. Grain and milling yields and agronomic performance of entries in the 2011 Uniform Regional Rice Nursery, Group 3, Rice Research Station, Crowley, LA.

ENT	SOURCE	PEDIGREE	VIG[1]	HDT	HTE	YIELD	RATOON	TOTAL YIELD	WHOLE	TOTAL
042	1002088	9502008-A/DREW//CLR 20	4	76	33	9352	2176	11528	64.1	67.4
045	1002103	CPRS//82CAY21/TBNT/3/CFX 29//…	5	71	29	9197	1955	11152	60.3	69.2
056	TMPL	TEMPLETON	3	74	32	7798	2891	10689	58.0	67.3
051	1102051	CFX-18//CPRS/KBNT/3/CFX-29/CCDR	5	77	33	8942	1301	10243	59.9	69.4
047	1001130	UA99-25/UA99-140//STG03P-03-041	4	77	32	8905	1290	10195	59.3	68.2
060	CL 181 AR	CL 181 AR	4	77	30	8648	1167	9815	56.5	67.4
057	REX	REX	3	77	32	7031	2768	9799	52.4	62.8
058	CHNR	CHENIERE	4	76	29	7935	1784	9719	59.3	69.2
054	1104054	248CO16E-2	4	77	32	8407	1251	9658	47.3	63.7
059	CCDR	COCODRIE	4	75	28	7589	1929	9518	54.9	67.3
044	1001124	STG02F5-07-067/STG02F5-04-034//STG03P-03-041	4	71	32	8010	1314	9324	56.4	67.8
050	0801161	FRNS/6/LBNT/9902/3/DAWN/9695//STBN/4/…	4	77	33	7749	1482	9231	47.2	61.5
053	1004053	RSMT//8403113/3/KCAL/LEAH//LEAH	4	75	29	7178	1814	8993	53.9	66.8
048	0702085	AR 1188/CCDR//9502008/LGRU	4	74	29	7454	1527	8982	59.2	69.6
046	0703147	CPRS/CCDR	4	76	30	6922	1702	8624	49.2	63.3
052	0703181	CPRS/CCDR	4	77	30	6793	1683	8477	55.7	67.1
041	0801030	CYBT/LM1	4	70	27	6631	1047	7679	54.8	67.0
049	0703144	CPRS/CCDR	5	77	31	6273	1331	7604	49.5	64.3
055	1104055	TBNT/LA110//LMNT/TBNT	4	78	30	6526	1077	7603	46.0	62.3
043	0803181	CPRS/CCDR	4	75	28	5764	1470	7234	56.6	68.2
CV										
LSD										

[1] Subjective rating 0 to 9, where 0 = excellent, 9 = poor.

Table 4. Grain and milling yields and agronomic performance of entries in the 2011 Uniform Regional Rice Nursery, Group 4, Rice Research Station, Crowley, LA.

ENT	SOURCE	PEDIGREE	VIG[1]	HDT	HTE	YIELD	RATOON	TOTAL YIELD	WHOLE	TOTAL
071	1102071	LAH10	6	86	47	11515	1817	13332	58.6	65.7
064	JES	JES	5	79	33	10594	1462	12056	59.1	66.7
062	0902082	BNGL/CL161	4	84	36	10487	1335	11822	64.7	68.4
073	1104073	CFX-18(CL161)/9804054	4	74	33	9654	1695	11349	55.5	65.6
074	1004074	CFX-18(CL161)/0004054	4	79	33	9575	1525	11100	56.2	66.1
079	ROYJ	ROY J	3	77	33	8397	1949	10345	50.5	67.5
065	1002168	MARS//M201/MARS/5/STRN//MERC/…	4	78	30	8692	1003	9695	58.5	62.6
080	CFFY	CAFFEY	3	80	32	7943	1360	9303	58.2	66.2
061	0701087	GP13416/KATY//PI312777	4	73	33	8017	1145	9162	51.5	64.6
063	0903184	CPRS/CCDR	4	76	32	7568	1496	9064	56.0	66.9
068	0902162	BNGL//MERC/RICO/3/MERC/RICO//BNGL	4	81	28	7273	1557	8830	57.8	63.5
077	1104077	LCSN/NWBT/KATY	4	70	31	7109	1666	8775	50.6	65.7
067	1001136	STG02PR-02-067/STG02AC-15-002//RU0401084	5	78	29	7189	1401	8590	59.7	64.0
075	0903190	CPRS/CCDR	5	76	32	6807	1298	8105	48.6	65.7
066	0903086	SABR/CCDR	4	79	35	6599	1406	8005	58.3	66.8
070	0801090	91642//KATY/NWBT/5/RU9201176/4/KATY/NWBT/3/LBNT/…	4	76	32	6153	1535	7689	43.7	62.8
076	0801093	LBNT/9902/3/DAWN/9695//STBN/4/LGRU/5/WLLS/6/…	5	69	32	6349	1275	7624	43.1	63.0
078	0703184	L201/SABR	4	80	34	5942	1482	7425	58.8	67.0
072	0903123	CPRS/NWBT//KATY/3/CCDR	6	73	30	5841	1448	7289	55.1	68.0
069	1003107	CF4-69/CCDR	6	74	32	5241	1367	6608	52.6	66.8
CV										
LSD										

[1] Subjective rating 0 to 9, where 0 = excellent, 9 = poor.

Table 5. Grain and milling yields and agronomic performance of entries in the 2011 Uniform Regional Rice Nursery, Group 5, Rice Research Station, Crowley, LA.

ENT	SOURCE	PEDIGREE	VIG[1]	HDT	HTE	YIELD	RATOON	TOTAL YIELD	WHOLE	TOTAL
120	CL261	CL261	3	80	35	10739	1772	12511	63.2	67.0
082	1102082	LGRU/LCSN/3/CFX-18//CCDR/9770532 DH2	4	76	30	9867	1763	11629	60.1	67.9
083	1004083	CL161/PSCL	3	78	35	9579	2049	11627	52.2	66.1
118	CL 142 AR	CL 142 AR	4	77	37	10238	1334	11572	49.5	65.1
106	1102106	CCDR/JEFF/3/CFX-18//CCDR/9770532 DH2	4	76	31	9589	1361	10950	61.5	68.3
085	1102085	9502008-A//AR 1188/CCDR/3/CFX-26/9702128	6	73	34	9258	1642	10900	60.4	68.7
094	1102094	9502008-A//AR 1188/CCDR/3/CFX-26/9702128	4	72	30	9249	1628	10877	61.4	68.0
088	1102088	CFX18/LM-1/3/9502008-A//AR 1188/CCDR	5	75	30	8997	1720	10717	53.1	64.3
112	1102112	CLPY 003 (CL 006)//CFX-26/9702128	6	77	34	9364	1214	10578	50.9	62.8
091	1102091	CCDR/JEFF/3/CFX-18//CCDR/9770532 DH2	4	73	31	9021	1425	10446	60.6	68.1
115	1102115	KATY/CPRS//JKSN/3/AR 1188/CCDR/4/CFX-26/9702128	5	72	31	8945	1453	10397	59.9	68.4
103	1102103	CFX-18//CCDR/9770532 DH2/3/9502008-A//…	4	77	31	8987	1408	10395	59.7	67.5
097	1102097	CCDR//CLPY 003	4	71	30	8423	1397	9820	57.5	67.3
109	1102109	KATY/CPRS//NWBT/…/3/9502008/4/CLR 9/5/…	5	75	29	8177	1329	9506	58.0	67.0
081	1001081	WLLS/ZHE733//19981434	4	72	30	7391	1600	8991	54.5	66.0
105	1001105	FRNS/5/LBNT/9902//NWBT/3/KATY/NWBT/4/LGRU	4	70	32	7663	1068	8731	34.9	62.6
102	1101102	STG02F5-07-067/STG02F5-04-034//STG03P-03-041	4	67	35	7242	1101	8343	36.9	62.6
119	M206	M206	5	67	34	7197	1044	8240	60.6	65.5
113	1003113	CPRS/CCDR	5	76	32	7063	965	8027	50.3	65.4
090	1001090	LBNT/9902/3/DAWN/9695//STBN/4/LGRU/5/WLLS/6/19981429	5	75	31	6734	1263	7996	45.2	60.7
089	1003089	CPRS/CCDR	5	75	32	6346	1450	7795	53.7	65.0
116	1003116	CPRS/CCDR	5	76	28	6462	1299	7760	60.2	69.0
096	1101096	STG02PR-02-067/STG02AC-15-002//RU0401084	5	71	27	6387	1184	7571	53.8	60.5
099	1101099	LMNT/QUILLA 65101//DIAMONTE	4	70	34	6571	948	7519	52.0	65.0

Continued.

Table 5. Continued.

ENT	SOURCE	PEDIGREE	VIG[1]	HDT	HTE	YIELD	RATOON	TOTAL YIELD	WHOLE	TOTAL
117	JMZ2	JAZZMAN-2	4	76	29	5809	1685	7494	60.2	66.5
100	1104100	RSMT//RXMT/IR36	4	80	31	6075	1385	7459	51.2	62.5
086	1103086	CPRS/CCDR	5	74	28	6223	1210	7433	53.4	67.9
108	1101108	LBNT/9902/3/DAWN/9695//STBN/4/LGRU/5/WLLS/6/19981429	5	72	32	6139	1242	7382	49.8	65.7
093	1101093	19991516/WLLS	5	71	29	5686	1622	7308	45.2	61.1
095	0803178	LGRU/LSCN/CF4-85	5	79	33	6029	1240	7269	55.9	66.0
092	1103092	CCDR/L202	5	79	34	5405	1531	6936	58.0	65.7
087	1001087	RU9201176/4/LBNT/STBN//NWBT/3/MILL/5/LGRU2/5/FRANCIS	4	78	30	5930	929	6859	46.6	62.0
084	1101084	STG97F5-01-004/UA99-128	5	78	31	5726	1116	6843	52.4	65.7
098	1003098	CPRS/NWBT//KATY/3/CCDR	5	75	29	5122	1391	6513	61.2	69.3
101	1003101	CF4-69/CCDR	6	75	32	5233	1102	6335	56.4	66.8
114	1104114	CPRS//NWBT/KATY	6	73	26	5024	1073	6097	50.7	66.0
107	1103107	MILL/JSMN	7	76	37	4887	947	5834	48.9	63.4
104	1103104	MILL/JSMN	7	76	35	4552	1109	5661	45.7	63.0
110	1103110	MILL/JSMN	7	77	36	4444	781	5225	47.4	62.1
111	1001111	RU0401084/IRAT 13//M-401	6	88	26	2835	764	3599	52.9	63.1
CV										
LSD										

[1] Subjective rating 0 to 9, where 0 = excellent, 9 = poor.

Table 6. Grain and milling yields and agronomic performance of entries in the 2011 Uniform Regional Rice Nursery, Group 6, Rice Research Station, Crowley, LA.

ENT	SOURCE	PEDIGREE	VIG[1]	HDT	HTE	YIELD	RATOON	TOTAL YIELD	WHOLE	TOTAL
145	1101145	WLLS/4484-1693	5	79	35	10707	1182	11890	51.5	65.8
122	1104122	CFX-18(CL161)/9804054	5	78	35	10070	1666	11735	53.2	66.2
152	1102152	9502008-A/DREW//CLR 20/3/9502008-A/DREW//CLR 20	5	77	31	9417	1554	10971	59.8	68.5
143	1102143	9502008-A/DREW//CFX 26/WELLS	5	76	31	9019	1940	10959	56.7	66.9
155	1102155	9502008-A/DREW//CLR 20/4/CPRS/KBNT//9502008-A	4	77	31	9137	1392	10529	57.3	67.7
136	1101136	FNCS/SHU 121-1655	5	71	35	8962	1550	10512	57.1	67.6
154	1104154	CFX-18(CL161)/PSCL	4	77	31	9107	1405	10512	57.8	67.4
157	1104157	RSMT//RXMT/IR36	5	73	30	7448	2115	9562	50.2	63.8
158	JZMN	JAZZMAN	4	79	35	7774	1740	9513	60.8	68.0
128	1102128	9502008//AR1188/CCDR/3/CCDR	4	74	31	7491	1764	9256	58.3	67.4
160	TGRT	TAGGART	4	78	34	7696	1437	9133	40.5	62.6
151	1101151	KDMxJASM 85	5	98	0	5209	3655	8864		
141	1003141	CPRS/CCDR	5	77	32	6976	1869	8845	51.8	66.2
123	1003123	CPRS/CCDR	4	76	30	6994	1847	8840	52.2	67.3
140	1102140	CCDR/JEFF//0402128	5	76	30	7141	1602	8744	53.0	66.4
125	1102125	CCDR/JEFF/3/9502008//AR1142/MBLE	5	72	31	7301	1221	8522	58.7	68.8
130	1101130	(4484-1693/FNCS)F4//FNCS	5	71	31	6930	1462	8393	54.9	67.8
142	1101142	KBNT/Q36194	5	77	33	7235	1133	8368	52.2	66.2
139	1001139	BASMATI-370/KATY/4/VSNTLM//L201/9NRZ/3/KATY/5/…	5	78	34	6392	1717	8109	42.0	58.6
137	1102137	CPRS/KBNT//9502008-A/3/RU0602180	5	74	29	6359	1599	7958	55.4	67.6
156	1104156	LMNT//TBNT/LA110	4	77	30	6497	1315	7812	50.1	62.0
149	1002071	LFTE/BNGL	5	78	31	7290	468	7758	53.5	67.8
127	1001127	RNS3/RU9101001	6	77	32	5804	1876	7680	39.6	60.2
131	1102131	WELLS/CTHL	5	71	28	5949	1583	7532	55.9	67.6

Continued.

Table 6. Continued.

ENT	SOURCE	PEDIGREE	VIG[1]	HDT	HTE	YIELD	RATOON	TOTAL YIELD	WHOLE	TOTAL
124	1101124	Oryzica Llanos 4/P 1274	4	102	0	3672	3714	7386		
129	1003129	SABR/CCDR	5	81	32	5933	1331	7263	58.1	65.7
146	1002146	NWBT/KATY//9902207x2/3/JSMN/DLLA//…	5	67	28	5462	1698	7160	61.4	69.9
135	1003135	CPRS/CCDR	5	76	29	5474	1621	7095	60.1	68.6
133	1001133	19991516/19981467	6	75	30	5043	2044	7087	46.5	62.2
121	0901121	RU9901133/DREW//RU0101093	4	67	26	5062	1911	6973	49.8	67.4
134	1102134	9502008-A/DREW/3/9502008-A//AR1188/CCDR	5	72	30	5382	1590	6972	56.2	69.4
144	0803144	CCDR/L202	5	75	29	5049	1547	6596	57.5	67.6
150	0903150	(JEFF//JEFF/O. RUFIPOGON)43_1-2	6	76	27	5469	1086	6555	53.6	66.2
132	1003132	CPRS/9901081	6	76	29	5029	1509	6538	57.7	69.6
153	1003153	CPRS/CCDR	5	74	26	5307	1084	6391	59.4	68.8
148	1001148	LBNT/9902/3/DAWN/9695//STBN/4/LGRU/5/WLLS/6/19981434	6	69	29	4511	1705	6215	42.5	65.3
147	0903147	CCDR/L202	5	75	27	4779	1338	6117	57.4	69.0
126	1103126	MILL/JSMN	8	75	34	4392	1481	5873	48.2	64.2
159	SABN	Sabine (SABN)	6	76	31	4921	852	5773	56.9	67.2
138	0903138	CCDR/L202	6	74	30	4303	1093	5396	55.0	69.0
CV										
LSD										

[1] Subjective rating 0 to 9, where 0 = excellent, 9 = poor.

Table 7. Grain and milling yields and agronomic performance of entries in the 2011 Uniform Regional Rice Nursery, Group 7, Rice Research Station, Crowley, LA.

ENT	SOURCE	PEDIGREE	VIG[1]	HDT	HTE	YIELD	RATOON	TOTAL YIELD	WHOLE	TOTAL
199	RNDO	RONDO	4	90	41	10999	1917	1958	49.4	66.5
200	CL152	CL152	5	77	33	9089	1698	1731	61.2	69.1
187	0903187	Carolina Gold/IR64//IR65610-24-3-6-3-2-3	5	85	43	9159	1347	1390	45.9	64.5
195	1102195	TRNS//CCDR/JEFF	5	68	31	8450	1896	1927	56.9	67.1
174	1102174	TRNS//CCDR/JEFF	4	73	31	8217	1559	1590	57.5	65.3
192	1102192	TRNS//CCDR/JEFF	5	75	29	8472	1139	1168	60.9	68.1
176	0801176	FRNS/6/LBNT/9902/3/DAWN/9695//STBN/4/LGRU/5/DREW	4	77	35	8158	1431	1466	54.9	66.6
197	1104197	LMNT*2/82CAY83//KATY/STBN	4	78	32	7420	1963	1994	43.1	64.1
194	1104194	CPRS/3/L201/TBNT/BLMT	5	79	33	7444	1753	1786	52.2	63.1
172	1103172	(MARS/CM101)/(LBNT_WX/RU8703190)	6	86	33	7310	1769	1802	53.8	66.1
171	1102171	BNGL/SHORT RICO/4/9502065/3/…	5	79	30	7995	1024	1054	63.4	67.1
178	1103178	(MARS/CM101)/(LBNT_WX/RU8703190)	5	86	33	7105	1846	1879	61.3	65.6
185	1101185	IRGA409/RXMT/5/NWBT/3/LBNT.9902/LBLE/4/MILL/6/…	5	81	34	7265	1532	1566	30.0	60.5
198	1104198	RSMT/KATY	5	80	31	7078	1622	1653	46.4	60.3
173	1101173	UA02-107/RU0202008//STG03F5-07-133	5	77	29	7061	1590	1620	51.2	64.4
161	1101161	LGRU//IRGA409/RXMT/3/CYBT	4	78	33	7193	1421	1454	52.3	65.2
180	1102180	TRNS//CCDR/9502008-A	5	67	29	7107	1477	1506	55.9	68.9
182	0801182	FRNS/6/LBNT/9902/3/DAWN/9695//STBN/4/LGRU/5/DREW	5	78	32	7549	1020	1052	51.9	66.4
164	1001164	STG02F5-07-067/STG02F5-04-034//STG03P-03-041	5	69	29	7048	1148	1177	59.5	68.2
168	1102168	BNGL/SHORT RICO//MERC	5	76	30	7273	742	771	60.2	67.3
191	1104191	LCSN/NWBT/KATY	6	72	30	6077	1849	1879	47.9	64.9
184	1003184	CPRS/NWBT//KATY/3/CCDR	5	78	31	6215	1592	1623	61.6	68.9
189	1102189	CHNR/3/9502008-A//AR 1188/CCDR	5	79	30	6185	1609	1638	59.6	69.4
183	1102183	CPRS/KBNT//9502008-A/3/9502008-A//AR 1188/CCDR	4	75	29	6494	1260	1289	56.4	68.5

Continued.

Table 7. Continued.

ENT	SOURCE	PEDIGREE	VIG[1]	HDT	HTE	YIELD	RATOON	TOTAL YIELD	WHOLE	TOTAL
167	1101167	IRGA409/RXMT/5/NWBT/3/LBNT/9902//LBLE/4/…	4	79	33	6597	1062	1096	44.8	63.9
166	1003166	CPRS/NWBT//KATY/3/CCDR	5	80	30	5847	1787	1817	60.5	67.9
162	1102162	BNGL/9502065//EARL	6	78	32	6289	1313	1345	58.3	66.3
181	1003181	CCDR/L202	4	75	29	6085	1390	1418	58.6	68.7
186	0904186	CFX-18(CL 161)/PSCL	6	90	45	7035	3297	10332	63.2	70.5
172	0803172	CPRS/CCDR	5	89	40	7462	2834	10296	66.3	72.3
175	0903175	CCDR/L202	5	88	42	7884	2411	10295	65.7	72.3
194	0904194	RSMT/RXMT/IR36	6	91	43	6010	4121	10131	58.9	71.2
166	1003166	CPRS/NWBT//KATY/3/CCDR	6	93	39	7141	2782	9923	63.9	70.1
198	1004198	PCOS/LMNT//GFMT//LMNT*2/82CAY83	6	95	37	7355	2467	9822	65.6	73.5
181	1003181	CCDR/L202	6	88	41	7047	2682	9729	64.2	72.1
190	1003190	CCDR/L202	6	84	40	7864	1286	9150	65.1	72.5
163	0903163	SABR/CCDR	7	94	48	6563	2579	9142	59.3	68.1
185	1001185	BASMATI-370/KATY/4/VSNTLM//L201/9NRZ/3/…	6	97	36	4739	3936	8675	48.8	67.2
164	1001164	STG02F5-07-067/STG02F5-04-034//STG03P-03-041	6	77	39	6496	2007	8503	70.5	73.3
169	1003169	CCDR/L202	7	89	43	6171	1318	7489	62.8	72.4
CV										
LSD										

[1] Subjective rating 0 to 9, where 0 = excellent, 9 = poor.

DATE OF PLANTING STUDIES

The purpose of these trials is to determine the grain yield, milling quality, and other agronomic characteristics of major rice varieties, experimental lines, and hybrids planted at various times. The choice of planting date can significantly impact growth, development, and yield, and the information generated from these trials is important for understanding the impact on the important economic and production characteristics associated with rice production.

Experiment: Date of Planting

Location: Rice Research Station, Crowley, Louisiana

Planting Method: Drill seeded

Plot size: 4.66 x 16 ft

Planting Dates: February 24, March 11, March 28, April 13, May 2, May 13, May 31, June 15

Entries: Caffey, Catahoula, Cheniere, CL111, CL151, CL152, CL261, Jazzman, Jazzman-2, Jupiter, LA 2085, LA 2140, and LAH10

Experimental Design: Replicated complete block design with three replications

Results: Results can be found in Tables 1-6, which are arranged across planting dates.

Table 1. Grain yields[†] of 13 rice varieties and experimental lines planted over eight planting dates, 2011. Rice Research Station, Crowley, LA.

	Planting Date								
Entry	Feb 24	March 11	March 28	April 13	May 2	May 13	May 31	June 15	Mean
LAH10	13707	12251	10427	9487	8276	7001	5159	6154	9058
CL151	11528	10558	9988	7721	6826	4813	4712	5360	7688
JUPITER	11070	9317	9398	8389	7203	5144	5247	4446	7527
CAFFEY	11234	9293	8366	7952	7025	4580	3956	3971	7047
CL111	10294	9682	9492	7820	6396	4356	3241	3669	6869
CATAHOULA	9685	8184	8485	8064	6696	4586	4548	4317	6821
CL152	10285	9720	8768	7057	6831	4587	3948	3230	6803
CL261	10556	9279	8497	6000	5174	5201	3440	3828	6497
LA 2085	9219	7996	8634	7781	6368	4253	3905	3504	6458
JAZZMAN	10794	7965	6883	7120	6498	3759	4168	3405	6324
LA 2140	9668	8760	8650	6075	5834	3858	3881	3500	6278
CHENIERE	9786	8480	8070	7218	6021	3607	3198	3472	6232
JAZZMAN-2	9224	6612	7712	7016	5569	4041	3742	3097	5877
Mean	10542	9084	8721	7515	6517	4599	4088	3996	

[†] Yield is in pounds of rough rice per acre at 12% moisture.

Table 2. Seedling vigor[†] of 13 rice varieties and experimental lines planted over eight planting dates, 2011. Rice Research Station, Crowley, LA.

	Planting Date								
Entry	Feb 24	March 11	March 28	April 13	May 2	May 13	May 31	June 15	Mean
CAFFEY	5	5	5	4	3	4	3	4	4
CATAHOULA	4	4	5	4	3	3	3	4	4
CHENIERE	5	5	5	5	4	4	3	4	4
CL111	3	3	4	3	3	2	2	3	3
CL151	4	4	4	4	3	3	2	3	3
CL152	5	5	5	5	4	4	3	4	4
CL261	3	3	4	3	3	2	2	3	3
JAZZMAN	4	5	6	4	3	4	2	4	4
JAZZMAN-2	4	5	6	5	3	4	3	4	4
JUPITER	5	6	5	4	4	4	4	4	5
LA2085	5	5	5	5	4	4	3	4	4
LA2140	4	4	5	5	4	3	3	4	4
LAH10	6	5	6	5	5	4	2	2	4
Mean	4	5	5	4	4	3	3	4	

[†] Subjective rating of 1- to 9 where 1 is the highest seedling vigor and 9 is the lowest seedling vigor.

Table 3. Days to 50% heading of 13 rice varieties and experimental lines planted over eight planting dates, 2011. Rice Research Station, Crowley, LA.

	Planting Date								
Entry	Feb 24	March 11	March 28	April 13	May 2	May 13	May 31	June 15	Mean
CAFFEY	91	85	81	79	79	75	72	68	79
CATAHOULA	86	81	80	77	75	73	67	62	75
CHENIERE	89	82	81	77	75	74	69	65	77
CL111	90	82	76	74	71	66	63	59	73
CL151	92	83	79	76	75	73	68	64	76
CL152	94	85	80	77	79	76	72	69	79
CL261	94	83	80	76	75	73	68	65	77
JAZZMAN	95	91	82	79	80	74	71	68	80
JAZZMAN-2	90	81	80	76	74	71	67	61	75
JUPITER	93	88	83	78	80	72	73	69	80
LA2085	90	80	80	76	74	72	67	61	75
LA2140	94	85	81	80	78	75	71	68	79
LAH10	97	90	82	79	78	74	68	64	79
Mean	92	84	80	77	76	73	69	65	

Table 4. Plant height† of 13 rice varieties and experimental lines planted over eight planting dates, 2011. Rice Research Station, Crowley, LA.

	Planting Date								
Entry	Feb 24	March 11	March 28	April 13	May 2	May 13	May 31	June 15	Mean
CAFFEY	36	35	38	39	36	35	33	35	36
CATAHOULA	33	35	38	41	43	35	35	39	37
CHENIERE	35	34	37	39	41	33	33	35	36
CL111	35	38	39	42	41	35	37	40	38
CL151	34	36	38	41	43	35	35	38	38
CL152	39	37	39	43	41	32	34	38	38
CL261	35	36	38	40	39	37	36	39	38
JAZZMAN	42	41	41	43	40	36	35	37	39
JAZZMAN-2	31	33	35	38	36	30	30	33	33
JUPITER	35	35	38	38	37	33	34	35	36
LA2085	34	35	38	39	39	34	34	39	37
LA2140	38	37	39	43	41	34	35	37	38
LAH10	48	48	49	53	47	44	45	44	47
Mean	37	37	39	41	40	35	35	38	

† Plant height in inches from the soil surface to the tip of the main panicle.

Table 5. Whole milling percentage† of 13 rice varieties and experimental lines planted over eight planting dates, 2011. Rice Research Station, Crowley, LA.

	Planting Date								
Entry	Feb 24	March 11	March 28	April 13	May 2	May 13	May 31	June 15	Mean
CAFFEY	60.6	63.6	55.7	54.3	50.6	55.4	61.4	60.2	57.7
CATAHOULA	61.0	59.1	55.4	53.3	44.0	45.5	59.3	65.6	55.4
CHENIERE	64.5	61.0	59.2	53.4	54.7	55.9	64.0	67.0	60.0
CL111	61.4	59.7	58.1	51.7	46.5	49.6	55.0	63.9	55.7
CL151	61.4	54.6	56.7	47.3	52.6	54.9	59.9	65.3	56.6
CL152	64.1	60.8	61.1	56.0	52.4	58.1	61.4	62.0	59.5
CL261	66.7	66.1	64.8	54.2	50.8	58.8	61.8	63.3	60.8
JAZZMAN	63.0	65.9	58.8	50.1	53.0	52.4	60.2	54.0	57.2
JAZZMAN-2	66.0	62.3	63.8	56.7	57.3	60.0	63.2	65.4	61.8
JUPITER	59.8	60.6	59.6	49.5	55.2	53.7	63.6	62.9	58.1
LA2085	61.5	60.3	56.9	51.4	51.3	52.5	58.0	64.2	57.0
LA2140	62.5	60.4	57.9	47.8	50.0	57.6	59.3	59.4	56.9
LAH10	58.2	61.9	54.7	48.1	55.8	57.1	63.7	57.4	57.1
Mean	62.4	61.3	58.7	51.8	51.9	54.7	60.8	62.4	

† The percentage of unbroken grains after the removal of the hulls and broken grains.

Table 6. Total milling percentage† of 13 rice varieties and experimental lines planted over eight planting dates, 2011. Rice Research Station, Crowley, LA.

	Planting Date								
Entry	Feb 24	March 11	March 28	April 13	May 2	May 13	May 31	June 15	Mean
CAFFEY	65.3	69.7	66.7	63.9	61.4	64.2	69.6	66.6	65.9
CATAHOULA	72.2	71.7	70.6	69.5	67.0	67.8	72.1	74.3	70.7
CHENIERE	73.0	72.8	72.6	70.4	69.6	68.8	72.5	74.2	71.7
CL111	71.0	68.6	70.8	68.8	66.1	65.5	69.1	72.3	69.0
CL151	71.7	66.9	69.9	66.3	67.8	68.2	71.3	73.4	69.4
CL152	71.4	71.3	70.9	70.4	67.6	69.1	71.9	71.8	70.6
CL261	69.6	69.0	69.0	66.1	62.6	65.6	68.4	70.6	67.6
JAZZMAN	68.6	71.8	69.5	67.1	66.7	66.1	69.6	68.1	68.4
JAZZMAN-2	71.8	69.2	71.0	69.3	68.9	67.9	70.2	72.5	70.1
JUPITER	66.9	66.7	65.7	59.0	63.4	60.6	68.5	68.2	64.9
LA2085	70.4	69.7	69.8	67.5	67.4	66.7	70.2	73.1	69.4
LA2140	69.8	68.4	68.5	65.6	65.2	67.0	69.2	69.6	67.9
LAH10	68.2	69.9	67.3	63.9	66.3	67.0	69.3	69.7	67.7
Mean	70.0	69.7	69.4	66.8	66.2	66.5	70.1	71.1	

† The cumulative percentage of broken and unbroken grains after the removal of the hulls.

DEVELOPMENT OF IMPROVED LONG-GRAIN, SPECIAL PURPOSE, AND HYBRID RICE VARIETIES FOR LOUISIANA

X.Y. Sha, S.D. Linscombe, W.K. Li, J.H. Oard, S.J. Theunissen, and B.J. Henry

The objectives of this state project are: 1) to develop superior conventional long-grain rice varieties with emphasis on yield potential, quality (milling, cooking, and processing), disease resistance, lodging resistance, seedling vigor, and early maturity; 2) to breed specialty rice varieties, especially Jasmine-, Basmati-, and Della-type long-grain rice, adapted to Louisiana and southern U.S. environmental conditions with superior cooking, agronomic, milling, and specific qualities, such as aroma and kernel elongation; and 3) to develop a comprehensive and competitive hybrid rice breeding program for Louisiana and the southern United States.

The 2011 field tests included 268 single cross and 52 backcrosses or top-cross transplanted F_1s, 250 space-planted F_2 populations, 38,400 segregating progeny rows, and about 900 yield plots. In order to develop Clearfield (CL) Jazzman varieties, an extensive backcross program was initiated in 2009 and is still underway. In 2011, two consecutive generations (BC_2 and BC_3) of Jazzman x CL line crosses with over 2,000 total plants were transplanted and selected. In addition, over 1,500 CL progeny rows were grown and evaluated with the help of Dr. Steve Linscombe. Screening for sheath blight and bacterial panicle blight resistance under artificial inoculation was carried out in collaboration with Dr. Don Groth on 4,000 F_2 and F_3 rows. DNA marker-assisted selection was continuously conducted on $BC_{1,}$ F_1 or F_1 plants of 3-way crosses for aroma, amylose content, gelatinization temperature, blast resistance, and Clearfield trait in collaboration with Dr. Jim Oard of the School of Plant, Environmental and Soil Sciences and Dr. Herry Utomo of the Rice Research Station. A total of 713 progeny rows was visually selected and hand-harvested as candidates of 2012 preliminary yield trials, while 3,890 rows were chosen for re-selection. Also, 325 new crosses were produced for the conventional long-grain and specialty rice breeding, and hybrid rice line development purposes, which included 32 backcrosses/top-crosses with a total of 3,200 seeds. An additional 420 test crosses were made for hybrid rice development. Due to possible NewPath drift, 2011 grain yields of non-CL breeding lines were much lower than that of 2010. However, 112 out of 336 total preliminary entries had higher grain yield and favorable agronomic characteristics compared with commercial non-CL checks. These will be further evaluated for milling, grain quality, and physicochemical properties in the laboratory before being evaluated in advanced yield trials. In advanced yield trials across Louisiana, 14 experimental lines, including LA2128, showed good yield potential and will be evaluated again in 2012.

The preliminary yield test included 377 promising breeding lines (185 replicated and 192 single-plot).Yield, milling, and agronomic performance of those lines are listed in Tables 1 to 9. Ten advanced long-grain (entries 022, 028, 031, 034, 125, 128, 131 134, 137, and 140), two specialty (entries 025 and 146), and one hybrid (entry 071) were tested in the Uniform Regional Rice Nursery (URN) and statewide multi-location commercial advanced (CA) yield trials. Test results of these lines are summarized in Table 10. A separate advanced yield (AY) trial consisting of 39 long-grain and 10 specialty experimental lines was tested at the Rice Research Station. Test results of the AY trial are listed in Table 10.

The 2011 Puerto Rico winter nursery included 6,560 progeny rows of long-grain, specialty rice, and hybrid materials. Most of these were F_3s for the generation advancement purpose.

The new Della-type aromatic line LA2140 (RU0802140) continued showing excellent yield potential. It was approved for official release as Della-2 by the LSU AgCenter in November 2011. Della-2 appears to have not only great yield advantage but also enhanced specialty characteristics over both Della and Dellrose.

Table 1. Agronomic and milling performance of 2011 Preliminary Yield Test (replicated), Group 9†, long-grain entries. Rice Research Station, Crowley, LA.

Entry	Pedigree	Vigor‡	Days to 50% Heading	Plant Height (cm)	Yield (lb/A)	Milling (%)§	
						Head	Total
801	KATY/CPRS//JKSN/3/AR1188/CCDR/4/CCDR/JEFF	4.0	80	85	4376	61.6	68.7
802	CCDR//CCDR/JEFF	3.5	79	77	3923	62.6	70.6
803	9502008//KATY/902207x2/3/0402082	5.0	79	84	2735	60.6	71.2
804	FRNS/4/TACAURI/3/CPRS//82CAY21/TBNT	5.5	80	84	6209	59.2	69.4
805	CPRS//9502008-A/DREW	4.0	81	77	3532	59.8	69.5
806	CCDR/FRNS	4.5	81	77	4907	n/a	n/a
807	CPRS/3/9502008//AR1188/CCDR	4.5	78	81	3646	n/a	n/a
808	CCDR//CCDR/JEFF	5.5	80	82	2930	n/a	n/a
809	CCDR/JEFF/3/9502008-A//AR1188/CCDR	5.0	79	84	2982	n/a	n/a
810	CCDR/JEFF/3/9502008-A//AR1188/CCDR	4.0	80	81	3564	61.9	71.1
811	9502008-A/DREW//AC101/DREW	4.0	80	80	4143	61.5	71.0
812	9502008-A/DREW//AC101/DREW	4.5	81	79	3245	n/a	n/a
813	CPRS/KBNT//9502008-A/3/RU0602180	4.5	77	79	3574	n/a	n/a
814	9502008-A//AR1188/CCDR/3/LGRU/LCSN	3.5	80	83	4628	59.6	68.9
815	CCDR/LGRU//AC101/DREW	4.0	78	84	4241	61.9	71.5
816	CCDR/4/9502008/3/MBLE//LMNT/LSBR-5	3.5	76	79	4885	59.3	71.0
817	CPRS/KBNT//9502008/3/0402088	5.0	79	82	4059	n/a	n/a
818	CPRS/3/9502008//AR1188/CCDR	4.5	78	83	3752	n/a	n/a
819	CCDR/JEFF/3/9502008//AR1142/MBLE	4.5	78	83	3429	n/a	n/a
820	CCDR/AC627	4.0	80	82	8101	62.4	70.9
821	KATY/CPRS//JKSN/3/AR1188/CCDR/4/AC427	4.0	79	86	4534	61.1	70.0
822	CCDR/RU0602137	4.5	80	83	3251	62.1	71.9
823	9502008//KATY/902207x2/3/0502091	3.0	80	85	5276	59.5	70.0
824	9502008//KATY/902207x2/3/0502091	4.0	80	80	4233	62.0	69.2
825	Cheniere	5.5	82	84	3717	n/a	n/a
c.v.%		16.8	1.7	3.8	19.7	2.3	1.4
$LSD_{0.05}$		1.5	2.7	6.4	1693	3.0	2.1

† Entries of Groups 1 to 8 are from Dr. Steve Linscombe's program and results are listed in the earlier part of this chapter.

‡ Subjective rating 1 to 7, where 1 = excellent, 7 = stand.

§ Data not available due to low stand caused by possible NewPath herbicide injury.

Table 2. Agronomic and milling performance of 2011 Preliminary Yield Test (replicated), Group 10, long-grain entries. Rice Research Station, Crowley, LA.

Entry	Pedigree	Vigor†	Days to 50% Heading	Plant Height (cm)	Yield (lb/A)	Milling (%)‡	
						Head	Total
826	CPRS/KBNT//9502008/3/9502008/DREW	3.5	78	75	4812	n/a	n/a
827	0402022/3/9502008//AR1142/MBLE	4.0	78	73	4004	56.9	68.4
828	9502008/DREW/3/0402097	4.0	79	74	3281	57.5	71.5
829	9502008/AR1121//KATY/CPRS//NWBT/…/3/CPRS/KBNT	4.5	83	74	3239	57.9	69.4
830	CCDR//CCDR/JEFF	4.0	81	83	3985	58.2	70.0
831	9502008-A/DREW//AC101/DREW	4.5	81	86	4251	57.9	69.7
832	CPRS/KBNT//9502008-A	3.5	79	77	3667	55.3	68.4
833	AC110/AC919	3.5	81	87	6032	62.0	71.1
834	9502008-A//AR1188/CCDR/3/WELLS/ZHE733	4.0	83	82	4470	60.8	71.0
835	0402022/0502094	4.5	80	80	3212	58.6	69.9
836	0402022/3/9502008//AR1142/MBLE	4.0	79	75	4341	58.2	69.9
837	CPRS/LGRU//RU0602128	4.5	81	79	3945	57.7	68.9
838	9502008/DREW/3/0502103	4.5	81	83	3615	n/a	n/a
839	DREW/CCDR//CCDR/JEFF	4.5	77	75	3848	52.7	69.2
840	0402022/3/CPRS/KBNT//9502008	4.0	80	79	4320	57.5	70.6
841	CCDR/3/9502008-A//AR1188/CCDR	4.0	82	85	4521	61.3	70.5
842	9502008/DREW/3/0402097	4.5	80	81	4181	59.3	70.0
843	RU0602128//CPRS/LGRU	5.0	79	74	4288	57.5	69.8
844	9502008//AR1142/MBLE/3/0502165	4.0	79	78	4759	56.0	69.3
845	9502008/DREW/3/0502103	4.0	76	83	4488	57.2	70.8
846	9502008/DREW/3/0502103	3.0	75	74	5292	56.4	68.5
847	DREW/CCDR//0302005	4.5	82	82	4221	52.7	67.6
848	JAF4DH3//9502008-A/DREW	3.5	79	81	4614	61.3	70.8
849	CCDR/JEFF//CCDR	4.5	81	78	3781	60.6	70.3
850	Francis	5.5	83	84	4283	53.6	69.3
c.v.%		14.7	2.0	4.3	24.3	2.8	1.2
$LSD_{0.05}$		1.3	3.4	7.0	2119	3.3	1.7

† Subjective rating 1 to 7, where 1 = excellent, 7 = stand.
‡ Data not available due to low stand caused by possible NewPath herbicide injury.

Table 3. Agronomic and milling performance of 2011 Preliminary Yield Test (replicated), Group 11, long-grain entries. Rice Research Station, Crowley, LA.

Entry	Pedigree	Vigor†	Days to 50% Heading	Plant Height (cm)	Yield (lb/A)	Milling (%)‡ Head	Milling (%)‡ Total
851	9502008//AR1188/CCDR/3/0402097	3.5	78	79	4551	60.5	70.6
852	CCDR/4/9502008/3/MBLE//LMNT/LSBR-5	3.5	78	78	4895	58.9	70.3
853	0502174/0402128	4.0	79	78	4917	62.5	70.7
854	CCDR/3/9502008-A//AR1188/CCDR	5.0	82	87	4290	n/a	n/a
855	CCDR/3/9502008-A//AR1188/CCDR	4.5	80	81	4273	n/a	n/a
856	AC627/3/CPRS/KBNT//9502008-A	5.0	81	83	8580	60.7	70.1
857	9502008//KATY/902207x2/3/0402082	5.0	82	82	3366	n/a	n/a
858	CCDR//CCDR/JEFF	4.5	80	83	4046	n/a	n/a
859	CPRS//CCDR/JEFF	5.0	81	85	4240	n/a	n/a
860	CCDR//CCDR/JEFF	4.5	80	81	3962	62.1	71.2
861	CCDR/JEFF/3/9502008//AR1142/MBLE	4.5	79	80	4107	n/a	n/a
862	0402022/3/CPRS/KBNT//9502008	4.5	78	77	3372	n/a	n/a
863	CCDR//CCDR/JEFF	4.0	80	84	4397	60.5	70.5
864	CCDR//9502008-A/DREW	3.5	78	78	5261	n/a	n/a
865	CCDR//CCDR/JEFF	4.5	78	80	3711	61.2	71.0
866	CCDR/AC919	3.5	76	88	5469	62.4	71.3
867	CPRS/KBNT//9502008-A	3.5	77	82	5532	57.4	69.3
868	CCDR/JEFF/3/9502008-A//AR1188/CCDR	4.0	77	81	5525	61.7	69.7
869	9502008-A//AR1188/CCDR/3/RU0602128	4.0	78	79	4424	60.0	70.0
870	CPRS/KBNT//9502008-A/4/9502008-A//AR1188/CCDR	4.0	75	78	4912	56.2	67.6
871	CPRS/KBNT//9502008-A/3/9901081/CCDR	4.5	76	81	5314	58.9	71.0
872	CPRS/KBNT//9502008-A	4.0	77	81	5245	57.2	69.3
873	CCDR/JEFF/3/9502008-A//AR1188/CCDR	4.0	77	83	4819	60.7	71.9
874	RU0301041/AC1158	5.0	75	88	7219	62.9	71.4
875	CL151	4.0	82	88	9198	59.6	69.6
c.v.%		16.2	1.9	3.9	20.9	2.5	1.5
$LSD_{0.05}$		1.4	3.1	6.5	2165	3.1	2.2

† Subjective rating 1 to 7, where 1 = excellent, 7 = stand.
‡ Data not available due to low stand caused by possible NewPath herbicide injury.

Table 4. Agronomic and milling performance of 2011 Preliminary Yield Test (replicated), Group 12, long-grain entries. Rice Research Station, Crowley, LA.

Entry	Pedigree	Vigor†	Days to 50% Heading	Plant Height (cm)	Yield (lb/A)	Milling (%)‡ Head	Milling (%)‡ Total
876	0402022/0502094	5.5	79	75	2971	n/a	n/a
877	9502008-A/DREW//CCDR/LGRU	6.0	81	79	2171	n/a	n/a
878	9502008-A/DREW//AC627	6.0	79	86	5648	55.7	70.2
879	KATY/CPRS//JKSN/3/AR1188/CCDR/4/CCDR/JEFF	6.5	80	85	3084	n/a	n/a
880	9502008-A//AR1188/CCDR/3/AC627	5.5	81	81	3646	n/a	n/a
881	9502008-A//AR1188/CCDR/3/CPRS/KBNT//9502008-A	4.5	79	82	4121	n/a	n/a
882	CCDR/LGRU//AC919	6.0	83	82	2148	n/a	n/a
883	9502008//KATY/902207x2/3/CCDR	6.5	81	72	1969	n/a	n/a
884	RU0702106/RU0301041	6.0	80	77	2514	n/a	n/a
885	CCDR/RU0501093	6.0	81	75	2657	n/a	n/a
886	CCDR/RU0702125	5.5	81	80	2666	n/a	n/a
887	CCDR/RU0702082	6.0	84	79	3216	n/a	n/a
888	CCDR/RU0702125	5.5	82	77	2359	n/a	n/a
889	CCDR/3/NWBT/KATY//9902207x2	6.0	83	78	2424	n/a	n/a
890	CCDR/RU0602128	5.5	82	81	3630	n/a	n/a
891	CPRS/KBNT//9502008-A/3/RU0602128	4.5	79	78	4080	n/a	n/a
892	CCDR/RU0702082	5.5	85	77	3473	n/a	n/a
893	CCDR/RU0602128	6.0	83	83	3318	n/a	n/a
894	CCDR/RU0702082	5.0	81	79	4115	60.1	70.0
895	CCDR/RU0602128	4.5	77	81	4386	58.5	70.4
896	CPRS/KBNT//9502008-A/3/RU0602128	5.0	78	87	4578	59.5	70.7
897	CCDR/3/NWBT/KATY//9902207x2	4.5	79	79	4376	59.4	69.4
898	AR1179/3/CPRS//…/4/WELLS/5/CCDR	6.0	80	78	3899	n/a	n/a
899	AR1179/3/CPRS//…/4/WELLS/5/9502008//KATY/902207x2	4.5	79	81	4867	52.5	68.0
900	Catahoula	5.0	80	83	3752	57.9	71.6
c.v.%		13.9	2.1	5.3	28.5	2.7	1.0
$LSD_{0.05}$		1.6	3.5	8.7	2022	3.8	1.6

† Subjective rating 1 to 7, where 1 = excellent, 7 = stand.
‡ Data not available due to low stand caused by possible NewPath herbicide injury.

Table 5. Agronomic and milling performance of 2011 Preliminary Yield Test (replicated), Group 13, long-grain entries. Rice Research Station, Crowley, LA.

Entry	Pedigree	Vigor†	Days to 50% Heading	Plant Height (cm)	Yield (lb/A)	Milling (%)‡ Head	Total
901	FRNS/CCDR//CCDR	5.0	83	84	4359	59.4	69.6
902	FRNS/CCDR//RU0702082	4.5	83	81	4882	59.4	69.6
903	FRNS/CCDR//CCDR	4.5	84	81	4247	n/a	n/a
904	CPRS/9901081/4/KATY/CPRS//JKSN/3/AR1188/CCDR	5.5	79	85	3738	57.8	69.3
905	FRNS/CCDR//RU0702082	6.0	86	79	3389	n/a	n/a
906	FRNS/CCDR//CCDR/JEFF	6.0	84	81	3455	n/a	n/a
907	CPRS/9901081//CCDR	5.0	80	78	4332	55.7	69.3
908	FRNS/CCDR//CCDR	6.0	86	78	3338	n/a	n/a
909	FRNS/CCDR//CCDR	6.5	86	82	3106	n/a	n/a
910	CPRS/9901081/4/KATY/CPRS//JKSN/3/AR1188/CCDR	6.0	82	83	2740	n/a	n/a
911	CPRS/9901081/4/KATY/CPRS//JKSN/3/AR1188/CCDR	6.0	80	83	3350	n/a	n/a
912	CCDR/9502008-A//RU0702134	5.5	80	79	3933	n/a	n/a
913	CCDR/9502008-A//RU0702134	6.5	81	84	2286	n/a	n/a
914	9502008-A//AR1188/CCDR/3/RU0602128	5.0	80	83	4425	n/a	n/a
915	CCDR/9502008-A//RU0702134	6.5	80	83	2044	n/a	n/a
916	9502008-A//AR1188/CCDR	5.0	81	78	3454	n/a	n/a
917	CCDR/9502008-A//RU0502091	5.5	82	79	3423	n/a	n/a
918	9502008-A//AR1188/CCDR/3/RU0702082	5.5	83	84	3489	n/a	n/a
919	9502008-A//AR1188/CCDR/3/RU0702134	5.0	78	77	3816	60.3	70.1
920	9502008-A//AR1188/CCDR	4.5	79	78	3777	58.8	68.7
921	9502008-A//AR1188/CCDR/3/RU0602128	4.5	79	82	4802	59.6	70.0
922	CCDR/9502008-A//RU0502091	5.5	80	83	3019	n/a	n/a
923	CCDR/9502008-A//RU0502094	5.5	82	79	3394	n/a	n/a
924	9502008-A//AR1188/CCDR	5.0	80	79	3256	n/a	n/a
925	Cocodrie	4.5	81	78	4306	n/a	n/a
c.v.%		12.5	2.5	4.5	25.7	4.0	1.8
$LSD_{0.05}$		1.4	4.2	7.5	1920	5.7	3.1

† Subjective rating 1 to 7, where 1 = excellent, 7 = stand.
‡ Data not available due to low stand caused by possible NewPath herbicide injury.

Table 6. Agronomic and milling performance of 2011 Preliminary Yield Test (replicated), Group 14, long-grain and specialty entries. Rice Research Station, Crowley, LA.

Entry	Pedigree	Vigor†	Days to 50% Heading	Plant Height (cm)	Yield (lb/A)	Milling (%)‡ Head	Milling (%)‡ Total
926	9502008-A//AR1188/CCDR/3/RU0602128	3.5	77	79	5169	58.8	69.1
927	CCDR/9502008-A//RU0502091	3.0	76	73.5	4899	58.6	71.2
928	9502008-A//AR1188/CCDR/3/RU0702082	4.5	82	81	4358	62.3	71.4
929	CTHL/4/NWBT/KATY//9902207x2/3/CCDR	5.5	78	78	3192	n/a	n/a
930	CBNT/3/MILL//9502008/LGRU	6.0	80	77	2932	61.2	72.4
931	CCDR/3/KATY/CPRS//JKSN/4/CCDR/JEFF	5.5	82	81.5	3522	n/a	n/a
932	CCDR/JEFF//CCDR/9502008-A	5.5	81	82	3705	n/a	n/a
933	JZMN/DLRS	6.5	83	77.5	1435	n/a	n/a
934	CCDR/4/L202/Leah//Toro/3/IR67016	4.5	88	93	6529	65.8	71.4
935	RU0402042/3/JSMN/DLLA/96SP287	4.5	84	72.5	4255	58.6	70.5
936	CPRS/KBNT//DLRS	4.5	87	74.5	4855	64.6	72.0
937	JZMN//A-301/KATY	6.5	82	81	3355	61.0	69.2
938	9502008//KATY/9902207x2/3/RU0302125	5.5	84	80.5	3471	62.4	69.0
939	JSMN/DLLA//DLLA/3/JZMN	6.0	85	81	2245	n/a	n/a
940	CCDR/JEFF//RU0302125	5.5	82	82.5	3263	n/a	n/a
941	RU0602103/RU0302125	6.0	78	77.5	2987	n/a	n/a
942	CPRS/KBNT//9502008-A/3/JSMN/DLLA/96SP287	5.0	82	81	3629	n/a	n/a
943	RU0302125/AC780	5.0	79	83.5	2916	64.3	70.7
944	RU0402042/3/JSMN/DLLA/96SP287	5.0	83	82	6185	66.8	71.2
945	CCDR/JEFF/3/JSMN/DLLA//96SP287	4.5	79	87	4343	59.7	69.1
946	L202/Leah//Toro/3/IR67016/4/97 KDM X2-1/Wells//…	5.0	82	78.5	5518	55.2	68.1
947	RU0302125/4/9502008-A//AR 1188/CCDR/3/…	5.0	79	89	4339	62.9	68.7
948	RU0302125/RU0502189	6.0	75	77.5	3407	n/a	n/a
949	07PY823/07PY824	4.0	77	74	4510	n/a	n/a
950	Jazzman	4.5	89	90.5	6535	62.0	69.4
c.v.%		12.5	1.5	5.6	14.6	2.5	2.3
$LSD_{0.05}$		1.3	2.5	9.4	1225	3.3	3.4

† Subjective rating 1 to 7, where 1 = excellent, 7 = stand.

‡ Data not available due to low stand caused by possible NewPath herbicide injury.

Table 7. Agronomic and milling performance of 2011 Preliminary Yield Test (replicated), Puerto Rico bulks, Clearfield (CL) Jazzman-type entries. Rice Research Station, Crowley, LA.

Entry	Pedigree	Vigor‡	Days to 50% Heading	Plant Height (cm)	Yield (lb/A)	Milling (%) Head	Milling (%) Total
111†	JZMN/08CLR004//JZMN	4.5	81	111	4351	46.3	66.4
112	JZMN/08CLR004//JZMN	4.0	78	105	3620	49.6	65.5
113	JZMN/08CLR004//JZMN	4.5	77	103	3946	53.6	64.9
114	JZMN/08CLR004//JZMN	4.0	81	109	4470	45.9	64.4
115	JZMN/08CLR004//JZMN	3.5	75	109	4616	51.5	65.4
116	JZMN/08CLR004//JZMN	3.5	77	114	4750	49.8	64.8
117	JZMN/08CLR004//JZMN	4.0	78	107	4593	53.2	64.9
118	JZMN/08CLR004//JZMN	4.0	77	102	3923	53.8	66.8
119	JZMN/08CLR004//JZMN	3.5	78	106	5321	54.7	66.8
120	JZMN/08CLR004//JZMN	4.5	78	105	4596	55.9	68.2
121	JZMN/08CLR004//JZMN	4.0	79	99	4981	53.2	65.6
122	JZMN/08CLR004//RU0802146	4.5	76	93	3053	44.6	66.1
123	JZMN/08CLR004//RU0802146	4.5	75	89	4182	56.9	68.6
124	JZMN/08CLR004//RU0802146	5.5	74	97	3733	52.9	66.6
125	JZMN/08CLR004//RU0802146	4.5	72	101	4171	54.7	66.8
126	JZMN/08CLR004//RU0802146	5.0	74	86	4039	58.6	67.5
127	JZMN/08CLR004//RU0802146	5.0	75	91	3825	57.4	67.0
128	JZMN/08CLR004//RU0802146	3.5	75	89	3836	43.4	66.2
129	JZMN/08CLR004//RU0802146	4.0	75	91	4807	57.0	66.6
130	JZMN/08CLR004//RU0802146	4.5	77	96	4404	57.7	67.9
131	JZMN/08CLR004//RU0802146	4.5	78	88	4198	55.3	66.6
132	JZMN/08CLR004//08AY001	5.0	75	93	4420	56.1	66.8
133	JZMN/08CLR004//08AY001	6.0	76	92	4702	56.4	68.0
134	JZM2//07PY824/08CLR003	3.5	75	85	4372	57.4	66.7
135	JZM2//07PY824/08CLR003	4.5	77	88	4823	58.9	67.8
136	JZM2//07PY824/08CLR003	4.0	78	91	4435	59.7	67.7
137	JZM2//07PY824/08CLR003	3.5	77	90	4670	55.1	66.1
138	JZM2//07PY824/08CLR003	4.0	73	87	2486	51.8	64.2
139	CL151	2.5	74	92	2681	34.6	58.3
140	CL111	2.0	72	95	1434	39.3	59.6
144	CL152	3.0	79	96	5470	58.3	68.6
145	CL161	3.0	77	90	4742	57.7	67.8

† Entries of 001-110 are from Dr. Steve Linscombe's program and results are listed in the earlier part of this chapter.
‡ Subjective rating 1 to 7, where 1 = excellent, 7 = stand.

Table 8. Agronomic and milling performance of 2011 Preliminary Yield Test (replicated), Puerto Rico bulks, long-grain entries. Rice Research Station, Crowley, LA.

Entry	Pedigree	Vigor†	Days to 50% Heading	Plant Height (cm)	Yield (lb/A)	Milling (%)	
						Head	Total
11PRS001	RU0902155/RU0902131	3.5	71	97	4432	55.1	66.8
11PRS002	RU0902174/RU0403166	4.0	75	94	5043	59.6	69.9
11PRS003	RU0902174/RU0403166	3.5	76	98	4535	53.4	70.6
11PRS004	RU0902128/RU0602128	3.0	72	94	4725	57.5	68.4
11PRS005	RU0902137/RU0403166	4.0	71	95	4652	55.7	69.8
11PRS006	RU0902137/RU0403166	3.5	71	96	4994	51.6	68.2
11PRS007	RU0902140/LMNT	4.0	72	97	4628	52.5	68.0
11PRS008	RU0802031/RU0902125	3.0	71	93	4587	53.8	68.9
11PRS009	RU0802031/RU0902140	3.0	70	93	4294	52.3	67.2
11PRS010	RU0802134/RU0902155	4.0	70	91	4145	57.2	69.7
11PRS011	RU0802134/RU0902134	3.0	71	91	4945	55.4	70.4
11PRS012	RU0502068/08PY755	3.0	72	93	5056	50.9	67.2
11PRS013	RU0502068/08PY755	3.0	71	89	5222	51.4	67.6
11PRS014	Cheniere	3.0	75	88	4721	59.1	70.4
11PRS015	Jazzman	3.5	79	96	5334	58.6	69.3
c.v.%		10.7	0.9	4.0	8.1	3.3	1.5
$LSD_{0.05}$		0.8	1.4	7.9	824	3.8	2.3

† Subjective rating 1 to 7, where 1 = excellent, 7 = stand.

Table 9. Agronomic and milling performance of 2011 Preliminary Yield Test, single plot (SP), long-grain entries. Rice Research Station, Crowley, LA.

Entry	Pedigree	Vigor†	Days to 50% Heading	Plant Height (cm)	Yield (lb/A)	Milling (%) Head	Milling (%) Total
11SP001	RU0502103/RU0502091	3.0	77	78	4100	56.0	69.2
11SP002	CCDR//CCDR/JEFF	4.0	78	81	6962	62.7	72.0
11SP003	AR1121/3/CPRS//82CAY21/TBNT/4/9502008-A/DREW	4.0	77	69	2439	60.3	71.3
11SP004	CPRS/KBNT//9502008-A	4.0	77	76	3417	54.5	68.5
11SP005	DREW/CCDR//0302005	5.0	78	75	2510	55.6	69.8
11SP006	0402022/3/CPRS/KBNT//9502008	4.0	78	77	4194	61.7	71.4
11SP007	0402022/0502094	5.0	80	75	4223	62.6	69.5
11SP008	CCDR/RU0602128	5.0	82	80	3605	61.5	71.3
11SP009	9502008//AR1188/CCDR/3/0502165	5.0	77	75	3703	55.7	70.6
11SP010	9502008/AR1121//CPRS/KBNT	5.0	80	75	3828	60.7	69.6
11SP011	CCDR/3/CPRS/KBNT//9502008-A	5.0	80	77	3835	59.7	68.8
11SP012	0402022/3/9502008//AR1142/MBLE	5.0	81	80	3782	62.1	70.8
11SP013	CCDR/4/9502008/3/MBLE//LMNT/LSBR-5	5.0	77	78	4640	63.6	73.5
11SP014	CPRS/KBNT//9502008/3/0402088	4.0	77	77	5560	60.0	71.7
11SP015	0402022/3/9502008//AR1142/MBLE	4.0	76	76	4410	63.6	71.7
11SP016	NWBT/KATY//9902207x2/3/9502008-A/DREW	4.0	78	71	4699	61.9	69.0
11SP017	CCDR/LGRU//AC101/DREW	4.0	79	76	3888	63.4	70.9
11SP018	CCDR/JEFF//0402128	5.0	77	77	2739	61.3	71.1
11SP019	CCDR/0502085	4.0	78	80	4044	63.4	73.1
11SP020	CPRS//CCDR/JEFF	3.0	78	76	5907	64.8	70.8
11SP021	CCDR/RU0602137	4.0	82	86	5780	63.9	73.7
11SP022	9502008-A//AR1188/CCDR/3/LGRU/LCSN	4.0	77	80	5329	64.8	74.4
11SP023	CCDR/0502094	5.0	78	83	4100	65.7	74.1
11SP024	9502008-A/DREW//AC627	5.0	77	85	4787	62.0	70.9
11SP025	Catahoula	5.0	80	78	4033	60.2	73.4
11SP026	0402022/3/CPRS/KBNT//9502008	4.0	75	76	3201	54.2	68.4
11SP027	CPRS//9502008/DREW	4.0	77	80	4082	60.6	71.0
11SP028	9502008/DREW/3/0402097	5.0	78	71	2845	60.3	71.9
11SP029	NWBT/KATY//9902207x2/3/0302005	4.0	73	82	5018	56.7	69.2
11SP030	9502008//AR1188/CCDR/3/0502165	3.0	78	70	5595	59.7	71.0
11SP031	CPRS/4/9502008/3/MBLE//LMNT/20001-5	3.0	81	76	5771	61.7	71.2
11SP032	9502008/AR1121//DREW/3/CPRS//82CAY21/TBNT	5.0	81	72	3436	63.7	71.5
11SP033	JAF4DH3/3/9502008-A//AR1188/CCDR	5.0	75	79	2528	60.4	70.3
11SP034	0402022/3/CPRS/KBNT//9502008	4.0	77	84	4310	62.6	71.9
11SP035	CCDR/JEFF/3/9502008-A//AR1188/CCDR	4.0	77	75	4658	59.9	70.4
11SP036	CPRS/WELLS	4.0	77	76	4438	58.6	68.4
11SP037	CPRS/RU0602128	4.0	76	72	5467	63.0	71.0
11SP038	CPRS/KBNT//9502008-A/3/AC627	4.0	81	80	7448	63.1	71.8
11SP039	9502008//AR1188/CCDR/3/0502165	4.0	77	73	3894	64.1	72.0
11SP040	0402022/0502094	4.0	76	75	4261	58.9	69.2
11SP041	CCDR//LGRU/LCSN	4.0	76	80	4862	57.7	71.5
11SP042	CCDR//9502008//AR1188/CCDR	5.0	80	75	3797	62.1	71.6
11SP043	9502008//KATY/9902207x2/3/AC105DH2/AC101DH2	5.0	80	75	3011	63.1	72.2
11SP044	KATY/CPRS//NWBT/…/3/9502008/4/NWBT/KATY//…	5.0	82	76	4554	61.1	69.8
11SP045	CCDR//CCDR/JEFF	4.0	80	76	3212	58.8	69.6
11SP046	CPRS/LGRU//RU0602131	4.0	80	80	3622	61.8	72.8
11SP047	9502008//AR1188/CCDR/3/CCDR	4.0	77	78	4136	59.2	71.6
11SP048	CPRS/LGRU/3/9502008-A//AR1188/CCDR	4.0	78	77	3924	58.1	69.3
11SP049	9502008/DREW/3/0502103	4.0	78	71	3145	59.9	71.3

Continued.

Table 9. Continued.

Entry	Pedigree	Vigor†	Days to 50% Heading	Plant Height (cm)	Yield (lb/A)	Milling (%) Head	Milling (%) Total
11SP050	Cheniere	4.0	80	77	4289	61.2	71.3
11SP051	CPRS/4/TACAURI/3/CPRS//L202/TBNT	3.0	80	81	5753	59.9	68.2
11SP052	CCDR/3/9502008-A//AR1188/CCDR	3.0	78	76	3599	58.1	71.5
11SP053	9502008/DREW/3/0502103	4.0	75	62	2759	60.6	70.9
11SP054	0402022/3/CPRS/KBNT//9502008	3.0	74	74	5181	58.7	70.4
11SP055	CCDR//CCDR/JEFF	4.0	77	75	3842	62.4	73.1
11SP056	CPRS//9502008/DREW	4.0	74	70	3520	59.6	71.3
11SP057	CPRS/NWBT//KATY/3/CCDR/4/AC622	3.0	79	86	8403	62.9	72.8
11SP058	CPRS//CCDR/JEFF	5.0	76	75	3006	56.5	71.1
11SP059	9502008/DREW/3/0502103	4.0	77	84	4595	61.2	69.7
11SP060	CCDR/JEFF//0402128	4.0	78	75	4563	56.0	70.1
11SP061	9502008//KATY/902207x2/3/0402088	4.0	78	74	4266	63.2	70.9
11SP062	9502008//AR1188/CCDR/3/CCDR	4.0	79	73	4514	56.9	70.9
11SP063	CCDR//CCDR/JEFF	4.0	79	66	4732	62.2	72.3
11SP064	0502171/9302065	4.0	76	72	3961	61.4	71.3
11SP065	9502008//AR1142/MBLE/3/0502165	4.0	77	74	3933	58.8	69.2
11SP066	9502008//AR1188/CCDR/3/CCDR	4.0	79	72	4233	60.7	71.0
11SP067	9502008//AR1142/MBLE/3/0502091	5.0	77	75	3259	54.1	69.7
11SP068	EPAGRI 107/LMNT//9502008-A/DREW	4.0	81	72	3746	60.9	71.1
11SP069	9502008//AR1142/MBLE/3/0502165	4.0	80	72	3716	56.0	69.3
11SP070	CCDR/AC1094	5.0	79	78	5608	62.2	71.1
11SP071	CCDR/JEFF//RU0601004	4.0	74	78	3939	56.6	69.5
11SP072	CCDR//CCDR/JEFF	4.0	77	78	4596	61.3	72.7
11SP073	CCDR/3/9502008-A//AR1188/CCDR	5.0	77	75	3061	61.9	72.1
11SP074	CPRS/KBNT//9502008-A	5.0	77	72	3486	58.5	71.6
11SP075	Francis	5.0	81	77	3475	54.6	69.4
11SP076	FRNS/CCDR//RU0502094	4.0	81	82	4302	65.3	73.1
11SP077	CPRS/WELLS	4.0	78	86	5417	65.1	71.7
11SP078	0402022/3/CPRS/KBNT//9502008	4.0	78	80	4221	61.1	73.1
11SP079	CCDR/3/9502008-A//AR1188/CCDR	5.0	77	81	3887	58.4	71.8
11SP080	CCDR/3/9502008-A//AR1188/CCDR	4.0	78	84	5612	56.6	71.5
11SP081	CCDR/LGRU//AC1048	4.0	78	80	8503	60.7	70.8
11SP082	9502008//AR1188/CCDR/3/0502165	4.0	78	82	5059	62.9	72.6
11SP083	0402022/3/9502008//AR1142/MBLE	4.0	78	70	4001	58.5	70.5
11SP084	CCDR/AC941	5.0	80	78	7029	63.7	71.6
11SP085	CCDR/RU0602137	5.0	79	80	4439	59.6	72.5
11SP086	CCDR/AC627	4.0	78	82	7882	60.2	72.1
11SP087	CCDR/AC622	5.0	80	89	7590	58.9	70.6
11SP088	CCDR/AC427	4.0	77	84	4826	62.3	72.1
11SP089	CCDR/AC627	5.0	79	79	7557	62.6	72.5
11SP090	CCDR/AC622	5.0	80	92	7267	63.8	72.0
11SP091	CCDR/RU0602137	5.0	79	80	3606	58.9	69.3
11SP092	9502008-A//AR1188/CCDR/3/CCDR/JEFF	4.0	78	79	5115	59.7	72.5
11SP093	CCDR/AC622	4.0	78	83	7117	59.2	69.3
11SP094	CCDR//EPAGRI 107/LMNT	4.0	79	90	8532	59.1	69.2
11SP095	CCDR/AC1048	4.0	81	76	7539	57.4	68.2
11SP096	CCDR/JEFF//RU0301041	5.0	77	77	2885	60.0	75.3
11SP097	CCDR/JEFF//RU0601004	4.0	78	74	3182	60.3	71.7
11SP098	CPRS/KBNT//9502008-A/3/PRSD	4.0	78	80	3565	62.3	70.7
11SP099	CCDR/AC919	4.0	75	85	3920	58.0	70.4

Continued.

Table 9. Continued.

Entry	Pedigree	Vigor†	Days to 50% Heading	Plant Height (cm)	Yield (lb/A)	Milling (%) Head	Milling (%) Total
11SP100	CL151	4.0	81	87	8738	59.0	70.9
11SP101	CPRS/LGRU//LGRU/3/AC627	4.0	78	80	6458	60.0	69.4
11SP102	9502008-A//AR1188/CCDR/3/AC690	4.0	79	80	6396	65.2	72.8
11SP103	KATY/CPRS//JKSN/3/AR1188/CCDR/4/AC427	5.0	80	77	6590	60.2	71.5
11SP104	KATY/CPRS//JKSN/3/AR1188/CCDR/4/AC1094	4.0	80	85	6729	66.0	71.3
11SP105	CPRS/NWBT//KATY/3/CCDR/4/AC622	5.0	82	83	6652	63.2	72.8
11SP106	CCDR/LGRU//AC101/DREW	4.0	78	75	3533	58.7	71.4
11SP107	JAF4DH3/3/9502008-A//AR1188/CCDR	4.0	78	80	4624	61.1	70.3
11SP108	9502008-A//AR1188/CCDR/3/RU0602025	4.0	78	85	4722	58.1	68.7
11SP109	9502008-A//AR1188/CCDR/3/LGRU/LCSN	4.0	78	84	5204	62.7	71.7
11SP110	RU0602128//CPRS/LGRU	4.0	78	78	4568	60.0	70.7
11SP111	9502008//KATY/902207x2/3/9502008-A//AR1188/CCDR	5.0	77	85	3819	59.7	73.1
11SP112	0402022/3/9502008//AR1188/CCDR	4.0	77	73	4510	56.6	70.1
11SP113	9502008//KATY/902207x2/3/9502008-A//AR1188/CCDR	5.0	79	80	3238	62.6	70.6
11SP114	RU0602103/3/9502008-A//AR1188/CCDR	5.0	78	82	3943	63.2	72.8
11SP115	CPRS/KBNT//9502008-A/3/AC627	4.0	77	82	7120	59.9	71.9
11SP116	CPRS/RU0602128	4.0	76	80	4527	63.8	72.3
11SP117	CCDR/RU0602128	4.0	79	82	4669	60.2	72.4
11SP118	CCDR/3/NWBT/KATY//9902207x2	4.0	78	88	3724	58.7	72.3
11SP119	CPRS/RU0602131	4.0	76	78	4366	63.3	70.1
11SP120	CCDR/RU0702134	3.0	77	90	5888	65.4	73.2
11SP121	CPRS/KBNT//9502008-A/3/AC627	3.0	78	82	8345	62.7	69.7
11SP122	CPRS/9502008//KATY/902207x2	3.0	77	83	6265	65.5	73.9
11SP123	CCDR/RU0502094	4.0	78	78	4524	60.6	71.6
11SP124	CCDR/RU0501093	4.0	75	75	5497	60.3	72.7
11SP125	Wells	4.0	80	79	4809	50.5	68.8
11SP126	CPRS/KBNT//9502008-A/3/RU0602128	4.0	76	82	4176	55.8	68.1
11SP127	CPRS/KBNT//9502008-A/3/RU0702131	4.0	76	90	4173	52.8	68.3
11SP128	CPRS/RU0702125	4.0	76	77	2868	57.9	69.3
11SP129	CCDR/RU0702134	3.0	77	81	4507	60.2	71.3
11SP130	CPRS/KBNT//9502008-A/3/RU0602131	3.0	74	83	5495	58.1	69.3
11SP131	CCDR/RU0602128	4.0	77	79	5313	63.3	72.8
11SP132	CCDR/RU0702134	4.0	77	78	4072	63.2	71.0
11SP133	CPRS/RU0702034	4.0	78	82	6243	63.5	71.2
11SP134	CPRS/KBNT//9502008-A/3/RU0602025	5.0	78	76	3537	59.8	71.5
11SP135	CCDR/RU0602128	5.0	80	83	3403	59.9	71.7
11SP136	CCDR/RU0502094	5.0	77	81	3175	65.6	71.9
11SP137	CPRS/RU0702134	5.0	77	78	2531	64.6	71.8
11SP138	CPRS/KBNT//9502008-A/3/RU0702131	5.0	78	80	3333	54.6	69.0
11SP139	CPRS/RU0702034	4.0	77	79	3908	58.2	68.3
11SP140	SPRG/RU0602131	4.0	73	68	3296	54.5	70.2
11SP141	CCDR/JEFF//RU0702034	4.0	81	83	6838	61.8	70.5
11SP142	RU0702106/RU0702131	4.0	79	79	4411	52.9	67.3
11SP143	AR1179/3/CPRS//…/4/WELLS/5/CCDR/JEFF	5.0	80	77	3156	56.2	67.8
11SP144	CCDR/JEFF//RU0702034	4.0	81	83	6828	59.5	68.9
11SP145	AR1179/3/CPRS//…/4/WELLS/5/CCDR/JEFF	4.0	81	81	4308	53.0	68.3
11SP146	FRNS/CCDR//CCDR	4.0	80	71	4085	62.6	72.4
11SP147	RU0702106/RU0601013	4.0	76	73	4120	59.0	71.0
11SP148	RU0702106/RU0702031	4.0	80	97	5758	60.9	70.5
11SP149	CPRS/9901081//RU0702094	4.0	77	79	4306	59.6	70.2

Continued.

Table 9. Continued.

Entry	Pedigree	Vigor†	Days to 50% Heading	Plant Height (cm)	Yield (lb/A)	Milling (%) Head	Milling (%) Total
11SP150	RU0902125	4.0	77	82	4232	62.0	72.0
11SP151	FRNS/CCDR/3/9502008//KATY/902207x2	3.0	81	85	4769	59.9	71.4
11SP152	FRNS/CCDR//RU0502094	4.0	80	82	4158	60.7	71.5
11SP153	FRNS/CCDR//CPRS	5.0	81	73	3276	59.3	70.8
11SP154	FRNS/CCDR//CCDR/JEFF	4.0	79	74	4276	59.5	72.5
11SP155	CPRS/9901081//CCDR	4.0	77	69	4352	57.6	69.4
11SP156	CPRS/9901081//CCDR	4.0	76	81	4045	57.9	71.2
11SP157	FRNS/CCDR/3/9502008//KATY/902207x2	4.0	81	85	4691	61.1	71.7
11SP158	FRNS/CCDR//RU0502094	4.0	82	80	4314	60.6	71.1
11SP159	CCDR/9502008-A//LCSN	4.0	77	83	7848	59.0	68.9
11SP160	FRNS/CCDR//RU0702082	5.0	80	86	5068	63.9	72.8
11SP161	FRNS/CCDR/3/9502008//KATY/902207x2	4.0	80	84	4292	63.2	72.1
11SP162	9502008-A//AR1188/CCDR/3/AC627	4.0	79	83	7783	61.5	70.0
11SP163	CCDR/9502008-A//AC627	4.0	79	86	7950	62.5	69.3
11SP164	9502008-A//AR1188/CCDR/3/AC627	4.0	80	85	7765	63.2	71.4
11SP165	9502008-A//AR1188/CCDR/3/AC627	4.0	80	85	7315	61.6	70.8
11SP166	RU0602103/3/9502008-A//AR1188/CCDR	4.0	77	78	4617	57.6	70.7
11SP167	RU0602103/RU0702131	4.0	76	75	4207	57.3	71.6
11SP168	9502008-A//AR1188/CCDR/3/RU0301041	4.0	78	78	4069	62.1	70.6
11SP169	9502008-A//AR1188/CCDR/3/RU0702134	4.0	76	80	5024	64.5	72.1
11SP170	9502008-A//AR1188/CCDR/3/AC627	4.0	77	92	8153	62.3	71.4
11SP171	RU0602103/3/9502008-A//AR1188/CCDR	4.0	77	82	4731	59.4	71.5
11SP172	CCDR/9502008-A//RU0301041	3.0	76	85	4442	61.8	70.0
11SP173	9502008-A//AR1188/CCDR/3/RU0702134	4.0	76	73	3171	64.3	71.3
11SP174	9502008-A//AR1188/CCDR	4.0	75	81	4337	61.6	70.6
11SP175	LAH10	3.0	88	115	7983	62.9	69.0
11SP176	9502008-A//AR1188/CCDR	4.0	77	80	2771	61.5	68.5
11SP177	9901081/CCDR//LMNT	3.0	75	83	4613	55.5	69.3
11SP178	9502008-A//AR1188/CCDR/3/RU0502091	4.0	76	86	4057	58.3	68.8
11SP179	CCDR/9502008-A//RU0301041	3.0	75	79	4554	63.5	73.5
11SP180	AC105/3/CCDR//CCDR/JEFF	4.0	77	70	4234	60.6	70.7
11SP181	CCDR/3/KATY/CPRS//JKSN/4/MILL//9502008/LGRU	4.0	79	80	3745	63.6	70.5
11SP182	CTHL/4/NWBT/KATY//9902207x2/3/CCDR	5.0	79	84	2766	61.4	73.0
11SP183	JSMN/DLLA//DLLA/3/JZMN	6.0	83	77	4038	64.5	71.1
11SP184	JZMN/DLRS	6.0	87	80	3031	61.4	71.9
11SP185	9502008-A//AR 1188/CCDR/3/04PY910	6.0	80	91	4414	56.0	68.8
11SP186	DLRS//AR1142/LA 2031/3/RU0402085	5.0	77	74	2574	59.4	70.2
11SP187	DLRS//AR1142/LA 2031/3/RU0402085	6.0	82	87	2667	62.9	70.6
11SP188	CPRS//NWBT/KATY/3/RU0302125	4.0	74	78	3071	60.1	70.2
11SP189	JSMN/DLLA//DLLA/3/JZMN	5.0	82	87	5264	64.6	69.6
11SP190	97KDMX2-1/WELLS/3/JSMN/DLLA/LLEAH/DLLA	5.0	82	78	2335	47.7	69.2
11SP191	CPRS/KBNT//9502008-A/3/JSMN/DLLA/96SP287	7.0	80	95	2140	64.4	72.4
11SP192	RU0302125/3/JA/9502008-A//AR1188/CCDR	5.0	76	85	3596	62.0	71.1
11SP193	CCDR/JEFF/3/JSMN/DLLA//96SP287	5.0	82	79	2924	63.8	71.6
11SP194	06PY773/JZMN	5.0	81	94	5058	63.9	69.5
11SP195	05SP138/RU0302125	5.0	77	90	2255	62.5	69.1
11SP196	JSMN/DLLA/LLEAH/DLLA/4/9502008-A//AR 1188/…	4.0	81	80	2891	58.9	69.7
11SP197	JSMN/DLLA//DLLA/3/RU0302125	6.0	80	81	1917	62.6	70.4
11SP198	AC780/JZMN	5.0	82	84	4168	62.8	69.0
11SP199	AC780/JZMN	5.0	82	84	4393	65.0	72.8
11SP200	Della-2	4.0	85	82	5870	60.9	69.7

† Subjective rating 1 to 7, where 1 = excellent, 7 = stand.

Table 10. Summary of agronomic and milling performance of 13 conventional long-grain, specialty, hybrid and selected check varieties tested in 2011 Uniform Regional Rice Nursery (URN) and Commercial Advanced Test (CA) conducted at 4 Louisiana locations.

Entry	Pedigree	Vigor†	Days to 50% Heading	Plant Height (cm)	Yield (lb/A)	Milling (%) Head	Milling (%) Total
022	CCDR//9502008/LGRU	5.3	84	86	6497	60.3	68.8
028	CCDR/3/9502008-A//AR1188/CCDR	4.9	81	84	6402	56.0	67.8
031	RU0602103/3/9502008-A//AR1188/CCDR	4.8	83	89	6579	60.3	69.3
034	CPRS/KBNT//9502008-A	5.3	82	86	6504	56.3	68.0
071	LAH10	6.4	89	119	9643	57.7	66.4
125	CCDR/JEFF/3/9502008//AR1142/MBLE	4.6	80	85	6577	60.4	69.9
128	9502008//AR1188/CCDR/3/CCDR	4.6	82	86	6474	59.5	69.0
131	WELLS/CTHL	4.8	80	81	5937	58.3	69.5
134	9502008-A/DREW/3/9502008-A//AR1188/CCDR	5.4	80	86	6100	56.5	69.6
137	CPRS/KBNT//9502008-A/3/RU0602180	4.7	81	85	6392	56.7	68.5
140	CCDR/JEFF//0402128	5.1	82	86	6544	54.8	68.7
146	NWBT/KATY//9902207x2/3/JSMN/DLLA//…	4.9	77	79	5424	62.2	70.5
Della-2 (025)		4.3	87	91	6548	58.3	66.9
Mermentau		4.6	81	86	6509	59.1	69.5
Cocodrie		4.7	83	86	6684	57.3	69.0
Cheniere		5.0	83	85	7137	60.2	70.4
CL151		4.8	82	95	8891	57.8	66.8
Catahoula		4.6	82	87	6956	57.3	70.3
Jazzman-2		4.7	83	80	5501	61.5	68.0
Jazzman		4.6	88	96	6953	61.3	68.5
Wells		3.7	85	94	7233	51.0	67.4

† Subjective rating 1 to 7, where 1 = excellent, 7 = stand.

Table 11. Agronomic and milling performance of 2011 Advanced Yield Trial, long-grain and specialty entries. Rice Research Station, Crowley, LA.

Entry	Pedigree	Vigor†	Days to 50% Heading	Plant Height (cm)	Yield (lb/A)			Milling (%)	
					Main	2nd	Total	Head	Total
001	9502008//KATY/9902207x2/3/JSMN/DLLA//LEAH/DLLA	4.0	69	75	4439	1834	6273	64.8	69.8
002	DLRS//AR1142/LA 2031/3/RU0402085	5.0	71	72	4581	1306	5887	64.4	70.2
003	NCHS/A-201	5.7	77	68	2579	996	3575	63.7	69.2
004	NCHS//JSMN/DLLA	4.3	73	70	3795	1423	5218	59.5	68.8
005	CCDR/3/JSMN/DLLA//LEAH/DLLA	4.3	74	78	4346	1118	5464	64.2	69.5
006	DLMT/CALMATI	4.0	73	76	4521	2014	6534	56.8	71.0
007	JSMN/DLLA//96SP287/3/CPRS/DREW	3.7	74	83	5776	1634	7411	63.8	71.5
008	DLMT/5/DLMT 8462…/4/DMSI	4.0	73	80	5691	2005	7697	63.6	70.3
009	9502008/CPRS/3/JSMN/DLLA//LEAH/DLLA	3.7	71	73	5379	2277	7656	58.5	70.5
010	A-301/KATY//01SP283	4.0	71	80	4909	1723	6631	55.5	69.2
011	CTHL/4/NWBT/KATY//9902207x2/3/CCDR	4.0	73	83	5603	1191	6794	57.5	70.5
012	CCDR/3/KATY/CPRS//JKSN/4/CCDR/JEFF	4.3	74	83	5526	1467	6993	60.4	70.8
013	9502008/CPRS/4/NWBT/KATY//9902207x2/3/CCDR	4.0	76	78	5350	2037	7387	60.6	69.7
014	9502008//KATY/9902207x2/3/9502008/CPRS	3.7	75	74	5291	1883	7175	63.6	70.7
015	CCDR//CCDR/JEFF	4.0	74	75	5217	1660	6877	60.0	70.1
016	CCDR/3/9502008-A//AR1188/CCDR	3.7	75	73	5475	1657	7132	56.7	71.2
017	CCDR/RU0601004	4.3	74	73	4749	1180	5930	59.0	70.0
018	CPRS/KBNT//9502008-A	3.7	73	75	5323	1520	6844	59.6	69.4
019	CCDR//CCDR/JEFF	4.0	73	77	4950	1543	6493	58.6	70.3
020	CCDR//9502008//AR1188/CCDR	4.0	74	79	5436	1592	7028	63.0	70.6
021	CPRS/KBNT//9502008/3/0402088	3.7	74	76	5050	1678	6728	54.9	69.5
022	CPRS/3/CPRS/KBNT//9502008	5.0	75	73	4026	1538	5563	57.0	69.6
023	9502008-A//AR1188/CCDR/3/CPRS/KBNT//9502008-A	4.0	74	76	5417	1578	6995	62.4	69.6
024	CPRS/4/9502008/3/CPRS//82CYA21/TBNT	3.3	73	75	5988	1511	7499	62.0	70.2
025	CCDR/3/CPRS/KBNT//9502008-A	4.3	75	79	5379	1887	7266	57.6	70.4
026	CCDR/JEFF/3/9502008//AR1142/MBLE	4.0	74	82	5968	1479	7447	63.0	71.8
027	CCDR/3/KATY/CPRS//JKSN/4/CCDR/JEFF	3.7	74	80	6051	1666	7717	61.4	70.0
028	CCDR/3/KATY/CPRS//JKSN/4/CCDR/JEFF	4.0	74	82	5873	1752	7625	63.3	71.5
029	9502008/CPRS/4/CPRS//82CAY21/TBNT/3/AR1121/5/CCDR//…	3.3	74	73	5848	1502	7350	59.6	70.6
030	9502008/CPRS/4/NWBT/KATY//9902207x2/3/CCDR	4.0	75	76	5878	1875	7752	63.2	70.0
031	CCDR/0502085//CCDR/9502008-A	4.3	74	79	5320	1738	7058	60.1	69.8
032	9502008-A//AR1188/CCDR/3/CCDR/JEFF	3.7	72	78	6125	1507	7632	61.4	70.6
033	CCDR//CCDR/JEFF	4.3	75	74	5476	1769	7245	63.0	71.2

Continued.

Table 11. Continued.

Entry	Pedigree	Vigor†	Days to 50% Heading	Plant Height (cm)	Yield (lb/A)			Milling (%)	
					Main	2nd	Total	Head	Total
034	0402022/3/CPRS/KBNT//9502008	4.0	72	74	5942	1706	7648	59.0	70.2
035	CCDR//CCDR/JEFF	4.0	76	86	7706	1905	9611	61.8	70.5
036	CCDR//9502008//AR1188/CCDR	3.3	73	78	5703	1753	7456	60.2	70.2
037	CPRS/4/TACAURI/3/CPRS//L202/TBNT	4.0	75	73	6095	1329	7424	60.1	68.2
038	CCDR/JEFF//0402128	4.0	74	79	5870	1681	7551	61.3	70.5
039	9502008-A//AR1188/CCDR/3/WELLS/ZHE733	4.3	75	73	4835	1742	6577	57.5	68.8
040	0502174/0402128	4.7	75	77	4285	1766	6051	60.1	70.1
041	9502008/AR1121//CPRS//82CAY21/TBNT	4.0	74	78	6821	1801	8622	63.4	71.5
042	CCDR//LGRU/LCSN	4.0	75	78	5624	1764	7388	62.2	70.6
043	9502008-A//AR1188/CCDR/3/LGRU/LCSN	3.3	75	77	6015	1424	7439	61.2	70.9
044	CCDR/RU0602131	4.3	76	76	5068	1721	6789	59.1	69.9
045	CCDR/AC622	4.0	75	91	7662	2115	9778	63.5	70.7
046	0402022/0502094	4.0	72	76	4994	1752	6746	59.5	69.1
047	CPRS/KBNT//9502008-A	4.0	74	77	5334	1872	7206	57.2	69.0
048	CPRS/KBNT//9502008-A/3/AC1021	4.0	75	74	5239	1771	7010	55.7	68.5
049	9502008-A//AR1188/CCDR/3/CCDR/JEFF	4.0	75	78	5423	1778	7201	62.3	70.5
050	CL151	3.7	78	91	9923	1190	11113	58.6	67.7
c.v.%		13.2	1.2	4.8	12.9	14.8	11.1	3.8	1.5
$LSD_{0.05}$		0.9	2	6.0	1149	397	1286	4.7	2.1

† Subjective rating 1 to 7, where 1 = excellent, 7 = no stand.

DEVELOPMENT OF HYBRID RICE FOR LOUISIANA

X.Y. Sha, W. Li, S.D. Linscombe, D.E. Groth, J.H. Oard, S.J. Theunissen, and B.J. Henry

Rice is one of the most important commodity crops in Louisiana. Because of its hybrid vigor (heterosis), hybrid rice has a 15% or more yield advantage over the best inbred variety grown under similar conditions; therefore, it offers Louisiana rice growers an opportunity to further improve their production. Research goals of our newly established Hybrid Rice program at the LSU AgCenter's Rice Research Station include: 1) development of and identifying male sterile lines (cytoplasmic A or environmental sensitive S) and restorer (R) lines adapted to the southern U.S. environmental conditions, 2) identifying elite cross combinations through extensive test-crossing, 3) exploring the feasibility of economical hybrid seed production, and 4) development of a marker-assisted selection scheme involving identifying and developing molecular markers for sterility/fertility traits, as well as anther culture to significantly expedite the breeding process.

Our 2011 research has been focused on the development of adapted male-sterile, maintainer, and restorer lines; production of a large number of test crosses between introduced Chinese male sterile lines and elite Louisiana long-grain genotypes; observational trial of over 400 test crosses made in 2010; multi-location hybrid yield trial; and both mini- and small-scale concept hybrid seed production. Breeding populations have been significantly increased and rapidly advanced for the development of adapted male sterile, maintainer, and restorer lines. Twenty-nine F_2 segregating populations derived from crosses between Chinese hybrid germplasm and Louisiana long-grain lines were grown in Puerto Rico winter nursery in Lajas, PR, for generation advancement. Selection was made on those materials, and some of the selections were turned over for an additional generation before being harvested in April and planted in May in Crowley. About 3,000 progeny rows, ranging from F_3 to F_5, were grown in summer 2011. About 400 new test crosses were produced between Chinese male sterile lines and Louisiana long-grain genotypes in spring and summer 2011. From observational test cross trials, we have identified and harvested 118 cross combinations, which include 45 3-line and 73 2-line candidate hybrids, for further milling and cereal chemistry evaluation. Additionally, 29 southern long-grain varieties/lines were found to have either partial or full restoring ability to Chinese CMS male sterile lines. A number of test crosses showed good agronomic characteristics and were chosen for re-evaluation in 2012. In the multi-location advanced hybrid yield trial, Chinese medium-grain hybrids LAH10 and LAH20, along with two experimental long-grain hybrids 10TC447 and 10TC151 (a Louisiana Clearfield line was used as pollen parent), demonstrated good yield potential compared with both CL151 and Caffey. Meanwhile, LAH10 was also tested and shown excellent yield potential in the Uniform Regional Rice Nursery, Commercial Advanced test, date of planting, and Variety x Nitrogen trials. A 1/8-acre concept hybrid seed production of a new long-grain hybrid LAH12 was a success by using the method similar to that we developed last year but with reduced labor involvement. To facilitate future research needs, several different mini- and small-scale seed production methods were also proposed and tested.

Table 1. Agronomic and milling performance of 2011 Advanced Yield Trial, hybrid entries. Rice Research Station, Crowley, LA.

Entry	Type†	Vigor‡	Days to 50% Heading	Plant Height (cm)	Main Yield (lb/A)	Ratoon (lb/A)	Total Yield (lb/A)	Milling (%)	
								Head	Total
10TC151	CL-L	5.3	80	102	9258	1580	10839	53.9	67.5
10TC446	L	4.7	90	114	9264	2410	11673	54.1	69.9
LAH10	M	4.7	86	119	9092	2202	11294	58.1	66.0
LAH20	M	4.7	86	119	8725	1524	10248	53.8	63.7
CL151	CL-L	4.0	79	89	9380	1388	10768	60.6	69.2
Caffey	M	4.7	81	80	6046	1428	7474	61.9	66.0
c.v.%		13.6	0.9	2.9	7.2	10.5	5.3	2.3	1.5
$LSD_{0.05}$		1.2	1.3	5.5	1126	336	1009	2.4	1.8

† CL-L = Clearfield long-grain, L = long-grain, and M = medium-grain.
‡ Subjective rating 1 to 7, where 1 = excellent, 7 = stand.

Table 2. Agronomic and milling performance of 2011 Advanced Yield Trial, hybrid entries. Fenton, LA.

Entry	Type†	Vigor‡	Days to 50% Heading	Plant Height (cm)	Main Yield (lb/A)	Milling (%)	
						Head	Total
10TC446	L	5.0	95	116	9904	59.3	69.9
LAH10	M	5.0	89	118	8496	60.1	67.0
LAH20	M	5.0	88	113	9518	55.8	64.8
CL151	CL-L	4.7	83	96	6587	62.6	69.7
Caffey	M	5.0	88	96	8248	62.0	64.2
c.v.%		5.2	0.5	3.8	11.4	4.6	3.2
$LSD_{0.05}$		0.5	0.8	7.8	1833	4.9	4.1

† CL-L = Clearfield long-grain, L = long-grain, and M = medium-grain.
‡ Subjective rating 1 to 7, where 1 = excellent, 7 = stand.

Table 3. Agronomic and milling performance of 2011 Advanced Yield Trial, hybrid entries. Lake Arthur, LA.

Entry	Type†	Vigor‡	Days to 50% Heading	Plant Height (cm)	Main Yield (lb/A)	Ratoon (lb/A)	Total Yield (lb/A)
10TC151	CL-L	5.3	92	105	7845	2331	10176
10TC446	L	5.3	93	112	7760	1951	9711
LAH10	M	5.7	91	118	9633	1897	11529
LAH20	M	5.0	92	113	9019	1883	10902
CL151	CL-L	4.7	89	105	8743	1297	10040
Caffey	M	4.7	92	105	8334	1642	9976
c.v.%		16.2	5.4	2.6	11.5	23.8	10.2
$LSD_{0.05}$		1.5	8.9	5.2	1790	793	1927

† CL-L = Clearfield long-grain, L = long-grain, and M = medium-grain.
‡ Subjective rating 1 to 7, where 1 = excellent, 7 = stand.

RICE GENETICS AND GERMPLASM DEVELOPMENT

J.H. Oard, D.E. Groth, S.D. Linscombe, X. Sha, W. Li, J. Silva,
Y. Sanabria, D. Galam, and C. de Guzman

Summary

Four hybrid lines were evaluated in a test cross nursery where grain yield of one long-grain line was statistically equivalent to a leading medium-grain hybrid, LAH10. Additional test cross lines will be evaluated in 2012 field plots. Thirty selected DNA markers co-segregated with sheath blight resistance in a mapping population, providing additional evidence that this technology may be used to help develop sheath blight resistance varieties. Several sheath blight-tolerant lines with good agronomic traits were developed that will be made available to the LSU AgCenter breeding projects. DNA markers were used to identify and accelerate the advance of Dr. Sha's breeding lines for Clearfield Jazzman rice.

Development of Adapted Inbred Lines for Hybrid Rice in Louisiana

During the 2011 Hybrid Test Cross Nursery, four test cross lines from Dr. Oard's program were evaluated. Three lines produced too few F_1 plants for yield evaluation while one line designated 11X-10365 was evaluated for grain yield, heading date, and plant height. 11X-10365 as a long-grain produced statistically equivalent grain yield compared with the leading medium-grain hybrid, LAH10 (40 vs. 43 grams on a per plant basis). In addition, 11X-10365 was shorter by 4cm and matured 14 days earlier than LAH10. Inbred variety CL151 produced 26 grams/plant as a check in the same nursery. A total of 39 crosses with two-line male sterile x LA varieties and lines were made in 2011 that will be evaluated in the 2012 Hybrid Test Cross Nursery in cooperation with Dr. Sha.

Results of the 2011 Hybrid Test Cross Nursery showed that the top eight entries for yield on a per plant basis were derived from two-line male sterile crosses. Additional improvements of the male sterile lines are needed, however, in terms of maturity, height, seed production, critical temperature, and seed purity. To achieve these goals, a total of 37 new male sterile selections from F_2 and F_4 populations were identified, in cooperation with Dr. Sha, showing 100% pollen sterility in 2011 summer field plots at Crowley. All selections were cut back at the end of the field season and transferred to the fall greenhouse where four selections produced viable seed at moderate to high rates. Seeds from these selections were planted in the winter greenhouse. Progeny from those selections will be planted in 2012 summer field plots. The expectation is that the selected lines, as shown in 2011 summer conditions, will produce non-viable pollen and no seed production. This material will also be evaluated in terms of height, maturity, and overall plant type. Those lines showing desired characteristics will be considered as candidate male-sterile lines and crossed to potential restorers with resulting F_1 seed entered into the next Test Cross Nursery. To identify additional candidate male sterile lines, F_2 seed from the top 10 entries of the 2011 Hybrid Test Cross Nursery was harvested and will be planted in 2012 field plots. Individuals will be selected in the field based on pollen sterility, stigma exsertion, and overall plant type. Selections will be cut back and transferred to the 2012 fall greenhouse to assess seed production levels.

As described above, development of appropriate two-line male sterile germplasm is a priority for Louisiana hybrid rice development. However, identification of suitable male-sterile lines is a labor-intensive and time-consuming process carried out over two or more field growing seasons. To expedite this procedure, we have investigated different DNA markers that may be associated with desired male sterile characteristics adapted to Louisiana growing conditions. To date, we have identified different candidate markers that are present only in male sterile material and absent in various restorer lines. Additional work will be carried out in 2012 to validate the markers originally identified over the past two years.

High stigma exsertion rates are required for successful commercial hybrid seed production. In cooperation with Drs. Sha and Li, six lines showing greater than 60% exsertion rates were identified from two F_4 and F_5 populations derived from a cross with CL161. From this material, four crosses were made with CL161, Cocodrie, and Catahoula. In addition, four conventional long-grain lines with good plant type were identified from the two original populations. These results suggest that good plant type and high stigma exsertion rates can be combined in adapted Louisiana germplasm. All selected lines and progeny from crosses will be further evaluated at the Rice Station in 2012 field plots.

Identification and Validation of DNA Markers for Sheath Blight Resistance

As previously reported in the 2010 Annual Report, we have identified more than 200 candidate DNA markers that may be associated with sheath blight resistance. To validate these markers, we have spent considerable time in the laboratory to optimize conditions that will generate stable and reliable results. In 2011, we found that 30 markers co-segregated with sheath blight resistance in the SB2 RiceCAP mapping population derived from a cross between Cocodrie and the resistant line MCR010277. These markers were found in genes that have been reported in the literature to play a role in plant disease resistance. We will continue to screen additional markers in the SB2 population during 2012 and validate results in different lines and varieties as part of our sheath blight resistance program.

Development of Sheath Blight-Resistant Germplasm by Traditional Genetic Approaches

For sheath blight research in 2011, a total of 1,668 lines developed from previous crosses were evaluated for resistance to sheath blight in inoculated field plots at Crowley. A total of 101 families were identified with sheath blight ratings ≤ 5 that would minimize the need for fungicide applications under commercial field conditions. From the selected families, a total of 412 crosses were made with Louisiana varieties and multiple sources of resistance. In addition, 892 backcrossed (BC_1F_1) lines were grown and selected in the greenhouse based on plant type and maturity for evaluation with the sheath blight DNA markers described above. All selected lines, including the BC_2F_1 /BC_1F_2 backcrossed lines, will be grown and evaluated under field plot conditions in 2012.

Repeatability of sheath blight ratings under field plot conditions has been a major challenge for development of sheath blight-resistant germplasm. To identify stable sheath blight-resistant material, we evaluated 325 lines in 2011, in cooperation with Dr. Groth, derived from a cross between Cocodrie and the sheath blight-resistant line MCR010277 in inoculated plots at Crowley. Results from this trial were combined with previous evaluations of this material conducted in Louisiana and Arkansas in 2006 and 2007. From the combined analysis, we identified 10 stable sheath blight-resistant lines across years and locations, with average ratings varying from 4.5 to 5.5. As described above, these lines contain several of the DNA markers we identified in 2010-2011. The 10 selected lines will be grown and crossed to Louisiana varieties in 2012 using DNA markers and sheath blight ratings to identify resistant lines with good agronomic traits.

Selection of Clearfield Jazzman Lines with DNA Marker Technology

To assist Dr. Sha in the rapid development of a Clearfield Jazzman variety, 800 rows consisting of 125 families in the BC_1F_4 generation were screened with DNA markers for appropriate levels of amylose content and gelatinization temperature. Several true-breeding lines for these traits were identified using marker technology that will accelerate the advance by two or more years and hasten the release of a Clearfield Jazzman variety for the Louisiana rice industry.

MARKER-ASSISTED BREEDING AND GENETIC IMPROVEMENT OF SOUTHERN U.S. RICE

H.S. Utomo and S.D. Linscombe

Preliminary yield (PY) trials for 22 lines derived from marker-assisted breeding were conducted in 2011 to evaluate their yield potential, milling performance, and other agronomic traits in the standard plot size of 4 x 16 ft. Some of the advanced lines from the marker-assisted selection have excellent yield potential, milling quality, and other agronomic traits (Table 1). Among lines tested, three lines were promising and will be further tested in commercial advanced tests. Approximately 4,000 marker-assisted lines were evaluated in headrows. The marker-assisted breeding project employed marker screening in the early generations, F_2 and F_3 lines, that contains fixed allele for the target genes to obtain its efficiency in cost and labor involved. For a single gene target, fixed target alleles can usually be obtained from the screening of the F_2 or F_3 progeny lines. For a multiple gene target, more elaborate crossing schemes were used so that the volume of marker screening can be kept at its lowest level. Once the target genes have been fixed, the progeny lines were advanced and subjected to regular breeding selections in order to identify the most viable breeding lines. Performance of a subset of these selected lines, i.e. 50 Pi-ta^2/Pi-b lines, is presented in Table 2.

Bulked analyses, employing 1,078 AFLP markers and 240 SSR markers using a bulk of nine high protein lines and Cocodrie as a check, found a total of 12 polymorphic markers. Two specific genomic regions have been identified to encode the percent protein increase of 49 and 35%. Fine mapping around the identified genetic markers provided more detailed genetic functionality of genomic segments around the marked regions. Evaluation of DHDPS gene was carried out using three high protein rice lines, WLS09128, CCD091301, and CCD091380, that have an average lysine improvement of 54.2, 45.8, and 20.8%, respectively. The high lysine line WLS09128 has a deletion mutation. The other high lysine rice lines do not exhibit any changes in their DHDPS gene. The findings provide some clues in understanding various factors that could contribute to higher lysine content and to establish a strategy for further improvement.

Advancing genetic mapping material for grain chalkiness is an undergoing process. Grain chalkiness is an undesirable character and one of the most important factors determining grain appearance and milling qualities. Chalkiness is associated with high levels of damage to the kernel during milling and, thus, to a reduction in head rice recovery. When chalky grain is steamed or boiled, cracks readily develop, reducing the palatability of the cooked product. Chalkiness is caused by loose packing of starch granules in the grain region. Various studies indicate that chalkiness is under genetic control, but its extent can be affected by the weather conditions experienced during the grain fill. Its inheritance has been shown to be complex. During the development of both pure breed and hybrid cultivars, breeders often encounter this problem. Molecular markers associated with this trait will help minimize the problem and concurrently improve their breeding efficiency. The markers can be used to pre-screen parental lines that will be used in a breeding program allowing breeders to concentrate only on parental lines that are not predisposed to the problem in the early stage of their breeding program. The specific objective of this study is to map grain chalkiness found among U.S. germplasm through developing mapping populations and identifying polymorphic markers that will be used in the mapping.

Introgression of specific traits rapidly can be done through marker-assisted backcrossing (MABC). To speed up recovery of the recurrent genomic background, 125 SSR markers specific to each recurrent parent were used during the backcrossing. Following crossing and backcrossing processes to incorporate multiple-gene target, the pyramided lines were advanced through selfing in progeny rows. BC_1 lines that carry the pyramided genes were also advanced through anther culture to rapidly produce homozygous lines. Cultivars Trenasse and CL151 were used as recurrent parents. Backcross lines carrying Pi-ta^2, Pi-b, and Pi-kh genes (mbTRNS-1 and mbCL151-1) were evaluated in replicated row trials for the second year. Tables 3 and 4 show the agronomic performance of these lines.

Table 1. Performance of 22 elite lines from marker assisted breeding in the 2011 preliminary yield trials.

Plot	Plot ID	Vigor[¶]	Height (cm)	Head Weight	Total Weight	Yield (lb/A)
001	HSU-2010 Plot 55 Pedigree: 09R-B-2072	5	96	57.29	70.59	8521.31
002	HSU-2010 Plot 64 Pedigree: 09R-B-1989	4	104	56.41	70.45	8498.09
003	HSU-2010 Plot 3 Pedigree: 09R-B-1621	4	94	55.36	70.15	8877.23
004	HSU-2010 Plot 4 Pedigree: 09R-B-1578	3	96	56.39	70.68	8949.04
005	HSU-2010 Plot 46 Pedigree: 09R-B-1646	3	96	59.06	72.21	6229.44
006	HSU-2010 Plot 6 Pedigree: 09R-B-858	5	103	58.98	71.42	8907.64
007	HSU-2010 Plot 59 Pedigree: 09R-B-1638	3	86	53.40	69.32	6479.80
008	HSU-2010 Plot 8 Pedigree: 09R-B-1200	3	105	53.39	69.02	7976.53
009	HSU-2010 Plot 75 Pedigree: 09R-B-1201	3	103	56.07	70.01	8203.14
010	HSU-2010 Plot 73 Pedigree: 09R-B-1623	2	97	57.37	70.56	9028.54
011	HSU-2010 Plot 44 Pedigree: 09R-B-549	3	113	46.80	65.69	8153.05
012	HSU-2010 Plot 60 Pedigree: 09R-B-1619	3	103	56.12	70.02	8300.87
013	HSU-2010 Plot 37 Pedigree: 09R-B-413	4	93	56.05	70.19	8020.84
014	HSU-2010 Plot 14 Pedigree: 09R-B-891	5	101	52.66	70.49	9079.34
015	HSU-2010 Plot 74 Pedigree: 09HU002	3	101	58.68	71.00	8876.71
016	HSU-2010 Plot 47 Pedigree: 09H1048 ENT029	3	100	59.06	71.65	8623.90
017	HSU-2010 Plot 16 Pedigree: 09H1029 ENT029	3	96	57.13	71.56	9023.05
018	HSU-2010 Plot 17 Pedigree: 09H1041 ENT030	4	93	55.02	70.15	8350.34
019	HSU-2010 Plot 18 Pedigree: 09H1056 ENT017	4	94	60.54	70.27	7525.54
020	HSU-2010 Plot 41 Pedigree: 09H1030 ENT030	3	100	50.85	68.25	8111.30
021	HSU-2010 Plot 43 Pedigree: 09H1016 ENT016	4	94	59.50	71.72	6587.72
022	09HI012-ENT012	5	96	59.22	71.88	8183.00
023	CCDR Check	4	94	52.90	69.57	8289.29
024	CL131 Check	3	88	60.99	71.06	7554.67
025	CL161 Check	3	91	61.05	70.76	7934.87
026	CL151 Check	4	92	56.90	69.75	8382.23
027	Caffey Check	2	93	57.15	67.64	7808.34
028	CL161 Check	3	94	62.30	71.25	8205.20
029	Caffey Check	2	93	57.08	66.27	8130.38
030	HSU-2010 Plot 4 Pedigree: 09R-B-1578	2	97	55.94	70.02	8476.68
031	CL151 Check	3	87	58.06	70.38	7628.18
032	HSU-2010 Plot 59 Pedigree: 09R-B-1638	3	93	56.00	69.58	6849.02
033	HSU-2010 Plot 6 Pedigree: 09R-B-858	5	92	56.84	70.16	8752.71
034	HSU-2010 Plot 73 Pedigree: 09R-B-1623	3	90	55.62	70.27	8688.17
035	HSU-2010 Plot 3 Pedigree: 09R-B-1621	2	97	56.55	70.12	8165.97
036	HSU-2010 Plot 17 Pedigree: 09H1041 ENT030	2	91	53.94	69.41	7318.33
037	HSU-2010 Plot 60 Pedigree: 09R-B-1619	5	100	57.26	70.29	8046.84
038	HSU-2010 Plot 55 Pedigree: 09R-B-2072	4	94	58.76	71.14	8050.89
039	HSU-2010 Plot 37 Pedigree: 09R-B-413	4	96	57.41	70.92	8213.82
040	CL131 Check	3	85	62.49	72.28	7504.79
041	HSU-2010 Plot 75 Pedigree: 09R-B-1201	3	100	56.71	70.40	7730.42
042	HSU-2010 Plot 16 Pedigree: 09H1029 ENT029	5	100	58.81	71.13	8294.65
043	HSU-2010 Plot 41 Pedigree: 09H1030 ENT030	3	96	52.95	69.30	7701.66
044	HSU-2010 Plot 8 Pedigree: 09R-B-1200	3	96	52.26	69.41	7665.46
045	HSU-2010 Plot 43 Pedigree: 09H1016 ENT016	3	100	58.94	71.69	6790.76

Continued.

Table 1. Continued.

Plot	Plot ID	Vigor¶	Height (cm)	Head Weight	Total Weight	Yield (lb/A)
046	HSU-2010 Plot 44 Pedigree: 09R-B-549	2	100	44.70	64.86	7019.97
047	HSU-2010 Plot 14 Pedigree: 09R-B-891	3	98	55.68	69.92	7714.65
048	HSU-2010 Plot 46 Pedigree: 09R-B-1646	3	88	57.70	70.49	6249.69
049	HSU-2010 Plot 47 Pedigree: 09H1048 ENT029	4	94	57.12	70.45	7688.45
050	CCDR Check	5	98	53.09	69.62	7727.07
051	HSU-2010 Plot 18 Pedigree: 09H1056 ENT017	3	94	53.91	68.69	7213.71
052	HSU-2010 Plot 64 Pedigree: 09R-B-1989	3	90	56.75	70.09	7890.09
053	HSU-2010 Plot 74 Pedigree: 09HU002	3	103	54.03	69.25	7735.12
054	09HI012-ENT012	4	96	56.49	70.58	8319.75
055	HSU-2010 Plot 6 Pedigree: 09R-B-858	4	95	56.55	70.21	7590.46
056	HSU-2010 Plot 14 Pedigree: 09R-B-891	3	106	53.22	68.39	8074.39
057	CCDR Check	4	95	54.13	69.31	7938.65
058	CL131 Check	5	87	63.20	71.85	7581.50
059	HSU-2010 Plot 55 Pedigree: 09R-B-2072	4	98	58.05	70.17	8144.73
060	HSU-2010 Plot 37 Pedigree: 09R-B-413	3	101	56.90	70.38	8384.04
061	HSU-2010 Plot 3 Pedigree: 09R-B-1621	3	97	55.47	69.77	8040.73
062	HSU-2010 Plot 46 Pedigree: 09R-B-1646	4	95	57.62	70.40	6504.30
063	HSU-2010 Plot 59 Pedigree: 09R-B-1638	2	93	54.66	69.38	6936.22
064	HSU-2010 Plot 60 Pedigree: 09R-B-1619	3	94	56.22	70.30	7769.96
065	HSU-2010 Plot 16 Pedigree: 09H1029 ENT029	2	100	54.41	69.61	8537.86
066	HSU-2010 Plot 44 Pedigree: 09R-B-549	2	108	46.01	64.58	6703.67
067	CL151 Check	3	96	53.67	67.94	8465.71
068	HSU-2010 Plot 64 Pedigree: 09R-B-1989	3	103	54.40	70.18	8117.83
069	HSU-2010 Plot 17 Pedigree: 09H1041 ENT030	5	88	53.97	69.43	8022.74
070	HSU-2010 Plot 4 Pedigree: 09R-B-1578	3	96	57.10	70.13	8107.49
071	HSU-2010 Plot 8 Pedigree: 09R-B-1200	2	103	52.18	69.47	7624.13
072	HSU-2010 Plot 47 Pedigree: 09H1048 ENT029	2	96	54.35	70.04	8252.62
073	CL161 Check	5	96	62.49	72.08	7002.79
074	HSU-2010 Plot 41 Pedigree: 09H1030 ENT030	4	97	53.38	70.69	7341.98
075	09HI012-ENT012	4	96	53.41	69.62	8149.33
076	HSU-2010 Plot 18 Pedigree: 09H1056 ENT017	3	97	59.52	70.29	6967.89
077	HSU-2010 Plot 73 Pedigree: 09R-B-1623	3	98	56.14	70.61	7670.37
078	HSU-2010 Plot 74 Pedigree: 09HU002	5	100	55.84	69.72	7926.32
079	HSU-2010 Plot 75 Pedigree: 09R-B-1201	3	100	53.42	69.82	7668.62
080	Caffey Check	3	92	60.28	67.32	7319.54
081	HSU-2010 Plot 43 Pedigree: 09H1016 ENT016	3	86	58.36	71.98	6842.93

Table 2. 2011 Field performance of some select lines carrying Pi-ta^2/Pi-b lines (2nd year tests).

No.	Plant ID	Blast genes	Grain type§	Vigor¶	Plant height (cm)	Heading date	Panicle length (cm)	Panicle weight (g)	Row yield (g)
1	08F39731	Pi-ta^2,Pi-b	L	2	78	87	29.1	7.5	697
2	08F39733	Pi-ta^2,Pi-b	L	2	77	86	28.9	7.8	610
3	08F39734	Pi-ta^2,Pi-b	L	3	75	82	20.7	8.8	598
4	08F37225	Pi-ta^2,Pi-b	L	4	76	87	26.7	7.6	596
5	08F37226	Pi-ta^2,Pi-b	L	3	75	88	27.0	6.0	471
6	08F47911	Pi-ta^2,Pi-b	L	3	79	84	31.7	5.8	498
7	08F47913	Pi-ta^2,Pi-b	L	3	81	85	29.5	5.3	566
8	08F47914	Pi-ta^2,Pi-b	L	3	80	87	25.6	7.8	768
9	08F47916	Pi-ta^2,Pi-b	L	4	79	87	27.1	4.9	518
10	08F49122	Pi-ta^2,Pi-b	L	4	77	81	23.6	5.7	456
11	08F49123	Pi-ta^2,Pi-b	L	2	77	85	21.8	7.4	430
12	08F49125	Pi-ta^2,Pi-b	L	3	78	88	27.4	6.7	567
13	08F49126	Pi-ta^2,Pi-b	L	2	80	89	26.9	7.9	546
14	08F51342	Pi-ta^2,Pi-b	L	2	83	80	27.6	6.1	599
15	08F51343	Pi-ta^2,Pi-b	L	3	87	80	32.5	5.4	747
16	08F54032	Pi-ta^2,Pi-b	L	3	82	80	23.6	5.5	469
17	08F54034	Pi-ta^2,Pi-b	L	5	86	77	23.0	5.6	585
18	08F54036	Pi-ta^2,Pi-b	L	2	88	81	29.0	7.5	588
19	08F47544	Pi-ta^2,Pi-b	L	2	85	80	32.3	7.6	557
20	08F47545	Pi-ta^2,Pi-b	L	3	88	76	35.9	5.3	596
21	08F43761	Pi-ta^2,Pi-b	L	3	77	82	29.5	6.0	607
22	08F43765	Pi-ta^2,Pi-b	L	3	78	89	25.9	7.7	509
23	08F43766	Pi-ta^2,Pi-b	L	3	82	77	24.9	7.9	607
24	08F43769	Pi-ta^2,Pi-b	L	5	80	77	27.3	8.4	579
25	08F34552	Pi-ta^2,Pi-b	L	4	79	87	31.4	7.3	585
26	08F34553	Pi-ta^2,Pi-b	L	4	79	88	38.6	6.7	687
27	08F44111	Pi-ta^2,Pi-b	L	3	86	79	28.2	7.4	788
28	08F44112	Pi-ta^2,Pi-b	L	2	86	79	27.0	6.8	546
29	08F44114	Pi-ta^2,Pi-b	L	2	89	76	20.4	8.4	584
30	08F76222	Pi-ta^2,Pi-b	L	1	83	80	24.0	6.9	579
31	08F76223	Pi-ta^2,Pi-b	L	4	79	87	37.5	6.8	687
32	08F57115	Pi-ta^2,Pi-b	L	1	87	85	21.6	5.6	545
33	08F77223	Pi-ta^2,Pi-b	L	2	78	79	27.5	4.9	488
34	08F77224	Pi-ta^2,Pi-b	L	2	75	72	29.0	7.7	560
35	08F77225	Pi-ta^2,Pi-b	L	3	72	70	25.3	7.4	757
36	08F46721	Pi-ta^2,Pi-b	L	4	80	81	26.9	4.9	432
37	08F46724	Pi-ta^2,Pi-b	L	3	77	88	29.5	6.3	525
38	08F53842	Pi-ta^2,Pi-b	L	3	86	87	32.3	5.6	778

Continued.

Table 2. Continued.

No.	Plant ID	Blast genes	Grain type§	Vigor¶	Plant height (cm)	Heading date	Panicle length (cm)	Panicle weight (g)	Row yield (g)
39	08F53849	Pi-ta[2],Pi-b	L	3	87	88	29.6	5.9	559
40	08F71751	Pi-ta[2],Pi-b	L	3	87	82	28.6	7.2	797
41	08F71756	Pi-ta2,Pi-b	L	1	80	88	26.0	8.1	578
42	08F71757	Pi-ta[2],Pi-b	L	2	80	80	27.9	6.7	679
43	08F71759	Pi-ta[2],Pi-b	L	2	80	80	29.6	7.7	587
44	08F58251	Pi-ta[2],Pi-b	L	1	86	83	30.4	7.3	644
45	08F58258	Pi-ta[2],Pi-b	L	2	88	80	28.8	5.0	653
46	08F12455	Pi-ta[2],Pi-b	L	2	86	82	23.4	5.6	465
47	08F77541	Pi-ta[2],Pi-b	L	3	80	89	28.7	7.3	786
48	08F77544	Pi-ta[2],Pi-b	L	2	87	80	27.3	6.8	654
49	08F77548	Pi-ta[2],Pi-b	L	2	80	89	23.0	6.9	448
50	08F77549	Pi-ta[2],Pi-b	L	4	87	77	20.5	7.7	560
51	CCDR		L	3	98	83	27.5	7.8	537

§L= Long grain; ¶Subjective rating (1= excellent, 9=poor).

Table 3. Field performance of two marker-assisted backcrossing lines to pyramid Pi-ta^2, Pi-b, and Pi-kh genes into the recurrent parental lines Trenasse (TRNS) and CL151 in 2011 (second year).

	Allele Compost. (%)	Grain Type[§]	Vigor[¶]	Days to 50% Heading	Plant Height (cm)	Row Yield (g)
mbTRNS-11	65(T);14(L);10(S);11(K)	L	2	82	98	453
mbCL151-16	73(CL);11(L);11(S);5(K)	L	2	82	99	483
TRNS ck		L	3	79	104	479
CL151 ck		L	2	82	97	456
C.V. (%)			4.1	6.0	5.1	23.2
LSD (0.05)			0.7	5.0	4.9	27.5

[†]T=Trenasse, L=Lemont, S=Saber, K=Katy, and CL=CL151; [§]L= long grain; [¶]Subjective rating (1= excellent, 9=poor).

Table 4. Field performance of double haploid lines carrying Pi-ta^2, Pi-b, and Pi-kh genes in 2011 (second year).

	Allele compt. (%)[†]	Grain type[§]	Vigor[¶]	Days to 50% heading	Plant height (cm)	Row yield (g)
mbTRNSdh	28(T);17(L);31(S);24(K)	L	2	92	99	502
mbCL151dh	34(CL);23(L);11(S);32(K)	L	4	84	92	499
TRNS ck		L	3	79	106	530
CL151 ck		L	2	86	95	538
C.V. (%)			4.1	2.8	6.9	23.2
LSD (0.05)			0.7	4.1	3.1	19.5

[†]T=Trenasse, L=Lemont, S=Saber, K=Katy, and CL=CL151; [§]L= long grain; [¶]Subjective rating (1= excellent, 9=poor).

RICE NUTRITION ENHANCEMENT PROJECT: LINE DEVELOPMENT, PROTEIN CONTENT, AND GRAIN NUTRITIONAL QUALITY

I. Wenefrida, S.D. Linscombe, and H.S. Utomo

Introduction and Methodologies

Field tests of elite high protein lines:

Advanced lines: Field tests were conducted for elite rice lines that consistently showed protein content of more than 9.5% in 2009 and 2010. These advanced lines were evaluated in a randomized complete block design with five replications. The field was fertilized using 110 lb/A urea in a split application. Throughout the growing season, the trial plots were maintained with a flood but occasionally drained for weed control. Conventional rice herbicides were used to control weeds. During the growing season, data of important agronomic characteristics, including vigor, plant height, heading date, maturity, lodging, and row yield, were collected. At maturity, seed from each row was hand harvested, threshed, dried to 12% moisture content, and stored at -20^{o}C. A random sample of bulked brown rice from each row was used to determine protein content.

Preliminary yield trials:

Primarily yield trial (PY) trials were conducted on 11 selected high protein lines to determine their yield potential and other characteristics, such as vigor, plant height, heading date, maturity, lodging, and milling quality. The PY trials were conducted on a plot size of 4 x 16 ft using a randomized complete block design with three replications. The same field fertilization and cultural practices were used as described above. At maturity, seed from each row was hand harvested, threshed, dried to 12% moisture content, and stored at -20^{o}C. A random sample of bulked brown rice from each plot was used to determine their protein content. Individual amino acid content from each entry was also determined.

Field and greenhouse evaluations of new lines:

Greenhouse seed increase and preliminary test of their protein content: A total of 423 breeding germplasm that were newly developed from Louisiana cultivars and breeding lines in 2010 were grown in the greenhouse for seed increase during 2011. Fertilization using urea equivalent to 150 lb/A was applied three different times; one third for each plot incorporated preplanting, and 4 and 8 weeks after planting. Insecticides were used as needed. Preliminary selections were conducted to eliminate undesirable phenotypic appearance, including high level of sterility, stunted growth, short stature, abnormal panicle formation, and irregular seed forms. At maturity, seed from each line was hand harvested, threshed, dried to 12% moisture content, and stored at -20^{o}C. A random sample of brown rice from harvested panicles of each line was used to determine protein content. A total of 298 selected lines will be evaluated in the field in the coming growing season.

Field trials and protein content determination: The field evaluation was carried out in replicated rows, three rows per line. The field was fertilized using the same amount of urea (110 lb/A) in a split application, maintained in a flooded condition and occasionally drained for weed control purposes as previously described. At maturity, seed from each row was hand harvested, threshed, dried to 12% moisture content, and stored at -20^{o}C. Random samples of 10 panicles were harvested at maturity. A random sample of brown rice from harvested panicles was used to determine their protein contents.

Grain protein analysis:

Grain protein content was determined using a finely ground sample of brown rice weighing approximately 200 mg. The sample was subjected to high temperature digestion at 850° to 1200°C using the N Combustion Analyzer.

Result Summary

Field tests of elite high protein lines:

In general, grain protein content of 324 elite lines was relatively consistent in the 3-year trials. The coefficient variance ranged from 0 to 32%. The majority of lines, however, has CVs of less than 7%. The means of protein contents range from 9.4 to 13.7%, while the average protein content of the cultivar checks ranged from 8.08 to 9.0%. Among the first group of 18 high protein lines that possess protein content of >12%, the majority of these lines were somewhat consistent over the three years. Four of them, however, performed consistently. They are 06P200828-1, 06P200828-2, 06P200828-3, and 07500R-457, with their CV of about 5%. The protein grain content of the high protein line 06-PCCD-126, with an average protein content of 12.0%, was very stable across the 3-year tests.

There were 95 high protein lines that belong to the second group, with average protein contents of >11.0 but <12.0%. Within this group, 26 high protein lines performed consistently. Seven of these lines performed extremely consistent with CV of 1.0% or less. The protein content of line 092000R-1572-B-Pan134,138 was extremely consistent at the same level of 11.75% in the 3-year tests. The remaining consistent lines were 06-PCCD-86, 06-PCCD-126, 500R-455-06N-Fert-1, 500R-455-06N-Fert-2, 06-PCCD-175-3, and 500R-455-06N-Fert-5, with an average protein content of 11.88 (0.92 CV), 11.85 (1.52), 11.65 (0.28), 11.38 (0.96), 11.15 (0.66), 11.13 (0.99), and 11.07% (1.00%), respectively.

The third group composed of 150 high protein lines that have grain protein content between 10% to <11%. A total of 83 lines performed consistently with CVs ranging from 0 to 5%. Five high protein lines performed extremely consistent with CV of 0 or close to 0%. They are lines 06-PCCD-26 (10.88% protein content), 06-PCCD-65 (10.44%), 092000R-1570-B-Pan105,138-2 (10.31%), 06-PCCD-159 (10.19%), and 092000R-1572-B-Pan111,116-6 (10.13%). The remaining lines that performed consistently include 06-PCCD-96, 06-PCCD-130, 06N3-505, 06-PCCD-291, 06-PCCD-65, 092000R-1572-B-Pan134,138-3, 092000R-1572-B-Pan111,116-4, 06-PCCD-192, and 500R-455-06N-P1.

The crude protein content of elite lines evaluated for 3 years is presented in Table 1. Figure 1 contains the information of coefficient of variance (%) for protein content means among 324 high protein elite lines based on data collected in 2009, 2010, and 2011 at the Rice Research Station. Phenotypic performance of 5 high protein lines and their cultivar checks in PY trials is presented in Table 2.

Table 1. Crude grain protein content of 324 elite lines evaluated in 2011, 2010, and 2009 field trials. Values are based on three replications. Mean, standard deviation (STD) and CV (%) are calculated based on the 3-year data.

Elite line	2011	2010	2009	Mean	STD	CV
08HU002-MS-P23-B4	11.31	16.06	N/A	13.69	3.36	24.53
08HU002-MS-P10-B3	11.94	14.56	N/A	13.25	1.85	14.00
08HU002-MS-P12-B1	11.44	14.75	N/A	13.09	2.34	17.89
08HU002-MS-P12-B1	11.13	14.75	N/A	12.94	2.56	19.81
09TP-R3-P67	11.38	14.81	12.53	12.91	1.75	13.54
09TP-R3-P67	10.81	14.81	12.53	12.72	2.01	15.77
09TP-R2-P9	11.19	14.69	12.23	12.70	1.80	14.16
06P200828	11.94	12.88	N/A	12.41	0.67	5.37
06P200828	11.94	12.88	N/A	12.41	0.67	5.37
06P200828	11.94	12.88	N/A	12.41	0.67	5.37
08HU002-MS-P35-C1	10.50	14.25	N/A	12.38	2.65	21.43
08HU002-MS-P20-B1	11.25	13.25	N/A	12.25	1.41	11.54
06PCCD112	11.25	N/A	13.20	12.23	1.38	11.28
08HU002-MS-P32-B1	10.50	13.81	N/A	12.16	2.34	19.26

Continued.

Table 1. Continued.

Elite line	2011	2010	2009	Mean	STD	CV
07500R-457	11.63	12.57	N/A	12.10	0.67	5.52
06-PCCD-131	10.25	13.00	13.00	12.08	1.59	13.14
2010R-1174 06N1-559	13.75	11.25	11.25	12.08	1.44	11.95
06-PCCD-65	14.44	10.88	10.88	12.07	2.05	17.02
08HU002-MS-P53-B2	11.00	13.13	N/A	12.07	1.51	12.48
08HU002-MS-P3-B2	10.75	13.31	N/A	12.03	1.81	15.05
06-PCCD-126	12.50	11.75	11.75	12.00	0.43	3.61
08HU002-MS-P35-B1	10.56	13.38	N/A	11.97	1.99	16.64
CPRS075-P1-18-3-075-3	11.19	13.09	11.58	11.95	1.00	8.40
06PCCD112	10.69	N/A	13.20	11.94	1.78	14.87
092000R-1572-B-Pan103,104,105	11.06	12.38	12.38	11.94	0.76	6.37
06P200828	11.00	12.88	N/A	11.94	1.33	11.13
06-PCCD-102	9.94	12.94	12.94	11.94	1.73	14.52
08HU002-MS-P11-B2	10.63	13.19	N/A	11.91	1.81	15.23
06-PCCD-65	13.94	10.88	10.88	11.90	1.77	14.84
06PCCD112	10.56	N/A	13.20	11.88	1.86	15.70
06-PCCD-86	11.75	11.94	11.94	11.88	0.11	0.92
06-PCCD-126	12.06	11.75	11.75	11.85	0.18	1.52
06P200828	10.81	12.88	N/A	11.85	1.46	12.34
500R-455-06N-Fert	12.63	11.44	11.44	11.84	0.68	5.78
CPRS075-P1-18-3-075-3	11.56	12.36	11.58	11.83	0.46	3.85
08HU002-MS-P56-B3	11.13	12.50	N/A	11.81	0.97	8.23
08HU002-MS-P26-I2	11.31	12.31	N/A	11.81	0.71	5.97
500R-455-06N-Fert	12.00	11.63	11.63	11.75	0.21	1.82
092000R-1572-B-Pan134,138	11.75	11.75	11.75	11.75	0.00	0.00
08HU002-MS-P32-I1	10.69	12.81	N/A	11.75	1.50	12.77
06-PCCD-291	10.13	12.56	12.56	11.75	1.41	11.97
06PCCD283	11.75	11.44	11.90	11.70	0.23	2.01
08HU002-MS-P45-B4	11.19	12.13	N/A	11.66	0.67	5.72
08HU002-MS-P49-B3	10.63	12.69	N/A	11.66	1.46	12.53
500R-455-06N-Fert-1	11.69	11.63	11.63	11.65	0.03	0.28
06-PCCD-86	10.56	12.19	12.19	11.65	0.94	8.07
06-PCCD-33	11.06	11.94	11.94	11.65	0.51	4.35
06-PCCD-65	14.63	10.13	10.13	11.63	2.60	22.32
06P10024	11.25	12.00	N/A	11.63	0.53	4.56
CPRS075-P1-18-3-075-3	12.63	10.67	11.58	11.63	0.98	8.42
06-PCCD-135	13.94	10.44	10.44	11.61	2.02	17.40
06-PCCD-127	16.00	9.38	9.38	11.59	3.82	32.99
08HU002-MS-P29-B2	10.69	12.44	N/A	11.56	1.24	10.72

Continued.

Table 1. Continued.

Elite line	2011	2010	2009	Mean	STD	CV
092000R-1572-B-Pan103,104,105	9.88	12.38	12.38	11.55	1.45	12.53
08HU002-MS-P25-B2	12.38	10.69	N/A	11.53	1.19	10.33
CPRS075-P1-18-3-075-1-PAN2	10.94	12.53	11.10	11.52	0.88	7.61
06-PCCD-65	12.75	10.88	10.88	11.50	1.08	9.39
06PCCD161	10.50	N/A	12.50	11.50	1.41	12.30
CPRS075-P1-18-3-075-1	11.75	12.30	10.44	11.50	0.96	8.31
06-PCCD-257	10.94	11.75	11.75	11.48	0.47	4.09
06PCCD203	10.56	11.69	12.13	11.46	0.81	7.05
06PCCD023	10.75	N/A	12.10	11.43	0.95	8.36
092000R-1572-B-Pan117,128	12.00	11.13	11.13	11.42	0.50	4.40
06-PCCD-65	14.00	10.13	10.13	11.42	2.23	19.57
08HU002-MS-P45-I3	11.25	11.56	N/A	11.41	0.22	1.92
06PCCD284	10.81	11.50	11.90	11.40	0.55	4.82
500R-455-06N-Fert-2	11.25	11.44	11.44	11.38	0.11	0.96
06PCCD023	10.63	N/A	12.10	11.36	1.04	9.18
09 TP R2 P111	10.88	11.94	11.27	11.36	0.54	4.74
500R-455-06N-Fert	11.19	11.44	11.44	11.36	0.15	1.28
CPRS075-P1-18-3-075-1	11.31	12.30	10.44	11.35	0.93	8.20
06P10024	10.69	12.00	N/A	11.34	0.93	8.18
06PCCD-131-2	10.56	11.69	11.75	11.33	0.67	5.90
08HU002-MS-P3-B1	11.00	11.63	N/A	11.32	0.45	3.94
06-PCCD-23	12.06	10.94	10.94	11.31	0.65	5.73
06-PCCD-33	10.06	11.94	11.94	11.31	1.08	9.58
06-PCCD-33	10.06	11.94	11.94	11.31	1.08	9.58
500R-455-06N-Fert	11.06	11.44	11.44	11.31	0.22	1.93
092000R-1570-B-Pan114	12.94	10.50	10.50	11.31	1.41	12.44
06PCCD097	10.63	11.75	11.50	11.29	0.59	5.23
06-PCCD-126	10.38	11.75	11.75	11.29	0.79	7.03
06-PCCD-132	13.88	10.00	10.00	11.29	2.24	19.81
06NNCPRS497	11.06	11.25	11.56	11.29	0.25	2.23
500R-455-06N-Fert	10.31	11.73	11.73	11.26	0.82	7.27
CPRS075-P1-1-3-3	11.75	11.63	10.38	11.25	0.76	6.74
06PCCD807	11.00	N/A	11.50	11.25	0.35	3.14
06-PCCD-132	13.25	10.25	10.25	11.25	1.73	15.40
092000R-1572-B-Pan150,160	9.75	12.00	12.00	11.25	1.30	11.55
07P201570	11.19	11.30	N/A	11.24	0.08	0.71
CPRS075-P1-18-3-075-1	12.00	11.21	10.44	11.22	0.78	6.95
06NNCPRS497	10.94	11.09	11.56	11.20	0.32	2.90
06-PCCD-132	14.31	9.63	9.63	11.19	2.70	24.16

Continued.

Table 1. Continued.

Elite line	2011	2010	2009	Mean	STD	CV
WELS 05-55 09N ROW54	11.56	10.80	N/A	11.18	0.54	4.82
CPRS075-P1-18-3-075-2	11.69	11.10	10.75	11.18	0.47	4.24
06N3-505	11.25	11.13	11.13	11.17	0.07	0.62
06N1-559	10.25	11.63	11.63	11.17	0.80	7.13
500R-455-06N-Fert	10.25	11.63	11.63	11.17	0.80	7.13
06NN499	10.63	10.74	12.13	11.17	0.84	7.50
07500R-455	10.50	12.01	10.94	11.15	0.78	6.96
06-PCCD-175-2	11.06	11.19	11.19	11.15	0.07	0.66
06-PCCD-175-3	11.00	11.19	11.19	11.13	0.11	0.99
06PCCD807	10.75	N/A	11.50	11.13	0.53	4.77
08HU002-MS-P49-I6	11.25	10.96	N/A	11.11	0.21	1.85
06-PCCD-126	9.81	11.75	11.75	11.10	1.12	10.07
06PCCD807	10.69	N/A	11.50	11.09	0.57	5.18
092000R-1572-Pan140,135	9.75	11.75	11.75	11.08	1.15	10.42
092000R-1572-Pan140,135	9.75	11.75	11.75	11.08	1.15	10.42
500R-455-06N-Fert-5	10.94	11.13	11.13	11.07	0.11	1.00
06-PCCD-275	9.50	11.81	11.81	11.04	1.33	12.08
092000R-1570-B	9.69	11.69	11.69	11.02	1.16	10.49
092000R-1572-Pan140,135	9.56	11.75	11.75	11.02	1.26	11.46
500R-455-06N-Fert-6	9.56	11.75	11.75	11.02	1.26	11.46
06N1-28	11.88	10.14	N/A	11.01	1.23	11.15
06-PCCD-26	11.25	10.88	10.88	11.00	0.21	1.94
06-PCCD-276	11.63	10.69	10.69	11.00	0.54	4.91
06PCCD807	10.50	N/A	11.50	11.00	0.71	6.43
500R-455-06N-Fert-8	10.06	11.44	11.44	10.98	0.80	7.24
06N3-505	12.44	10.25	10.25	10.98	1.26	11.50
092000R-1970-Pan5	9.81	11.56	11.56	10.98	1.01	9.19
07P201570	10.63	11.30	N/A	10.96	0.48	4.35
07500R-455	10.69	11.26	10.94	10.96	0.29	2.62
06-PCCD-175	10.50	11.19	11.19	10.96	0.40	3.63
500R-455-06N-Fert	10.00	11.44	11.44	10.96	0.83	7.59
092000R-1572-Pan155,158	10.06	11.38	11.38	10.94	0.76	6.95
CPRS075-P1-18-3-075-3	10.56	10.67	11.58	10.94	0.56	5.11
500R-455-06N-Fert	10.69	11.00	11.00	10.90	0.18	1.66
06-PCCD-26	10.88	10.88	10.88	10.88	0.00	0.03
06-PCCD-65	12.38	10.13	10.13	10.88	1.30	11.91
08HU002-MS-P46-I2	10.50	11.25	N/A	10.88	0.53	4.88
08HU002-MS-P9-I1	11.19	10.50	N/A	10.84	0.49	4.48
06-PCCD-131	10.63	10.94	10.94	10.84	0.18	1.68

Continued.

Table 1. Continued.

Elite line	2011	2010	2009	Mean	STD	CV
092000R-1572-Pan152,156	10.13	11.19	11.19	10.84	0.61	5.67
CPRS075-P1-18-3-075-2	11.25	10.45	10.75	10.82	0.40	3.74
06-PCCD-126	10.56	10.94	10.94	10.81	0.22	2.02
06-PCCD-135	9.56	11.44	11.44	10.81	1.08	10.02
092000R-1572-B-Pan134,138	10.56	10.94	10.94	10.81	0.22	2.02
092000R-1572-B	9.94	11.25	11.25	10.81	0.76	7.01
06-PCCD-135	13.31	9.56	9.56	10.81	2.17	20.04
06-PCCD-100	10.13	11.13	11.13	10.80	0.58	5.38
092000R-1572-B-Pan117,128	10.13	11.13	11.13	10.80	0.58	5.38
092000R-1572-B-Pan117,128	10.06	11.13	11.13	10.77	0.62	5.72
CPRS075-P1-1-3-2	10.69	11.40	10.19	10.76	0.61	5.65
06-PCCD-132	13.00	9.63	9.63	10.75	1.95	18.09
06-PCCD-26	10.50	10.88	10.88	10.75	0.22	2.04
08HU002-MS-P11-I1	11.38	10.13	N/A	10.75	0.88	8.19
06-PCCD-34	12.13	10.06	10.06	10.75	1.19	11.09
06-PCCD-270	12.63	9.81	9.81	10.75	1.63	15.12
07500R-455	10.56	10.70	10.94	10.73	0.19	1.78
CPRS075-P1-1-3-3	10.63	11.19	10.38	10.73	0.42	3.87
06-PCCD-270	10.31	10.94	10.94	10.73	0.36	3.38
500R-455-06N-P1	11.69	10.25	10.25	10.73	0.83	7.74
092000R-1572-B-Pan117,128	9.88	11.13	11.13	10.71	0.72	6.76
06-PCCD-103	12.00	10.06	10.06	10.71	1.12	10.46
CPRS075-P1-18-3-075-2	10.88	10.45	10.75	10.69	0.22	2.04
092000R-104-Pan3	11.19	10.44	10.44	10.69	0.43	4.04
CPRS075-P1-2-14-1-Sterl	11.25	10.38	10.38	10.67	0.50	4.71
06-PCCD-96	10.63	10.69	10.69	10.67	0.04	0.35
06-PCCD-34	12.13	9.94	9.94	10.67	1.26	11.82
500R-455-06N-Fert	10.00	11.00	11.00	10.67	0.58	5.41
06-PCCD-104	9.94	11.00	11.00	10.65	0.61	5.76
CPRS075-P1-1-3-2	10.56	11.40	9.96	10.64	0.72	6.80
06-PCCD-135	10.38	10.75	10.75	10.63	0.22	2.04
06-PCCD-31	9.88	11.00	11.00	10.63	0.65	6.11
06-PCCD-102	9.81	11.00	11.00	10.60	0.69	6.47
06-PCCD-130	10.69	10.56	10.56	10.60	0.07	0.69
06-PCCD-96	10.38	10.69	10.69	10.59	0.18	1.72
500R-455-06N-P1	9.88	10.94	10.94	10.59	0.61	5.81
06-PCCD-124	12.63	9.56	9.56	10.58	1.77	16.72
092000R-1571-B-1572-B-Pan100,102	10.13	10.81	10.81	10.58	0.40	3.74
092000R-1572-B-Pan129	11.13	10.31	10.31	10.58	0.47	4.45

Continued.

Table 1. Continued.

Elite line	2011	2010	2009	Mean	STD	CV
06-PCCD-279	11.56	10.06	10.06	10.56	0.87	8.21
06-PCCD-131	11.38	10.13	10.13	10.55	0.72	6.82
06-PCCD-272	9.75	10.94	10.94	10.54	0.69	6.52
06N3-505	11.13	10.25	10.25	10.54	0.51	4.79
500R-455-06N-P1	10.00	10.81	10.81	10.54	0.47	4.44
06-PCCD-26	11.94	9.81	9.81	10.52	1.23	11.68
06N3-505	10.44	10.56	10.56	10.52	0.07	0.67
06-PCCD-132	10.38	10.56	10.56	10.50	0.11	1.02
06-PCCD-180	11.81	9.83	9.83	10.49	1.14	10.91
06N3-505	10.44	10.50	10.50	10.48	0.04	0.34
092000R-1570-B	11.38	10.00	10.00	10.46	0.79	7.59
092000R-1571-B-1572-B-Pan100,102	9.75	10.81	10.81	10.46	0.61	5.85
06-PCCD-65	10.44	10.44	10.44	10.44	0.00	0.01
CCDR-CHECK	10.56	11.25	9.50	10.44	0.88	8.45
06-PCCD-272	9.81	10.75	10.75	10.44	0.54	5.19
092000R-1571-B-1572-B-Pan100,102	9.69	10.81	10.81	10.44	0.65	6.21
092000R-1572-B-Pan150,160	10.69	10.31	10.31	10.44	0.22	2.09
06-PCCD-55	11.88	9.69	9.69	10.42	1.26	12.11
06-PCCD-45	11.63	9.81	9.81	10.42	1.05	10.06
08HU002-MS-P30 or 36-B2	10.88	9.94	N/A	10.41	0.66	6.35
06-PCCD-291	10.44	10.38	10.38	10.40	0.03	0.32
06-PCCD-65	10.31	10.44	10.44	10.40	0.07	0.71
500R-455-06N-Fert	10.69	10.25	10.25	10.40	0.25	2.43
06-PCCD-77	10.06	10.56	10.56	10.39	0.29	2.76
06N3-505	10.13	10.50	10.50	10.38	0.22	2.09
06N3-505	11.00	10.06	10.06	10.37	0.54	5.23
06-PCCD-274	10.19	10.44	10.44	10.36	0.15	1.41
06N3-505	10.06	10.5	10.5	10.35	0.25	2.44
06-PCCD-65	10.13	10.44	10.44	10.34	0.18	1.76
092000R-1570-B-Pan114-2	9.94	10.50	10.50	10.31	0.32	3.15
092000R-1570-B-Pan114-3	9.94	10.50	10.50	10.31	0.32	3.15
500R-455-06N-Fert	10.44	10.25	10.25	10.31	0.11	1.05
092000R-1570-B-Pan105,138-2	10.31	10.31	10.31	10.31	0.00	0.01
06N3-505	11.31	9.81	9.81	10.31	0.87	8.41
500R-455-06N-P1	9.75	10.56	10.56	10.29	0.47	4.54
06-PCCD-135	10.06	10.38	10.38	10.27	0.18	1.78
06N3-505	10.56	10.13	10.13	10.27	0.25	2.43
500R-455-06N-P1	9.56	10.63	10.63	10.27	0.62	6.00
06-PCCD-37	11.31	9.75	9.75	10.27	0.90	8.78

Continued.

Table 1. Continued.

Elite line	2011	2010	2009	Mean	STD	CV
06-PCCD-71	9.50	10.63	10.63	10.25	0.65	6.36
06-PCCD-279	11.00	9.88	9.88	10.25	0.65	6.31
092000R-1572-B-Pan134,138-3	10.13	10.31	10.31	10.25	0.11	1.04
06-PCCD-75	10.94	9.88	9.88	10.23	0.61	5.97
06NR39-R	10.94	9.88	9.88	10.23	0.61	5.97
06-PCCD-164	10.81	9.94	9.94	10.23	0.50	4.92
06-PCCD-99	9.56	10.56	10.56	10.23	0.58	5.63
06-PCCD-125	9.56	10.56	10.56	10.23	0.58	5.63
06-PCCD-275	11.06	9.81	9.81	10.23	0.72	7.07
500R-455-06N-P1	10.06	10.31	10.31	10.23	0.14	1.40
CPRS075-P1-2-14-1-Sterl	9.88	10.38	10.38	10.21	0.29	2.86
06-PCCD-132	9.75	10.44	10.44	10.21	0.40	3.90
06-PCCD-26	11.00	9.81	9.81	10.21	0.69	6.73
CPRS075-P1-2-14-1-Sterl	9.81	10.38	10.38	10.19	0.33	3.22
06-PCCD-159	10.19	10.19	10.19	10.19	0.00	0.01
06N3-505	9.69	10.44	10.44	10.19	0.43	4.26
06N3-505	10.69	9.94	9.94	10.19	0.43	4.24
092000R-1570-B-Pan103,135	10.56	10.00	10.00	10.19	0.32	3.19
500R-455-06N-Fert	9.94	10.31	10.31	10.19	0.22	2.11
092000R-1570-B	11.25	9.63	9.63	10.17	0.94	9.20
500R-455-06N-Fert	10.00	10.25	10.25	10.17	0.14	1.42
092000R-1572-B-Pan111,116-4	10.19	10.13	10.13	10.15	0.03	0.33
06N3-505	9.94	10.25	10.25	10.15	0.18	1.78
06-PCCD-280	9.81	10.31	10.31	10.14	0.29	2.83
092000R-1572-B-Pan111,116-6	10.13	10.13	10.13	10.13	0.00	0.03
06-PCCD-109	9.50	10.44	10.44	10.13	0.54	5.36
092000R-104-Pan3	9.50	10.44	10.44	10.13	0.54	5.36
500R-455-06N-Fert	9.50	10.44	10.44	10.13	0.54	5.36
06-PCCD-180	10.69	9.83	9.83	10.12	0.50	4.89
06N3-505	10.44	9.94	9.94	10.11	0.29	2.84
06N3-505	10.44	9.94	9.94	10.11	0.29	2.84
092000R-1572-B-Pan134,138	10.31	10	10	10.10	0.18	1.79
06-PCCD-264	11.31	9.5	9.5	10.10	1.05	10.36
06-PCCD-104	9.69	10.31	10.31	10.10	0.36	3.56
06-PCCD-184	10.69	9.81	9.81	10.10	0.51	5.01
06-PCCD-280	9.69	10.31	10.31	10.10	0.36	3.56
06-PCCD-192	10.00	10.13	10.13	10.09	0.08	0.74
500R-455-06N-P1	10.25	10.00	10.00	10.08	0.14	1.43
092000R-1572-Pan155,158	9.63	10.31	10.31	10.08	0.40	3.92

Continued.

Table 1. Continued.

Elite line	2011	2010	2009	Mean	STD	CV
06-PCCD-45	10.63	9.81	9.81	10.08	0.47	4.67
06-PCCD-45	10.63	9.81	9.81	10.08	0.47	4.67
500R-455-06N-P1	10.63	9.81	9.81	10.08	0.47	4.67
06-PCCD-80	9.94	10.13	10.13	10.07	0.11	1.10
06-PCCD-275	9.81	10.19	10.19	10.06	0.22	2.17
06-PCCD-143	10.50	9.83	9.83	10.05	0.39	3.85
06-PCCD-80	9.75	10.19	10.19	10.04	0.25	2.53
092000R-1570-B	9.75	10.19	10.19	10.04	0.25	2.53
500R-455-06N-P1	10.13	10.00	10.00	10.04	0.07	0.72
06-PCCD-129	9.50	10.31	10.31	10.04	0.47	4.66
092000R-1570-B-Pan105,138	9.50	10.31	10.31	10.04	0.47	4.66
500R-455-06N-Fert	9.81	10.13	10.13	10.02	0.18	1.83
06-PCCD-38	9.69	10.19	10.19	10.02	0.29	2.89
06-PCCD-142	10.56	9.75	9.75	10.02	0.47	4.68
092000R-1572-B-Pan111,116	9.75	10.13	10.13	10.00	0.22	2.19
06-PCCD-55	10.63	9.69	9.69	10.00	0.54	5.40
06-PCCD-125	9.50	10.25	10.25	10.00	0.43	4.33
06-PCCD-175	11.00	9.50	9.50	10.00	0.87	8.66
092000R-1572-B-Pan111,116	9.69	10.13	10.13	9.98	0.26	2.56
06-PCCD-272	9.94	10.00	10.00	9.98	0.04	0.36
06-PCCD-184	10.31	9.81	9.81	9.98	0.29	2.91
06-PCCD-187	10.00	9.94	9.94	9.96	0.03	0.35
06N3-505	10.50	9.69	9.69	9.96	0.47	4.70
06-PCCD-184	10.25	9.81	9.81	9.96	0.25	2.55
06N3-505	10.44	9.69	9.69	9.94	0.43	4.34
06-PCCD-276	9.81	10.00	10.00	9.94	0.11	1.09
06-PCCD-135	10.25	9.75	9.75	9.92	0.29	2.91
06-PCCD-272	9.63	10.06	10.06	9.92	0.25	2.53
06-PCCD-279	9.63	10.06	10.06	9.92	0.25	2.53
06-PCCD-128	9.69	10.00	10.00	9.90	0.18	1.82
06-PCCD-128	9.69	10.00	10.00	9.90	0.18	1.82
06-PCCD-175	10.69	9.50	9.50	9.90	0.69	6.93
06-PCCD-103	9.75	9.94	9.94	9.88	0.11	1.11
06-PCCD-61	10.13	9.75	9.75	9.88	0.22	2.19
092000R-1570-B-Pan137,142	9.75	9.93	9.93	9.87	0.10	1.05
06-PCCD-128	9.69	9.94	9.94	9.86	0.15	1.48
06-PCCD-135	10.06	9.75	9.75	9.85	0.18	1.83
06-PCCD-276	10.06	9.75	9.75	9.85	0.18	1.83
500R-455-06N-P1	9.56	10.00	10.00	9.85	0.25	2.56

Continued.

Table 1. Continued.

Elite line	2011	2010	2009	Mean	STD	CV
500R-455-06N-P1	9.94	9.81	9.81	9.85	0.07	0.75
06-PCCD-55	10.06	9.69	9.69	9.81	0.22	2.19
06-PCCD-97	9.81	9.81	9.81	9.81	0.00	0.01
06-PCCD-146	9.81	9.81	9.81	9.81	0.00	0.01
06N3-505	10.13	9.63	9.63	9.80	0.29	2.92
092000R-1570-B-Pan111,113	9.50	9.94	9.94	9.79	0.25	2.59
06-PCCD-77	10.38	9.50	9.50	9.79	0.51	5.16
06-PCCD-68	9.88	9.75	9.75	9.79	0.07	0.74
092000R-1570-B-Pan133,134	9.75	9.81	9.81	9.79	0.03	0.35
500R-455-06N-P1	9.75	9.81	9.81	9.79	0.03	0.35
FRNS	11.38	9.00	8.99	9.79	1.37	14.04
06NR39-R	9.56	9.88	9.88	9.77	0.18	1.88
06-PCCD-70	10.31	9.50	9.50	9.77	0.47	4.80
06-PCCD-135	9.75	9.75	9.75	9.75	0.00	0.00
06-PCCD-135	9.75	9.75	9.75	9.75	0.00	0.00
06-PCCD-31	9.63	9.81	9.81	9.75	0.11	1.10
06-PCCD-31	9.56	9.81	9.81	9.73	0.14	1.47
06-PCCD-100	10.38	9.38	9.38	9.71	0.57	5.92
06-PCCD-37	9.63	9.75	9.75	9.71	0.07	0.74
06-PCCD-131	10.06	9.50	9.50	9.69	0.32	3.35
06-PCCD-131	10.06	9.50	9.50	9.69	0.32	3.35
06-PCCD-194	9.56	9.75	9.75	9.69	0.11	1.12
06N3-505	9.63	9.69	9.69	9.67	0.04	0.39
092000R-1570B-Pan120,125,126	9.50	9.75	9.75	9.67	0.14	1.49
06-PCCD-272	10.00	9.50	9.50	9.67	0.29	2.99
092000R-1572-Pan157	9.94	9.52	9.52	9.66	0.24	2.50
06-PCCD-149	10.06	9.44	9.44	9.65	0.36	3.73
06-PCCD-132	9.63	9.63	9.63	9.63	0.00	0.03
06-PCCD-130	9.56	9.63	9.63	9.61	0.04	0.41
06-PCCD-45	9.81	9.50	9.50	9.60	0.18	1.88
06-PCCD-267	9.50	9.63	9.63	9.59	0.08	0.78
06-PCCD-117	9.63	9.56	9.56	9.58	0.04	0.39
06-PCCD-118	10.19	9.25	9.25	9.56	0.54	5.66
06-PCCD-123	11.06	8.81	8.81	9.56	1.30	13.60
06-PCCD-264	9.56	9.56	9.56	9.56	0.00	0.02
092000R-1570-B-Pan110,108	9.63	9.50	9.50	9.54	0.07	0.76
06-PCCD-123	9.69	9.25	9.25	9.40	0.25	2.69
FRANCIS CHECK	9.81	8.60	8.60	9.00	0.70	7.77
FRANCIS CHECK	9.56	8.42	8.42	8.80	0.66	7.50

Continued.

Table 1. Continued.

Elite line	2011	2010	2009	Mean	STD	CV
CYPRESS CHECK	10.06	8.13	8.13	8.77	1.11	12.70
TRENASSE CHECK	9.88	8.10	8.10	8.69	1.02	11.79
FRANCIS CHECK	9.00	8.53	8.53	8.69	0.27	3.12
FRANCIS CHECK	9.69	8.10	8.10	8.63	0.92	10.62
CYPRESS CHECK	8.29	8.55	8.55	8.46	0.15	1.77
COCODRIE CHECK	9.56	7.73	7.73	8.34	1.06	12.68
COCODRIE CHECK	8.88	8.02	8.02	8.31	0.50	5.98
CYPRESS CHECK	8.46	8.00	8.00	8.15	0.27	3.26
CATAHOULA CHECK	8.81	7.79	7.79	8.13	0.59	7.26
TRENASSE CHECK	7.75	8.24	8.24	8.08	0.28	3.50

Figure 1. Coefficient of variance (%) for protein content means among 324 high protein elite lines based on data collected in 2009, 2010, and 2011 at the Rice Research Station.

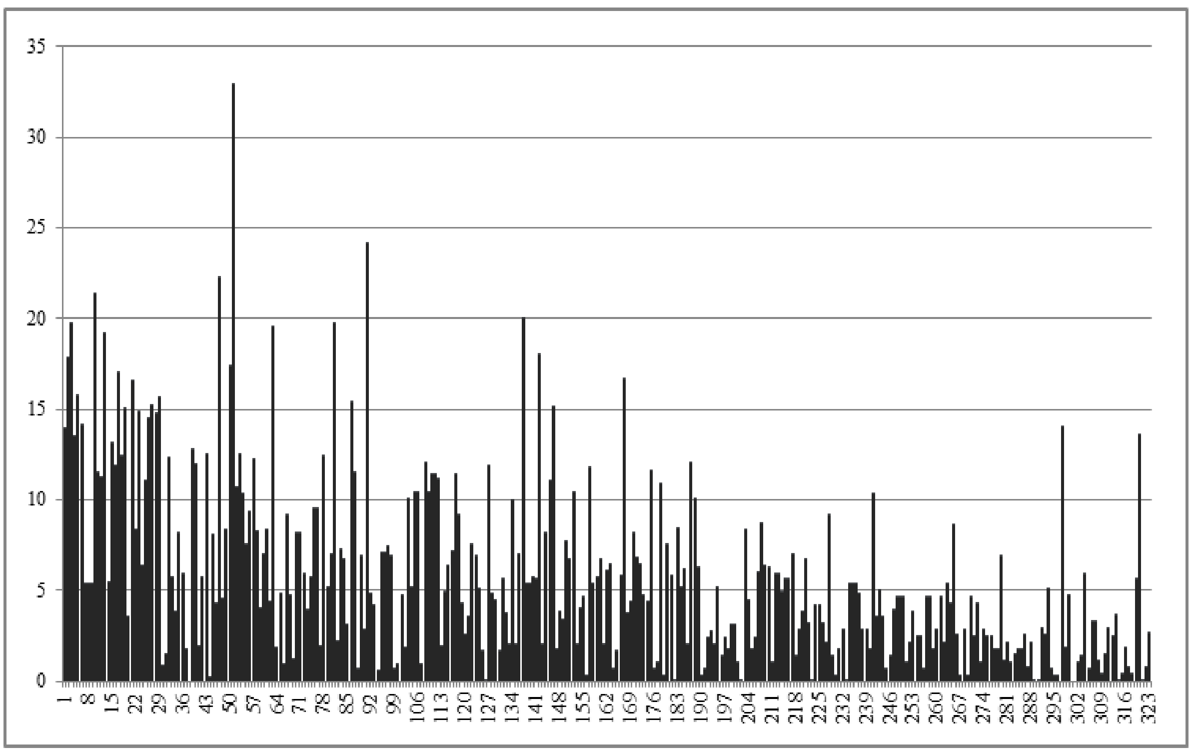


Table 2. Phenotypic performance of five high protein lines and their cultivar checks in PY trials. Values averaged over three replicates.

Plant ID	Vigor	Height (cm)	HDT	Lodging	Head	Total	Yield	Protein Content
06PCY120024	4	87.7	190	40	57.7	70.2	6003.69	13.6
06PCY120025	5	85	195	55	57.2	70.1	5747.98	13.1
06PCY122425	5	87	194	38	56.6	70.0	5879.68	12.0
06PFR200828	6	97	195	0	54.5	70.0	3958.46	14.3
07PCC2021570	4	93	189	13	51.9	70.5	8029.03	12.6
CPRS	4	94	188	15	58.8	69.3	7702.29	9.1
CCDR	4	89	193	33	53.0	69.4	8335.08	9.3
FRNS	6	99	194	0	44.6	68.2	5960.08	9.9

RICE AGRONOMY[1]

D.L. Harrell, J.P. Leonards, R.P. Regan, and J.S. Fluitt

INRODUCTION

The following three sections of the report document research conducted in rice plant nutrition, cultural management, and rice rotational crops. Rice plant nutrition studies were conducted at the LSU AgCenter Rice Research Station and at multiple off-station locations in an effort to generate agronomic production information representative of all Louisiana rice production areas. Rice nutrition studies were conducted in Acadia Parish at the Rice Research Station and on cooperator farms located in Acadia, Vermilion, St. Landry, Franklin, and Richland parishes. Cultural management studies were conducted at the Rice Research Station north and south units.

We would like to express our sincere appreciation to the following off-station cooperators for their assistance in conducting this research. Our efforts would not be successful without their support.

Lounsberry Farms – Vermilion Parish
Elliot Colvin – Richland Parish
Richard and Neil Fontenot – St. Landry Parish
Miller Brothers Farms – Acadia Parish
John Owen – Franklin Parish

Throughout the following sections, multiple abbreviations are used to represent common units of measure and agricultural chemicals. These abbreviations are explained below in Tables 1 and 2, respectively.

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

Table 1. Common abbreviations used in agronomic research at the Rice Research Station.

Abbreviation	Explanation
A	Acre
bushel/A	Bushels per acre
Ca	Calcium
COC	Crop oil concentrate
DAT	Days after treatment
DPP	Days prior to planting
Fe	Iron
ft	Feet
ft^2	Square feet
gal/A	Gallons product per acre
Head Rice	Percent unbroken kernels left after milling
in	Inches
lb	Pounds
lb/A	Pounds product per acre
lb ai/A	Pounds active ingredient per acre
Ldg-Rate	Lodging rate in percent
Ldg-Type	Lodging type on a scale from 0 to 5 where 0 = no lodging, 1 = slightly lodged (approximately 1 - 23^o angle) and 5 = lodged to ground (90^o angle)
K	Potassium
Main	First rice crop; crop growth stage prior to first harvest
Mg	Magnesium
Na	Sodium
NA	Information not available/applicable
oz/A	Ounces product per acre
P	Phosphorus
PD	Panicle differentiation
PI	Panicle initiation
pl/m^2	Plant densities measures 14 days after seeding emergence by counting the main-stem numbers in a randomly selected area of 1 m^2 in each plot
Postharvest	Application applied immediately following main crop harvest
ppm	Parts per million
PRE	Application prior to crop emergence
Preflood	Preflood application applied 1 to 2 days prior to permanent flood establishment
Preplant	Preplanting application prior to flooding and seeding
pt/A	Pints product per acre
Ratoon	Second rice crop growth after harvest of first (main) crop
RRS	Rice Research Station, Crowley, LA
SB Severity	Sheath blight infestation on a scale from 1 to 9; where 1 = no sheath blight and 9 = severe sheath blight infestation
Total Mill	Percent of rice kernels left after milling
Zn	Zinc
10% Heading(HD)	Crop growth stage where 10% of plants within a plot have visible panicles
50% Heading(HD)	Number of days from effective seeding date to 50% panicle exertion

Table 2. Common crop protection chemicals and formulations used in agronomic research at the Rice Research Station.

Trade Name	Common Name	Formulation	Company
Herbicides			
Aim	Carfentrazone	EC2	FMC Corp.
Arrosolo	Propanil + molinate	3 lb + 3 lb	RiceCo
Basagran	Bentazon	4 lb	BASF
Clincher	Cyhalofop	2.38 lb	Dow Agro Science LLC
Command	Clomazone	3ME	FMC Corp.
Duet	Propanil + bensulfuron	4 lb + 0.48 oz	Rice Co.
Grandstand R	Triclopyr	3 lb	Dow Agro Science LLC
Grasp	Penoxsulam	SC2	Dow Agro Science LLC
Honcho Plus	Glyphosate	4 lb	Monsanto
Liberty	Glufosinate ammonium	18.19%	Bayer CropScience
Londax	Bensulfuron	60% DF	DuPont
Newpath	Imazethapyr	2 lb	BASF
Permit	Halosulfuron	75% WSG	Monsanto
Prowl	Pendimethalin	EL 3.3	BASF
Regiment	Bispyribac-sodium	80% DF	Valent USA
Rice Beaux	Propanil + Thiobencarb		Rice Co LLC
Roundup Weatherman	Glyphosate	4 lb	Monsanto
Stam M4	Propanil	4 lb	Dow Agro Science LLC
Weedar 64	2,4-D	3.8 lb	Aventis
Insecticides			
Dermacor	Rynaxypyr		DuPont
Karate Z	Cyhalothrin	2.08 lb	Syngenta
Mustang Max	Zeta-cypermethrin	0.8	FMC Corp.
Methyl Parathion	Methyl Parathion	4 lb	Cheminova
Fungicides			
Dithane DF	Mancozeb	75% DF	Dow Agro Science LLC
Stratego	Propiconazole + Trifloxystrobin	1.04 lb + 1.04 lb	Bayer Crop Science LLC
Quadris	Azoxystrobin	2.08 lb	Syngenta
Quilt	Azoxystrobin + Propiconazole	1.04 lb + 0.62 lb	Syngenta

RICE NUTRITION EXPERIMENTS

D.L. Harrell, J.P. Leonards, R.P. Regan, and J.S. Fluitt

Variety by Nitrogen Rate and Application Timing Experiments

Variety by nitrogen (N) experiments are conducted yearly throughout Louisiana in order to establish N requirements for new commercial varieties and advanced experimental lines. Rice varieties vary in their response to N rates and timing of application. These varietal N response differences can be attributed to several factors, including such traits as lodging, disease susceptibility, and N uptake efficiency. Environmental influences also impact the N rate needed to produce optimum yields. These include such factors as soil type, weather, and disease and insect pressure. For this reason, trials are conducted not only at the Rice Research Station (RRS) but also at cooperator sites in Vermilion (VP), Franklin (FP) and Richland (RP) parishes. The soils at RRS, VP, FP, and RP are classified as Crowley silt loam, Kaplan silt loam, Sharkey clay, and Perry clay, respectively. Eight single preflood N rates (0, 30, 60, 90, 120, 150, 180, and 210 lb/A) and four split rates applied at the 4- to 5-leaf stage and at panicle differentiation (45/45, 75/45, 105/45, and 135/45 lb N/A) were evaluated. The N requirement, days to 50% heading, lodging susceptibility, and plant height were all determined. Ratoon data are also determined for trials in Southwest Louisiana. A minimum of 3 years of data for each variety is needed before final recommendations are established. These recommendations can be found in Rice Varieties and Management Tips 2012, LAES publication number 2270. Electronic copies of this publication can be accessed from the LSU AgCenter Website: (http://www.lsuagcenter.com).

Complete results for each variety by N trials at each location are presented in Tables 1 – 34. Twelve conventional rice varieties, two advanced experimental lines, and an experimental medium-grain hybrid were evaluated in 2011. At the RRS, all variety by N trials were drill seeded into a fall-stale seedbed on March 24. Harvest date varied by variety. Statistically, optimum grain yields at the RRS were obtained after applying 90 lb N/A for 'Roy J'; 120 lb N/A for 'CL261'; 150 lb N/A for 'CL111,' 'CL142,' 'CL181,' 'CL152,' 'CL162,' 'Rex,' 'Taggart,' 'Caffey,' 'LA2140,' and 'LAH10'; and 180 lb N/A for 'LA2048,' 'JES,' and 'Jazzman 2'. Only the experimental hybrid, 'LAH10,' lodged at the RRS trials. In fact, LAH10 began to lodge at the 60 lb N/A rate.

Variety by N experiments at the VP site were drill seeded to a conventionally tilled seedbed on March 17. Newpath drift did occur at the VP location; however, the non-Clearfield varieties did recover and were harvested. Optimal yields at VP were obtained at 30 lb N/A for CL162; 60 lb N/A for CL111; 90 lb N/A for CL152, LA2048, Taggart, Caffey, Jazzman, and LA2140; 120 lb N/A for Rex; and 150 lb N/A for LAH10. The medium-grain CL261 was lodged due to animals that only bedded in this variety compromising the ability to determine an optimum yield. Lodging was not observed in any other variety.

Experiments at the RP location were drill seeded to a conventionally tilled seedbed on April 13. Only Clearfield varieties were tested at this location. All varieties were harvested on September 1. Grain yields for CL111, CL142, and CL152 reached 95% of the maximum yield at a N rate of 60 lb/A. Grain yields for CL181 and CL162 reached near maximum when no N fertilizer was applied. Rice variety CL261 was maximized at 150 lb N/A.

All trials at the FP location were lost due to black bird predation of rice seed just after planting.

Other Fertility Experiments

An experiment was established in 2011 at the RRS location to evaluate the N uptake efficiency of six rice varieties (CL151, CL111, CL181, Jazzman 2, CL261, and Caffey) and one experimental rice hybrid (LAH10). Three rates of N (0, 90, and 150 lb/A) were applied as a single preflood application. Biomass samples were taken at 50% heading, and grain samples were taken at harvest. Agronomic and tissue analysis results are presented in Table 35. When the data were pooled across cultivars (data not shown), significant responses for grain yield and N uptake (at 50% heading and grain at maturity) were observed for N rate. In all cases, N uptake and yield increased with increasing N rates. At the 90 lb N/A rate, the medium-grain variety Caffey had a significantly higher grain N content (1.3%) compared to all of the long-grain varieties, which ranged from 1.0-1.1%, but was not different than the other medium-grain variety in the trial, CL261 (1.2%). Differences in grain N content at maturity did not differ at the 0 and 150 lb N/A rates.

Identical zinc (Zn) fertility trials were conducted at the Miller Brothers Farm in Egan, LA (AP location) and at R&N Farms in Vidrine, LA (EP location). These trials consisted of six Zn rates (0, 5, 7.5, 10, 15, and 20 lb/A). The Zn source was zinc sulfate, which was surface broadcast at planting. Biomass samples were then taken at the mid-tillering stage approximately 2 weeks after flooding and again at 50% heading and were analyzed for Zn content. At the EP location, the initial soil test indicated a Zn concentration of 0.7 ppm and a soil pH of 5.1. Results of the EP location are presented in Table 47. A yield response to Zn fertilization was not observed at this location for the first or ratoon crops. Tissue samples at mid-tillering increased numerically with an increasing Zn rate and ranged from 38 to 84 ppm, but was never below the critical level of 15 ppm, indicating that Zn was not limiting. A soil test at the AP location indicated that Zn was 0.2 ppm and soil pH was 7.1. Results from this location are presented in Table 57. Grain yield was statistically increased with increasing Zn fertilization at the P=0.08 level of probability. Grain yield increased from a low of 6,830 lb/A at the 0 Zn rate to a high of 9,446 lb/A at the 20 lb/A Zn rate. Ninety-five percent relative grain yield was achieved at the 7.5 lb Zn/A rate with a grain yield of 9,370 lb/A. Ratoon yields were not significantly different due to Zn fertilization. Tissue Zn concentrations at mid-tillering ranged from a low of 21.8 ppm to a high of 46 ppm at the 0 and 20 lb/A Zn rates, respectively. Although a significant grain yield response to Zn fertilization was observed at the P=0.08 level, the concentrations were higher than the published literature critical level of 15 ppm.

A study focused on the varietal response of rice to Zn fertilization was conducted at the AP location. Seven Clearfield rice varieties (CL151, CL111, CL152, CL162, CL142, CL181, and CL261) were evaluated. Two Zn fertilizer rates (0 or 15 lb Zn/A) as zinc sulfate were used. All rice seed received a Zn seed treatment at a rate of 1 lb/A. Results of this trial can be found in Table 54. All varieties benefited from Zn fertilization. However, a significant yield response to Zn fertilization at the $P \leq 0.05$ level was observed for CL151, CL162, and CL142. Grain yield increased by 33, 34, and 38% in response to Zn fertilization for CL151, CL162, and CL142, respectively.

A study was established at the EP and AP locations to evaluate the effects of potassium (K) rate main and ratoon crop yields. Six K rates (0, 30, 60, 90, 120, and 150 lb K_2O/A) were surface broadcast at planting. Aboveground biomass samples were taken at main crop heading. Initial Mehlich3 soil test extractable K at the AP location was 44 ppm. A yield response to K fertilization was not observed at this location. However, aboveground biomass K concentration at heading increased from 0.95 to 1.36% from the 0 and 150 lb K_2O fertilization rates, respectively. Initial Mehlich3 soil test extractable K at the EP location was 79 ppm. Grain yields of both the main and ratoon crops were not significantly increased due to K fertilization at this location.

Phosphorus (P) fertilization trials were established at the EP and AP locations in 2011. Six rates of P_2O_5 were evaluated (0, 30, 60, 90, 120, and 150 lb P_2O_5/A). All P was surface broadcast at planting as triple-super phosphate. Mehlich3 soil test extractable P at the EP location was 10 ppm. A significant yield response to P fertilization was not observed at this location. Mehlich3 soil test extractable P at the AP location was 3 ppm. A response to P fertilization was observed at this location. Grain yields of the main crop ranged from a low of 6,191 lb/A at the 0 lb P_2O_5 rate to a high of 9,451 lb P_2O_5 at the 120 lb P_2O_5 rate. Ninety-five percent of the relative yield was achieved at the 60 lb P_2O_5 rate. When ratoon and main crop yields were combined, 95% of the relative grain yield was achieved at the 90 lb P_2O_5 rate.

Two trials were established in Louisiana in 2011 to evaluate the agronomic response of CL151 to N fertilization rate, K fertilization rate, and K fertilizer application timing and their associated interactions. Of particular interest was the impact of treatment interactions on the lodging potential of the rice variety. Two N fertilization rates (100 and 200 lb/A), three K fertilization rates (45, 90, and 135), and two K fertilizer application timings (preflood and panicle initiation (PI) as determined by greenring development). The factorial treatments were arranged in a randomized complete block design. The first trial was located at the RRS location. The soil at the Acadia Parish location was classified as a Crowley silt loam. The second location was at the EP location. The Evangeline Parish location was drill seeded into a conventionally tilled seedbed and the Acadia Parish location was drill seeded to a fall stale seedbed. Treatment means for the main effects of N rate, K rate, and K application timing at the RRS location are presented in Table 50a. Treatment means for the 2- and 3-way interactions are presented in Tables 50b and 50c, respectively. Lodging was not observed for any of the plots at this location. Main crop rice grain yield was not significantly affected by the 2- or 3-way treatment interactions. Main crop grain yield was significantly increased by the main effect of N rate (P=0.0394) but not by K rate or K application timing. The 200 lb/A N fertilization rate yielded 10,110 lb grain/A while the 100 lb/A N rate yielded 9,184 lb grain/A. Ratoon rice yields were not affected by any of the treatments or interactions; however, total seasonal yield (main crop plus ratoon crop) was increased both by K rate and N rate. In general, the 135 lb/A K fertilization rate produced slightly higher total yields compared to the 45 and 90 lb/A rates. Total yield was increased by 812 lb/A at the 200 lb/A N rate compared with 100 lb/A N rate. Tissue K concentration within the aboveground biomass was increased with each increasing K fertilization rate from 1.26 to 1.39%. Similarly, aboveground tissue concentration of K at 50% heading was higher (1.42%) when the fertilizer was applied preflood than when the K fertilizer was applied at PI (1.23%). This suggests that the K fertilizer was best utilized when it was applied preflood. Total K and N uptake in the aboveground tissue at 50% heading was increased with increasing rates of K and N fertilization, respectively. Treatment means for the main effects of N rate, K rate, and K application timing for the EP location are presented in Table 49a. Treatment means for the 2- and 3-way interactions are presented in Tables 49b and 49c, respectively. Lodging was not observed for any of the plots at this location. Rice grain yield of the main crop was affected by the complex 3-way interaction of N rate, K rate, and K application timing; however, it was not affected by the simple main effects. Unfortunately, a simple discernible pattern in the 3-way interaction of treatments on grain yield could not be inferred from the results. Ratoon and total grain yields were not significantly influenced by the main effects or their interaction. Aboveground biomass concentration of N at 50% heading and total N uptake was higher when the 200 lb/A N rate was used (1.72% and 183 lb N/A, respectively) compared with the 100 lb/A N rate (1.24% and 131 lb N/A). Potassium tissue concentration and total K uptake at 50% heading were similar across all treatments and treatment interactions.

A trial was established in 2011 at the RRS location to evaluate the amount and rate of ammonia volatilization loss from four N sources over a 20-day period of time. Arborite-treated urea, Agrotain-treated urea, N-Zone-treated urea, and untreated urea were evaluated. Semi-open volatilization chambers were used to estimate ammonia volatilization loss. Fertilizer was applied by hand on a dry soil and phosphoric acid-treated sponges were used to trap the ammonia gas released. The sponges were removed for analysis and replaced 10, 9, 7, 5, 3, and 1 day before the permanent flood was established and 1 and 5 days post flooding. Cumulative N losses over the 20-day period are presented in Figure 1. Approximate cumulative N loss over the 15-day period was 22, 18, 4, and 3% from urea, N-Zone-treated urea, Arborite-treated urea, and Agrotain-treated urea (Table 1). Both Arborite and Agrotain contain the active ingreadient N-(n-butyl) thiophosphoric triamide (NBPT) and were similar in their effectiveness in slowing volatilization losses compared to untreated urea.

Another trial at the RRS was conducted as a companion trial to the previous volatilization experiment in order to evaluate the corresponding rice grain yield loss associated with the four N sources when applied several days before rice flood establishment. The trial was set up as a randomized complete block design with four N sources (Arborite-treated urea, Agrotain-treated urea, N-Zone-treated urea, and urea), two rates of N (60 and 120 lb N/A), and three application timings (10, 5, and 1 days prior to flood establishment, DPF). A check plot, which received 0 N, also was included as a reference. A significant rainfall event did occur on April 26, producing 3.35 inches of rain. This occurred 3 DPF. This rainfall event helped to incorporate the 10 and 5 DPF N fertilizer treatments and caused the 1 DPF treatment to be applied onto wet ground. Analysis of variance results from the factorial arrangement of treatments (not including the check treatment) are presented in Tables 51a, 51b, and 51c for the main effects, and 2- and 3-way interactions, respectively. Results from the check plot which was not included in this analysis was 5,442 lb/A. Rice grain yield was not significantly affected by the 3-way interaction (P = 0.25) but was for the 2-way interaction between N source and time of application (P = 0.0016, LSD = 677 lb grain/A). In general, the 5 DPF application timing produced the highest rice grain yields (ranging from a high of 9,337 lb/A to a low of 9,104 lb/A), which were not significantly different between N sources. Grain yields were not statistically different between N sources at the 1 DPF treatment. However, significant yield differences in grain yield did occur between N sources when applied 10 DPF. Urea (7,217 lb/A) and N-Zone-treated urea (7,035 lb/A) were significantly lower than Agrotain-treated urea (8,640 lb/A) and Abrorite-treated urea (8,481 lb/A). A significant grain yield difference between Arborite and Agrotain was not observed for the 2-way interaction, indicating that both products are equally effective in reducing volatilization when left on a soil surface for 10 days. The rainfall event that occurred 3 DPF could partly explain why the 5 DPF had higher yields compared with the 10 and 1 DPF treatments. It could be assumed that the fertilizer efficiency of the 5 DPF treatment was increased by moving the N into the soil profile from the rainfall event. Conversely, the 1 DPF treatment most likely had a reduced fertilizer efficiency due to an increased rate of volatilization that is possible when urea is applied onto a wet soil surface. Similar findings were observed for total N uptake for the 2-way interaction between N source and time of application supporting this hypothesis.

A trial was conducted to evaluate the rice yield and N uptake response to N fertilizers and commercially available fertilizer treatments. Fertilizers and fertilizer treatments evaluated included Agrotain, Arborite, urea, ammonium sulfate (AMS), Super-U, Nutrisphere-N, N-Zone, Instinct, Stay-N, and 1:1 mix of AMS and urea. All fertilizers were applied at rates of 60 and 120 lb N/A. Results of this experiment are presented in Table 53. Mean yield across N rates for urea was 5,810 lb/A. Yield, compared with urea, was significantly increased ($P<0.001$; LSD=452 lb/A) for Agrotain (8,580 lb/A), Arborite (8,361 lb/A), Super-U (8,331 lb/A), and AMS (7,144 lb/A). When compared with urea, rice yields were reduced for N-Zone (5,681 lb/A), Stay-N (5,741 lb/A), and Instinct (5,747 lb/A). Yields for Nutrisphere-N and the 1:1 urea and AMS blend were not significantly different from urea.

Ratoon Rice Fertility Experiments

A trial was initiated in 2010 and repeated in 2011 to evaluate the response of CL111 and CL151 ratoon yields to various N sources and rates. Sources of N included urea, ammonium sulfate (AS), and a 1:1 N based blend of urea and AS. Rates of N were 45, 90, and 135 lb/A. All main crop yields were statistically similar. Treatment means from this trial are presented in Table 36. A significant ratoon yield response ($P < 0.001$) was seen for N rate. Ratoon grain yield means for the 45, 90, and 135 lb/A N rates were 2,123, 2,549, and 2,975 lb/A, respectively (LSD = 106 lb/A). Yields were optimized at an N rate of 135 lb/A. A significant variety response also was observed ($P < 0.03$). Overall mean yields across N rates for CL111 and CL151 were 2,730 and 2,368, respectively (LSD = 274 lb/A). A ratoon yield response was observed for N source ($P = 0.0062$; LSD = 112 lb/A) with AS significantly out yielding the other N sources. Ratoon yields were 2,470, 2,686, and 2,492 lb/A for urea, AS, and the urea-AS blend, respectively.

A trial was initiated in 2010 and repeated in 2011 to evaluate the ratoon yield response of CL111 and CL151 to various rates of N. Six post harvest rates of N (0, 30, 60, 90, 120, and 150 lb/A) were evaluated. All plots received 150 lb/A prior to permanent flood establishment in the first crop. Analysis of variance indicated that ratoon yields of CL111 (2,642 lb/A) were statically superior to CL151 (2,286 lb/A) at the $P = 0.07$ level of probility. A significant ratoon yield response was observed for N rate ($P<0.001$; LSD = 265). Mean ratoon yield was 1,494, 1,997, 2,443, 2,781, 2,888, and 3,183 lb/A for the 0, 30, 60, 90, 120, and 150 lb/A N fertilization rates, respectively. N was optimized at the 150 lb/A N fertilization rate. A variety by N rate interaction was not observed.

A trial was initiated to evaluate the effectiveness of Agrotain-treated urea compared to untreated urea in ratoon rice production. Two N sources (Agrotain-treated urea and urea) and six N rates (0, 30, 60, 90, 120, and 150 lb/A) were evaluated in the trial. First crop rice was fertilized with urea at rate of 150 lb N/A after harvest. CL111 was the rice variety grown. Main crop grain yield was similar across all treatments. A significant N rate by N source interaction was observed (Table 38). When Agrotain-treated urea was used, the optimum N rate was 90 lb/A with a ratoon yield of 12,928 lb/A. When urea was the N source, the optimum N rate was 120 lb/A with a ratoon yield of 12,949 lb/A.

Rice Variety by Nitrogen Experiments at the Rice Research Station

Experiment number ....: Rice Research Station VxN Studies

Site and design ....:
Location/Cooperator ....: Rice Research Station (Crowley Main)
Tillage type..................................: Fall Stale
Experimental design...................: Randomized complete block
Number of reps ....: 4
Plot size..: 4.66 x 16 ft
Row width/rows per plot............: 8 in / 7

Soil type ....: Crowley silt loam
% organic matter........................: 1.3
pH...: 6.9
Extractable nutrients ppm ....: Ca-1,274; Cu-1.7; Mg-196; P-21; K-61; Na-66; S-6.2; Zn-5.0

Crop/Variety ....: Rice / See Data Sheet
Planting method/date ....: Drill seeded / March 15
Seeding rate/depth......................: 40 seeds/ft^2 / .75 inch
Emergence date...........................: March 24
Harvest date ....: See Data Sheet
Ratoon harvest date....................: See Data Sheet

Seed treatment/cwt ....: Dithane (fungicide)-114 g
Release (gibberellic acid)-10 g
Zinc Plus (10% Zn & 4.9% combined sulfur)-296 ml

Fertilization..: 240 lb/A 0-24-24-2.8, March 16
90 lb N/A 46-0-0, August 8

Water management ....:
Flush ....: March 23, April 7, April 15
Flood ....: April 21
Drain...: July 19
Ratoon flood.................................: August 10
Ratoon drain ....: October 14

Pest management ....:
Herbicides....................................: 1.5 qt/A Glyphosate, March 2
1 qt/A Glyphosate, March 21
3 qt/A Propanil + .5 oz/A Permit + 1 oz/A Londax, April 6
2 qt/A Rice Beaux + 2 qt/A Propanil + 1 oz/A Londax + .75 oz/A Permit, April 19
19 oz/A Clincher, May 27
1.5 qt/A Basagran, August 9
Insecticides ....: 0.137 lb ai/cwt Dermacor seed treatment
Fungicides....................................: 12 oz/A Quadris, June 18

Table 1. Determine the agronomic response of drill-seeded CL111 to nitrogen fertilizer rate and time of application (3.1). Rice Research Station.

Crop Name					Rice	Rice	Rice	Rice	Rice	Rice	Rice
Rating Date						7/29/2011	7/29/2011	7/29/2011		10/26/2011	
Rating Type					50% HD	Height	Test Wt.	Yield	50% HD	Yield	Total Yield
Rating Unit					days	in	lb/bu	lb/A	days	lb/A	lb/A
Crop Stage Majority					Main	Main	Main	Main	Ratoon	Ratoon	MC+RC
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage							
1	UREA	0	lb ai/A	4-5 leaf	92 f	31 c	48.8 a	3831 g	40 a	3656 a	7487 f
2	UREA	30	lb ai/A	4-5 leaf	93 def	31 c	49.2 a	5558 f	40 a	3360 ab	8918 e
3	UREA	60	lb ai/A	4-5 leaf	94 cd	34 bc	49.6 a	7674 d	40 a	3297 ab	10971 cd
4	UREA	90	lb ai/A	4-5 leaf	95 bc	36 abc	47.4 a	8616 c	40 a	2797 cd	11414 c
5	UREA	120	lb ai/A	4-5 leaf	95 b	39 ab	48.6 a	9538 b	40 a	2752 cd	12290 ab
6	UREA	150	lb ai/A	4-5 leaf	96 ab	39 ab	48.3 a	10086 ab	40 a	2703 d	12789 a
7	UREA	180	lb ai/A	4-5 leaf	97 a	41 a	48.4 a	10478 a	40 a	2462 d	12940 a
8	UREA	210	lb ai/A	4-5 leaf	97 a	42 a	48.0 a	10438 a	40 a	2547 d	12986 a
9	UREA	45	lb ai/A	4-5 leaf	92 ef	34 bc	48.0 a	7032 e	40 a	3236 abc	10267 d
	UREA	45	lb ai/A	PD							
10	UREA	75	lb ai/A	4-5 leaf	94 cde	35 abc	49.5 a	8736 c	40 a	3022 bcd	11758 bc
	UREA	**45**	**lb ai/A**	**PD**							
11	UREA	105	lb ai/A	4-5 leaf	95 bc	39 ab	48.2 a	9962 ab	40 a	2676 d	12638 a
	UREA	45	lb ai/A	PD							
12	UREA	135	lb ai/A	4-5 leaf	96 ab	37 abc	48.8 a	10211 ab	40 a	2611 d	12822 a
	UREA	45	lb ai/A	PD							
LSD (P=.05)					1	4	1.6	612	0	369	712
Standard Deviation					1	2	1.1	424	0	255	493
CV					1	6	2.2	5	0	9	4

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls).

Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Table 2. Determine the agronomic response of drill-seeded CL142 to nitrogen fertilizer rate and time of application (2.1). Rice Research Station.

Crop Name					Rice	Rice	Rice	Rice	Rice	Rice	Rice
Rating Date						7/29/2011	7/31/2011	7/31/2011		11/7/2011	
Rating Type					50% HD	Height	Test Wt.	Yield	50% HD	Yield	Total Yield
Rating Unit					days	in	lb/bu	lb/A	days	lb/A	lb/A
Crop Stage Majority					Main	Main	Main	Main	Ratoon	Ratoon	MC+RC
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage							
1	UREA	0	lb ai/A	4-5 leaf	95 f	34 e	48.6 ab	4634 e	57 a	2338 ab	6972 e
2	UREA	30	lb ai/A	4-5 leaf	97 def	35 de	48.8 a	6334 d	57 a	2218 ab	8552 d
3	UREA	60	lb ai/A	4-5 leaf	97 c-f	38 cde	48.4 abc	8020 c	57 a	2047 ab	10066 c
4	UREA	90	lb ai/A	4-5 leaf	98 cd	39 cde	48.5 abc	9074 b	57 a	1791 ab	10866 bc
5	UREA	120	lb ai/A	4-5 leaf	101 a	43 abc	48.2 a-d	9146 b	57 a	1830 ab	10976 bc
6	UREA	150	lb ai/A	4-5 leaf	100 a	45 ab	47.4 e	10025 a	57 a	1764 ab	11789 ab
7	UREA	180	lb ai/A	4-5 leaf	101 a	47 a	47.7 cde	10156 a	57 a	2368 ab	12524 a
8	UREA	210	lb ai/A	4-5 leaf	101 a	45 ab	47.6 de	10369 a	57 a	2453 a	12822 a
9	UREA	45	lb ai/A	4-5 leaf	96 ef	39 cd	48.6 ab	8042 c	57 a	1913 ab	9955 c
	UREA	45	lb ai/A	PD							
10	UREA	75	lb ai/A	4-5 leaf	97 cde	39 cd	48.4 abc	9254 b	57 a	1597 b	10851 bc
	UREA	45	lb ai/A	PD							
11	UREA	105	lb ai/A	4-5 leaf	99 bc	42 bc	48.3 a-d	10178 a	57 a	1814 ab	11992 a
	UREA	45	lb ai/A	PD							
12	UREA	135	lb ai/A	4-5 leaf	100 ab	42 abc	48.0 b-e	10294 a	57 a	1773 ab	12067 a
	UREA	45	lb ai/A	PD							
LSD (P=.05)					1	3	0.5	649	0	460	781
Standard Deviation					1	2	0.3	450	0	318	541
CV					1	5	0.7	5	0	16	5

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls).

Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Table 3. Determine the agronomic response of drill-seeded CL181 to nitrogen fertilizer rate and time of application (2.1). Rice Research Station.

Crop Name					Rice	Rice	Rice	Rice	Rice	Rice	Rice
Rating Date						7/29/2011	8/31/2011	8/31/2011		11/7/2011	
Rating Type					50% HD	Height	Test Wt.	Yield	50% HD	Yield	Total Yield
Rating Unit					days	in	lb/bu	lb/A	days	lb/A	lb/A
Crop Stage Majority					Main	Main	Main	Main	Ratoon	Ratoon	MC+RC
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage							
1	UREA	0	lb ai/A	4-5 leaf	97 e	29 d	49.2 bcd	5310 e	28 a	2190 a	7500 g
2	UREA	30	lb ai/A	4-5 leaf	96 e	30 cd	49.7 a	6633 d	28 a	1889 a	8522 f
3	UREA	60	lb ai/A	4-5 leaf	96 e	31 bcd	49.6 ab	8611 c	28 a	2278 a	10890 de
4	UREA	90	lb ai/A	4-5 leaf	98 de	34 ab	49.1 cde	9618 b	28 a	2209 a	11827 bcd
5	UREA	120	lb ai/A	4-5 leaf	99 bcd	34 ab	48.8 de	10135 ab	28 a	1932 a	12067 a-d
6	UREA	150	lb ai/A	4-5 leaf	100 abc	35 ab	48.3 fg	10709 a	28 a	2254 a	12963 ab
7	UREA	180	lb ai/A	4-5 leaf	101 ab	35 ab	48.1 g	10626 a	28 a	2176 a	12802 abc
8	UREA	210	lb ai/A	4-5 leaf	101 a	35 ab	48.0 g	10659 a	28 a	2400 a	13059 ab
9	UREA	45	lb ai/A	4-5 leaf	96 e	32 bcd	49.7 a	8485 c	28 a	2072 a	10557 e
	UREA	45	lb ai/A	PD							
10	UREA	75	lb ai/A	4-5 leaf	97 e	32 bcd	49.4 abc	9489 b	28 a	2037 a	11526 cde
	UREA	45	lb ai/A	PD							
11	UREA	105	lb ai/A	4-5 leaf	99 cd	33 abc	48.9 de	10540 a	28 a	2272 a	12812 abc
	UREA	45	lb ai/A	PD							
12	UREA	135	lb ai/A	4-5 leaf	100 abc	36 a	48.7 ef	11092 a	28 a	2225 a	13317 a
	UREA	45	lb ai/A	PD							
LSD (P=.05)					1	3	0.3	695	0	379	923
Standard Deviation					1	2	0.2	482	0	262	639
CV					1	5	0.5	5	0	12	6

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls).

Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Table 4. Determine the agronomic response of drill-seeded CL152 to nitrogen fertilizer rate and time of application (1.1). Evaluate greenseeker technology. Rice Research Station.

Crop Name					Rice	Rice	Rice	Rice	Rice	Rice	Rice
Rating Date						7/29/2011	8/31/2011	8/31/2011		11/1/2011	
Rating Type					50% HD	Height	Test Wt.	Yield	50% HD	Yield	Total Yield
Rating Unit					days	in	lb/bu	lb/A	days	lb/A	lb/A
Crop Stage Majority					Main	Main	Main	Main	Ratoon	Ratoon	MC+RC
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage							
1	UREA	0	lb ai/A	4-5 leaf	97 d	31 g	49.5 ab	4690 e	59 a	2650 a	7340 g
2	UREA	30	lb ai/A	4-5 leaf	97 d	32 fg	50.1 a	6431 d	59 a	2743 a	9174 f
3	UREA	60	lb ai/A	4-5 leaf	98 cd	36 def	49.6 ab	8168 c	59 a	2581 a	10749 de
4	UREA	90	lb ai/A	4-5 leaf	99 bc	36 def	49.3 ab	9184 b	59 a	2625 a	11809 bcd
5	UREA	120	lb ai/A	4-5 leaf	100 bc	38 a-e	49.0 bcd	9640 ab	59 a	2602 a	12241 abc
6	UREA	150	lb ai/A	4-5 leaf	103 a	39 a-d	48.4 cde	10013 ab	59 a	2707 a	12720 abc
7	UREA	180	lb ai/A	4-5 leaf	103 a	40 abc	48.2 de	10390 a	59 a	2742 a	13132 ab
8	UREA	210	lb ai/A	4-5 leaf	104 a	41 ab	48.0 e	10568 a	59 a	2654 a	13222 a
9	UREA	240	lb ai/A	4-5 leaf	104 a	42 a	47.9 e	10205 ab	59 a	2650 a	12855 abc
10	UREA	45	lb ai/A	4-5 leaf	97 d	34 ef	50.2 a	7662 c	59 a	2608 a	10270 e
	UREA	45	lb ai/A	PD							
11	UREA	75	lb ai/A	4-5 leaf	99 bcd	36 cde	49.4 ab	9093 b	59 a	2428 a	11521 cd
	UREA	45	lb ai/A	PD							
12	UREA	105	lb ai/A	4-5 leaf	100 bc	37 b-e	48.9 bcd	10155 ab	59 a	2553 a	12709 abc
	UREA	45	lb ai/A	PD							
13	UREA	135	lb ai/A	4-5 leaf	103 a	38 a-e	48.5 cde	9857 ab	59 a	2556 a	12413 abc
	UREA	45	lb ai/A	PD							
14	UREA	75	lb ai/A	4-5 leaf	100 bc	35 def	49.4 ab	9095 b	59 a	2491 a	11586 cd
	SBNR-UREA	0	lb ai/A	PD							
15	UREA	105	lb ai/A	4-5 leaf	101 b	38 a-e	49.1 bc	9731 ab	59 a	2382 a	12113 abc
	SBNR-UREA	0	lb ai/A	PD							
LSD (P=.05)					2	3	0.6	732	0	419	843
Standard Deviation					1	2	0.4	512	0	293	590
CV					1	4	0.8	6	0	11	5

Continued.

Table 4. Continued.

Crop Name		Rice	Rice	Rice		Rice		Rice		Rice	Rice	Rice
Description		Tissue	Tissue	Tissue		Tissue		Tissue		N uptake	N uptake	N uptake
Part Rated				Abvgrd -		Abvgrd -		Abvgrd -		total -	total -	grain -
Rating Date		5/31/2011	6/23/2011	5/31/2011		6/23/2011		7/31/2011		5/31/2011	6/23/2011	7/31/2011
Rating Type		WP dry wt	WP dry wt	N	C	N	C	N	C	N	N	N
Rating Unit		grams	grams	%	%	%	%	%	%	lb/A	lb/A	lb/A
Sample Size, Unit		3 ft	3 ft									
Collection Basis, Unit		1 row	1 row									
Crop Stage Majority		Main	Main	Main	Main	Main	Main	Main	Main	Main	Main	Main
Crop Stage Scale		PD	50% HD	PD	PD	50% HD	50% HD	Grain	Grain	PD	50% HD	Grain
Trt No.	Trt Name											
1	UREA	21.4 b	83.0 d	1.57 d	40.70 a	0.99 f	39.70 a	1.13 a	41.60 a	16 e	40 e	52 d
2	UREA	.	127.7 c	.	.	0.89 f	39.73 a	1.30 a	53.18 a	.	55 de	85 c
3	UREA	.	173.8 abc	.	.	1.03 ef	40.00 a	1.11 a	42.20 a	.	86 bcd	91 bc
4	UREA	.	192.0 ab	.	.	1.16 def	40.15 a	1.15 a	41.80 a	.	108 bc	105 abc
5	UREA	.	209.3 a	.	.	1.29 cde	39.73 a	1.17 a	42.23 a	.	129 ab	112 abc
6	UREA	.	214.1 a	.	.	1.49 bc	40.15 a	1.07 a	42.23 a	.	153 a	107 abc
7	UREA	.	203.8 a	.	.	1.60 ab	39.90 a	1.12 a	41.60 a	.	154 a	117 ab
8	UREA	.	192.7 ab	.	.	1.71 ab	40.05 a	1.17 a	42.13 a	.	158 a	124 a
9	UREA	.	177.8 abc	.	.	1.80 a	40.08 a	1.19 a	41.98 a	.	154 a	122 ab
10	UREA UREA	59.4 a	134.1 bc	1.49 d	41.13 a	1.02 ef	39.38 a	1.11 a	41.50 a	42 d	66 cde	85 c
11	UREA UREA	61.7 a	189.8 ab	1.92 c	41.08 a	1.03 ef	39.95 a	1.17 a	41.88 a	56 cd	93 bcd	106 abc
12	UREA UREA	84.1 a	165.7 abc	2.15 b	41.43 a	1.29 cde	40.35 a	1.14 a	41.95 a	86 ab	103 bc	115 abc
13	UREA UREA	81.3 a	191.4 ab	2.62 a	41.65 a	1.33 cd	40.23 a	1.11 a	41.30 a	102 a	121 ab	110 abc
14	UREA SBNR-UREA	77.3 a	196.9 a	1.86 c	41.43 a	1.15 def	40.00 a	1.08 a	41.60 a	69 bc	108 bc	98 abc
15	UREA SBNR-UREA	71.4 a	217.7 a	2.19 b	41.58 a	1.18 def	39.78 a	1.17 a	41.80 a	75 bc	123 ab	113 abc
LSD (P=.05)		19.6	38.4	0.20	0.74	0.19	0.81	0.22	8.49	19	29	19
Standard Deviation		13.2	26.9	0.14	0.50	0.13	0.57	0.15	5.94	13	20	13
CV		20.2	15.1	6.93	1.21	10.26	1.42	13.47	13.94	20	19	13

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls).
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Table 5. Determine the agronomic response of drill-seeded CL162 to nitrogen fertilizer rate and time of application (1.1). Evaluate greenseeker technology. Rice Research Station.

Crop Name					Rice	Rice	Rice	Rice	Rice	Rice	Rice
Rating Date						7/29/2011	7/29/2011	7/29/2011		11/1/2011	
Rating Type					50% HD	Height	Test Wt	Yield	50% HD	Yield	Total Yield
Rating Unit					days	in	lb/bu	lb/A	days	lb/A	lb/A
Crop Stage Majority					Main	Main	Main	Main	Ratoon	Ratoon	MC+RC
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage							
1	UREA	0	lb ai/A	4-5 leaf	91 g	34 e	48.7 a	5525 f	35 a	2932 a	8457 f
2	UREA	30	lb ai/A	4-5 leaf	91 g	34 e	48.6 a	7278 e	35 a	2762 ab	10040 e
3	UREA	60	lb ai/A	4-5 leaf	92 fg	36 de	48.7 a	8398 d	35 a	2817 a	11215 d
4	UREA	90	lb ai/A	4-5 leaf	93 ef	38 cd	48.3 a	9424 bc	35 a	2541 ab	11965 bcd
5	UREA	120	lb ai/A	4-5 leaf	94 de	40 bcd	47.8 a	9991 ab	35 a	2344 ab	12335 a-d
6	UREA	150	lb ai/A	4-5 leaf	95 cd	41 abc	48.3 a	10518 a	35 a	2742 ab	13260 a
7	UREA	180	lb ai/A	4-5 leaf	95 bc	42 abc	48.2 a	10145 ab	35 a	2567 ab	12712 abc
8	UREA	210	lb ai/A	4-5 leaf	96 ab	44 ab	47.6 a	10214 ab	35 a	2724 ab	12937 ab
9	UREA	240	lb ai/A	4-5 leaf	97 a	45 a	47.9 a	10080 ab	35 a	2719 ab	12799 ab
10	UREA	45	lb ai/A	4-5 leaf	92 fg	36 de	49.1 a	8411 d	35 a	2860 a	11270 d
	UREA	45	lb ai/A	PD							
11	UREA	75	lb ai/A	4-5 leaf	92 fg	42 abc	48.1 a	9464 bc	35 a	2368 ab	11832 bcd
	UREA	45	lb ai/A	PD							
12	UREA	105	lb ai/A	4-5 leaf	93 ef	40 bcd	48.3 a	10390 a	35 a	2563 ab	12953 ab
	UREA	45	lb ai/A	PD							
13	UREA	135	lb ai/A	4-5 leaf	95 cd	41 abc	48.2 a	10616 a	35 a	2356 ab	12972 ab
	UREA	45	lb ai/A	PD							
14	UREA	75	lb ai/A	4-5 leaf	92 fg	39 cd	48.1 a	9146 c	35 a	2524 ab	11670 cd
	SBNR-UREA	0	lb ai/A	PD							
15	UREA	105	lb ai/A	4-5 leaf	93 ef	41 abc	48.3 a	10175 ab	35 a	2135 b	12310 a-d
	SBNR-UREA	0	lb ai/A	PD							
LSD (P=.05)					1	3	1.5	545	0	391	732
Standard Deviation					1	2	1.1	381	0	274	512
CV					1	4	2.2	4	0	11	4

Continued.

Table 5. Continued.

Crop Name		Rice	Rice	Rice		Rice		Rice		Rice	Rice	Rice
Description		Tissue	Tissue	Tissue		Tissue		Tissue		N Uptake	N Uptake	N Uptake
Part Rated				Abvgrd -		Abvgrd -		Abvgrd -		Total -	Total -	grain -
Rating Date		5/31/2011	6/17/2011	5/31/2011		6/17/2011		7/29/2011		5/31/2011	6/17/2011	7/29/2011
Rating Type		WP dry wt	WP dry wt	N	C	N	C	N	C	N	N	N
Rating Unit		grams	grams	%	%	%	%	%	%	lb/A	lb/A	lb/A
Sample Size, Unit		3 ft	3 ft									
Collection Basis, Unit		1 row	1 row									
Crop Stage Majority		Main	Main	Main	Main	Main	Main	Main	Main	Main	Main	Grain
Crop Stage Scale		PD	50% HD	PD	PD	50% HD	50% HD	Grain	Grain	PD	50% HD	
Trt No.	Trt Name											
1	UREA	38.6 d	99.6 d	1.24 d	39.48 b	0.96 de	40.58 a	1.03 d	40.83 abc	22 e	46 g	57 e
2	UREA	.	156.5 c	.	.	0.91 e	40.63 a	1.04 cd	40.33 bc	.	69 fg	76 d
3	UREA	.	192.8 abc	.	.	1.15 cde	40.65 a	1.05 cd	40.00 c	.	106 def	88 c
4	UREA	.	199.0 abc	.	.	1.11 cde	40.55 a	1.06 cd	40.63 abc	.	107 def	99 b
5	UREA	.	205.4 ab	.	.	1.37 bcd	40.45 a	1.13 a-d	41.08 ab	.	136 cde	113 a
6	UREA	.	225.9 ab	.	.	1.69 ab	40.65 a	1.16 abc	41.25 ab	.	185 ab	121 a
7	UREA	.	233.5 a	.	.	1.71 ab	40.43 a	1.15 abc	41.28 ab	.	191 ab	117 a
8	UREA	.	223.4 ab	.	.	1.62 b	40.28 a	1.22 a	41.55 a	.	173 abc	124 a
9	UREA	.	222.5 ab	.	.	1.97 a	39.80 a	1.18 ab	41.25 ab	.	207 a	119 a
10	UREA UREA	89.9 c	178.1 bc	1.33 cd	40.33 a	0.96 de	40.45 a	1.04 cd	40.93 ab	57 d	81 fg	88 c
11	UREA **UREA**	111.6 ab	209.7 ab	1.47 c	40.33 a	1.10 cde	40.15 a	1.08 bcd	40.60 abc	79 bc	112 def	102 b
12	UREA UREA	115.6 ab	217.0 ab	1.70 b	40.13 a	1.33 b-e	40.63 a	1.10 bcd	41.25 ab	94 b	138 cde	115 a
13	UREA UREA	126.9 a	215.3 ab	1.96 a	40.25 a	1.49 bc	39.75 a	1.14 a-d	41.55 a	119 a	154 bcd	121 a
14	UREA SBNR-UREA	103.5 bc	198.6 abc	1.45 c	40.38 a	0.99 de	40.08 a	1.08 bcd	41.03 ab	72 c	94 ef	98 b
15	UREA SBNR-UREA	113.8 ab	208.4 ab	1.65 b	40.55 a	1.32 b-e	40.20 a	1.15 a-d	41.20 ab	91 b	133 cde	116 a
LSD (P=.05)		15.2	31.2	0.17	0.51	0.26	0.74	0.07	0.60	13	34	8
Standard Deviation		10.2	21.8	0.11	0.35	0.18	0.52	0.05	0.42	9	24	6
CV		10.2	11.0	7.25	0.86	13.79	1.28	4.40	1.02	12	18	5

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls).
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Table 6. Determine the agronomic response of drill-seeded CL261 to nitrogen fertilizer rate and time of application (2.1). Evaluate greenseeker technology. Rice Research Station.

Crop Name					Rice		Rice		Rice		Rice		Rice		Rice		Rice
Rating Date							7/29/2011		8/1/2011		8/1/2011				10/26/2011		
Rating Type					50% HD		Height		Test Wt		Yield		50% HD		Yield		Total Yield
Rating Unit					days		in		lb/bu		lb/A		days		lb/A		lb/A
Crop Stage Majority					Main		Main		Main		Main		Ratoon		Ratoon		MC+RC
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage													
1	UREA	0	lb ai/A	4-5 leaf	96	bcd	32	e	45.7	ab	4937	e	38	a	2664	ab	7601 e
2	UREA	30	lb ai/A	4-5 leaf	96	d	33	de	46.1	a	6627	d	38	a	2284	b	8911 d
3	UREA	60	lb ai/A	4-5 leaf	96	bcd	35	cde	45.9	ab	7944	c	38	a	2651	ab	10595 c
4	UREA	90	lb ai/A	4-5 leaf	96	bcd	36	cd	45.9	ab	9043	abc	38	a	2551	ab	11594 abc
5	UREA	120	lb ai/A	4-5 leaf	97	bc	37	bcd	45.5	abc	9510	ab	38	a	2625	ab	12135 abc
6	UREA	150	lb ai/A	4-5 leaf	97	bc	38	abc	45.1	b-e	9891	a	38	a	2842	ab	12733 a
7	UREA	180	lb ai/A	4-5 leaf	98	a	40	ab	44.8	cde	9903	a	38	a	2934	ab	12837 a
8	UREA	210	lb ai/A	4-5 leaf	98	a	41	a	44.6	de	10136	a	38	a	3184	a	13320 a
9	UREA	240	lb ai/A	4-5 leaf	98	a	41	a	44.5	e	10167	a	38	a	3157	a	13324 a
10	UREA	45	lb ai/A	4-5 leaf	96	cd	33	de	45.4	abc	8293	bc	38	a	2563	ab	10856 bc
	UREA	45	lb ai/A	PD													
11	UREA	75	lb ai/A	4-5 leaf	96	bcd	36	bcd	45.7	ab	9024	abc	38	a	2707	ab	11731 abc
	UREA	45	lb ai/A	PD													
12	UREA	105	lb ai/A	4-5 leaf	97	bc	38	abc	45.4	abc	9243	ab	38	a	2855	ab	12098 abc
	UREA	45	lb ai/A	PD													
13	UREA	135	lb ai/A	4-5 leaf	97	b	40	ab	45.3	bcd	9788	a	38	a	2724	ab	12512 a
	UREA	45	lb ai/A	PD													
14	UREA	75	lb ai/A	4-5 leaf	96	cd	37	abc	45.8	ab	9309	ab	38	a	2740	ab	12049 abc
	SBNR-UREA	0	lb ai/A	PD													
15	UREA	105	lb ai/A	4-5 leaf	97	bcd	36	cd	45.5	ab	9671	a	38	a	2765	ab	12436 ab
	SBNR-UREA	0	lb ai/A	PD													
LSD (P=.05)					1		2		0.5		880		0		391		1042
Standard Deviation					0		1		0.4		616		0		273		729
CV					0		4		0.8		7		0		10		6

Continued.

Table 6. Continued.

Crop Name		Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice
Description		Tissue	Tissue	Tissue		Tissue		Tissue		N Uptake	N Uptake	N Uptake
Part Rated				Abvgrd -		Abvgrd -		Abvgrd -		Total -	Total -	grain -
Rating Date		5/31/2011	6/20/2011	5/31/2011		6/20/2011		8/1/2011		5/31/2011	6/20/2011	8/1/2011
Rating Type		WP dry wt	WP dry wt	N	C	N	C	N	C	N	N	N
Rating Unit		grams	grams	%	%	%	%	%	%	lb/A	lb/A	lb/A
Sample Size, Unit		3 ft	3 ft									
Collection Basis, Unit		1 row	1 row									
Crop Stage Majority		Main	Main	Main	Main	Main	Main	Main	Main	Main	Main	Grain
Crop Stage Scale		PD	50% HD	PD	PD	50% HD	50% HD	Grain	Grain	PD	50% HD	
Trt No.	Trt Name											
1	UREA	37.1 c	107.8 b	1.62 a	40.33 a	1.00 de	39.65 a	1.12 c	41.83 a	28 c	52 e	55 h
2	UREA	.	151.5 b	.	.	1.07 cde	39.13 a	1.22 bc	42.03 a	.	78 de	80 g
3	UREA	.	202.1 ab	.	.	0.97 e	38.55 a	1.12 c	41.65 a	.	95 de	89 fg
4	UREA	.	215.5 ab	.	.	1.08 cde	38.98 a	1.19 c	41.70 a	.	110 de	108 c-f
5	UREA	.	204.6 ab	.	.	1.36 bcd	39.93 a	1.28 bc	42.03 a	.	133 cd	121 bcd
6	UREA	.	209.0 ab	.	.	1.45 b	39.10 a	1.27 bc	41.73 a	.	146 a-d	126 bcd
7	UREA	.	306.8 a	.	.	1.50 b	37.23 a	1.29 bc	41.65 a	.	208 ab	128 bc
8	UREA	.	238.2 ab	.	.	1.86 a	39.63 a	1.36 ab	41.88 a	.	213 a	137 ab
9	UREA	.	208.6 ab	.	.	1.96 a	38.53 a	1.44 a	42.23 a	.	192 abc	146 a
10	UREA UREA	70.9 b	167.6 b	1.42 a	40.58 a	1.07 cde	39.68 a	1.16 c	41.58 a	48 b	86 de	96 efg
11	UREA UREA	100.9 a	209.1 ab	1.52 a	40.83 a	1.03 de	38.43 a	1.16 c	41.65 a	73 a	103 de	105 def
12	UREA UREA	103.9 a	215.8 ab	1.67 a	40.83 a	1.40 bc	39.50 a	1.24 bc	41.88 a	83 a	145 a-d	114 cde
13	UREA UREA	89.8 a	202.9 ab	1.94 a	40.33 a	1.43 bc	39.43 a	1.30 bc	41.85 a	85 a	139 bcd	127 bc
14	UREA SBNR-UREA	93.3 a	228.9 ab	1.53 a	40.88 a	1.17 b-e	39.38 a	1.18 c	41.63 a	68 ab	129 cd	110 cde
15	UREA SBNR-UREA	104.5 a	232.4 ab	1.64 a	41.63 a	1.29 b-e	39.33 a	1.23 bc	41.68 a	82 a	145 a-d	119 bcd
LSD (P=.05)		16.8	74.4	0.53	1.16	0.24	2.35	0.10	0.48	20	48	14
Standard Deviation		11.3	52.0	0.35	0.78	0.16	1.64	0.07	0.33	14	34	10
CV		13.2	25.2	21.90	1.91	12.58	4.21	5.64	0.80	20	26	9

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls).
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Table 7. Determine the agronomic response of drill-seeded Caffey to nitrogen fertilizer rate and time of application (1.1). Rice Research Station.

Crop Name					Rice	Rice	Rice	Rice	Rice	Rice	Rice
Rating Date						7/29/2011	8/2/2011	8/2/2011		10/25/2011	
Rating Type					50% HD	Height	Test Wt.	Yield	50% HD	Yield	Total Yield
Rating Unit					days	in	lb/bu	lb/A	days	lb/A	lb/A
Crop Stage Majority					Main	Main	Main	Main	Ratoon	Ratoon	MC+RC
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage							
1	UREA	0	lb ai/A	4-5 leaf	98 cd	32 d	45.0 ab	4984 e	38 a	2969 a	7953 g
2	UREA	30	lb ai/A	4-5 leaf	97 d	33 cd	45.1 ab	6683 d	38 a	3110 a	9793 f
3	UREA	60	lb ai/A	4-5 leaf	97 d	34 bcd	45.0 abc	8434 c	38 a	2807 a	11241 de
4	UREA	90	lb ai/A	4-5 leaf	99 c	35 a-d	44.6 a-d	9358 b	38 a	2698 a	12056 cd
5	UREA	120	lb ai/A	4-5 leaf	100 ab	35 a-d	44.6 a-d	10150 ab	38 a	2842 a	12993 abc
6	UREA	150	lb ai/A	4-5 leaf	100 ab	38 a-d	44.3 cde	10748 a	38 a	2737 a	13485 ab
7	UREA	180	lb ai/A	4-5 leaf	101 ab	39 ab	44.0 de	11215 a	38 a	2691 a	13906 a
8	UREA	210	lb ai/A	4-5 leaf	101 a	41 a	43.8 e	11204 a	38 a	2935 a	14139 a
9	UREA	45	lb ai/A	4-5 leaf	97 d	35 a-d	45.3 a	8150 c	38 a	2726 a	10876 e
	UREA	45	lb ai/A	PD							
10	UREA	75	lb ai/A	4-5 leaf	98 cd	36 a-d	44.9 abc	9651 b	38 a	2730 a	12381 bcd
	UREA	45	lb ai/A	PD							
11	UREA	105	lb ai/A	4-5 leaf	100 b	37 a-d	44.5 bcd	10220 ab	38 a	2610 a	12830 abc
	UREA	45	lb ai/A	PD							
12	UREA	135	lb ai/A	4-5 leaf	100 ab	38 abc	44.3 cde	10846 a	38 a	2729 a	13575 ab
	UREA	45	lb ai/A	PD							
LSD (P=.05)					1	4	0.5	803	0	361	967
Standard Deviation					1	2	0.3	556	0	250	670
CV					1	6	0.7	6	0	9	6

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls).

Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Table 8. Determine the agronomic response of drill-seeded Jazzman-2 to nitrogen fertilizer rate and time of application (2.1). Rice Research Station.

Crop Name					Rice	Rice	Rice	Rice	Rice	Rice	Rice
Rating Date						7/29/2011	8/15/2011	8/15/2011		10/26/2011	
Rating Type					50% HD	Height	Test Wt.	Yield	50% HD	Yield	Total Yield
Rating Unit					days	in	lb/bu	lb/A	days	lb/A	lb/A
Crop Stage Majority					Main	Main	Main	Main	Ratoon	Ratoon	MC+RC
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage							
1	UREA	0	lb ai/A	4-5 leaf	97 de	28 e	46.0 ab	3045 e	36 a	2434 a	5479 g
2	UREA	30	lb ai/A	4-5 leaf	96 e	30 de	46.0 ab	4541 d	36 a	2544 a	7085 f
3	UREA	60	lb ai/A	4-5 leaf	98 de	32 cde	46.4 ab	5574 c	36 a	2544 a	8119 e
4	UREA	90	lb ai/A	4-5 leaf	99 cd	33 bcd	46.6 a	6707 b	36 a	2452 a	9160 d
5	UREA	120	lb ai/A	4-5 leaf	101 ab	35 abc	46.0 ab	6985 b	36 a	2718 a	9703 bcd
6	UREA	150	lb ai/A	4-5 leaf	101 ab	35 abc	46.0 ab	7344 ab	36 a	2684 a	10028 a-d
7	UREA	180	lb ai/A	4-5 leaf	101 ab	37 ab	45.6 b	8204 a	36 a	2753 a	10958 a
8	UREA	210	lb ai/A	4-5 leaf	102 a	39 a	45.6 b	7669 ab	36 a	2839 a	10509 abc
9	UREA	45	lb ai/A	4-5 leaf	97 de	31 cde	46.9 a	5410 c	36 a	2467 a	7876 ef
	UREA	45	lb ai/A	PD							
10	UREA	75	lb ai/A	4-5 leaf	97 de	33 bcd	46.6 a	6802 b	36 a	2513 a	9315 cd
	UREA	45	lb ai/A	PD							
11	UREA	105	lb ai/A	4-5 leaf	100 bc	33 bcd	46.0 ab	7193 ab	36 a	2542 a	9736 bcd
	UREA	45	lb ai/A	PD							
12	UREA	135	lb ai/A	4-5 leaf	101 ab	38 a	46.0 ab	7907 ab	36 a	2746 a	10653 ab
	UREA	45	lb ai/A	PD							
LSD (P=.05)					1	3	0.6	805	0	339	846
Standard Deviation					1	2	0.4	557	0	235	586
CV					1	5	0.9	9	0	9	6

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls).

Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Table 9. Determine the agronomic response of drill-seeded LA2140 to nitrogen fertilizer rate and time of application (2.1). Rice Research Station.

Crop Name					Rice	Rice	Rice	Rice	Rice	Rice	Rice
Rating Date						7/29/2011	8/5/2011	8/5/2011		10/26/2011	
Rating Type					50% HD	Height	Test Wt.	Yield	50% HD	Yield	Total Yield
Rating Unit					days	in	lb/bu	lb/A	days	lb/A	lb/A
Crop Stage Majority					Main	Main	Main	Main	Ratoon	Ratoon	MC+RC
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage							
1	UREA	0	lb ai/A	4-5 leaf	100 b	32 f	45.5 bc	4248 f	41 a	2631 e	6879 g
2	UREA	30	lb ai/A	4-5 leaf	99 b	33 ef	46.5 a	5691 e	41 a	2935 d	8626 f
3	UREA	60	lb ai/A	4-5 leaf	99 b	37 bcd	46.5 a	6948 d	41 a	3040 cd	9988 e
4	UREA	90	lb ai/A	4-5 leaf	100 b	35 de	46.3 a	8124 c	41 a	3095 bcd	11219 d
5	UREA	120	lb ai/A	4-5 leaf	102 a	38 abc	46.2 a	8708 b	41 a	3145 a-d	11853 c
6	UREA	150	lb ai/A	4-5 leaf	103 a	40 a	46.0 a	9045 ab	41 a	3442 ab	12487 ab
7	UREA	180	lb ai/A	4-5 leaf	103 a	39 ab	45.5 bc	9405 a	41 a	3135 a-d	12539 ab
8	UREA	210	lb ai/A	4-5 leaf	104 a	41 a	45.3 c	9396 a	41 a	3509 a	12905 a
9	UREA	45	lb ai/A	4-5 leaf	99 b	35 cde	46.4 a	6869 d	41 a	2888 d	9757 e
	UREA	45	lb ai/A	PD							
10	UREA	75	lb ai/A	4-5 leaf	99 b	36 bcd	46.4 a	8220 c	41 a	3166 a-d	11386 d
	UREA	45	lb ai/A	PD							
11	UREA	105	lb ai/A	4-5 leaf	100 b	39 ab	46.1 a	9066 ab	41 a	3153 a-d	12218 bc
	UREA	45	lb ai/A	PD							
12	UREA	135	lb ai/A	4-5 leaf	103 a	38 abc	45.9 ab	9190 ab	41 a	3395 abc	12586 ab
	UREA	45	lb ai/A	PD							
LSD (P=.05)					1	2	0.4	443	0	249	432
Standard Deviation					1	1	0.3	307	0	172	299
CV					1	3	0.6	4	0	6	3

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls).

Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Table 10. Determine the agronomic response of drill-seeded Rex to nitrogen fertilizer rate and time of application (2.1). Rice Research Station.

Crop Name					Rice	Rice	Rice	Rice	Rice	Rice	Rice
Rating Date						7/29/2011	7/31/2011	7/31/2011		10/26/2011	
Rating Type					50% HD	Height	Test Wt.	Yield	50% HD	Yield	Total Yield
Rating Unit					days	in	lb/bu	lb/A	days	lb/A	lb/A
Crop Stage Majority					Main	Main	Main	Main	Ratoon	Ratoon	MC+RC
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage							
1	UREA	0	lb ai/A	4-5 leaf	99 a-d	31 f	49.1 bc	4146 g	51 a	3633 a	7779 f
2	UREA	30	lb ai/A	4-5 leaf	97 f	34 e	49.8 a	5918 f	51 a	3365 a	9282 e
3	UREA	60	lb ai/A	4-5 leaf	97 ef	36 de	49.7 a	7055 e	51 a	3554 a	10608 d
4	UREA	90	lb ai/A	4-5 leaf	98 c-f	37 cde	49.5 ab	8398 d	51 a	3663 a	12061 c
5	UREA	120	lb ai/A	4-5 leaf	98 c-f	41 ab	49.3 abc	9609 bc	51 a	3413 a	13022 ab
6	UREA	150	lb ai/A	4-5 leaf	99 abc	40 ab	48.7 d	9896 ab	51 a	3557 a	13453 a
7	UREA	180	lb ai/A	4-5 leaf	100 ab	42 a	48.5 de	10398 a	51 a	3279 a	13676 a
8	UREA	210	lb ai/A	4-5 leaf	100 a	43 a	48.2 e	10299 ab	51 a	3318 a	13616 a
9	UREA	45	lb ai/A	4-5 leaf	97 ef	36 de	49.7 a	7010 e	51 a	3698 a	10709 d
	UREA	45	lb ai/A	PD							
10	UREA	75	lb ai/A	4-5 leaf	97 ef	38 bcd	49.8 a	8644 d	51 a	3627 a	12272 c
	UREA	45	lb ai/A	PD							
11	UREA	105	lb ai/A	4-5 leaf	98 def	40 abc	49.4 abc	9256 c	51 a	3359 a	12615 bc
	UREA	45	lb ai/A	PD							
12	UREA	135	lb ai/A	4-5 leaf	98 b-e	42 ab	48.9 cd	10201 ab	51 a	3535 a	13736 a
	UREA	45	lb ai/A	PD							
LSD (P=.05)					1	2	0.4	521	0	368	537
Standard Deviation					1	1	0.2	361	0	255	372
CV					1	4	0.5	4	0	7	3

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls).

Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Table 11. Determine the agronomic response of drill-seeded LA2048 to nitrogen fertilizer rate and time of application (2.1). Rice Research Station.

Crop Name					Rice	Rice	Rice	Rice	Rice	Rice	Rice
Rating Date						7/29/2011	7/31/2011	7/31/2011		10/25/2011	10/25/2011
Rating Type					50% HD	Height	Test Wt	Yield	50% HD	Yield	Total Yield
Rating Unit					days	in	lb/bu	lb/A	days	lb/A	lb/A
Crop Stage Majority					Main	Main	Main	Main	Ratoon	Ratoon	MC+RC
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage							
1	UREA	0	lb ai/A	4-5 leaf	93 c	31 c	49.9 a	3883 g	37 a	2708 a	6590 h
2	UREA	30	lb ai/A	4-5 leaf	93 c	31 c	50.3 a	5479 f	37 a	2762 a	8242 g
3	UREA	60	lb ai/A	4-5 leaf	94 c	33 bc	50.4 a	6699 e	37 a	2604 a	9303 f
4	UREA	90	lb ai/A	4-5 leaf	94 c	36 ab	50.0 a	8594 d	37 a	2601 a	11194 de
5	UREA	120	lb ai/A	4-5 leaf	96 b	37 ab	49.5 ab	9199 c	37 a	2497 a	11695 cd
6	UREA	150	lb ai/A	4-5 leaf	97 ab	39 a	49.0 b	10159 ab	37 a	2648 a	12807 a
7	UREA	180	lb ai/A	4-5 leaf	97 ab	40 a	48.9 b	10547 a	37 a	2456 a	13003 a
8	UREA	210	lb ai/A	4-5 leaf	98 a	39 a	48.1 c	10148 ab	37 a	2614 a	12762 a
9	UREA	45	lb ai/A	4-5 leaf	93 c	32 c	49.9 a	6783 e	37 a	2645 a	9428 f
	UREA	45	lb ai/A	PD							
10	UREA	75	lb ai/A	4-5 leaf	94 c	35 bc	50.2 a	8359 d	37 a	2679 a	11037 e
	UREA	45	lb ai/A	PD							
11	UREA	105	lb ai/A	4-5 leaf	96 b	36 ab	49.6 ab	9312 c	37 a	2697 a	12010 bc
	UREA	45	lb ai/A	PD							
12	UREA	135	lb ai/A	4-5 leaf	97 ab	40 a	48.9 b	9884 b	37 a	2621 a	12505 ab
	UREA	45	lb ai/A	PD							
LSD (P=.05)					1	3	0.6	336	0	301	545
Standard Deviation					1	2	0.4	233	0	209	378
CV					1	5	0.8	3	0	8	3

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls).

Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Table 12. Determine the agronomic response of drill-seeded Taggart to nitrogen fertilizer rate and time of application (3.1). Rice Research Station.

Crop Name					Rice	Rice	Rice	Rice	Rice	Rice	Rice
Rating Date						7/29/2011	7/31/2011	7/31/2011		11/4/2011	
Rating Type					50% HD	Height	Test Wt	Yield	50% HD	Yield	Total Yield
Rating Unit					days	in	lb/bu	lb/A	days	lb/A	lb/A
Crop Stage Majority					Main	Main	Main	Main	Ratoon	Ratoon	MC+RC
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage							
1	UREA	0	lb ai/A	4-5 leaf	96 f	33 h	50.8 a	4776 g	58 a	3016 bcd	7792 f
2	UREA	30	lb ai/A	4-5 leaf	97 f	36 gh	51.0 a	6682 f	58 a	2533 cde	9215 e
3	UREA	60	lb ai/A	4-5 leaf	98 ef	38 fg	51.1 a	7596 e	58 a	2447 de	10043 d
4	UREA	90	lb ai/A	4-5 leaf	99 de	42 def	50.4 a	9308 d	58 a	2600 cde	11908 c
5	UREA	120	lb ai/A	4-5 leaf	101 bcd	43 b-e	49.9 b	10076 abc	58 a	2803 b-e	12878 b
6	UREA	150	lb ai/A	4-5 leaf	103 b	46 abc	49.1 c	10655 a	58 a	3089 bc	13744 a
7	UREA	180	lb ai/A	4-5 leaf	104 ab	49 a	48.8 c	10361 ab	58 a	3351 ab	13712 a
8	UREA	210	lb ai/A	4-5 leaf	105 a	47 ab	48.2 d	10126 abc	58 a	3693 a	13820 a
9	UREA	45	lb ai/A	4-5 leaf	96 f	39 efg	51.0 a	7762 e	58 a	2422 de	10184 d
	UREA	45	lb ai/A	PD							
10	UREA	75	lb ai/A	4-5 leaf	98 ef	42 c-f	50.7 a	9551 cd	58 a	2268 e	11820 c
	UREA	45	lb ai/A	PD							
11	UREA	105	lb ai/A	4-5 leaf	100 cde	45 a-d	49.7 b	9774 bcd	58 a	2824 b-e	12598 b
	UREA	45	lb ai/A	PD							
12	UREA	135	lb ai/A	4-5 leaf	102 bc	46 abc	49.2 c	10717 a	58 a	3156 bc	13873 a
	UREA	45	lb ai/A	PD							
LSD (P=.05)					2	3	0.5	508	0	409	618
Standard Deviation					1	2	0.4	352	0	283	428
CV					1	4	0.7	4	0	10	4

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls).

Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Table 13. Determine the agronomic response of drill-seeded JES to nitrogen fertilizer rate and time of application (1.1). Rice Research Station.

Crop Name					Rice	Rice	Rice	Rice	Rice	Rice	Rice
Rating Date						7/29/2011	7/31/2011	7/31/2011		11/7/2011	
Rating Type					50% HD	Height	Test Wt.	Yield	50% HD	Yield	Total Yield
Rating Unit					days	in	lb/bu	lb/A	days	lb/A	lb/A
Crop Stage Majority					Main	Main	Main	Main	Ratoon	Ratoon	MC+RC
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage							
1	UREA	0	lb ai/A	4-5 leaf	99 de	28 e	49.5 a	6014 e	61 a	2946 a	8960 c
2	UREA	30	lb ai/A	4-5 leaf	98 e	31 de	50.2 a	7546 d	61 a	2703 abc	10249 b
3	UREA	60	lb ai/A	4-5 leaf	99 de	32 cd	50.1 a	9383 bc	61 a	2236 abc	11619 a
4	UREA	90	lb ai/A	4-5 leaf	100 d	34 bcd	46.9 bc	9782 ab	61 a	2383 abc	12165 a
5	UREA	120	lb ai/A	4-5 leaf	103 bc	36 abc	48.6 ab	10141 ab	61 a	2641 abc	12783 a
6	UREA	150	lb ai/A	4-5 leaf	105 ab	38 a	47.1 bc	9711 b	61 a	2500 abc	12210 a
7	UREA	180	lb ai/A	4-5 leaf	105 a	38 ab	47.2 bc	10851 a	61 a	1970 c	12822 a
8	UREA	210	lb ai/A	4-5 leaf	106 a	38 ab	46.3 c	10428 ab	61 a	2442 abc	12869 a
9	UREA	45	lb ai/A	4-5 leaf	100 de	31 de	48.7 ab	8777 c	61 a	2833 ab	11610 a
	UREA	45	lb ai/A	PD							
10	UREA	75	lb ai/A	4-5 leaf	99 de	34 a-d	49.3 a	9853 ab	61 a	2597 abc	12450 a
	UREA	45	lb ai/A	PD							
11	UREA	105	lb ai/A	4-5 leaf	102 c	36 abc	47.4 bc	9986 ab	61 a	2503 abc	12489 a
	UREA	45	lb ai/A	PD							
12	UREA	135	lb ai/A	4-5 leaf	104 ab	36 ab	47.4 bc	10225 ab	61 a	2114 bc	12339 a
	UREA	45	lb ai/A	PD							
LSD (P=.05)					1	3	1.3	705	0	471	821
Standard Deviation					1	2	0.9	488	0	326	568
CV					1	5	1.9	5	0	13	5

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls).

Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Table 14. Determine the agronomic response of drill-seeded Roy J to nitrogen fertilizer rate and time of application (1.1). Rice Research Station.

Crop Name					Rice	Rice	Rice	Rice	Rice	Rice	Rice
Rating Date						7/29/2011	7/31/2011	7/31/2011		11/7/2011	
Rating Type					50% HD	Height	Test Wt	Yield	50% HD	Yield	Total Yield
Rating Unit					days	in	lb/bu	lb/A	days	lb/A	lb/A
Crop Stage Majority					Main	Main	Main	Main	Ratoon	Ratoon	MC+RC
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage							
1	UREA	0	lb ai/A	4-5 leaf	100 d	32 e	49.9 ab	4780 d	57 a	3623 cd	8402 e
2	UREA	30	lb ai/A	4-5 leaf	99 d	35 de	50.4 a	6416 c	57 a	3314 d	9730 d
3	UREA	60	lb ai/A	4-5 leaf	100 d	37 cd	50.2 a	9051 ab	57 a	3304 d	12355 bc
4	UREA	90	lb ai/A	4-5 leaf	101 cd	39 a-d	49.2 bc	9784 a	57 a	3300 d	13084 ab
5	UREA	120	lb ai/A	4-5 leaf	103 b	42 abc	48.8 c	10240 a	57 a	3531 cd	13771 a
6	UREA	150	lb ai/A	4-5 leaf	107 a	44 abc	47.2 de	9637 a	57 a	3860 bc	13497 ab
7	UREA	180	lb ai/A	4-5 leaf	107 a	44 abc	47.3 de	9465 a	57 a	4068 ab	13533 ab
8	UREA	210	lb ai/A	4-5 leaf	107 a	45 a	46.8 e	9119 ab	57 a	4347 a	13466 ab
9	UREA	45	lb ai/A	4-5 leaf	99 d	38 bcd	50.2 a	8415 b	57 a	3278 d	11693 c
	UREA	45	lb ai/A	PD							
10	UREA	75	lb ai/A	4-5 leaf	100 d	39 a-d	49.3 bc	9657 a	57 a	3184 d	12841 ab
	UREA	45	lb ai/A	PD							
11	UREA	105	lb ai/A	4-5 leaf	103 bc	41 abc	48.7 c	9841 a	57 a	3509 cd	13350 ab
	UREA	45	lb ai/A	PD							
12	UREA	135	lb ai/A	4-5 leaf	106 a	44 ab	47.7 d	9579 a	57 a	3736 bc	13316 ab
	UREA	45	lb ai/A	PD							
LSD (P=.05)					2	4	0.7	780	0	283	769
Standard Deviation					1	2	0.5	540	0	196	533
CV					1	6	0.9	6	0	5	4

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls).

Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Table 15. Determine the agronomic response of drill-seeded LAH10 to nitrogen fertilizer rate and time of application (1.1). Rice Research Station.

Crop Name					Rice	Rice	Rice		Rice	Rice	Rice	Rice	Rice
Rating Date						7/29/2011	7/29/2011		8/5/2011	8/5/2011		10/25/2011	10/25/2011
Rating Type					50% HD	Height	Lodge		Test Wt.	Yield	50% HD	Yield	Total Yield
Rating Unit					days	in	% plot	rate	lb/bu	lb/A	days	lb/A	lb/A
Crop Stage Majority					Main	Main	Main	Main	Main	Main	Ratoon	Ratoon	MC+RC
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage									
1	UREA	0	lb ai/A	4-5 leaf	107 a	47 a	.	.	42.9 a	7012 e	24 a	3680 a	10692 e
2	UREA	30	lb ai/A	4-5 leaf	105 a	45 a	.	.	41.9 a	8563 d	24 a	3802 a	12365 d
3	UREA	60	lb ai/A	4-5 leaf	105 a	47 a	12 c	1 b	43.5 a	10270 bc	24 a	3925 a	14196 bc
4	UREA	90	lb ai/A	4-5 leaf	105 a	49 a	21 bc	2 ab	42.6 a	10925 bc	24 a	3812 a	14736 bc
5	UREA	120	lb ai/A	4-5 leaf	106 a	50 a	33 abc	2 ab	43.1 a	11563 ab	24 a	4330 a	15893 b
6	UREA	150	lb ai/A	4-5 leaf	105 a	52 a	40 abc	3 a	41.5 a	13147 a	24 a	4280 a	17427 a
7	UREA	180	lb ai/A	4-5 leaf	106 a	53 a	70 a	3 a	41.7 a	11199 abc	24 a	3191 a	14390 bc
8	UREA	210	lb ai/A	4-5 leaf	106 a	52 a	70 a	3 a	41.2 a	11321 abc	24 a	3820 a	15141 bc
9	UREA	45	lb ai/A	4-5 leaf	106 a	47 a	16 bc	1 b	41.4 a	9296 cd	24 a	3683 a	12979 cd
	UREA	45	lb ai/A	PD									
10	UREA	75	lb ai/A	4-5 leaf	105 a	51 a	27 bc	1 b	43.7 a	10734 bc	24 a	4115 a	14849 bc
	UREA	45	lb ai/A	PD									
11	UREA	105	lb ai/A	4-5 leaf	104 a	51 a	50 abc	2 ab	40.9 a	11264 abc	24 a	3932 a	15195 bc
	UREA	45	lb ai/A	PD									
12	UREA	135	lb ai/A	4-5 leaf	105 a	50 a	55 ab	3 ab	42.2 a	11621 ab	24 a	3968 a	15589 b
	UREA	45	lb ai/A	PD									
LSD (P=.05)					1	4	26	1	3.1	1334	0	649	1520
Standard Deviation					1	3	18	1	2.2	924	0	449	1053
CV					1	5	45	35	5.1	9	0	12	7

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls).

Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Rice Variety by Nitrogen Experiments at Vermilion Parish

Experiment number	Vermilion Parish VxN Studies
Site and design	
Location/Cooperator	Vermilion Parish / Kent Lounsberry
Tillage type	Conventional
Experimental design	Randomized complete block
Number of reps	4
Plot size	4.66 x 16 ft
Row width/rows per plot	8 in / 7
Soil type	Kaplan silt loam
% organic matter	1.5
pH	4.9
Extractable nutrients ppm	Ca-491; Cu-0.83; Mg-91; P-30; K-78; Na-35; S-7.1; Zn-3.9
Crop/Variety	Rice / See data sheet
Planting method/date	Drill seeded / March 17
Seeding rate/depth	40 seeds/ft^2 / .75 inch
Emergence date	March 26
Harvest date	August 3
Ratoon Harvest date	October 27
Seed treatment/cwt	Dithane (fungicide)-114 g Release (gibberellic acid)-10 g Zinc Plus (10% Zn & 4.9% combined sulfur)-296 ml
Fertilization	240 lb/A 0-24-24-2.8, March 17 92 lb N/A 46-0-0, August 5
Water management	
Flush	March 28, April 13
Flood	May 6
Drain	July 15
Ratoon flood	August 5
Ratoon drain	October 10
Pest management	
Herbicides	1 gal/A Propanil + .5 oz/A Permit + 1 oz/A Londax, April 11 1 gal/A Super Wham + 1 oz/A Londax, May 5 19 oz/A Clincher, May 27
Insecticides	None
Fungicides	12 oz/A Quadris, June 18

Table 16. Determine the agronomic response of drill-seeded CL111 to nitrogen fertilizer rate and time of application (3.2). Vermilion Parish.

Crop Name					Rice	Rice	Rice	Rice	Rice	Rice
Rating Date						8/3/2011	8/3/2011	8/3/2011	10/27/2011	
Rating Type					50% HD	Height	Test Wt.	Yield	Yield	Total Yield
Rating Unit					days	in	lb/bu	lb/A	lb/A	lb/A
Crop Stage Majority					Main	Main	Main	Main	Ratoon	MC+RC
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage						
1	UREA	0	lb ai/A	4-5 leaf	87 c	34 c	44.8 a	6744 c	2368 a	9113 c
2	UREA	30	lb ai/A	4-5 leaf	90 bc	36 bc	44.7 a	8107 b	2655 a	10762 b
3	UREA	60	lb ai/A	4-5 leaf	94 ab	38 ab	45.2 a	8984 ab	2574 a	11558 ab
4	UREA	90	lb ai/A	4-5 leaf	94 ab	38 ab	45.0 a	8971 ab	2877 a	11848 ab
5	UREA	120	lb ai/A	4-5 leaf	95 ab	38 ab	44.8 a	8725 ab	2870 a	11596 ab
6	UREA	150	lb ai/A	4-5 leaf	97 a	39 ab	44.3 a	8992 ab	3008 a	12000 ab
7	UREA	180	lb ai/A	4-5 leaf	97 a	38 ab	43.6 a	8053 b	2728 a	10781 b
8	UREA	210	lb ai/A	4-5 leaf	99 a	38 ab	44.4 a	8467 ab	2876 a	11343 ab
9	UREA	45	lb ai/A	4-5 leaf	93 ab	37 ab	45.2 a	8760 ab	2742 a	11503 ab
	UREA	45	lb ai/A	PD						
10	UREA	75	lb ai/A	4-5 leaf	95 ab	39 ab	44.9 a	8882 ab	2894 a	11776 ab
	UREA	45	lb ai/A	PD						
11	UREA	105	lb ai/A	4-5 leaf	98 a	40 a	44.7 a	9237 a	2967 a	12204 ab
	UREA	45	lb ai/A	PD						
12	UREA	135	lb ai/A	4-5 leaf	99 a	40 a	44.6 a	9268 a	3058 a	12326 a
	UREA	45	lb ai/A	PD						
LSD (P=.05)					4	2	0.9	660	408	885
Standard Deviation					3	1	0.6	457	283	613
CV					3	4	1.4	5	10	5

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls).

Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Table 17. Determine the agronomic response of drill-seeded CL142 to nitrogen fertilizer rate and time of application (2.2). Vermilion Parish.

Crop Name					Rice	Rice	Rice	Rice	Rice	Rice
Rating Date						8/3/2011	8/3/2011	8/3/2011	10/27/2011	
Rating Type					50% HD	Height	Test Wt.	Yield	Yield	Total Yield
Rating Unit					days	in	lb/bu	lb/A	lb/A	lb/A
Crop Stage Majority					Main	Main	Main	Main	Ratoon	MC+RC
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage						
1	UREA	0	lb ai/A	4-5 leaf	98 d	40 c	44.6 a	8220 a	1697 a	9917 ab
2	UREA	30	lb ai/A	4-5 leaf	99 d	41 bc	44.4 ab	8243 a	1838 a	10081 ab
3	UREA	60	lb ai/A	4-5 leaf	101 cd	44 abc	44.2 ab	8473 a	1694 a	10167 a
4	UREA	90	lb ai/A	4-5 leaf	102 c	43 abc	44.0 b	8356 a	1756 a	10112 ab
5	UREA	120	lb ai/A	4-5 leaf	104 b	44 abc	43.5 c	7785 ab	1848 a	9632 abc
6	UREA	150	lb ai/A	4-5 leaf	105 ab	47 a	43.1 de	7525 ab	1818 a	9343 abc
7	UREA	180	lb ai/A	4-5 leaf	108 a	45 ab	42.9 ef	7145 b	1882 a	9027 bc
8	UREA	210	lb ai/A	4-5 leaf	108 a	47 a	42.6 f	6966 b	1819 a	8785 c
9	UREA	45	lb ai/A	4-5 leaf	100 cd	43 abc	44.3 ab	8278 a	1773 a	10051 ab
	UREA	45	lb ai/A	PD						
10	UREA	75	lb ai/A	4-5 leaf	102 c	42 abc	44.3 ab	8163 a	2056 a	10219 a
	UREA	45	lb ai/A	PD						
11	UREA	105	lb ai/A	4-5 leaf	105 ab	44 abc	43.6 c	8184 a	1891 a	10075 ab
	UREA	45	lb ai/A	PD						
12	UREA	135	lb ai/A	4-5 leaf	107 ab	46 ab	43.3 cd	7753 ab	1952 a	9706 abc
	UREA	45	lb ai/A	PD						
LSD (P=.05)					2	3	0.3	634	271	669
Standard Deviation					2	2	0.2	439	188	463
CV					1	4	0.5	6	10	5

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls).

Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Table 18. Determine the agronomic response of drill-seeded CL152 to nitrogen fertilizer rate and time of application (1.2). Evaluate greenseeker technology. Vermilion Parish.

Crop Name					Rice	Rice	Rice	Rice	Rice	Rice
Rating Date						8/3/2011	8/3/2011	8/3/2011	10/27/2011	
Rating Type					50% HD	Height	Test Wt.	Yield	Yield	Total Yield
Rating Unit					days	in	lb/bu	lb/A	lb/A	lb/A
Crop Stage Majority					Main	Main	Main	Main	Ratoon	MC+RC
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage						
1	UREA	0	lb ai/A	4-5 leaf	99 g	36 c	45.2 a	7978 bc	3086 a	11064 abc
2	UREA	30	lb ai/A	4-5 leaf	100 g	38 abc	44.8 ab	8276 ab	3286 a	11562 abc
3	UREA	60	lb ai/A	4-5 leaf	103 f	36 c	44.7 abc	8506 ab	3319 a	11825 ab
4	UREA	90	lb ai/A	4-5 leaf	106 cde	39 abc	44.9 ab	8540 ab	2915 a	11455 abc
5	UREA	120	lb ai/A	4-5 leaf	107 b-e	38 abc	44.0 abc	8728 ab	3168 a	11895 ab
6	UREA	150	lb ai/A	4-5 leaf	109 abc	41 ab	43.5 bcd	8319 ab	2883 a	11202 abc
7	UREA	180	lb ai/A	4-5 leaf	109 abc	41 ab	43.3 cd	8493 ab	2924 a	11417 abc
8	UREA	210	lb ai/A	4-5 leaf	110 ab	41 ab	42.6 d	8091 bc	2711 a	10802 bc
9	UREA	240	lb ai/A	4-5 leaf	111 a	41 a	42.5 d	7604 c	3005 a	10608 c
10	UREA	45	lb ai/A	4-5 leaf	104 ef	37 bc	44.9 ab	8546 ab	3104 a	11650 abc
	UREA	45	lb ai/A	PD						
11	UREA	75	lb ai/A	4-5 leaf	106 cde	38 abc	44.6 abc	8686 ab	3156 a	11842 ab
	UREA	45	lb ai/A	PD						
12	UREA	105	lb ai/A	4-5 leaf	108 b-e	39 abc	44.0 abc	8685 ab	3062 a	11747 abc
	UREA	45	lb ai/A	PD						
13	UREA	135	lb ai/A	4-5 leaf	109 abc	41 ab	43.8 a-d	8481 ab	2782 a	11262 abc
	UREA	45	lb ai/A	PD						
14	UREA	75	lb ai/A	4-5 leaf	105 def	38 abc	44.6 abc	9008 a	3169 a	12177 a
	SBNR-UREA	0	lb ai/A	PD						
15	UREA	105	lb ai/A	4-5 leaf	108 bcd	40 abc	43.8 a-d	8522 ab	2951 a	11473 abc
	SBNR-UREA	0	lb ai/A	PD						
LSD (P=.05)					2	2	0.9	480	418	682
Standard Deviation					2	1	0.6	336	292	477
CV					1	4	1.4	4	10	4

Continued.

Table 18. Continued.

Crop Name	Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice
Description	Tissue	Tissue	Tissue		Tissue		Tissue		Tissue	Tissue	Grain
Part Rated			Abvgrd -		Abvgrd -		Abvgrd -				
Rating Date	5/30/2011	7/5/2011	5/30/2011		7/15/2011		8/3/2011		5/30/2011	7/5/2011	7/5/2011
Rating Type	WP dry wt	WP dry wt	N	C	N	C	N	C	N Uptake	N Uptake	N Uptake
Rating Unit	grams	grams	%	%	%	%	%	%	lb/A	lb/A	lb/A
Sample Size, Unit	3 ft	3 ft									
Collection Basis, Unit	1 row	1 row									
Crop Stage Majority	Main	Main	Main	Main	Main	Main	Main	Main	Main	Main	Main
Crop Stage Scale	PD	50%HD	PD	PD	50% HD	50% HD	Grain	Grain	PD	50%HD	Maturity
Trt No. / Trt Name											
1 UREA	40.5 a	174.9 a	2.15 d	41.15 c	1.13 g	40.28 ab	1.22 bc	41.88 c	42 c	98 d	97 a
2 UREA	.	235.8 a	.	.	1.18 fg	39.75 b	1.20 c	42.13 bc	.	134 cd	99 a
3 UREA	.	230.1 a	.	.	1.39 c-g	40.45 ab	1.18 c	42.03 bc	.	154 bcd	100 a
4 UREA	.	212.6 a	.	.	1.33 d-g	40.50 ab	1.27 bc	42.38 bc	.	137 cd	108 a
5 UREA	.	227.7 a	.	.	1.43 c-f	40.00 ab	1.20 c	42.20 bc	.	156 bcd	105 a
6 UREA	.	216.9 a	.	.	1.64 c	40.40 ab	1.30 bc	42.83 bc	.	172 bcd	108 a
7 UREA	.	213.2 a	.	.	1.88 b	40.53 ab	1.29 bc	42.55 bc	.	191 bc	110 a
8 UREA	.	223.7 a	.	.	2.05 b	41.13 ab	1.34 b	43.03 b	.	221 ab	108 a
9 UREA	.	218.9 a	.	.	2.51 a	41.33 a	1.43 a	43.75 a	.	261 a	108 a
10 UREA UREA	47.9 a	236.4 a	2.87 c	42.20 ab	1.24 efg	40.38 ab	1.20 c	42.18 bc	66 bc	141 bcd	102 a
11 UREA UREA	66.8 a	212.0 a	3.15 c	42.40 ab	1.36 c-g	40.08 ab	1.18 c	42.13 bc	100 ab	137 cd	103 a
12 UREA UREA	70.4 a	204.2 a	3.51 b	42.50 ab	1.60 cd	40.43 ab	1.27 bc	42.55 bc	117 a	158 bcd	110 a
13 UREA UREA	68.8 a	213.4 a	3.99 a	43.00 a	1.58 cd	39.90 b	1.29 bc	42.55 bc	132 a	162 bcd	110 a
14 UREA SBNR-UREA	51.8 a	228.5 a	2.94 c	41.93 b	1.35 c-g	40.20 ab	1.22 bc	42.28 bc	72 bc	149 bcd	110 a
15 UREA SBNR-UREA	46.7 a	253.5 a	3.54 b	42.53 ab	1.51 cde	39.88 b	1.31 bc	42.58 bc	79 bc	185 bc	112 a
LSD (P=.05)	22.6	55.2	0.26	0.62	0.19	0.81	0.08	0.61	29	49	10
Standard Deviation	15.2	38.6	0.17	0.41	0.13	0.57	0.05	0.42	20	34	7
CV	27.1	17.5	5.46	0.98	8.71	1.40	4.32	1.00	22	21	6

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls).

Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Table 19. Determine the agronomic response of drill-seeded CL162 to nitrogen fertilizer rate and time of application (1.2). Evaluate greenseeker technology. Vermilion Parish.

Crop Name					Rice	Rice	Rice	Rice	Rice	Rice
Rating Date						8/3/2011	8/3/2011	8/3/2011	10/27/2011	
Rating Type					50% HD	Height	Test Wt.	Yield	Yield	Total Yield
Rating Unit					days	in	lb/bu	lb/A	lb/A	lb/A
Crop Stage Majority					Main	Main	Main	Main	Ratoon	MC+RC
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage						
1	UREA	0	lb ai/A	4-5 leaf	95 f	39 b	45.2 a	8382 a	2120 a	10502 a
2	UREA	30	lb ai/A	4-5 leaf	97 ef	41 ab	45.0 a	8661 a	2189 a	10850 a
3	UREA	60	lb ai/A	4-5 leaf	97 def	40 ab	44.6 a	9124 a	2210 a	11334 a
4	UREA	90	lb ai/A	4-5 leaf	99 cd	43 ab	44.6 a	8968 a	2095 a	11184 a
5	UREA	120	lb ai/A	4-5 leaf	102 ab	41 ab	44.8 a	9024 a	2188 a	11323 a
6	UREA	150	lb ai/A	4-5 leaf	102 ab	44 a	44.0 a	8223 a	2309 a	10531 a
7	UREA	180	lb ai/A	4-5 leaf	102 ab	42 ab	44.6 a	8286 a	2386 a	10672 a
8	UREA	210	lb ai/A	4-5 leaf	103 a	43 ab	44.1 a	8170 a	2091 a	10261 a
9	UREA	240	lb ai/A	4-5 leaf	103 a	43 ab	43.9 a	8185 a	2182 a	10367 a
10	UREA	45	lb ai/A	4-5 leaf	97 ef	40 ab	45.5 a	9154 a	2049 a	11202 a
	UREA	45	lb ai/A	PD						
11	UREA	75	lb ai/A	4-5 leaf	100 bc	41 ab	44.3 a	9001 a	2320 a	11321 a
	UREA	45	lb ai/A	PD						
12	UREA	105	lb ai/A	4-5 leaf	101 ab	42 ab	44.0 a	8915 a	2344 a	11259 a
	UREA	45	lb ai/A	PD						
13	UREA	135	lb ai/A	4-5 leaf	103 ab	41 ab	44.3 a	8664 a	2056 a	10721 a
	UREA	45	lb ai/A	PD						
14	UREA	75	lb ai/A	4-5 leaf	99 cde	41 ab	44.1 a	8962 a	2061 a	11023 a
	SBNR-UREA	0	lb ai/A	PD						
15	UREA	105	lb ai/A	4-5 leaf	101 ab	42 ab	44.8 a	9089 a	2070 a	11159 a
	SBNR-UREA	0	lb ai/A	PD						
LSD (P=.05)					2	2	1.0	580	334	759
Standard Deviation					1	1	0.7	406	233	531
CV					1	3	1.5	5	11	5

Continued.

Table 19. Continued.

Crop Name		Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice
Description		Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	N uptake	N uptake	N uptake
Part Rated				Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	total -	total -	grain -
Rating Date		5/30/2011	6/28/2011	5/30/2011	5/30/2011	6/28/2011	6/28/2011	8/3/2011	8/3/2011	5/30/2011	6/28/2011	7/31/2011
Rating Type		WP dry wt	WP dry wt	N	C	N	C	N	C	N	N	N
Rating Unit		grams	grams	%	%	%	%	%	%	lb/A	lb/A	lb/A
Sample Size, Unit		3 ft	3 ft									
Collection Basis, Unit		1 row	1 row									
Crop Stage Majority		Main	Main	Main	Main	Main	Main	Main	Main	Main	Main	Main
Crop Stage Scale		PD	50%HD	PD	PD	50% HD	50% HD	Grain	Grain	PD	50% HD	Grain
Trt No.	Trt Name											
1	UREA	55.0 c	219.0 a	2.76 a	42.48 a	1.11 a	41.00 a	1.18 b	41.73 b	69 a	117 a	98 a
2	UREA	.	224.9 a	.	.	1.06 a	40.55 a	1.15 b	41.63 b	.	114 a	100 a
3	UREA	.	210.4 a	.	.	1.08 a	40.45 a	1.20 ab	41.93 ab	.	108 a	109 a
4	UREA	.	243.7 a	.	.	1.09 a	40.88 a	1.19 ab	41.85 ab	.	128 a	106 a
5	UREA	.	233.1 a	.	.	1.10 a	41.15 a	1.25 ab	42.23 ab	.	123 a	113 a
6	UREA	.	237.9 a	.	.	1.12 a	40.88 a	1.21 ab	41.95 ab	.	128 a	100 a
7	UREA	.	227.0 a	.	.	1.09 a	40.93 a	1.34 a	42.78 a	.	119 a	111 a
8	UREA	.	235.0 a	.	.	1.17 a	41.28 a	1.29 ab	42.05 ab	.	132 a	105 a
9	UREA	.	207.4 a	.	.	1.15 a	41.08 a	1.26 ab	41.80 ab	.	113 a	103 a
10	UREA UREA	61.6 bc	237.3 a	2.69 a	41.85 a	1.09 a	41.13 a	1.27 ab	42.45 ab	78 a	123 a	117 a
11	UREA UREA	87.0 ab	202.5 a	2.89 a	42.30 a	1.11 a	41.60 a	1.20 ab	42.00 ab	119 a	108 a	108 a
12	UREA UREA	88.1 ab	243.2 a	2.79 a	41.73 a	1.09 a	40.88 a	1.22 ab	42.33 ab	118 a	128 a	109 a
13	UREA UREA	97.0 a	231.6 a	2.85 a	42.13 a	1.11 a	41.03 a	1.22 ab	42.58 ab	133 a	123 a	106 a
14	UREA SBNR-UREA	92.8 a	240.2 a	2.15 a	42.15 a	1.11 a	41.18 a	1.18 b	42.13 ab	99 a	127 a	105 a
15	UREA SBNR-UREA	81.8 ab	201.5 a	3.00 a	41.85 a	1.12 a	40.75 a	1.20 ab	42.15 ab	118 a	109 a	109 a
LSD (P=.05)		20.8	46.4	0.94	1.13	0.11	0.82	0.09	0.58	44	27	11
Standard Deviation		14.0	32.5	0.63	0.76	0.08	0.57	0.06	0.40	29	19	8
CV		17.4	14.4	23.06	1.80	6.90	1.39	4.98	0.96	28	16	7

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls).

Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Table 20. Determine the agronomic response of drill-seeded CL261 to nitrogen fertilizer rate and time of application (2.2). Evaluate greenseeker technology. Vermilion Parish.

Crop Name					Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice
Rating Date						8/3/2011	8/3/2011	8/3/2011	8/3/2011	8/3/2011	10/27/2011	
Rating Type					50% HD	Height	Lodge	Lodge	Test Wt.	Yield	Yield	Total Yield
Rating Unit					days	in	% plot	rate	lb/bu	lb/A	lb/A	lb/A
Crop Stage Majority					Main	Main	Main	Main	Main	Main	Ratoon	MC+RC
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage								
1	UREA	0	lb ai/A	4-5 leaf	99 h	37 ab	.	.	45.5 a	8074 a	2459 a	10533 a
2	UREA	30	lb ai/A	4-5 leaf	99 gh	35 b	.	.	45.2 abc	7818 a	2435 a	10253 a
3	UREA	60	lb ai/A	4-5 leaf	100 gh	41 a	6 a	1 a	45.2 a-d	7860 a	2416 a	10276 a
4	UREA	90	lb ai/A	4-5 leaf	101 efg	38 ab	26 a	1 a	44.7 c-f	6464 abc	2262 a	8726 abc
5	UREA	120	lb ai/A	4-5 leaf	102 cde	39 ab	25 a	1 a	44.7 c-f	6716 ab	2493 a	9209 ab
6	UREA	150	lb ai/A	4-5 leaf	102 bcd	40 ab	41 a	1 a	44.3 ef	5652 a-d	2259 a	7912 a-d
7	UREA	180	lb ai/A	4-5 leaf	103 abc	41 a	43 a	1 a	44.5 ef	5176 bcd	2139 a	7315 bcd
8	UREA	210	lb ai/A	4-5 leaf	103 ab	40 a	47 a	1 a	44.2 f	4317 cd	2193 a	6510 cd
9	UREA	240	lb ai/A	4-5 leaf	104 a	40 ab	53 a	1 a	44.2 f	3880 d	2246 a	6126 d
10	UREA	45	lb ai/A	4-5 leaf	99 h	36 ab	18 a	1 a	45.3 ab	7944 a	2391 a	10335 a
	UREA	45	lb ai/A	PD								
11	UREA	75	lb ai/A	4-5 leaf	100 fgh	38 ab	26 a	1 a	44.9 b-f	7154 ab	2488 a	9641 ab
	UREA	45	lb ai/A	PD								
12	UREA	105	lb ai/A	4-5 leaf	101 def	39 ab	23 a	1 a	44.8 b-f	5939 a-d	2227 a	8166 a-d
	UREA	45	lb ai/A	PD								
13	UREA	135	lb ai/A	4-5 leaf	102 cde	38 ab	41 a	1 a	44.5 def	6294 abc	2377 a	8671 abc
	UREA	45	lb ai/A	PD								
14	UREA	75	lb ai/A	4-5 leaf	100 fgh	37 ab	16 a	1 a	45.0 a-e	7204 ab	2283 a	9488 ab
	SBNR-UREA	0	lb ai/A	PD								
15	UREA	105	lb ai/A	4-5 leaf	102 cde	37 ab	26 a	1 a	44.6 c-f	6920 ab	2403 a	9323 ab
	SBNR-UREA	0	lb ai/A	PD								
LSD (P=.05)					1	3	29	0	0.4	1524	303	1691
Standard Deviation					1	2	16	0	0.3	1067	212	1183
CV					1	5	54	0	0.7	16	9	13

Continued.

Table 20. Continued

Crop Name		Rice	Rice	Rice		Rice		Rice		Rice	Rice	Rice
Description		Tissue	Tissue	Tissue		Tissue		Tissue		N uptake	N uptake	N uptake
Part Rated				Abvgrd -		Abvgrd -		Abvgrd -		total -	total -	grain -
Rating Date		5/30/2011	6/28/2011	5/30/2011		6/28/2011		8/3/2011		5/30/2011	6/28/2011	8/3/2011
Rating Type		WP dry wt	WP dry wt	N	C	N	C	N	C	N	N	N
Rating Unit		grams	grams	%	%	%	%	%	%	lb/A	lb/A	lb/A
Sample Size, Unit		3 ft	3 ft									
Collection Basis, Unit		1 row	1 row									
Crop Stage Majority		Main	Main	Main	Main	Main	Main	Main	Main	Main	Main	Main
Crop Stage Scale		PD	50%HD	PD	PD	50% HD	50% HD	Grain	Grain	PD	50% HD	Grain
Trt No.	Trt Name											
1	UREA	66.7 a	198.4 a	2.04 c	40.71 c	1.19 a	41.88 a	1.21 b	41.63 a	75 c	113 a	98 a
2	UREA	.	183.5 a	.	.	1.30 a	42.05 a	1.26 b	41.85 a	.	115 a	98 a
3	UREA	.	201.1 a	.	.	1.20 a	41.60 a	1.22 b	41.68 a	.	116 a	95 ab
4	UREA	.	197.6 a	.	.	1.22 a	42.08 a	1.30 ab	42.08 a	.	115 a	84 abc
5	UREA	.	211.3 a	.	.	1.21 a	41.93 a	1.33 ab	42.13 a	.	122 a	89 ab
6	UREA	.	206.1 a	.	.	1.24 a	41.53 a	1.35 ab	42.20 a	.	122 a	76 abc
7	UREA	.	241.1 a	.	.	1.24 a	41.80 a	1.39 ab	42.18 a	.	143 a	73 abc
8	UREA	.	212.4 a	.	.	1.31 a	41.90 a	1.44 a	42.15 a	.	134 a	63 bc
9	UREA	.	228.8 a	.	.	1.39 a	42.13 a	1.38 ab	42.00 a	.	152 a	53 c
10	UREA UREA	81.3 a	228.5 a	2.45 bc	41.10 bc	1.15 a	41.55 a	1.29 ab	42.15 a	96 bc	125 a	102 a
11	UREA UREA	71.8 a	221.3 a	2.68 bc	41.83 abc	1.26 a	41.90 a	1.35 ab	42.23 a	92 bc	133 a	96 ab
12	UREA UREA	85.4 a	254.2 a	2.87 b	42.03 ab	1.19 a	41.73 a	1.35 ab	42.53 a	116 abc	146 a	79 abc
13	UREA UREA	89.4 a	223.6 a	3.58 a	42.18 ab	1.23 a	41.60 a	1.31 ab	42.18 a	153 a	132 a	79 abc
14	UREA SBNR-UREA	93.1 a	225.2 a	2.67 bc	41.68 abc	1.24 a	41.65 a	1.25 b	41.95 a	119 abc	134 a	89 ab
15	UREA SBNR-UREA	80.6 a	229.4 a	3.15 ab	42.48 a	1.19 a	41.65 a	1.30 ab	41.85 a	123 ab	131 a	90 ab
LSD (P=.05)		17.9	43.2	0.54	0.89	0.14	0.46	0.11	0.48	31	29	20
Standard Deviation		12.0	30.2	0.36	0.60	0.10	0.32	0.07	0.34	21	20	14
CV		14.8	13.9	13.06	1.44	8.12	0.76	5.63	0.80	19	15	17

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls).

Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Table 21. Determine the agronomic response of drill-seeded Caffey to nitrogen fertilizer rate and time of application (1.2). Vermilion Parish.

Crop Name					Rice	Rice		Rice		Rice		Rice		Rice		Rice	
Rating Date						8/3/2011		8/3/2011		8/3/2011		8/3/2011		10/27/2011			
Rating Type					50% HD	Height		Lodge	Lodge	Test Wt.		Yield		Yield		Total Yield	
Rating Unit					days	in		% plot	rate	lb/bu		lb/A		lb/A		lb/A	
Crop Stage Majority					Main	Main		Main	Main	Main		Main		Ratoon		MC+RC	
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage													
1	UREA	0	lb ai/A	4-5 leaf	101	34	d	.	.	44.9	a	5341	c	2520	b	7861	e
2	UREA	30	lb ai/A	4-5 leaf	102	36	bcd	10	3	44.9	a	6145	b	2531	b	8676	d
3	UREA	60	lb ai/A	4-5 leaf	103	36	a-d	.	.	44.3	b	6658	ab	2429	b	9087	cd
4	UREA	90	lb ai/A	4-5 leaf	107	38	a-d	.	.	44.0	bc	7123	a	2890	ab	10013	abc
5	UREA	120	lb ai/A	4-5 leaf	109	39	abc	.	.	43.7	cd	7194	a	2866	ab	10060	abc
6	UREA	150	lb ai/A	4-5 leaf	109	40	abc	5	1	42.9	e	7412	a	3303	a	10715	a
7	UREA	180	lb ai/A	4-5 leaf	108	40	ab	.	.	43.0	e	7376	a	3198	a	10574	ab
8	UREA	210	lb ai/A	4-5 leaf	109	41	a	.	.	43.0	e	7382	a	3164	a	10546	ab
9	UREA	45	lb ai/A	4-5 leaf	106	35	cd	.	.	44.7	a	6271	b	2762	ab	9033	cd
	UREA	45	lb ai/A	PD													
10	UREA	75	lb ai/A	4-5 leaf	108	38	a-d	.	.	43.8	cd	6628	ab	2927	ab	9555	bcd
	UREA	45	lb ai/A	PD													
11	UREA	105	lb ai/A	4-5 leaf	109	39	abc	.	.	43.6	cd	7033	a	3095	a	10128	ab
	UREA	45	lb ai/A	PD													
12	UREA	135	lb ai/A	4-5 leaf	109	40	abc	.	.	43.3	de	7344	a	3313	a	10657	ab
	UREA	45	lb ai/A	PD													
LSD (P=.05)					.	3		.	.	0.4		549		346		732	
Standard Deviation					.	2		.	.	0.3		380		240		507	
CV					.	5		.	.	0.6		6		8		5	

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls).

Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Table 22. Determine the agronomic response of drill-seeded Jazzman-2 to nitrogen fertilizer rate and time of application (2.2). Vermilion Parish.

Crop Name					Rice	Rice	Rice	Rice	Rice	Rice
Rating Date						8/3/2011	8/3/2011	8/3/2011	10/27/2011	
Rating Type					50% HD	Height	Test Wt.	Yield	Yield	Total Yield
Rating Unit					days	in	lb/bu	lb/A	lb/A	lb/A
Crop Stage Majority					Main	Main	Main	Main	Ratoon	MC+RC
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage						
1	UREA	0	lb ai/A	4-5 leaf	99	29 c	45.3 a	3524 c	1749 a	5274 c
2	UREA	30	lb ai/A	4-5 leaf	101	30 bc	45.2 a	4002 bc	1837 a	5838 bc
3	UREA	60	lb ai/A	4-5 leaf	103	32 abc	45.2 a	4882 ab	2028 a	6910 ab
4	UREA	90	lb ai/A	4-5 leaf	107	32 abc	44.7 ab	5034 ab	1847 a	6881 ab
5	UREA	120	lb ai/A	4-5 leaf	109	33 abc	44.5 abc	5082 ab	2038 a	7121 ab
6	UREA	150	lb ai/A	4-5 leaf	110	34 abc	43.7 c	5076 ab	1927 a	7002 ab
7	UREA	180	lb ai/A	4-5 leaf	107	33 abc	43.9 bc	5297 ab	1750 a	7047 ab
8	UREA	210	lb ai/A	4-5 leaf	108	35 a	44.2 bc	5846 a	1932 a	7778 a
9	UREA	45	lb ai/A	4-5 leaf	107	30 abc	45.3 a	4258 bc	1792 a	6050 bc
	UREA	45	lb ai/A	PD						
10	UREA	75	lb ai/A	4-5 leaf	108	33 abc	44.8 ab	4467 bc	1772 a	6239 abc
	UREA	45	lb ai/A	PD						
11	UREA	105	lb ai/A	4-5 leaf	108	33 abc	44.2 bc	4773 ab	1902 a	6675 abc
	UREA	45	lb ai/A	PD						
12	UREA	135	lb ai/A	4-5 leaf	110	35 ab	44.2 bc	5300 ab	1652 a	6952 ab
	UREA	45	lb ai/A	PD						
LSD (P=.05)					.	3	0.6	847	377	1036
Standard Deviation					.	2	0.4	587	261	717
CV					.	6	1.0	12	14	11

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls).

Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Table 23. Determine the agronomic response of drill-seeded LA2140 to nitrogen fertilizer rate and time of application (2.2). Vermilion Parish.

Crop Name					Rice	Rice		Rice		Rice	
Rating Date						8/3/2011		8/3/2011		8/3/2011	
Rating Type					50% HD	Height		Test Wt.		Yield	
Rating Unit					days	in		lb/bu		lb/A	
Crop Stage Majority					Main	Main		Main		Main	
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage							
1	UREA	0	lb ai/A	4-5 leaf	99	34	d	46.6	a	5105	d
2	UREA	30	lb ai/A	4-5 leaf	101	35	cd	46.2	ab	5651	bcd
3	UREA	60	lb ai/A	4-5 leaf	102	37	abc	45.7	bc	5985	abc
4	UREA	90	lb ai/A	4-5 leaf	103	35	cd	45.3	bcd	6498	a
5	UREA	120	lb ai/A	4-5 leaf	104	38	abc	44.8	cde	6260	ab
6	UREA	150	lb ai/A	4-5 leaf	106	40	ab	43.8	fg	6315	ab
7	UREA	180	lb ai/A	4-5 leaf	108	41	a	43.5	g	6370	ab
8	UREA	210	lb ai/A	4-5 leaf	109	40	ab	43.4	g	6234	ab
9	UREA	45	lb ai/A	4-5 leaf	103	37	bcd	45.5	bcd	5511	cd
	UREA	45	lb ai/A	PD							
10	UREA	75	lb ai/A	4-5 leaf	105	38	abc	45.4	bcd	6060	abc
	UREA	45	lb ai/A	PD							
11	UREA	105	lb ai/A	4-5 leaf	106	39	ab	44.6	def	6148	abc
	UREA	45	lb ai/A	PD							
12	UREA	135	lb ai/A	4-5 leaf	108	39	ab	44.3	efg	6449	a
	UREA	45	lb ai/A	PD							
LSD (P=.05)					.	2		0.7		461	
Standard Deviation					.	1		0.5		319	
CV					.	4		1.1		5	

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls).

Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Table 24. Determine the agronomic response of drill-seeded Rex to nitrogen fertilizer rate and time of application (2.2). Vermilion Parish.

Crop Name					Rice	Rice		Rice		Rice		Rice		Rice	
Rating Date						8/3/2011		8/3/2011		8/3/2011		10/27/2011			
Rating Type					50% HD	Height		Test Wt.		Yield		Yield		Total Yield	
Rating Unit					days	in		lb/bu		lb/A		lb/A		lb/A	
Crop Stage Majority					Main	Main		Main		Main		Ratoon		MC+RC	
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage											
1	UREA	0	lb ai/A	4-5 leaf	100	35	b	45.3	a	5163	e	2455	a	7618	c
2	UREA	30	lb ai/A	4-5 leaf	101	37	ab	44.0	b-e	5984	d	2297	a	8281	c
3	UREA	60	lb ai/A	4-5 leaf	102	37	ab	44.9	ab	6446	c	2600	a	9046	b
4	UREA	90	lb ai/A	4-5 leaf	103	39	ab	44.7	abc	7050	ab	2524	a	9575	ab
5	UREA	120	lb ai/A	4-5 leaf	104	42	a	44.4	a-d	7150	ab	3036	a	10186	ab
6	UREA	150	lb ai/A	4-5 leaf	108	41	a	43.1	e	6822	bc	2500	a	9323	ab
7	UREA	180	lb ai/A	4-5 leaf	109	42	a	43.3	de	7442	a	3114	a	10556	a
8	UREA	210	lb ai/A	4-5 leaf	110	43	a	43.3	de	7256	ab	2628	a	9884	ab
9	UREA	45	lb ai/A	4-5 leaf	102	39	ab	45.0	ab	6801	bc	2936	a	9737	ab
	UREA	45	lb ai/A	PD											
10	UREA	75	lb ai/A	4-5 leaf	104	38	ab	44.7	abc	6744	bc	3260	a	10004	ab
	UREA	45	lb ai/A	PD											
11	UREA	105	lb ai/A	4-5 leaf	108	38	ab	44.1	b-e	7154	ab	3137	a	10291	a
	UREA	45	lb ai/A	PD											
12	UREA	135	lb ai/A	4-5 leaf	108	43	a	43.7	cde	7045	ab	3416	a	10460	a
	UREA	45	lb ai/A	PD											
LSD (P=.05)					.	4		0.8		354		775		766	
Standard Deviation					.	2		0.5		245		537		531	
CV					.	5		1.2		4		19		6	

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls).
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Table 25. Determine the agronomic response of drill-seeded LA2048 to nitrogen fertilizer rate and time of application (1.2). Vermilion Parish.

Crop Name					Rice	Rice	Rice	Rice	Rice	Rice
Rating Date						8/3/2011	8/3/2011	8/3/2011	10/27/2011	
Rating Type					50% HD	Height	Test Wt.	Yield	Yield	Total Yield
Rating Unit					days	in	lb/bu	lb/A	lb/A	lb/A
Crop Stage Majority					Main	Main	Main	Main	Ratoon	MC+RC
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage						
1	UREA	0	lb ai/A	4-5 leaf	94	29 d	45.3 a	3346 c	1440 c	4786 c
2	UREA	30	lb ai/A	4-5 leaf	95	33 c	44.4 ab	4509 b	1885 b	6394 b
3	UREA	60	lb ai/A	4-5 leaf	102	34 bc	44.5 ab	4835 ab	2294 ab	7129 ab
4	UREA	90	lb ai/A	4-5 leaf	102	37 abc	44.2 ab	5909 ab	2541 a	8450 a
5	UREA	120	lb ai/A	4-5 leaf	103	38 abc	43.2 bc	4715 ab	2243 ab	6958 ab
6	UREA	150	lb ai/A	4-5 leaf	103	39 ab	42.7 c	5479 ab	2295 ab	7774 ab
7	UREA	180	lb ai/A	4-5 leaf	108	40 a	42.7 c	6168 a	2196 ab	8364 a
8	UREA	210	lb ai/A	4-5 leaf	108	41 a	42.4 c	6090 a	2427 ab	8517 a
9	UREA	45	lb ai/A	4-5 leaf	102	36 abc	44.3 ab	4949 ab	2043 ab	6992 ab
	UREA	45	lb ai/A	PD						
10	UREA	75	lb ai/A	4-5 leaf	108	34 bc	43.5 bc	4763 ab	2338 ab	7102 ab
	UREA	45	lb ai/A	PD						
11	UREA	105	lb ai/A	4-5 leaf	108	37 abc	43.3 bc	5111 ab	2147 ab	7258 ab
	UREA	45	lb ai/A	PD						
12	UREA	135	lb ai/A	4-5 leaf	109	39 ab	42.9 c	5445 ab	2249 ab	7694 ab
	UREA	45	lb ai/A	PD						
LSD (P=.05)					.	3	0.9	933	378	1176
Standard Deviation					.	2	0.6	646	262	815
CV					.	5	1.4	13	12	11

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls).

Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Table 26. Determine the agronomic response of drill-seeded Taggart to nitrogen fertilizer rate and time of application (3.2). Vermilion Parish.

Crop Name					Rice	Rice		Rice		Rice		Rice		Rice	
Rating Date						8/3/2011		8/3/2011		8/3/2011		10/27/2011			
Rating Type					50% HD	Height		Test wt.		Yield		Yield		Total Yield	
Rating Unit					days	in		lb/bu		lb/A		lb/A		lb/A	
Crop Stage Majority					Main	Main		Main		Main		Ratoon		MC+RC	
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage											
1	UREA	0	lb ai/A	4-5 leaf	101	32	h	44.5	a	2738	b	1822	d	4560	c
2	UREA	30	lb ai/A	4-5 leaf	104	34	gh	43.3	b	3474	ab	1997	cd	5471	bc
3	UREA	60	lb ai/A	4-5 leaf	108	37	efg	42.8	bcd	3852	ab	2202	bcd	6055	ab
4	UREA	90	lb ai/A	4-5 leaf	112	39	c-f	42.3	cde	4484	a	2152	bcd	6637	ab
5	UREA	120	lb ai/A	4-5 leaf	113	42	bc	42.1	de	4396	a	2441	abc	6837	ab
6	UREA	150	lb ai/A	4-5 leaf	113	41	b-e	41.4	e	4175	a	2737	ab	6911	ab
7	UREA	180	lb ai/A	4-5 leaf	114	44	ab	41.4	e	4313	a	2639	ab	6953	ab
8	UREA	210	lb ai/A	4-5 leaf	116	47	a	41.3	e	4603	a	2807	a	7410	a
9	UREA	45	lb ai/A	4-5 leaf	110	37	fg	43.1	bc	3737	ab	2278	a-d	6015	ab
	UREA	45	lb ai/A	PD											
10	UREA	75	lb ai/A	4-5 leaf	112	38	def	42.2	cde	3429	ab	2328	a-d	5757	abc
	UREA	45	lb ai/A	PD											
11	UREA	105	lb ai/A	4-5 leaf	114	41	bcd	41.9	de	3871	ab	2602	ab	6473	ab
	UREA	45	lb ai/A	PD											
12	UREA	135	lb ai/A	4-5 leaf	114	43	bc	41.9	de	4263	a	2605	ab	6868	ab
	UREA	45	lb ai/A	PD											
LSD (P=.05)					.	3		0.7		933		365		1017	
Standard Deviation					.	2		0.5		646		253		704	
CV					.	4		1.1		16		11		11	

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls).

Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Table 27. Determine the agronomic response of drill-seeded Roy J to nitrogen fertilizer rate and time of application (1.2). Vermilion Parish.

Crop Name					Rice	Rice		Rice		Rice	
Rating Date						8/3/2011		8/3/2011		8/3/2011	
Rating Type					50% HD	Height		Test Wt.		Yield	
Rating Unit					days	in		lb/bu		lb/A	
Crop Stage Majority					Main	Main		Main		Main	
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage							
1	UREA	0	lb ai/A	4-5 leaf	102	35	e	45.0	a	3062	a
2	UREA	30	lb ai/A	4-5 leaf	103	35	e	43.3	b	3474	a
3	UREA	60	lb ai/A	4-5 leaf	108	39	bcd	42.8	bc	3852	a
4	UREA	90	lb ai/A	4-5 leaf	111	39	cd	42.3	cd	4484	a
5	UREA	120	lb ai/A	4-5 leaf	113	43	a	42.1	cde	4396	a
6	UREA	150	lb ai/A	4-5 leaf	117	42	abc	41.4	e	4175	a
7	UREA	180	lb ai/A	4-5 leaf	119	44	a	41.4	e	4313	a
8	UREA	210	lb ai/A	4-5 leaf	119	44	a	41.3	e	4603	a
9	UREA	45	lb ai/A	4-5 leaf	109	38	de	43.1	b	3737	a
	UREA	45	lb ai/A	PD							
10	UREA	75	lb ai/A	4-5 leaf	113	40	a-d	42.2	cd	3429	a
	UREA	45	lb ai/A	PD							
11	UREA	105	lb ai/A	4-5 leaf	116	43	abc	41.9	de	3871	a
	UREA	45	lb ai/A	PD							
12	UREA	135	lb ai/A	4-5 leaf	118	43	ab	41.9	de	4263	a
	UREA	45	lb ai/A	PD							
LSD (P=.05)					.	3		0.5		907	
Standard Deviation					.	2		0.4		628	
CV					.	4		0.9		16	

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls).
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Table 28. Determine the agronomic response of drill-seeded LAH10 to nitrogen fertilizer rate and time of application (1.2). Vermilion Parish.

Crop Name					Rice	Rice		Rice		Rice		Rice		Rice	
Rating Date						8/3/2011		8/3/2011		8/3/2011		10/27/2011			
Rating Type					50% HD	Height		Test Wt.		Yield		Yield		Total Yield	
Rating Unit					days	in		lb/bu		lb/A		lb/A		lb/A	
Crop Stage Majority					Main	Main		Main		Main		Ratoon		MC+RC	
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage											
1	UREA	0	lb ai/A	4-5 leaf	106	44	b	43.2	ab	6995	c	1768	a	8763	c
2	UREA	30	lb ai/A	4-5 leaf	107	47	a	43.2	ab	7172	c	1742	a	8914	c
3	UREA	60	lb ai/A	4-5 leaf	107	49	a	43.2	ab	7963	abc	1739	a	9703	bc
4	UREA	90	lb ai/A	4-5 leaf	107	49	a	43.8	a	8086	abc	1844	a	9930	abc
5	UREA	120	lb ai/A	4-5 leaf	107	49	a	43.7	a	8251	abc	1918	a	10169	abc
6	UREA	150	lb ai/A	4-5 leaf	107	49	a	42.2	b	9268	a	1590	a	10858	ab
7	UREA	180	lb ai/A	4-5 leaf	105	50	a	43.0	ab	9138	ab	2314	a	11452	a
8	UREA	210	lb ai/A	4-5 leaf	106	51	a	42.9	ab	8701	ab	1926	a	10628	ab
9	UREA	45	lb ai/A	4-5 leaf	108	49	a	43.5	a	7880	bc	1819	a	9699	bc
	UREA	45	lb ai/A	PD											
10	UREA	75	lb ai/A	4-5 leaf	107	49	a	43.1	ab	7800	bc	1760	a	9560	bc
	UREA	45	lb ai/A	PD											
11	UREA	105	lb ai/A	4-5 leaf	107	51	a	43.0	ab	8316	abc	1746	a	10062	abc
	UREA	45	lb ai/A	PD											
12	UREA	135	lb ai/A	4-5 leaf	107	50	a	43.0	ab	8703	ab	1950	a	10652	ab
	UREA	45	lb ai/A	PD											
LSD (P=.05)					.	2		0.8		851		441		1013	
Standard Deviation					.	1		0.5		589		306		701	
CV					.	3		1.2		7		17		7	

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls).

Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Rice Variety by Nitrogen Experiments at Richland Parish

Experiment number	: Richland Parish VxN Studies
Site and design	:
Location/Cooperator	: Richland Parish / Elliot Colvin
Tillage type	: Conventional
Experimental design	: Randomized complete block
Number of reps	: 4
Plot size	: 4.66 x 16 ft
Row width/rows per plot	: 8 in / 7
Soil type	: Perry Clay
% organic matter	: 2.7
pH	: 6.5
Extractable nutrients ppm	: Ca-2,839; Cu-3.4; Mg-787; P-33; K-260; Na-91; S-15; Zn-3.1
Crop/Variety	: Rice / See data sheet
Planting method/date	: Drill seeded / April 13
Seeding rate/depth	: 40 seeds/ft^2 / .75 inch
Emergence date	: April 23
Harvest date	: September 1
Seed treatment/cwt	: Dithane (fungicide)-114 g
	Release (gibberellic acid)-10 g
	Zinc Plus (10% Zn & 4.9% combined sulfur)-296 ml
Fertilization	: None
Water management	:
Flush	: April 15 (rain), May 20
Flood	: June 2
Drain	: August 23
Pest management	:
Herbicides	: 6 oz/A Newpath, May 17
	1 gal/A Propanil + 6 oz/A Newpath, June 1
Insecticides	: 0.137 lb ai/cwt Dermacor seed treatment
Fungicides	: None

Table 29. Determine the agronomic response of drill-seeded CL111 to nitrogen fertilizer rate and time of application (3.3). Richland Parish

Crop Name					Rice		Rice		Rice		Rice		Rice	
Rating Date							8/31/2011		8/31/2011		8/31/2011		8/31/2011	
Rating Type					50% HD		Height		Lodge	Lodge	Test Wt		Yield	
Rating Unit					days		in		% plot	rate	lb/bu		lb/A	
Crop Stage Majority					Main		Main		Main	Main	Main		Main	
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage										
1	UREA	0	lb ai/A	4-5 leaf	94	f	40	c	.	.	42.3	a	7834	a
2	UREA	30	lb ai/A	4-5 leaf	95	ef	41	c	.	.	42.3	a	8328	a
3	UREA	60	lb ai/A	4-5 leaf	97	de	42	b	.	.	41.7	a	8865	a
4	UREA	90	lb ai/A	4-5 leaf	99	bc	44	ab	.	.	41.5	a	8943	a
5	UREA	120	lb ai/A	4-5 leaf	101	ab	44	ab	.	.	42.0	a	9253	a
6	UREA	150	lb ai/A	4-5 leaf	101	ab	44	ab	10	3	41.7	a	8947	a
7	UREA	180	lb ai/A	4-5 leaf	102	a	45	a	.	.	41.5	a	8517	a
8	UREA	210	lb ai/A	4-5 leaf	102	a	44	ab	45	4	41.6	a	8387	a
9	UREA	45	lb ai/A	4-5 leaf	96	ef	43	ab	.	.	42.4	a	9313	a
	UREA	45	lb ai/A	PD										
10	UREA	75	lb ai/A	4-5 leaf	97	cde	44	ab	.	.	42.3	a	9341	a
	UREA	45	lb ai/A	PD										
11	UREA	105	lb ai/A	4-5 leaf	99	bcd	45	a	20	4	42.3	a	8976	a
	UREA	45	lb ai/A	PD										
12	UREA	135	lb ai/A	4-5 leaf	101	ab	45	a	45	4	41.0	a	8302	a
	UREA	45	lb ai/A	PD										
LSD (P=.05)					2		2		.	.	1.4		1028	
Standard Deviation					1		1		.	.	1.0		712	
CV					1		2		.	.	2.3		8	

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls).
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Table 30. Determine the agronomic response of drill-seeded CL142 to nitrogen fertilizer rate and time of application (2.3). Richland Parish.

Crop Name					Rice		Rice		Rice		Rice	
Rating Date							8/31/2011		8/31/2011		8/31/2011	
Rating Type					50% HD		Height		Test Wt		Yield	
Rating Unit					days		in		lb/bu		lb/A	
Crop Stage Majority					Main		Main		Main		Main	
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage								
1	UREA	0	lb ai/A	4-5 leaf	99	e	43	d	41.7	a	8002	a
2	UREA	30	lb ai/A	4-5 leaf	100	e	45	cd	41.7	a	7985	a
3	UREA	60	lb ai/A	4-5 leaf	103	bcd	45	bcd	41.1	ab	8268	a
4	UREA	90	lb ai/A	4-5 leaf	103	bcd	48	abc	40.5	ab	8369	a
5	UREA	120	lb ai/A	4-5 leaf	104	abc	49	abc	40.6	ab	8619	a
6	UREA	150	lb ai/A	4-5 leaf	104	abc	49	ab	40.5	ab	8194	a
7	UREA	180	lb ai/A	4-5 leaf	105	ab	48	abc	40.4	ab	8312	a
8	UREA	210	lb ai/A	4-5 leaf	106	a	51	a	40.1	b	7951	a
9	UREA	45	lb ai/A	4-5 leaf	101	de	47	abc	40.9	ab	8111	a
	UREA	45	lb ai/A	PD								
10	UREA	75	lb ai/A	4-5 leaf	102	cd	48	abc	41.1	ab	8413	a
	UREA	45	lb ai/A	PD								
11	UREA	105	lb ai/A	4-5 leaf	104	abc	49	abc	40.5	ab	8318	a
	UREA	45	lb ai/A	PD								
12	UREA	135	lb ai/A	4-5 leaf	105	abc	50	a	40.2	b	8341	a
	UREA	45	lb ai/A	PD								
LSD (P=.05)					2		3		0.8		723	
Standard Deviation					1		1		0.6		501	
CV					1		3		1.4		6	

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls).
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Table 31. Determine the agronomic response of drill-seeded CL181 to nitrogen fertilizer rate and time of application (2.3). Richland Parish.

Crop Name					Rice		Rice		Rice		Rice	
Rating Date							8/31/2011		8/31/2011		8/31/2011	
Rating Type					50% HD		Height		Test Wt		Yield	
Rating Unit					days		in		lb/bu		lb/A	
Crop Stage Majority					Main		Main		Main		Main	
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage								
1	UREA	0	lb ai/A	4-5 leaf	103	g	35	b	42.0	a	6707	a
2	UREA	30	lb ai/A	4-5 leaf	103	fg	37	ab	41.2	b	6433	ab
3	UREA	60	lb ai/A	4-5 leaf	104	def	37	ab	40.4	bcd	6386	ab
4	UREA	90	lb ai/A	4-5 leaf	105	cde	38	ab	40.6	bc	6200	ab
5	UREA	120	lb ai/A	4-5 leaf	105	cde	37	ab	40.3	cd	5918	ab
6	UREA	150	lb ai/A	4-5 leaf	106	abc	38	ab	39.6	d	5248	ab
7	UREA	180	lb ai/A	4-5 leaf	107	a	40	a	40.0	cd	4992	b
8	UREA	210	lb ai/A	4-5 leaf	106	abc	38	ab	39.6	d	5371	ab
9	UREA	45	lb ai/A	4-5 leaf	104	efg	38	ab	40.8	bc	6122	ab
	UREA	45	lb ai/A	PD								
10	UREA	75	lb ai/A	4-5 leaf	105	cd	38	ab	40.6	bc	6283	ab
	UREA	45	lb ai/A	PD								
11	UREA	105	lb ai/A	4-5 leaf	105	bc	39	a	40.6	bc	5697	ab
	UREA	45	lb ai/A	PD								
12	UREA	135	lb ai/A	4-5 leaf	106	ab	39	a	40.0	cd	6056	ab
	UREA	45	lb ai/A	PD								
LSD (P=.05)					1		2		0.6		871	
Standard Deviation					1		1		0.4		603	
CV					1		3		1.0		10	

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls).
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Table 32. Determine the agronomic response of drill-seeded CL152 to nitrogen fertilizer rate and time of application (1.3). Evaluate greenseeker technology. Richland Parish.

Crop Name					Rice	Rice	Rice	Rice	Rice	Rice	Rice		Rice	
Description									Tissue	Tissue	Tissue		Tissue	
Part Rated											Abvgrd -		Abvgrd -	
Rating Date						8/31/2011	9/1/2011	9/1/2011	7/6/2011	7/25/2011	7/6/2011		7/25/2011	
Rating Type					50% HD	Height	Test Wt	Yield	WP dry wt	WP dry wt	N	C	N	C
Rating Unit					days	in	lb/bu	lb/A	grams	grams	%	%	%	%
Sample Size, Unit									3 ft	3 ft				
Collection Basis, Unit									1 row	1 row				
Crop Stage Majority					Main	Main	Main	Main	Main	Main	Main	Main	Main	Main
Crop Stage Scale									PD	50%HD	PD	PD	50% HD	50% HD
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage										
1	UREA	0	lb ai/A	4-5 leaf	102 d	38 c	40.8 ab	7907 a	123.1 a	189.3 a	1.63 d	39.63 ab	1.29 f	40.88 a
2	UREA	30	lb ai/A	4-5 leaf	102 cd	40 b	40.6 ab	8196 a	.	213.0 a	.	.	1.37 ef	40.48 a
3	UREA	60	lb ai/A	4-5 leaf	104 ab	42 ab	39.7 ab	7884 a	.	215.6 a	.	.	1.54 def	40.48 a
4	UREA	90	lb ai/A	4-5 leaf	105 ab	43 a	39.1 ab	7893 a	.	205.5 a	.	.	1.46 ef	40.40 a
5	UREA	120	lb ai/A	4-5 leaf	105 a	43 ab	39.0 ab	8279 a	.	215.7 a	.	.	1.60 c-f	39.60 a
6	UREA	150	lb ai/A	4-5 leaf	105 a	43 a	39.2 ab	7373 a	.	210.2 a	.	.	1.67 b-e	40.03 a
7	UREA	180	lb ai/A	4-5 leaf	105 a	43 a	38.2 b	7834 a	.	230.4 a	.	.	1.94 abc	39.65 a
8	UREA	210	lb ai/A	4-5 leaf	106 a	42 ab	38.3 b	7725 a	.	237.3 a	.	.	2.10 a	39.80 a
9	UREA	240	lb ai/A	4-5 leaf	105 a	42 ab	38.4 b	7493 a	.	183.7 a	.	.	2.00 ab	39.83 a
10	UREA	45	lb ai/A	4-5 leaf	103 bc	42 ab	41.3 a	6839 a	137.0 a	216.3 a	1.94 bc	39.78 a	1.39 ef	40.63 a
	UREA	45	lb ai/A	PD										
11	UREA	75	lb ai/A	4-5 leaf	104 ab	42 ab	39.4 ab	8185 a	122.1 a	172.2 a	1.87 cd	39.03 b	1.56 def	39.68 a
	UREA	45	lb ai/A	PD										
12	UREA	105	lb ai/A	4-5 leaf	104 ab	43 a	38.9 ab	8085 a	128.8 a	190.9 a	2.24 ab	39.03 b	1.74 b-e	40.15 a
	UREA	45	lb ai/A	PD										
13	UREA	135	lb ai/A	4-5 leaf	105 a	43 ab	38.6 ab	7725 a	125.2 a	206.9 a	2.42 a	39.18 b	1.87 a-d	39.93 a
	UREA	45	lb ai/A	PD										
14	UREA	75	lb ai/A	4-5 leaf	105 ab	42 ab	40.0 ab	7989 a	120.1 a	211.9 a	2.14 abc	39.43 ab	1.57 def	40.13 a
	SBNR-UREA	0	lb ai/A	PD										
15	UREA	105	lb ai/A	4-5 leaf	104 ab	42 ab	39.1 ab	8049 a	139.2 a	200.4 a	2.40 a	39.45 ab	1.74 b-e	40.35 a
	SBNR-UREA	0	lb ai/A	PD										
LSD (P=.05)					1	1	1.6	1828	24.5	42.2	0.25	0.40	0.23	0.89
Standard Deviation					1	1	1.1	1279	16.5	29.5	0.17	0.27	0.16	0.63
CV					1	2	2.9	16	12.9	14.3	8.09	0.69	9.81	1.56

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls).

Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Table 33. Determine the agronomic response of drill-seeded CL162 to nitrogen fertilizer rate and time of application (1.3). Evaluate greenseeker technology. Richland Parish.

Crop Name					Rice		Rice		Rice		Rice		Rice		Rice		Rice		Rice				Rice			
Description															Tissue		Tissue		Tissue				Tissue			
Part Rated																			Abvgrd -				Abvgrd -			
Rating Date							8/31/2011		8/31/2011		9/1/2011		9/1/2011		7/6/2011		7/25/2011		7/6/2011				7/25/2011			
Rating Type					50% HD		Height		Lodge	Lodge	Test Wt		Yield		WP dry wt		WP dry wt		N		C		N		C	
Rating Unit					days		in		% plot	rate	lb/bu		lb/A		grams		grams		%		%		%		%	
Sample Size, Unit															3 ft		3 ft									
Collection Basis, Unit															1 row		1 row									
Crop Stage Majority					Main		Main		Main	Main	Main		Main		Main		Main		Main		Main		Main		Main	
Crop Stage Scale															PD		50%HD		PD		PD		50% HD		50% HD	
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage																						
1	UREA	0	lb ai/A	4-5 leaf	99	e	42	c	.	.	39.5	a	7953	a	130.3	b	196.0	a	1.65	c	39.78	a	1.11	e	39.40	a
2	UREA	30	lb ai/A	4-5 leaf	100	cde	44	b	.	.	39.2	a	7691	a	.		191.8	a	.		.		1.19	de	39.18	a
3	UREA	60	lb ai/A	4-5 leaf	100	bcd	45	ab	.	.	39.3	a	8210	a	.		225.8	a	.		.		1.37	cde	38.40	a
4	UREA	90	lb ai/A	4-5 leaf	102	ab	45	ab	.	.	39.2	a	8217	a	.		232.3	a	.		.		1.65	bcd	39.63	a
5	UREA	120	lb ai/A	4-5 leaf	103	a	45	ab	.	.	39.6	a	7998	a	.		248.1	a	.		.		1.74	bc	39.15	a
6	UREA	150	lb ai/A	4-5 leaf	103	a	46	ab	.	.	38.3	a	7863	a	.		194.2	a	.		.		1.77	bc	38.28	a
7	UREA	180	lb ai/A	4-5 leaf	103	a	46	ab	.	.	39.3	a	8105	a	.		222.4	a	.		.		1.88	bc	39.08	a
8	UREA	210	lb ai/A	4-5 leaf	103	a	46	ab	40	5	38.8	a	7713	a	.		209.3	a	.		.		2.10	ab	39.73	a
9	UREA	240	lb ai/A	4-5 leaf	103	a	47	a	.	.	38.2	a	6930	a	.		228.3	a	.		.		2.36	a	39.43	a
10	UREA	45	lb ai/A	4-5 leaf	99	de	46	ab	.	.	39.7	a	8131	a	152.4	a	198.6	a	1.88	bc	39.60	a	1.43	cde	39.18	a
	UREA	45	lb ai/A	PD																						
11	UREA	75	lb ai/A	4-5 leaf	101	bc	46	ab	.	.	39.1	a	8185	a	148.5	ab	225.5	a	2.13	ab	39.18	a	1.55	cde	39.63	a
	UREA	45	lb ai/A	PD																						
12	UREA	105	lb ai/A	4-5 leaf	101	ab	46	ab	20	4	38.4	a	8251	a	140.3	ab	211.4	a	2.45	a	39.63	a	1.49	cde	38.45	a
	UREA	45	lb ai/A	PD																						
13	UREA	135	lb ai/A	4-5 leaf	102	ab	46	ab	.	.	39.1	a	8326	a	136.0	ab	195.6	a	2.37	a	39.88	a	1.81	bc	39.15	a
	UREA	45	lb ai/A	PD																						
14	UREA	75	lb ai/A	4-5 leaf	101	bc	46	ab	.	.	39.1	a	7930	a	137.8	ab	234.6	a	2.09	ab	39.50	a	1.55	cde	39.28	a
	SBNR-UREA	0	lb ai/A	PD																						
15	UREA	105	lb ai/A	4-5 leaf	101	ab	46	ab	.	.	39.5	a	8185	a	146.9	ab	197.9	a	2.32	a	39.78	a	1.82	bc	39.43	a
	SBNR-UREA	0	lb ai/A	PD																						
LSD (P=.05)					1		2		.	.	1.1		909		13.2		46.2		0.25		0.63		0.31		1.26	
Standard Deviation					1		1		.	.	0.8		636		8.9		32.3		0.17		0.42		0.22		0.88	
CV					1		2		.	.	2.0		8		6.3		15.1		7.97		1.06		13.23		2.26	

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls).

Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Table 34. Determine the agronomic response of drill-seeded CL261 to nitrogen fertilizer rate and time of application (2.3). Evaluate greenseeker technology. Richland Parish.

Crop Name					Rice	Rice	Rice		Rice	Rice	Rice	Rice	Rice		Rice	
Description											Tissue	Tissue	Tissue		Tissue	
Part Rated													Abvgrd -		Abvgrd -	
Rating Date						8/31/2011	8/31/2011		9/1/2011	9/1/2011	7/6/2011	7/25/2011	7/6/2011		7/25/2011	
Rating Type					50% HD	Height	Lodge		Test Wt	Yield	WP dry wt	WP dry wt	N	C	N	C
Rating Unit					days	in	% plot	rate	lb/bu	lb/A	grams	grams	%	%	%	%
Sample Size, Unit											3 ft	3 ft				
Collection Basis, Unit											1 row	1 row				
Crop Stage Majority					Main	Main	Main	Main	Main	Main	Main	Main	Main	Main	Main	Main
Crop Stage Scale											PD	50%HD	PD	PD	50% HD	50% HD
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage												
1	UREA	0	lb ai/A	4-5 leaf	98 f	38 d	.	.	40.9 a	7354 b	120.1 b	269.0 a	1.69 b	39.33 a	1.30 f	39.10 a
2	UREA	30	lb ai/A	4-5 leaf	98 f	40 bc	.	.	40.7 a	7812 ab	.	196.7 a	.	.	1.25 f	39.60 a
3	UREA	60	lb ai/A	4-5 leaf	99 def	41 abc	.	.	40.5 a	7743 ab	.	229.8 a	.	.	1.40 ef	38.88 a
4	UREA	90	lb ai/A	4-5 leaf	100 b-e	42 abc	.	.	40.4 a	8144 ab	.	206.7 a	.	.	1.51 def	39.48 a
5	UREA	120	lb ai/A	4-5 leaf	101 abc	42 abc	.	.	40.3 ab	8266 ab	.	220.3 a	.	.	1.68 b-f	39.78 a
6	UREA	150	lb ai/A	4-5 leaf	101 abc	44 a	.	.	40.0 ab	8870 a	.	240.2 a	.	.	2.17 ab	40.03 a
7	UREA	180	lb ai/A	4-5 leaf	102 ab	43 ab	.	.	39.9 ab	8186 ab	120.1 b	203.0 a	.	.	1.93 a-e	39.65 a
8	UREA	210	lb ai/A	4-5 leaf	102 ab	43 a	50	4	39.9 ab	8028 ab	.	207.9 a	.	.	2.13 abc	39.25 a
9	UREA	240	lb ai/A	4-5 leaf	103 a	44 a	50	4	39.2 b	8319 ab	.	213.5 a	.	.	2.29 a	39.45 a
10	UREA	45	lb ai/A	4-5 leaf	98 ef	40 c	.	.	40.5 a	8036 ab	140.9 ab	221.1 a	2.44 a	39.08 a	1.66 b-f	39.45 a
	UREA	45	lb ai/A	PD												
11	UREA	75	lb ai/A	4-5 leaf	99 c-f	41 abc	.	.	40.0 ab	8400 ab	144.8 ab	236.0 a	2.19 a	38.90 a	1.60 c-f	38.80 a
	UREA	45	lb ai/A	PD												
12	UREA	105	lb ai/A	4-5 leaf	101 a-d	42 abc	.	.	40.0 ab	8162 ab	140.1 ab	230.0 a	2.32 a	38.55 a	1.73 b-f	39.45 a
	UREA	45	lb ai/A	PD												
13	UREA	135	lb ai/A	4-5 leaf	101 abc	42 abc	.	.	40.4 a	8112 ab	151.9 a	257.9 a	2.54 a	38.98 a	2.02 a-d	39.23 a
	UREA	45	lb ai/A	PD												
14	UREA	75	lb ai/A	4-5 leaf	99 c-f	41 abc	.	.	40.4 a	8179 ab	144.5 ab	222.5 a	2.12 a	38.80 a	1.51 def	39.35 a
	SBNR-UREA	0	lb ai/A	PD												
15	UREA	105	lb ai/A	4-5 leaf	101 abc	43 abc	.	.	40.2 ab	8217 ab	146.9 a	246.1 a	2.37 a	38.70 a	1.57 def	39.03 a
	SBNR-UREA	0	lb ai/A	PD												
LSD (P=.05)					1	2	.	.	0.7	684	16.6	53.5	0.39	0.65	0.35	1.10
Standard Deviation					1	1	.	.	0.5	479	11.2	37.4	0.26	0.43	0.24	0.77
CV					1	2	.	.	1.2	6	8.1	16.5	11.75	1.12	14.11	1.96

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls).

Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Comparison of N Uptake Efficiency of Seven Rice Varieties

Experiment number	: 11-CM-19
Site and design	:
Location/Cooperator	: Rice Research Station (Crowley Main)
Tillage type	: Fall Stale
Experimental design	: Randomized complete block
Number of reps	: 4
Plot size	: 4.66 x 16 ft
Row width/rows per plot	: 8 in / 7
Soil type	: Crowley silt loam
% organic matter	: 1.3
pH	: 6.9
Extractable nutrients ppm	: Ca-1,274; Cu-1.7; Mg-196; P-21; K-61; Na-66; S-6.2; Zn-5.0
Crop/Variety	: Rice / Multiple
Planting method/date	: Drill seeded / March 15
Seeding rate/depth	: 33 seeds/ft^2 / .75 inch
Emergence date	: March 24
Harvest date	: August 2
Seed treatment/cwt	: Dithane (fungicide)-114 g Release (gibberellic acid)-10 g Zinc Plus (10% Zn & 4.9% combined sulfur)-296 ml
Fertilization	: 240 lb/A 0-24-24-2.8, March 16
Water management	:
Flush	: March 23, April 7, April 15
Flood	: April 21
Drain	: July 19
Pest management	:
Herbicides	: 1.5 qt/A Glyphosate, March 2 1 qt/A Glyphosate, March 21 3 qt/A Propanil + .5 oz/A Permit + 1 oz/A Londax, April 6 2 qt/A Rice Beaux + 2 qt/A Propanil + 1 oz/A Londax + .75 oz/A Permit, April 19 19 oz/A Clincher, May 27
Insecticides	: 0.137 lb ai/cwt Dermacor seed treatment
Fungicides	: 12 oz/A Quadris, June 18

Table 35. Comparison of N uptake efficiency of seven rice varieties (1.1). Rice Research Station.

Crop Name						Rice		Rice		Rice		Rice	
Rating Date								7/29/2011		8/2/2011		8/2/2011	
Rating Type						50% HD		Height		Test Wt.		Yield	
Rating Unit						days		in		lb/bu		lb/A	
Crop Stage Majority						Main		Main		Main		Main	
Trt No.	Trt Name	Variety	Rate	Rate Unit	Growth Stage								
1	0 N	CL151	0	lb ai/A		96	c	30	f	44.3	a-f	4123	g
2	0 N	CL111	0	lb ai/A		92	d	31	ef	45.3	ab	3563	gh
3	0 N	CL181	0	lb ai/A		97	c	30	f	45.2	abc	3781	gh
4	0 N	LAH10	0	lb ai/A		109	a	42	b	43.0	ef	4592	fg
5	0 N	Jazzman-2	0	lb ai/A		102	b	30	f	43.1	def	2722	h
6	0 N	CL261	0	lb ai/A		98	c	30	f	44.0	a-f	3970	gh
7	0 N	Caffey	0	lb ai/A		102	b	30	f	44.3	a-f	3268	gh
8	90 N SPF	CL151	90	lb ai/A	4-5 leaf	97	c	37	cd	44.1	a-f	8707	cde
9	90 N SPF	CL111	90	lb ai/A	4-5 leaf	95	c	37	bcd	45.6	a	8213	cde
10	90 N SPF	CL181	90	lb ai/A	4-5 leaf	98	c	33	def	45.4	ab	8199	cde
11	90 N SPF	LAH10	90	lb ai/A	4-5 leaf	107	a	47	a	43.0	f	9160	bcd
12	90 N SPF	Jazzman-2	90	lb ai/A	4-5 leaf	106	a	34	c-f	43.6	c-f	4465	fg
13	90 N SPF	CL261	90	lb ai/A	4-5 leaf	97	c	35	c-f	44.8	a-d	7867	de
14	90 N SPF	Caffey	90	lb ai/A	4-5 leaf	102	b	35	c-f	44.5	a-f	7350	e
15	150 N SPF	CL151	150	lb ai/A	4-5 leaf	98	c	39	bc	44.3	a-f	10396	ab
16	150 N SPF	CL111	150	lb ai/A	4-5 leaf	96	c	38	bcd	45.1	abc	9562	bc
17	150 N SPF	CL181	150	lb ai/A	4-5 leaf	101	b	36	cde	44.1	a-f	9487	bc
18	150 N SPF	LAH10	150	lb ai/A	4-5 leaf	107	a	49	a	43.4	def	10794	a
19	150 N SPF	Jazzman-2	150	lb ai/A	4-5 leaf	108	a	35	c-f	43.2	def	5577	f
20	150 N SPF	CL261	150	lb ai/A	4-5 leaf	98	c	35	c-f	44.6	a-e	9237	bcd
21	150 N SPF	Caffey	150	lb ai/A	4-5 leaf	103	b	36	cde	43.9	b-f	8352	cde
LSD (P=.05)						3		3		0.9		926	
Standard Deviation						2		2		0.7		655	
CV						2		6		1.5		10	

Continued.

Table 35. Continued.

Crop Name						Rice		Rice		Rice		Rice		Rice		Rice	
Description						Tissue		Tissue		Tissue		Grain		Grain		N Uptake	
Part Rated								Abvgrd -		Abvgrd -		@ Harv -		@ Harv -		Abvgrd -	
Rating Date						6/27/2011		6/27/2011		6/27/2011		8/2/2011		8/2/2011		6/27/2011	
Rating Type						WP dry wt		N		C		N		C		N	
Rating Unit						grams		%		%		%		%		lb/A	
Sample Size, Unit						3 ft											
Collection Basis, Unit						1 row											
Crop Stage Majority						Main		Main		Main		Main		Main		Main	
Crop Stage Scale						50% HD		50% HD		50% HD		Grain		Grain		50% HD	
Trt No.	Trt Name	Variety	Rate	Rate Unit	Growth Stage												
1	0 N	CL151	0	lb ai/A		83.3	ef	0.797	fg	38.55	ab	0.999	cd	40.90	a	32	f
2	0 N	CL111	0	lb ai/A		102.7	def	0.791	g	38.65	ab	1.063	bcd	40.33	a	39	f
3	0 N	CL181	0	lb ai/A		110.0	c-f	0.926	efg	38.38	ab	1.043	bcd	40.48	a	49	ef
4	0 N	LAH10	0	lb ai/A		70.0	ef	0.971	efg	38.95	a	0.901	d	40.78	a	33	f
5	0 N	Jazzman-2	0	lb ai/A		57.6	f	0.904	efg	38.35	ab	1.080	bcd	41.40	a	25	f
6	0 N	CL261	0	lb ai/A		93.7	ef	0.861	fg	39.23	a	1.043	bcd	41.38	a	39	f
7	0 N	Caffey	0	lb ai/A		64.9	ef	0.931	efg	38.90	a	1.073	bcd	41.63	a	29	f
8	90 N SPF	CL151	90	lb ai/A	4-5 leaf	188.9	ab	0.946	efg	38.85	a	1.044	bcd	41.18	a	86	cde
9	90 N SPF	CL111	90	lb ai/A	4-5 leaf	216.1	a	0.975	efg	39.13	a	1.110	bcd	40.85	a	100	a-d
10	90 N SPF	CL181	90	lb ai/A	4-5 leaf	212.1	a	0.948	efg	38.58	ab	1.041	bcd	40.88	a	97	a-d
11	90 N SPF	LAH10	90	lb ai/A	4-5 leaf	214.7	a	1.117	cde	38.70	ab	0.986	cd	40.90	a	115	a-d
12	90 N SPF	Jazzman-2	90	lb ai/A	4-5 leaf	132.1	b-e	1.130	cde	38.88	a	1.075	bcd	41.53	a	71	def
13	90 N SPF	CL261	90	lb ai/A	4-5 leaf	191.5	ab	0.984	efg	39.38	a	1.180	abc	41.70	a	91	b-e
14	90 N SPF	Caffey	90	lb ai/A	4-5 leaf	130.1	b-e	1.050	def	39.35	a	1.318	a	47.80	a	66	def
15	150 N SPF	CL151	150	lb ai/A	4-5 leaf	194.7	ab	1.160	cde	38.63	ab	1.068	bcd	41.60	a	113	a-d
16	150 N SPF	CL111	150	lb ai/A	4-5 leaf	230.5	a	1.320	bc	38.93	a	1.163	abc	41.28	a	146	a
17	150 N SPF	CL181	150	lb ai/A	4-5 leaf	201.4	a	1.263	bcd	37.83	b	1.215	abc	41.45	a	123	abc
18	150 N SPF	LAH10	150	lb ai/A	4-5 leaf	222.5	a	1.318	bc	38.53	ab	1.047	bcd	40.90	a	141	ab
19	150 N SPF	Jazzman-2	150	lb ai/A	4-5 leaf	167.8	abc	1.555	a	38.65	ab	1.158	abc	41.95	a	128	abc
20	150 N SPF	CL261	150	lb ai/A	4-5 leaf	230.2	a	1.223	bcd	39.00	a	1.245	ab	41.63	a	134	abc
21	150 N SPF	Caffey	150	lb ai/A	4-5 leaf	161.2	a-d	1.400	b	39.13	a	1.208	abc	42.05	a	108	a-d
LSD (P=.05)						43.5		0.152		0.60		0.131		3.64		31	
Standard Deviation						30.8		0.107		0.42		0.093		2.57		22	
CV						19.7		9.970		1.09		8.440		6.19		26	

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls).

Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Determine the Effect of N Source, Rate, and Variety on Ratoon Yields

Experiment number	: 11-CM-20
Site and design	:
Location/Cooperator	: Rice Research Station (Crowley Main)
Tillage type	: Fall Stale
Experimental design	: Randomized complete block
Number of reps	: 4
Plot size	: 4.66 x 16 ft
Row width/rows per plot	: 8 in / 7
Soil type	: Crowley silt loam
% organic matter	: 1.4
pH	: 7.2
Extractable nutrients ppm	: Ca-1,408; Cu-1.9; Mg-196; P-31; K-63; Na-81; S-9.6; Zn-6.2
Crop/Variety	: Rice / CL111, CL151
Planting method/date	: Drill seeded / March 16
Seeding rate/depth	: 33 seeds/ft^2 / .75 inch
Emergence date	: March 24
Harvest date	: August 2
Ratoon harvest date	: November 4
Seed treatment/cwt	: Dithane (fungicide)-114 g
	Release (gibberellic acid)-10 g
	Zinc Plus (10% Zn & 4.9% combined sulfur)-296 ml
Fertilization	: 240 lb/A 0-24-24-2.8, March 16
	150 lb N/A 46-0-0, April 20
Water management	:
Flush	: March 23, April 7, April 15
Flood	: April 21
Drain	: July 19
Ratoon flood	: August 11
Ratoon drain	: October 14
Pest management	:
Herbicides	: 1.5 qt/A Glyphosate, March 2
	1 qt/A Glyphosate, March 21
	3 qt/A Propanil + .5 oz/A Permit + 1 oz/A Londax, April 6
	2 qt/A Rice Beaux + 2 qt/A Propanil + 1 oz/A Londax + .75 oz/A Permit, April 19
	19 oz/A Clincher, May 27
	1.5 qt/A Basagran, August 9
Insecticides	: 0.137 lb ai/cwt Dermacor seed treatment
Fungicides	: 12 oz/A Quadris, June 18

Table 36. Determine the effect of N source, rate, and variety (CL151 and CL111) on ratoon yields (2.1). Rice Research Station.

Crop Name					Rice	Rice	Rice	Rice	Rice	Rice	Rice
Rating Date						7/29/2011	8/2/2011	8/2/2011		10/26/2011	
Rating Type					50% HD	Height	Test Wt.	Yield	50% HD	Yield	Total Yield
Rating Unit					days	in	lb/bu	lb/A	days	lb/A	lb/A
Crop Stage Majority					Main	Main	Main	Main	Ratoon	Ratoon	MC+RC
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage							
1	Urea CL111	45	lb ai/A	Harvest	97 c	41 a	47.0 a	10264 a	46 b	2351 c-f	12615 abc
2	Urea CL151	45	lb ai/A	Harvest	99 a	39 a	45.3 b	9715 a	52 a	1768 g	11483 d
3	Amm Sulfate CL111	45	lb ai/A	Harvest	98 b	42 a	46.9 a	9633 a	46 b	2406 b-e	12039 cd
4	Amm Sulfate CL151	45	lb ai/A	Harvest	99 a	39 a	45.6 b	10338 a	52 a	2061 efg	12399 a-d
5	Blend CL111	45	lb ai/A	Harvest	97 c	41 a	47.0 a	9841 a	46 b	2223 def	12064 bcd
6	Blend CL151	45	lb ai/A	Harvest	99 a	40 a	45.3 b	10144 a	52 a	1930 fg	12075 bcd
7	Urea CL111	90	lb ai/A	Harvest	97 c	40 a	47.2 a	9843 a	46 b	2662 a-d	12505 abc
8	Urea CL151	90	lb ai/A	Harvest	99 a	40 a	45.6 b	10305 a	52 a	2231 def	12535 abc
9	Amm Sulfate CL111	90	lb ai/A	Harvest	97 c	41 a	47.0 a	10132 a	46 b	3066 a	13199 abc
10	Amm Sulfate CL151	90	lb ai/A	Harvest	99 a	41 a	45.5 b	10131 a	52 a	2425 b-e	12556 abc
11	Blend CL111	90	lb ai/A	Harvest	97 c	40 a	46.7 a	9979 a	46 b	2660 a-d	12639 abc
12	Blend CL151	90	lb ai/A	Harvest	99 a	41 a	45.4 b	10358 a	52 a	2252 def	12610 abc

Continued.

Table 36. Continued.

Crop Name					Rice	Rice	Rice	Rice	Rice	Rice	Rice
Rating Date						7/29/2011	8/2/2011	8/2/2011		10/26/2011	
Rating Type					50% HD	Height	Test Wt.	Yield	50% HD	Yield	Total Yield
Rating Unit					days	in	lb/bu	lb/A	days	lb/A	lb/A
Crop Stage Majority					Main	Main	Main	Main	Ratoon	Ratoon	MC+RC
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage							
13	Urea CL111	135	lb ai/A	Harvest	97 c	40 a	47.0 a	9773 a	45 b	3066 a	12839 abc
14	Urea CL151	135	lb ai/A	Harvest	99 a	41 a	45.5 b	10192 a	52 a	2744 abc	12936 abc
15	Amm Sulfate CL111	135	lb ai/A	Harvest	97 c	40 a	47.1 a	9984 a	46 b	3064 a	13048 abc
16	Amm Sulfate CL151	135	lb ai/A	Harvest	99 ab	40 a	45.5 b	10391 a	52 a	3093 a	13484 a
17	Blend CL111	135	lb ai/A	Harvest	97 c	40 a	47.0 a	9803 a	46 b	3075 a	12877 abc
18	Blend CL151	135	lb ai/A	Harvest	99 a	40 a	45.5 b	10417 a	52 a	2812 ab	13229 ab
LSD (P=.05)					0.6	3	0.4	508	1	294	659
Standard Deviation					0.4	2	0.3	359	1	208	466
CV					0.42	4	0.7	4	2	8	4

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls).

Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Ratoon Response to Nitrogen Fertilizer Rates

Experiment number ....: 11-CM-21

Site and design ....:
- **Location/Cooperator** ....: Rice Research Station (Crowley Main)
- **Tillage type**..................................: Fall Stale
- **Experimental design**...................: Randomized complete block
- **Number of reps** ....: 4
- **Plot size**..: 4.66 x 16 ft
- **Row width/rows per plot**............: 8 in / 7

Soil type ....: Crowley silt loam
- **% organic matter**........................: 1.4
- **pH**...: 7.2
- **Extractable nutrients** ppm ....: Ca-1,408; Cu-1.9; Mg-196; P-31; K-63; Na-81; S-9.6; Zn-6.2

Crop/Variety ....: Rice / CL111, CL151
- **Planting method/date** ....: Drill seeded / March 16
- **Seeding rate/depth**......................: 33 seeds/ft^2 / .75 inch
- **Emergence date**...........................: March 24
- **Harvest date** ....: August 2
- **Ratoon harvest date**....................: October 26

Seed treatment/cwt ....: Dithane (fungicide)-114 g
Release (gibberellic acid)-10 g
Zinc Plus (10% Zn & 4.9% combined sulfur)-296 ml

Fertilization..: 240 lb/A 0-24-24-2.8, March 16
150 lb N/A 46-0-0, April 20

Water management ....:
- **Flush** ....: March 23, April 7, April 15
- **Flood**...: April 21
- **Drain**...: July 19
- **Ratoon flood**.................................: August 11
- **Ratoon drain** ....: October 14

Pest management ....:
- **Herbicides**....................................: 1.5 qt/A Glyphosate, March 2
  1 qt/A Glyphosate, March 21
  3 qt/A Propanil + .5 oz/A Permit + 1 oz/A Londax, April 6
  2 qt/A Rice Beaux + 2 qt/A Propanil + 1 oz/A Londax + .75 oz/A Permit, April 19
  19 oz/A Clincher, May 27
  1.5 qt/A Basagran, August 9
- **Insecticides** ....: 0.137 lb ai/cwt Dermacor seed treatment
- **Fungicides**....................................: 12 oz/A Quadris, June 18

Table 37. Ratoon Response of CL111 and CL151 to Nitrogen Fertilizer Rates (2.1). Rice Research Station.

Crop Name					Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice
Rating Date						7/29/2011	8/2/2011	8/2/2011		10/26/2011	10/26/2011	
Rating Type					50% HD	Height	Test Wt.	Yield	50% HD	Test Wt.	Yield	Total Yield
Rating Unit					days	in	lb/bu	lb/A	days	lb/bu	lb/A	lb/A
Crop Stage Majority					Main	Main	Main	Main	Ratoon	Ratoon	Ratoon	MC+RC
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage								
1	CL111 0 lb/A	0	lb ai/A	Postharv	11387 c	40 a	46.7 a	9838 a	48 b	44.4 ab	1549 fg	11387 c
2	CL111 30 lb/A	30	lb ai/A	Postharv	12454 abc	40 a	46.7 a	10357 a	49 b	44.8 a	2097 def	12454 abc
3	CL111 60 lb/A	60	lb ai/A	Postharv	12702 abc	40 a	46.8 a	10011 a	49 b	44.8 a	2691 bcd	12702 abc
4	CL111 90 lb/A	90	lb ai/A	Postharv	12849 abc	42 a	46.6 a	9928 a	49 b	44.7 a	2921 b	12849 abc
5	CL111 120 lb/A	120	lb ai/A	Postharv	13161 ab	41 a	46.7 a	10091 a	49 b	44.5 ab	3070 b	13161 ab
6	CL111 150 lb/A	150	lb ai/A	Postharv	13999 a	41 a	46.7 a	10473 a	49 b	44.5 ab	3526 a	13999 a
7	CL151 0 lb/A	0	lb ai/A	Postharv	12277 bc	39 a	45.3 b	10838 a	52 a	44.2 abc	1439 g	12277 bc
8	CL151 30 lb/A	30	lb ai/A	Postharv	12235 bc	40 a	45.1 b	10338 a	52 a	43.7 bcd	1897 efg	12235 bc
9	CL151 60 lb/A	60	lb ai/A	Postharv	12769 abc	41 a	45.3 b	10573 a	52 a	43.6 bcd	2196 cde	12769 abc
10	CL151 90 lb/A	90	lb ai/A	Postharv	12792 abc	39 a	45.0 b	10151 a	52 a	43.5 cd	2641 bcd	12792 abc
11	CL151 120 lb/A	120	lb ai/A	Postharv	13565 ab	39 a	45.1 b	10859 a	52 a	43.4 cd	2706 bcd	13565 ab
12	CL151 150 lb/A	150	lb ai/A	Postharv	13178 ab	40 a	45.3 b	10338 a	52 a	43.1 d	2840 bc	13178 ab
LSD (P=.05)					1012	3	0.5	738	1	0.6	456	1012
Standard Deviation					701	2	0.3	511	0	0.4	316	701
CV					5	4	0.7	5	1	1.0	13	5

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls).
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Evaluation of the Agronomic Response of Ratoon Rice to Post-harvest N Application Source and Rate

Experiment number ....: 11-CM-22

Site and design ....:
- **Location/Cooperator** ....: Rice Research Station (Crowley Main)
- **Tillage type** ....: Fall Stale
- **Experimental design** ....: Randomized complete block
- **Number of reps** ....: 4
- **Plot size** ....: 4.66 x 16 ft
- **Row width/rows per plot** ....: 8 in / 7

Soil type ....: Crowley silt loam
- **% organic matter** ....: 1.4
- **pH** ....: 7.2
- **Extractable nutrients** ppm ....: Ca-1,408; Cu-1.9; Mg-196; P-31; K-63; Na-81; S-9.6; Zn-6.2

Crop/Variety ....: Rice / CL111
- **Planting method/date** ....: Drill seeded / March 16
- **Seeding rate/depth** ....: 33 seeds/ft^2 / .75 inch
- **Emergence date** ....: March 24
- **Harvest date** ....: August 2
- **Ratoon harvest date** ....: November 1

Seed treatment/cwt ....: Dithane (fungicide)-114 g
Release (gibberellic acid)-10 g
Zinc Plus (10% Zn & 4.9% combined sulfur)-296 ml

Fertilization ....: 240 lb/A 0-24-24-2.8, March 16
150 lb N/A 46-0-0, April 20

Water management ....:
- **Flush** ....: March 23, April 7, April 15
- **Flood** ....: April 21
- **Drain** ....: July 19
- **Ratoon flood** ....: August 11
- **Ratoon drain** ....: October 14

Pest management ....:
- **Herbicides** ....: 1.5 qt/A Glyphosate, March 2
1 qt/A Glyphosate, March 21
3 qt/A Propanil + .5 oz/A Permit + 1 oz/A Londax, April 6
2 qt/A Rice Beaux + 2 qt/A Propanil + 1 oz/A Londax + .75 oz/A Permit, April 19
19 oz/A Clincher, May 27
1.5 qt/A Basagran, August 9
- **Insecticides** ....: 0.137 lb ai/cwt Dermacor seed treatment
- **Fungicides** ....: 12 oz/A Quadris, June 18

Table 38. Evaluation and comparison of the agronomic response of CL111 ratoon rice crop to post-harvest N application source and rate (2.1). Rice Research Station.

Crop Name					Rice	Rice	Rice	Rice	Rice	Rice	Rice
Rating Date						7/29/2011	8/2/2011	8/2/2011		11/1/2011	
Rating Type					50% HD	Height	Test Wt.	Yield	50% HD	Yield	Total Yield
Rating Unit					days	in	lb/bu	lb/A	days	lb/A	lb/A
Crop Stage Majority					Main	Main	Main	Main	Ratoon	Ratoon	MC+RC
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage							
1	Agrotain-urea 0 lb/A	0	lb ai/A	PostHarv	97 a	38 a	46.5 a	9244 ab	45 d	1761 hi	11005 e
2	Agrotain-urea 30 lb/A	30	lb ai/A	PostHarv	97 a	40 a	46.4 a	9669 ab	46 bcd	2306 fg	11975 cd
3	Agrotain-urea 60 lb/A	60	lb ai/A	PostHarv	97 a	40 a	45.7 a	9100 b	46 bcd	2901 cd	12001 cd
4	Agrotain-urea 90 lb/A	90	lb ai/A	PostHarv	97 a	40 a	46.3 a	9543 ab	48 abc	3386 b	12928 ab
5	Agrotain-urea 120 lb/A	120	lb ai/A	PostHarv	97 a	41 a	46.4 a	9661 ab	48 ab	3812 a	13473 a
6	Agrotain-urea 150 lb/A	150	lb ai/A	PostHarv	97 a	41 a	46.3 a	9619 ab	48 ab	3910 a	13530 a
7	Urea 0 lb/A	0	lb ai/A	PostHarv	97 a	41 a	46.2 a	9714 ab	45 d	1652 i	11366 de
8	Urea 30 lb/A	30	lb ai/A	PostHarv	97 a	40 a	46.3 a	9527 ab	45 d	2049 gh	11575 de
9	Urea 60 lb/A	60	lb ai/A	PostHarv	97 a	39 a	46.4 a	9611 ab	45 d	2505 ef	12116 cd
10	Urea 90 lb/A	90	lb ai/A	PostHarv	97 a	40 a	46.4 a	9729 ab	44 d	2757 de	12485 bc
11	Urea 120 lb/A	120	lb ai/A	PostHarv	97 a	40 a	46.5 a	9913 a	46 cd	3035 bcd	12949 ab
12	Urea 150 lb/A	150	lb ai/A	PostHarv	97 a	39 a	46.3 a	9512 ab	49 a	3255 bc	12767 abc
LSD (P=.05)					0	2	0.6	427	2	317	564
Standard Deviation					0	1	0.4	296	1	219	390
CV					0	3	0.8	3	2	8	3

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls).

Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Evaluation of Potassium Timing on CL151 Main and Ratoon Rice Yields and Agronomics

Experiment number	11-CM-33
Site and design	
Location/Cooperator	Rice Research Station (Crowley Main)
Tillage type	Fall Stale
Experimental design	Randomized complete block
Number of reps	4
Plot size	4.66 x 16 ft
Row width/rows per plot	8 in / 7
Soil type	Crowley silt loam
% organic matter	1.4
pH	7.2
Extractable nutrients ppm	Ca-1,408; Cu-1.9; Mg-196; P-31; K-63; Na-81; S-9.6; Zn-6.2
Crop/Variety	Rice / CL151
Planting method/date	Drill seeded / March 16
Seeding rate/depth	33 seeds/ft^2 / .75 inch
Emergence date	March 24
Harvest date	August 2
Ratoon harvest date	November 4
Seed treatment/cwt	Dithane (fungicide)-114 g Release (gibberellic acid)-10 g Zinc Plus (10% Zn & 4.9% combined sulfur)-296 ml
Fertilization	130 lb/A 0-46-0, April 1 120 lb N/A 46-0-0, April 20 90 lb N/A 46-0-0, August 8
Water management	
Flush	March 23, April 7, April 15
Flood	April 21
Drain	July 19
Ratoon flood	August 11
Ratoon drain	October 14
Pest management	
Herbicides	1.5 qt/A Glyphosate, March 2 1 qt/A Glyphosate, March 21 3 qt/A Propanil + .5 oz/A Permit + 1 oz/A Londax, April 6 2 qt/A Rice Beaux + 2 qt/A Propanil + 1 oz/A Londax + .75 oz/A Permit, April 19 19 oz/A Clincher, May 27 1.5 qt/A Basagran, August 9
Insecticides	0.137 lb ai/cwt Dermacor seed treatment
Fungicides	12 oz/A Quadris, June 18

Table 39. Evaluation of Potassium timing on CL151 main and ratoon rice yields and agronomics (1.1). Rice Research Station.

Crop Name					Rice	Rice	Rice	Rice	Rice	Rice
Rating Date						7/29/2011	8/2/2011		11/4/2011	
Rating Type					50% HD	Height	Test Wt.	50% HD	Yield	Total Yield
Rating Unit					days	in	lb/bu	days	lb/A	lb/A
Crop Stage Majority					Main	Main	Main	Ratoon	Ratoon	MC+RC
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage						
1	Untreated Check	0	lb ai/A		99 a	38 a	44.7 a	52 a	12257 a	21746 a
2	Muriate of Potash 0-0-60	120	lb ai/A	ATPLAN	99 a	39 a	44.4 ab	52 a	12301 a	21474 a
3	Muriate of Potash 0-0-60	120	lb ai/A	PREFLD	99 a	39 a	44.6 ab	52 a	12390 a	21562 a
4	Muriate of Potash 0-0-60	120	lb ai/A	MIDTILL	99 a	38 a	44.6 ab	52 a	11589 a	21078 a
5	Muriate of Potash 0-0-60	120	lb ai/A	GR	99 a	38 a	44.4 ab	52 a	11912 a	21006 a
6	Muriate of Potash 0-0-60	120	lb ai/A	50%HD	99 a	38 a	44.5 ab	52 a	10744 a	20195 a
7	Muriate of Potash 0-0-60	120	lb ai/A	ATHARV	99 a	36 a	44.6 ab	52 a	12081 a	21361 a
8	Muriate of Potash 0-0-60	60	lb ai/A	ATPLAN	99 a	38 a	44.3 b	52 a	11600 a	20554 a
	Muriate of Potash 0-0-60	60	lb ai/A	GR						
9	Muriate of Potash 0-0-60	60	lb ai/A	ATPLAN	99 a	38 a	44.5 ab	52 a	11117 a	20230 a
	Muriate of Potash 0-0-60	60	lb ai/A	ATHARV						
LSD (P=.05)					0	3	0.2	0	1196	1401
Standard Deviation					0	1	0.2	0	819	960
CV					0	4	0.4	0	7	5

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls).

Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Evaluation of Emerald BioAgriculture Product EB97 on CL151 Rice Yield and Agronomics

Experiment number ....: 11-CM-38

Site and design ....:
- **Location/Cooperator** ....: Rice Research Station (Crowley Main)
- **Tillage type**..................................: Fall Stale
- **Experimental design**...................: Randomized complete block
- **Number of reps** ....: 4
- **Plot size**..: 4.66 x 16 ft
- **Row width/rows per plot**............: 8 in / 7

Soil type ....: Crowley silt loam
- **% organic matter**........................: 1.3
- **pH**...: 6.9
- **Extractable nutrients** ppm ....: Ca-1,221; Cu-1.9; Mg-217; P-13; K-64; Na-80; S-9.5; Zn-5.8

Crop/Variety ....: Rice / CL151
- **Planting method/date** ....: Drill seeded / March 16
- **Seeding rate/depth**......................: 33 seeds/ft^2 / .75 inch
- **Emergence date**...........................: March 24
- **Harvest date** ....: August 1

Seed treatment/cwt ....: Dithane (fungicide)-114 g
Release (gibberellic acid)-10 g
Zinc Plus (10% Zn & 4.9% combined sulfur)-296 ml

Fertilization..: 120 lb N/A 46-0-0, April 20

Water management ....:
- **Flush** ....: March 23, April 7, April 15
- **Flood**...: April 21
- **Drain**...: July 19

Pest management ....:
- **Herbicides**....................................: 1.5 qt/A Glyphosate, March 2
  1 qt/A Glyphosate, March 21
  3 qt/A Propanil + .5 oz/A Permit + 1 oz/A Londax, April 6
  2 qt/A Rice Beaux + 2 qt/A Propanil + 1 oz/A Londax + .75 oz/A Permit, April 19
  19 oz/A Clincher, May 27
- **Insecticides** ....: 0.137 lb ai/cwt Dermacor seed treatment
- **Fungicides**....................................: 12 oz/A Quadris, June 18

Table 40a. Evaluation of Emerald BioAgriculture product EB97 on CL151 rice yield and agronomics.

Crop Name				Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice		Rice	Rice
Description											Tissue		Biomass	N Uptake
Part Rated											Abvgrd -		Abvgrd -	Total -
Rating Date					7/29/2011	8/1/2011	8/1/2011	8/1/2011	8/1/2011	8/1/2011	6/23/2011		6/23/2011	6/23/2011
Rating Type				50% HD	Height	Moist	Test Wt.	Yield	Milling	Milling	N	C	Biomass	N
Rating Unit				days	in	%	lb/bu	lb/A	head	total	%	%	lb/A	lb/A
Sample Size, Unit									g	g				
Collection Basis, Unit									100g	100g				
Crop Stage Majority				Main	Main	Main	Main	Main	Main	Main	Main	Main	Main	Main
Crop Stage Scale													50% HD	50% HD
Trt No.	Treatment Name	Rate	Rate Unit											
1	0-24-24-1	0	qt/A	99 a	40 a	20.2 a	43.5 a	10543 a	48.9 a	67.7 c	1.3 a	39.8 a	11120 a	137 a
	Harvester	3	qt/A											
2	0-24-24-1	0	qt/A	99 a	40 a	18.8 a	44.0 a	10233 a	50.9 a	68.0 bc	1.3 a	39.0 a	10786 a	137 a
	w/o Harvester	0	qt/A											
3	EB97 trt 0-24-24-1	3	qt/ton	99 a	39 a	19.4 a	43.8 a	10260 a	50.4 a	68.2 b	1.3 a	38.9 a	11472 a	145 a
	Harvester	3	qt/A											
4	EB97 trt 0-24-24-1	3	qt/ton	99 a	40 a	18.8 a	44.1 a	10198 a	50.0 a	68.7 a	1.2 a	39.3 a	11372 a	135 a
	w/o Harvester	0	qt/A											
LSD (P=.05)				.	1.5	2.6	0.9	503	4.7	0.4	0.2	1.1	1545	31
Standard Deviation				.	0.9	1.6	0.6	314	3.0	0.2	0.1	0.7	966	19
CV				.	2.3	8.3	1.3	3	5.9	0.3	11.2	1.8	9	14
Treatment F				.	0.48	0.68	0.70	1.02	0.34	10.78	0.38	1.42	0.40	0.19
Treatment Prob(F)				.	0.70	0.59	0.58	0.43	0.80	0.00	0.77	0.30	0.76	0.90

Table 40b. Nutrient content of total aboveground samples taken at 50% heading.

Trt No.	Treatment Name	Rate	Rate Unit	Al	B	Ca	Co	Fe	Mg	Mn	Mo	P	K	Na	S	Zn
Crop Name				Rice												
Description				Tissue												
Part Rated				Abvgrd -												
Rating Date				6/23/2011												
Rating Type				Al	B	Ca	Co	Fe	Mg	Mn	Mo	P	K	Na	S	Zn
Rating Unit				ppm	ppm	%	ppm	ppm	%	ppm	ppm	%	%	ppm	%	ppm
Crop Stage Majority				Main												
Crop Stage Scale				50% HD												
1	0-24-24-1	0	qt/A	171 a	5.3 a	0.21 a	3.39 a	229 a	0.19 a	403 a	2.1 ab	0.23 a	1.33 a	2878 a	0.10 a	36 a
	Harvester	3	qt/A													
2	0-24-24-1	0	qt/A	313 a	5.4 a	0.22 a	3.64 a	399 a	0.20 a	413 a	1.9 b	0.23 a	1.29 a	3095 a	0.11 a	35 a
	w/o Harvester	0	qt/A													
3	EB97 trt 0-24-24-1	3	qt/ton	432 a	5.2 a	0.22 a	3.33 a	517 a	0.20 a	387 a	2.4 a	0.22 a	1.29 a	2939 a	0.10 a	36 a
	Harvester	3	qt/A													
4	EB97 trt 0-24-24-1	3	qt/ton	139 a	5.4 a	0.21 a	3.48 a	196 a	0.20 a	403 a	2.1 b	0.23 a	1.32 a	3057 a	0.11 a	33 a
	w/o Harvester	0	qt/A													
LSD (P=.05)				446	0.55	0.02	0.61	513	0.02	56	0.26	0.02	0.13	732	0.01	2.6
Standard Deviation				279	0.35	0.02	0.38	321	0.01	35	0.16	0.01	0.08	458	0.01	1.6
CV				106	6.50	7.18	11.10	96	5.85	9	7.62	5.70	6.14	15	8.68	4.6
Treatment F				0.94	0.19	0.81	0.52	0.88	0.38	0.37	5.36	0.73	0.23	0.19	0.67	2.98
Treatment Prob(F)				0.46	0.90	0.52	0.68	0.49	0.77	0.78	0.02	0.56	0.88	0.90	0.59	0.09

Partial Nitrogen Replacement in Rice

Experiment number	: 11-CM-35
Site and design	:
Location/Cooperator	: Rice Research Station (Crowley Main) / Helena Chemical Company
Tillage type	: Fall Stale
Experimental design	: Randomized complete block
Number of reps	: 4
Plot size	: 4.66 x 16 ft
Row width/rows per plot	: 8 in / 7
Soil type	: Crowley silt loam
% organic matter	: 1.2
pH	: 7.1
Extractable nutrients ppm	: Ca-1,096; Cu-1.7; Mg-210; P-10; K-58; Na-85; S-7.7; Zn-4.4
Crop/Variety	: Rice / CL151
Planting method/date	: Drill seeded / March 15
Seeding rate/depth	: 33 seeds/ft^2 / .75 inch
Emergence date	: March 24
Harvest date	: July 29
Ratoon harvest date	: November 7
Seed treatment/cwt	: Dithane (fungicide)-114 g Release (gibberellic acid)-10 g Zinc Plus (10% Zn & 4.9% combined sulfur)-296 ml
Fertilization	: 92 lb N/A 46-0-0, April 29 240 lb/A 0-24-24-2.5, May 4 90 lb N/A 46-0-0, August 8
Water management	:
Flush	: March 23, April 7, April 15
Flood	: April 29
Drain	: July 14
Ratoon flood	: August 10
Ratoon drain	: October 14
Pest management	:
Herbicides	: 1.5 qt/A Glyphosate, March 2 1 qt/A Glyphosate, March 21 3 qt/A Propanil + .5 oz/A Permit + 1 oz/A Londax, April 6 2 qt/A Rice Beaux + 2 qt/A Propanil + 1 oz/A Londax +.75 oz/A Permit, April 19 19 oz/A Clincher, May 27 1.5 qt/A Basagran, August 9
Insecticides	: 0.137 lb ai/cwt Dermacor seed treatment
Fungicides	: 12 oz/A Quadris, June 18

Table 41. Partial nitrogen replacement in rice trial, 2011. Rice Research Station.

Crop Name				Rice		Rice		Rice		Rice					
Rating Date				6/3/2011				7/22/2011		7/29/2011					
Rating Type				Height		50% HD		Height		Moist		Test Wt.		Yield	
Rating Unit				in		days		in		%		lb/bu		lb/A	
Crop Stage Majority				PD		Main		Main		Main		Main		Main	
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage											
1	Nitrogen	92	lb/A	Preflood	23.8 a		99 a		35.0 a		15.6 a		48.7 a		8542 a
2	Nitrogen	92	lb/A	Preflood	23.8 a		99 a		35.8 a		16.5 a		47.9 a		8801 a
	Nitrogen (46-0-0)	46	lb/A	PI											
	HM1109	2	pt/A	PI											
3	Nitrogen	92	lb/A	Preflood	23.8 a		99 a		35.3 a		16.7 a		47.8 a		8984 a
	HM9310	3.0	gal/A	PI											
	Quilt	14	oz/A	Heading											
	Penetrator Plus	8	oz/A	Heading											
	HM9310	3.0	gal/A	Heading											
4	Nitrogen	92	lb/A	Preflood	24.3 a		99 a		34.8 a		16.0 a		48.0 a		9141 a
	HM9310	3.0	gal/A	PI											
	Quilt	14	oz/A	Heading											
	Penetrator Plus	8	oz/A	Heading											
	HM9310	2.0	gal/A	Heading											
5	Nitrogen	92	lb/A	Preflood	23.5 a		99 a		36.8 a		16.3 a		48.2 a		9007 a
	HM9310	2.0	gal/A	PI											
	HM1109	2	pt/A	PI											
	Quilt	14	oz/A	Heading											
	Penetrator Plus	8	oz/A	Heading											
	HM9310	2.0	gal/A	Heading											
	HM1109	2	pt/A	Heading											
6	Nitrogen	92	lb/A	Preflood	24.3 a		99 a		35.0 a		16.1 a		48.0 a		8907 a
	HM9310	3.0	gal/A	PI											
	Quilt	14	oz/A	Heading											
	Penetrator Plus	8	oz/A	Heading											
	HM9310	1.0	gal/A	Heading											
7	Nitrogen	92	lb/A	Preflood	24.0 a		99 a		35.8 a		16.0 a		48.0 a		8938 a
	HM9310	3.0	gal/A	PI											
	HM1109	2	pt/A	PI											
	Quilt	14	oz/A	Heading											
	Penetrator Plus	8	oz/A	Heading											
	HM9310	1.0	gal/A	Heading											
	HM1109	2	pt/A	Heading											
8	Nitrogen	92	lb/A	Preflood	24.5 a		99 a		35.5 a		16.7 a		48.7 a		8978 a
	Nitrogen (46-0-0)	46	lb/A	PI											
LSD (P=.05)					0.7		0.0		1.9		1.8		0.9		636
Standard Deviation					0.5		0.0		1.3		1.2		0.6		432
CV					1.9		0.0		3.7		7.5		1.2		5
Replicate F					2.14		0.00		3.11		0.64		0.90		2.99
Replicate Prob(F)					0.13		1.00		0.05		0.60		0.46		0.05
Treatment F					2.19		0.00		0.96		0.38		1.47		0.68
Treatment Prob(F)					0.08		1.00		0.49		0.91		0.23		0.69

Continued.

Table 41. Continued.

Crop Name					Rice		Rice		Rice		Rice				Rice	
Rating Date											11/7/2011					
Rating Type					Milling		Milling		50% HD		Moist		Yield		Total Yield	
Rating Unit					head		total		days		%		lb/A		lb/A	
Sample Size, Unit					g		g									
Collection Basis, Unit					100g		100g									
Crop Stage Majority					Main		Main		Ratoon		Ratoon		Ratoon		MC+RC	
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage												
1	Nitrogen	92	lb/A	Preflood	45.5	a	67.2	a	59	a	19.2	ab	2539	ab	11081	a
2	Nitrogen	92	lb/A	Preflood	48.2	a	67.7	a	59	a	20.3	a	2285	b	11086	a
	Nitrogen (46-0-0)	46	lb/A	PI												
	HM1109	2	pt/A	PI												
3	Nitrogen	92	lb/A	Preflood	47.7	a	68.0	a	59	a	18.8	bc	2592	ab	11576	a
	HM9310	3.0	gal/A	PI												
	Quilt	14	oz/A	Heading												
	Penetrator Plus	8	oz/A	Heading												
	HM9310	3.0	gal/A	Heading												
4	Nitrogen	92	lb/A	Preflood	48.6	a	68.0	a	59	a	19.1	bc	2541	ab	11683	a
	HM9310	3.0	gal/A	PI												
	Quilt	14	oz/A	Heading												
	Penetrator Plus	8	oz/A	Heading												
	HM9310	2.0	gal/A	Heading												
5	Nitrogen	92	lb/A	Preflood	48.3	a	67.9	a	59	a	17.9	c	2665	a	11672	a
	HM9310	2.0	gal/A	PI												
	HM1109	2	pt/A	PI												
	Quilt	14	oz/A	Heading												
	Penetrator Plus	8	oz/A	Heading												
	HM9310	2.0	gal/A	Heading												
	HM1109	2	pt/A	Heading												
6	Nitrogen	92	lb/A	Preflood	47.9	a	67.5	a	59	a	18.8	bc	2704	a	11611	a
	HM9310	3.0	gal/A	PI												
	Quilt	14	oz/A	Heading												
	Penetrator Plus	8	oz/A	Heading												
	HM9310	1.0	gal/A	Heading												
7	Nitrogen	92	lb/A	Preflood	47.5	a	67.5	a	59	a	18.4	bc	2858	a	11795	a
	HM9310	3.0	gal/A	PI												
	HM1109	2	pt/A	PI												
	Quilt	14	oz/A	Heading												
	Penetrator Plus	8	oz/A	Heading												
	HM9310	1.0	gal/A	Heading												
	HM1109	2	pt/A	Heading												
8	Nitrogen	92	lb/A	Preflood	49.6	a	67.8	a	59	a	19.4	ab	2311	b	11139	a
	Nitrogen (46-0-0)	46	lb/A	PI												
LSD (P=.05)					3.5		0.8		0.0		1.2		335		781	
Standard Deviation					2.4		0.5		0.0		0.8		227		530	
CV					5.0		0.8		0.0		4.4		9		5	
Replicate F					0.27		1.97		0.00		22.53		5.55		4.07	
Replicate Prob(F)					0.85		0.15		1.00		0.00		0.01		0.02	
Treatment F					0.94		1.17		0.00		2.94		2.88		1.28	
Treatment Prob(F)					0.50		0.36		1.00		0.03		0.03		0.31	

Means followed by same letter do not significantly differ (P=.05, LSD).
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Evaluation of HM9309A with HM1109 as Additives in Rice

Experiment number ....: 11-CM-36

Site and design ....:
- **Location/Cooperator** ....: Rice Research Station (Crowley Main) / Helena Chemical Company
- **Tillage type**..................................: Fall Stale
- **Experimental design**...................: Randomized complete block
- **Number of reps** ....: 4
- **Plot size**..: 4.66 x 16 ft
- **Row width/rows per plot**............: 8 in / 7

Soil type ....: Crowley silt loam
- **% organic matter**........................: 1.2
- **pH**...: 7.1
- **Extractable nutrients** ppm ....: Ca-1,096; Cu-1.7; Mg-210; P-10; K-58; Na-85; S-7.7; Zn-4.4

Crop/Variety ....: Rice / CL151
- **Planting method/date** ....: Drill seeded / March 15
- **Seeding rate/depth**......................: 33 seeds/ft^2 / .75 inch
- **Emergence date**...........................: March 24
- **Harvest date** ....: July 29
- **Ratoon harvest date**....................: November 7

Seed treatment/cwt ....: Dithane (fungicide)-114 g
Release (gibberellic acid)-10 g
Zinc Plus (10% Zn & 4.9% combined sulfur)-296 ml

Fertilization..: 120 lb N/A 46-0-0, April 29
240 lb/A 0-24-24-2.5, May 4
90 lb N/A 46-0-0, August 8

Water management ....:
- **Flush** ....: March 23, April 7, April 15
- **Flood** ....: April 29
- **Drain**..: July 14
- **Ratoon flood** ....: August 10
- **Ratoon drain** ....: October 14

Pest management ....:
- **Herbicides**....................................: 1.5 qt/A Glyphosate, March 2
1 qt/A Glyphosate, March 21
3 qt/A Propanil + .5 oz/A Permit + 1 oz/A Londax, April 6
2 qt/A Rice Beaux + 2 qt/A Propanil + 1 oz/A Londax +.75 oz/A Permit, April 19
19 oz/A Clincher, May 27
1.5 qt/A Basagran, August 9
- **Insecticides** ....: 0.137 lb ai/cwt Dermacor seed treatment
- **Fungicides**....................................: 12 oz/A Quadris, June 18

Table 42. Evaluation of HM9309A with HM1109 as additives in rice, 2011. Rice Research Station.

Crop Name					Rice	Rice	Rice	Rice		Rice	
Description					2-3 leaf	PD					
Rating Date					4/5/2011	6/3/2011		7/22/2011		8/5/2011	
Rating Type					Stand Cnt	Height	50% HD	Height	Moist	Test Wt.	Yield
Rating Unit					number	in	days	in	%	lb/bu	lb/A
Sample Size, Unit					1 sq ft						
Collection Basis, Unit											
Crop Stage Majority						Main	Main	Main	Main	Main	Main
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage							
1	Standard Fertility				19 a	25.3 a	100 a	37.3 a	18.6 a	47.4 a	9287 a
	QUILT	14	oz/A	PI							
2	Standard Fertility				19 a	24.8 a	100 a	36.3 a	19.8 a	47.1 a	9298 a
	HM9310	1	gal/A	PI							
	QUILT	14	oz/A	PI							
3	Standard Fertility				20 a	24.3 a	100 a	37.3 a	19.6 a	47.1 a	9233 a
	HM9310	1	gal/A	PI							
	HM1109	2	pt/A	PI							
	QUILT	14	oz/A	PI							
4	Standard Fertility				21 a	25.5 a	100 a	37.3 a	19.2 a	47.2 a	9704 a
	HM9310	1	gal/A	PI							
	HM0715	1	pt/A	PI							
	QUILT	14	oz/A	PI							
5	Standard Fertility				18 a	25.0 a	100 a	36.3 a	18.9 a	47.3 a	9039 a
	HM0715	1	pt/A	PI							
	QUILT	14	oz/A	PI							
6	Standard Fertility				20 a	24.5 a	100 a	36.8 a	20.6 a	46.8 a	9264 a
	HM1109	2	pt/A	PI							
	QUILT	14	oz/A	PI							
LSD (P=.05)					3.4	1.3	0.0	1.6	2.2	0.6	588
Standard Deviation					2.3	0.9	0.0	1.0	1.5	0.4	390
CV					11.6	3.4	0.0	2.8	7.6	0.9	4
Replicate F					0.16	0.68	0.00	5.05	1.86	1.70	0.86
Replicate Prob(F)					0.92	0.58	1.00	0.01	0.18	0.21	0.48
Treatment F					0.77	1.22	0.00	0.90	0.94	0.91	1.24
Treatment Prob(F)					0.59	0.35	1.00	0.51	0.49	0.50	0.34

Continued.

Table 42. Continued.

Crop Name					Rice	Rice	Rice	Rice	Rice	Rice
Description									90 lb N all trt	
Rating Date								11/7/2011	11/7/2011	
Rating Type					Milling	Milling	50% HD	Moist	Yield	Total Yield
Rating Unit					head	total	days	%	lb/A	lb/A
Sample Size, Unit					g	g				
Collection Basis, Unit					100g	100g				
Crop Stage Majority					Main	Main	Ratoon	Ratoon	Ratoon	MC+RC
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage						
1	Standard Fertility				52.3 a	68.3 a	52 a	18.5 a	2833 a	12120 a
	QUILT	14	oz/A	PI						
2	Standard Fertility				53.1 a	68.6 a	52 a	18.9 a	2694 a	11992 a
	HM9310	1	gal/A	PI						
	QUILT	14	oz/A	PI						
3	Standard Fertility				52.2 a	68.6 a	52 a	18.3 a	2411 a	11644 a
	HM9310	1	gal/A	PI						
	HM1109	2	pt/A	PI						
	QUILT	14	oz/A	PI						
4	Standard Fertility				52.6 a	68.3 a	52 a	18.0 a	2879 a	12583 a
	HM9310	1	gal/A	PI						
	HM0715	1	pt/A	PI						
	QUILT	14	oz/A	PI						
5	Standard Fertility				52.0 a	68.2 a	52 a	18.0 a	2867 a	11906 a
	HM0715	1	pt/A	PI						
	QUILT	14	oz/A	PI						
6	Standard Fertility				51.7 a	68.5 a	52 a	18.4 a	2724 a	11989 a
	HM1109	2	pt/A	PI						
	QUILT	14	oz/A	PI						
LSD (P=.05)					2.6	0.9	0.0	1.3	430	928
Standard Deviation					1.8	0.6	0.0	0.9	286	616
CV					3.4	0.9	0.0	4.6	10	5
Replicate F					0.48	1.48	0.00	5.42	0.82	0.74
Replicate Prob(F)					0.70	0.26	1.00	0.01	0.50	0.55
Treatment F					0.31	0.27	0.00	0.65	1.51	1.02
Treatment Prob(F)					0.90	0.92	1.00	0.66	0.24	0.44

Means followed by same letter do not significantly differ (P=.05, LSD).

Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Yield Benefit and Optimum Application Timing of HM0715

Experiment number	: 11-CM-37
Site and design	:
Location/Cooperator	: Rice Research Station (Crowley Main) / Helena Chemical Company
Tillage type	: Fall Stale
Experimental design	: Randomized complete block
Number of reps	: 4
Plot size	: 4.66 x 16 ft
Row width/rows per plot	: 8 in / 7
Soil type	: Crowley silt loam
% organic matter	: 1.2
pH	: 7.1
Extractable nutrients ppm	: Ca-1,096; Cu-1.7; Mg-210; P-10; K-58; Na-85; S-7.7; Zn-4.4
Crop/Variety	: Rice / CL151
Planting method/date	: Drill seeded / March 15
Seeding rate/depth	: 33 seeds/ft^2 / .75 inch
Emergence date	: March 24
Harvest date	: July 29
Ratoon harvest date	: November 7
Seed treatment/cwt	: Dithane (fungicide)-114 g Release (gibberellic acid)-10 g Zinc Plus (10% Zn & 4.9% combined sulfur)-296 ml
Fertilization	: 120 lb N/A 46-0-0, April 29 240 lb/A 0-24-24-2.5, May 4 90 lb N/A 46-0-0, August 8
Water management	:
Flush	: March 23, April 7, April 15
Flood	: April 29
Drain	: July 14
Ratoon flood	: August 10
Ratoon drain	: October 14
Pest management	:
Herbicides	: 1.5 qt/A Glyphosate, March 2 1 qt/A Glyphosate, March 21 3 qt/A Propanil + .5 oz/A Permit + 1 oz/A Londax, April 6 2 qt/A Rice Beaux + 2 qt/A Propanil + 1 oz/A Londax +.75 oz/A Permit, April 19 19 oz/A Clincher, May 27 1.5 qt/A Basagran, August 9
Insecticides	: 0.137 lb ai/cwt Dermacor seed treatment
Fungicides	: 12 oz/A Quadris, June 18

Table 43. Yield benefit and optimum application timing of HM0715 (2.1). Rice Research Station.

Crop Name					Rice	Rice	Rice	Rice			Rice	
Description						NDVI						
Part Rated						canopy -						
Rating Date						6/7/2011	7/22/2011	7/29/2011				
Rating Type					50% HD		Height	Moist	Test Wt.	Yield	Milling	
Rating Unit					days		in	%	lb/bu	lb/A	head	total
Sample Size, Unit											g	g
Collection Basis, Unit											100g	100g
Crop Stage Majority					Main		Main	Main	Main	Main	Main	Main
Trt No.	Treatment Name	Rate	Rate Unit	Growth Stage								
1	Grower Std.- Ck			UNTRT	100 a	0.694 a	35.3 a	18.0 a	47.5 a	8909 a	51.6 a	68.5 a
2	HM0715	1.0	pt/A	LP/PF	100 a	0.705 a	36.3 a	19.7 a	46.8 a	9015 a	50.6 a	68.0 a
	HM9110	0.25	% v/v	LP/PF								
3	HM0715	1.0	pt/A	PI	100 a	0.697 a	35.3 a	19.0 a	47.2 a	9104 a	50.4 a	68.1 a
	HM9110	0.25	% v/v	PI								
4	HM0715	1.0	pt/A	PD + 7 D	100 a	0.720 a	36.8 a	18.2 a	47.3 a	9352 a	51.2 a	68.2 a
	HM9110	0.25	% v/v	PD + 7 D								
5	HM0715	1.0	pt/A	BOOT SPLIT	100 a	0.714 a	35.8 a	17.6 a	47.7 a	9215 a	51.6 a	68.1 a
	HM9110	0.25	% v/v	BOOT SPLIT								
6	HM0715	1.0	pt/A	10% HD	100 a	0.722 a	36.5 a	18.1 a	47.5 a	9242 a	52.8 a	68.6 a
	HM9110	0.25	% v/v	10% HD								
LSD (P=.05)					0.0	0.025	1.52	2.2	0.8	694	1.8	0.7
Standard Deviation					0.0	0.016	1.01	1.4	0.5	458	1.2	0.4
CV					0.0	2.3	2.81	7.8	1.2	5	2.3	0.7
Replicate F					0.000	3.6	3.093	1.1	1.0	1.1	4.07	8.12
Replicate Prob(F)					1.0000	0.0	0.0589	0.4	0.4	0.4	0.03	0.00
Treatment F					0.000	2.1	1.610	1.2	1.1	0.5	2.02	1.47
Treatment Prob(F)					1.0000	0.1	0.2174	0.4	0.4	0.8	0.13	0.26

Continued.

Table 43. Continued.

Crop Name					Rice	Rice		Rice
Description						90 lb N all trt		
Rating Date						11/7/2011		
Rating Type					50% HD	Moist	Yield	Total Yield
Rating Unit					days	%	lb/A	lb/A
Crop Stage Majority					Ratoon	Ratoon	Ratoon	MC+RC
Trt No.	Treatment Name	Rate	Rate Unit	Growth Stage				
1	Grower Std.- Ck			UNTRT	59 a	19.6 ab	2390 a	11299 a
2	HM0715	1.0	pt/A	LP/PF	59 a	20.9 a	2536 a	11459 a
	HM9110	0.25	% v/v	LP/PF				
3	HM0715	1.0	pt/A	PI	59 a	18.7 bc	2738 a	11842 a
	HM9110	0.25	% v/v	PI				
4	HM0715	1.0	pt/A	PD + 7 D	59 a	18.2 c	3106 a	12458 a
	HM9110	0.25	% v/v	PD + 7 D				
5	HM0715	1.0	pt/A	BOOT SPLIT	59 a	18.5 bc	3054 a	12269 a
	HM9110	0.25	% v/v	BOOT SPLIT				
6	HM0715	1.0	pt/A	10% HD	59 a	18.9 bc	3110 a	12351 a
	HM9110	0.25	% v/v	10% HD				
LSD (P=.05)						1.37	632	1121
Standard Deviation						0.91	420	739
CV						4.74	15	6
Replicate F						3.44	1.5	1.7
Replicate Prob(F)						0.04	0.3	0.2
Treatment F						4.74	2.2	1.8
Treatment Prob(F)						0.01	0.1	0.2

Means followed by same letter do not significantly differ (P=.05, LSD).

Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Evaluation of Potassium Timing on CL151 Main and Ratoon Rice Yields and Agronomics

Experiment number	11-RF-33
Site and design	
Location/Cooperator	Evangeline Parish / R & N Farms
Tillage type	Conventional
Experimental design	Randomized complete block
Number of reps	4
Plot size	4.66 x 16 ft
Row width/rows per plot	8 in / 7
Soil type	
% organic matter	NA
pH	5.1
Extractable nutrients ppm	Ca-1,035; Cu-1.3; Mg-280; P-10; K-79; Na-44; S-9.0; Zn-0.7
Crop/Variety	Rice / CL151
Planting method/date	Drill seeded / March 24
Seeding rate/depth	33 seeds/ft^2 / .75 inch
Emergence date	April 3
Harvest date	August 4
Ratoon harvest date	November 9
Seed treatment/cwt	Dithane (fungicide)-114 g Release (gibberellic acid)-10 g Zinc Plus (10% Zn & 4.9% combined sulfur)-296 ml
Fertilization	130 lb/A 0-46-0, March 24 42.3 lb/A $ZnSO_4$, March 24 120 lb N/A 46-0-0, May 6 90 lb N/A 46-0-0, August 5
Water management	
Flush	March 29 (rain)
Flood	May 6
Drain	July 22
Ratoon flood	August 5
Ratoon drain	October 18
Pest management	
Herbicides	6 oz/A Newpath, April 15 6 oz/A Newpath, May 5
Insecticides	0.137 lb ai/cwt Dermacor seed treatment .77 oz/cwt Cruiser seed treatment
Fungicides	20 oz/A Stratego, June 25

Table 44. Evaluation of Potassium timing on CL151 main and ratoon rice yields and agronomics (1.2). Evangeline Parish.

Crop Name					Rice	Rice	Rice	Rice	Rice	Rice
Rating Date						8/3/2011	8/4/2011	8/4/2011	11/9/2011	
Rating Type					50% HD	Height	Test Wt.	Yield	Yield	Total Yield
Rating Unit					days	in	lb/bu	lb/A	lb/A	lb/A
Crop Stage Majority					Main	Main	Main	Main	Ratoon	
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage						
1	Untreated Check	0	lb ai/A		96 a	40 a	43.4 a	10497 a	2786 a	13283 a
2	Muriate of Potash 0-0-60	120	lb ai/A	ATPLAN	96 a	39 a	43.6 a	10496 a	2860 a	13356 a
3	Muriate of Potash 0-0-60	120	lb ai/A	PREFLD	96 a	39 a	43.4 a	10450 a	2307 a	12758 a
4	Muriate of Potash 0-0-60	120	lb ai/A	MIDTILL	96 a	40 a	43.6 a	10792 a	3756 a	14548 a
5	Muriate of Potash 0-0-60	120	lb ai/A	GR	96 a	40 a	43.4 a	10491 a	3849 a	14340 a
6	Muriate of Potash 0-0-60	120	lb ai/A	50%HD	96 a	40 a	43.5 a	10575 a	3720 a	14295 a
7	Muriate of Potash 0-0-60	120	lb ai/A	ATHARV	96 a	40 a	43.5 a	10563 a	3888 a	14451 a
8	Muriate of Potash 0-0-60	60	lb ai/A	ATPLAN	96 a	40 a	43.5 a	10552 a	3222 a	13774 a
	Muriate of Potash 0-0-60	60	lb ai/A	GR						
9	Muriate of Potash 0-0-60	60	lb ai/A	ATPLAN	96 a	40 a	43.5 a	10655 a	4816 a	15471 a
	Muriate of Potash 0-0-60	60	lb ai/A	ATHARV						
LSD (P=.05)					0	1	0.33	433	1913	2110
Standard Deviation					0	1	0.23	296	1311	1446
CV					0	3	0.52	3	38	10

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls).

Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Evaluation of Rice Response to Potassium Rate

Experiment number ....: 11-RF-02

Site and design ....:
- **Location/Cooperator** ....: Evangeline Parish / R & N Farms
- **Tillage type** ....: Conventional
- **Experimental design** ....: Randomized complete block
- **Number of reps** ....: 4
- **Plot size** ....: 4.66 x 16 ft
- **Row width/rows per plot** ....: 8 in / 7

Soil type ....:
- **% organic matter** ....: NA
- **pH** ....: 5.1
- **Extractable nutrients** ppm ....: Ca-1,035; Cu-1.3; Mg-280; P-10; K-79; Na-44; S-9.0; Zn-0.7

Crop/Variety ....: Rice / CL151
- **Planting method/date** ....: Drill seeded / March 24
- **Seeding rate/depth** ....: 33 seeds/ft^2 / .75 inch
- **Emergence date** ....: April 3
- **Harvest date** ....: August 4
- **Ratoon harvest date** ....: November 9

Seed treatment/cwt ....: Dithane (fungicide)-114 g
Release (gibberellic acid)-10 g
Zinc Plus (10% Zn & 4.9% combined sulfur)-296 ml

Fertilization ....: 130 lb/A 0-46-0, March 24
42.3 lb/A $ZnSO_4$, March 24
120 lb N/A 46-0-0, May 6
90 lb N/A 46-0-0, August 5

Water management ....:
- **Flush** ....: March 29 (rain)
- **Flood** ....: May 6
- **Drain** ....: July 22
- **Ratoon flood** ....: August 5
- **Ratoon drain** ....: October 18

Pest management ....:
- **Herbicides** ....: 6 oz/A Newpath, April 15
  6 oz/A Newpath, May 5
- **Insecticides** ....: 0.137 lb ai/cwt Dermacor seed treatment
  .77 oz/cwt Cruiser seed treatment
- **Fungicides** ....: 20 oz/A Stratego, June 25

Table 45. Evaluation of rice response to potassium rate. Evangeline Parish.

Crop Name					Rice	Rice	Rice	Rice	Rice	Rice	Rice
Description					Tissue						
Rating Date					7/6/2011		8/3/2011	8/4/2011	8/4/2011	11/11/2011	
Rating Type					WP dry wt	50% HD	Height	Test Wt.	Yield	Yield	Total Yield
Rating Unit					grams	days	in	lb/bu	lb/A	lb/A	lb/A
Sample Size, Unit					3 ft						
Collection Basis, Unit					1 row						
Crop Stage Majority					50% HD	Main	Main	Main	Main	Ratoon	MC+RC
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage							
1	0 lb K2O	0	lb ai/A	2-3 leaf	237.0 a	95 a	39 a	44.1 a	10439 a	4308 a	14747 a
2	30 lb K2O	30	lb ai/A	2-3 leaf	223.2 a	95 a	39 a	44.1 a	9920 a	4511 a	14431 a
3	60 lb K2O	60	lb ai/A	2-3 leaf	206.7 a	95 a	39 a	44.1 a	10236 a	4565 a	14801 a
4	90 lb K2O	90	lb ai/A	2-3 leaf	248.4 a	95 a	41 a	44.2 a	10082 a	4454 a	14536 a
5	120 lb K2O	120	lb ai/A	2-3 leaf	186.0 a	95 a	40 a	43.9 a	10210 a	4473 a	14683 a
6	150 lb K2O	150	lb ai/A	2-3 leaf	273.6 a	95 a	40 a	44.2 a	9885 a	4506 a	14391 a
LSD (P=.05)					66.0	0	2	0.5	803	479	915
Standard Deviation					43.8	0	1	0.3	533	318	607
CV					19.1	0	3	0.7	5	7	4

Continued.

Table 45. Continued.

Crop Name	Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice
Crop Variety	CL151	CL151	CL151	CL151	CL151	CL151	CL151	CL151	CL151	CL151	CL151	CL151	CL151
Description	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue
Part Rated	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -
Rating Date	7/6/2011	7/6/2011	7/6/2011	7/6/2011	7/6/2011	7/6/2011	7/6/2011	7/6/2011	7/6/2011	7/6/2011	7/6/2011	7/6/2011	7/6/2011
Rating Type	Al	B	Ca	Co	Fe	Mg	Mn	Mo	P	K	Na	S	Zn
Rating Unit	ppm	ppm	%	ppm	ppm	%	ppm	ppm	%	%	ppm	%	ppm
Crop Stage Majority	Main-HD	Main-HD	Main-HD	Main-HD	Main-HD	Main-HD	Main-HD	Main-HD	Main-HD	Main-HD	Main-HD	Main-HD	Main-HD
Trt No. / Trt Name													
1 0 lb K2O	184 a	5.40 a	0.25 a	3.80 a	290 a	0.19 a	637 a	1.54 ab	0.28 a	1.52 a	2863 a	0.12 a	36.4 a
2 30 lb K2O	92 a	5.02 a	0.24 a	3.70 a	206 a	0.19 a	553 a	1.68 a	0.28 a	1.56 a	2221 a	0.13 a	38.2 a
3 60 lb K2O	364 a	4.60 a	0.24 a	3.37 a	376 a	0.19 a	623 a	1.50 ab	0.27 a	1.45 a	2525 a	0.12 a	36.7 a
4 90 lb K2O	245 a	4.64 a	0.25 a	3.73 a	310 a	0.20 a	637 a	1.33 b	0.29 a	1.58 a	2907 a	0.14 a	41.9 a
5 120 lb K2O	126 a	4.78 a	0.23 a	3.55 a	203 a	0.18 a	605 a	1.26 b	0.27 a	1.63 a	1881 a	0.12 a	36.7 a
6 150 lb K2O	365 a	4.76 a	0.24 a	4.07 a	382 a	0.20 a	639 a	1.26 b	0.28 a	1.46 a	2496 a	0.13 a	38.8 a
LSD (P=.05)	334	1.33	0.04	0.45	249	0.02	121	0.23	0.02	0.24	852	0.01	8.1
Standard Deviation	222	0.88	0.02	0.30	166	0.01	80	0.12	0.01	0.16	565	0.01	5.4
CV	97	18.09	9.87	8.11	56	6.75	13	8.35	4.84	10.28	23	7.65	14.2

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls).

Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Evaluation of Rice Response to Phosphorus Rate

Experiment number ....: 11-RF-03

Site and design ....:
- **Location/Cooperator** ....: Evangeline Parish / R & N Farms
- **Tillage type**..................................: Conventional
- **Experimental design**...................: Randomized complete block
- **Number of reps** ....: 4
- **Plot size**..: 4.66 x 16 ft
- **Row width/rows per plot**............: 8 in / 7

Soil type ....:
- **% organic matter**........................: NA
- **pH**...: 5.1
- **Extractable nutrients** ppm ....: Ca-1,035; Cu-1.3; Mg-280; P-10; K-79; Na-44; S-9.0; Zn-0.7

Crop/Variety ....: Rice / CL151
- **Planting method/date** ....: Drill seeded / March 24
- **Seeding rate/depth**......................: 33 seeds/ft^2 / .75 inch
- **Emergence date**...........................: April 3
- **Harvest date** ....: August 4
- **Ratoon harvest date**....................: November 9

Seed treatment/cwt ....: Dithane (fungicide)-114 g
Release (gibberellic acid)-10 g
Zinc Plus (10% Zn & 4.9% combined sulfur)-296 ml

Fertilization..: 100 lb/A 0-0-60, March 24
42.3 lb/A $ZnSO_4$, March 24
120 lb N/A 46-0-0, May 6
90 lb N/A 46-0-0, August 5

Water management ....:
- **Flush** ....: March 29 (rain)
- **Flood** ....: May 6
- **Drain**..: July 22
- **Ratoon flood**................................: August 5
- **Ratoon drain** ....: October 18

Pest management ....:
- **Herbicides**....................................: 6 oz/A Newpath, April 15
6 oz/A Newpath, May 5
- **Insecticides** ....: 0.137 lb ai/cwt Dermacor seed treatment
.77 oz/cwt Cruiser seed treatment
- **Fungicides**....................................: 20 oz/A Stratego, June 25

Table 46. Evaluation of rice response to phosphorus rate. Evangeline Parish.

Crop Name					Rice	Rice	Rice	Rice	Rice	Rice	Rice
Description					Tissue						
Rating Date					7/6/2011		8/3/2011	8/4/2011	8/4/2011	11/9/2011	
Rating Type					WP dry wt	50% HD	Height	Test Wt.	Yield	Yield	Total Yield
Rating Unit					grams	days	in	lb/bu	lb/A	lb/A	lb/A
Sample Size, Unit					3 ft						
Collection Basis, Unit					1 row						
Crop Stage Majority					50%HD	Main	Main	Main	Main	Ratoon	MC+RC
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage							
1	0 lb P_2O_5	0	lb ai/A	2-3 leaf	183.1 a	95 a	39 a	44.1 a	10089 a	4642 a	14731 a
2	30 lb P_2O_5	30	lb ai/A	2-3 leaf	213.7 a	95 a	40 a	44.0 a	10226 a	4960 a	15186 a
3	60 lb P_2O_5	60	lb ai/A	2-3 leaf	200.3 a	95 a	40 a	44.4 a	10175 a	4823 a	14998 a
4	90 lb P_2O_5	90	lb ai/A	2-3 leaf	196.1 a	95 a	40 a	44.2 a	9976 a	4863 a	14839 a
5	120 lb P_2O_5	120	lb ai/A	2-3 leaf	226.5 a	95 a	40 a	44.0 a	10297 a	4769 a	15066 a
6	150 lb P_2O_5	150	lb ai/A	2-3 leaf	218.8 a	95 a	39 a	44.1 a	10311 a	4665 a	14975 a
LSD (P=.05)					28.7	0	2	0.4	648	303	671
Standard Deviation					19.0	0	1	0.2	430	201	445
CV					9.2	0	3	0.5	4	4	3

Continued.

Table 46. Continued.

Crop Name	Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice
Crop Variety	CL151	CL151	CL151	CL151	CL151	CL151	CL151	CL151	CL151	CL151	CL151	CL151	CL151
Description	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue
Part Rated	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -
Rating Date	7/6/2011	7/6/2011	7/6/2011	7/6/2011	7/6/2011	7/6/2011	7/6/2011	7/6/2011	7/6/2011	7/6/2011	7/6/2011	7/6/2011	7/6/2011
Rating Type	Al	B	Ca	Co	Fe	Mg	Mn	Mo	P	K	Na	S	Zn
Rating Unit	ppm	ppm	%	ppm	ppm	%	ppm	ppm	%	%	ppm	%	ppm
Crop Stage Majority	Main-HD	Main-HD	Main-HD	Main-HD	Main-HD	Main-HD	Main-HD	Main-HD	Main-HD	Main-HD	Main-HD	Main-HD	Main-HD
Trt Trt No. Name													
1 0 lb P2O5	362 a	3.17 a	0.21 a	2.87 a	343 a	0.18 a	529 a	1.15 a	0.25 a	1.63 a	3249 a	0.13 a	31.2 a
2 30 lb P2O5	146 a	4.57 a	0.24 a	3.45 a	232 a	0.20 a	595 a	1.35 a	0.31 a	1.73 a	3667 a	0.14 a	39.5 a
3 60 lb P2O5	185 a	3.43 a	0.20 a	2.83 a	170 a	0.17 a	496 a	1.64 a	0.25 a	1.47 a	3129 a	0.12 a	31.9 a
4 90 lb P2O5	113 a	4.23 a	0.24 a	3.80 a	192 a	0.19 a	611 a	1.38 a	0.29 a	1.51 a	2601 a	0.14 a	37.3 a
5 120 lb P2O5	329 a	4.51 a	0.23 a	3.89 a	362 a	0.20 a	616 a	1.48 a	0.29 a	1.47 a	3522 a	0.13 a	40.1 a
6 150 lb P2O5	147 a	3.06 a	0.21 a	3.29 a	191 a	0.19 a	556 a	1.43 a	0.27 a	1.49 a	2981 a	0.12 a	33.7 a
LSD (P=.05)	233	1.94	0.03	1.15	206	0.03	146	0.41	0.07	0.32	1212	0.02	10.8
Standard Deviation	154	1.26	0.02	0.76	136	0.02	96	0.25	0.05	0.21	799	0.01	7.1
CV	72	32.86	10.20	22.54	55	10.48	17	17.78	16.61	13.44	25	11.42	20.0

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls).

Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Evaluation of Zinc Rate

Experiment number	: 11-RF-04
Site and design	:
Location/Cooperator	: Evangeline Parish / R & N Farms
Tillage type	: Conventional
Experimental design	: Randomized complete block
Number of reps	: 4
Plot size	: 4.66 x 16 ft
Row width/rows per plot	: 8 in / 7
Soil type	:
% organic matter	: NA
pH	: 5.1
Extractable nutrients ppm	: Ca-1,035; Cu-1.3; Mg-280; P-10; K-79; Na-44; S-9.0; Zn-0.7
Crop/Variety	: Rice / CL151
Planting method/date	: Drill seeded / March 24
Seeding rate/depth	: 33 seeds/ft^2 / .75 inch
Emergence date	: April 3
Harvest date	: August 4
Ratoon harvest date	: November 9
Seed treatment/cwt	: Dithane (fungicide)-114 g
	Release (gibberellic acid)-10 g
	Zinc Plus (10% Zn & 4.9% combined sulfur)-296 ml
Fertilization	: 250 lb/A 0-24-24, March 24
	120 lb N/A 46-0-0, May 6
	90 lb N/A 46-0-0, August 5
Water management	:
Flush	: March 29 (rain)
Flood	: May 6
Drain	: July 22
Ratoon flood	: August 5
Ratoon drain	: October 18
Pest management	:
Herbicides	: 6 oz/A Newpath, April 15
	6 oz/A Newpath, May 5
Insecticides	: 0.137 lb ai/cwt Dermacor seed treatment
	.77 oz/cwt Cruiser seed treatment
Fungicides	: 20 oz/A Stratego, June 25

Table 47. Evaluation of Zinc rate. Evangeline Parish.

Crop Name					Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice
Description					Tissue	Tissue						
Rating Date					5/23/2011	7/6/2011		8/3/2011	8/4/2011	8/4/2011	11/9/2011	
Rating Type					WP dry wt	WP dry wt	50% HD	Height	Test Wt.	Yield	Yield	Total Yield
Rating Unit					grams	grams	days	in	lb/bu	lb/A	lb/A	lb/A
Sample Size, Unit					3 ft	3 ft						
Collection Basis, Unit					1 row	1 row						
Crop Stage Majority					Midtill	50%HD	Main	Main	Main	Main	Ratoon	MC+RC
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage								
1	0 Zn				55.1 a	264.0 a	95 a	40 ab	44.1 a	10263 a	4160 a	14423 a
2	5 lb Zn/A	5	lb ai/A	PLANTING	52.7 a	265.0 a	95 a	38 b	44.5 a	10480 a	4456 a	14935 a
3	7.5 lb Zn/A	7.5	lb ai/A	PLANTING	58.1 a	256.9 a	95 a	39 ab	44.4 a	10649 a	4476 a	15125 a
4	10 lb Zn/A	10	lb ai/A	PLANTING	63.4 a	299.6 a	95 a	39 ab	44.5 a	10290 a	4400 a	14690 a
5	15lb Zn/A	15	lb ai/A	PLANTING	48.9 a	297.4 a	95 a	40 ab	44.5 a	10345 a	4274 a	14619 a
6	20 lb Zn/A	20	lb ai/A	PLANTING	56.9 a	282.2 a	95 a	40 a	44.3 a	10428 a	4659 a	15087 a
LSD (P=.05)					17.9	45.6	0	1	0.5	635	341	773
Standard Deviation					11.9	30.3	0	1	0.3	421	227	513
CV					21.3	10.9	0	2	0.8	4	5	3

Continued.

Table 47. Continued.

Crop Name	Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice
Crop Variety	CL151	CL151	CL151	CL151	CL151	CL151	CL151	CL151	CL151	CL151	CL151	CL151	CL151
Description	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue
Part Rated	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -
Rating Date	5/23/2011	5/23/2011	5/23/2011	5/23/2011	5/23/2011	5/23/2011	5/23/2011	5/23/2011	5/23/2011	5/23/2011	5/23/2011	5/23/2011	5/23/2011
Rating Type	Al	B	Ca	Co	Fe	Mg	Mn	Mo	P	K	Na	S	Zn
Rating Unit	ppm	ppm	%	ppm	ppm	%	ppm	ppm	%	%	ppm	%	ppm
Crop Stage Majority	Main-MT	Main-MT	Main-MT	Main-MT	Main-MT	Main-MT	Main-MT	Main-MT	Main-MT	Main-MT	Main-MT	Main-MT	Main-MT
Trt Treatment													
No. Name													
1 0 Zn	898 a	6.91 a	0.26 a	9.25 a	599 a	0.22 a	785 a	1.38 ab	0.36 a	3.10 a	2305 a	0.32 a	37.5 a
2 5 lb Zn/A	815 a	5.50 a	0.27 a	10.25 a	558 a	0.22 a	724 a	1.19 ab	0.35 a	3.00 a	2146 a	0.33 a	79.5 a
3 7.5 lb Zn/A	1717 a	5.03 a	0.26 a	9.77 a	1055 a	0.21 a	729 a	1.64 a	0.33 a	2.92 a	2094 a	0.31 a	50.0 a
4 10 lb Zn/A	1679 a	5.20 a	0.26 a	9.81 a	1086 a	0.21 a	760 a	1.53 ab	0.35 a	3.12 a	1872 a	0.32 a	72.9 a
5 15 lb Zn/A	1034 a	5.77 a	0.26 a	9.70 a	692 a	0.21 a	695 a	1.44 ab	0.33 a	2.89 a	2295 a	0.32 a	61.7 a
6 20 lb Zn/A	1111 a	6.06 a	0.26 a	9.57 a	745 a	0.21 a	683 a	1.16 b	0.32 a	3.03 a	2170 a	0.31 a	83.6 a
LSD (P=.05)	1762	2.66	0.02	1.34	1025	0.02	88	0.31	0.05	0.43	484	0.04	52.1
Standard Deviation	1169	1.77	0.01	0.89	680	0.02	58	0.21	0.03	0.29	322	0.03	34.6
CV	97	30.76	5.64	9.13	86	7.49	8	14.80	10.12	9.53	15	8.55	53.9

Continued.

Table 47. Continued.

Crop Name	Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice
Crop Variety	CL151	CL151	CL151	CL151	CL151	CL151	CL151	CL151	CL151	CL151	CL151	CL151	CL151
Description	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue
Part Rated	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -
Rating Date	7/6/2011	7/6/2011	7/6/2011	7/6/2011	7/6/2011	7/6/2011	7/6/2011	7/6/2011	7/6/2011	7/6/2011	7/6/2011	7/6/2011	7/6/2011
Rating Type	Al	B	Ca	Co	Fe	Mg	Mn	Mo	P	K	Na	S	Zn
Rating Unit	ppm	ppm	%	ppm	ppm	%	ppm	ppm	%	%	ppm	%	ppm
Crop Stage Majority	Main-HD	Main-HD	Main-HD	Main-HD	Main-HD	Main-HD	Main-HD	Main-HD	Main-HD	Main-HD	Main-HD	Main-HD	Main-HD
Trt Treatment No. Name													
1 0 Zn	183 a	5.21 a	0.23 a	3.03 a	229 a	0.18 a	609 a	1.32 a	0.27 a	1.51 a	2011 a	0.13 a	31.7 a
2 5 lb Zn/A	243 a	5.05 a	0.24 a	3.45 a	276 a	0.18 a	632 a	1.37 a	0.27 a	1.50 a	2293 a	0.13 a	32.9 a
3 7.5 lb Zn/A	470 a	4.47 a	0.22 a	3.42 a	406 a	0.19 a	624 a	1.52 a	0.26 a	1.42 ab	2679 a	0.12 a	34.6 a
4 10 lb Zn/A	380 a	5.33 a	0.21 a	3.25 a	328 a	0.18 a	534 a	1.51 a	0.26 a	1.40 ab	2293 a	0.12 a	38.6 a
5 15 lb Zn/A	841 a	4.16 a	0.21 a	3.50 a	599 a	0.18 a	613 a	1.53 a	0.25 a	1.34 b	2455 a	0.12 a	36.1 a
6 20 lb Zn/A	246 a	5.32 a	0.24 a	3.39 a	269 a	0.19 a	669 a	1.46 a	0.26 a	1.47 ab	2266 a	0.13 a	41.8 a
LSD (P=.05)	836	1.66	0.04	1.00	541	0.03	113	0.36	0.04	0.11	706	0.02	10.0
Standard Deviation	555	1.10	0.03	0.66	359	0.02	75	0.23	0.03	0.07	468	0.01	6.6
CV	141	22.44	12.44	19.84	102	9.71	12	16.06	10.21	5.16	20	11.62	18.4

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls).

Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Evaluation of Phosphorus Timing on CL151 Main and Ratoon Rice Yields and Agronomics

Experiment number ....: 11-RF-34

Site and design ....:
- **Location/Cooperator** ....: Evangeline Parish / R & N Farms
- **Tillage type** ....: Conventional
- **Experimental design** ....: Randomized complete block
- **Number of reps** ....: 4
- **Plot size** ....: 4.66 x 16 ft
- **Row width/rows per plot** ....: 8 in / 7

Soil type ....:
- **% organic matter** ....: NA
- **pH** ....: 5.1
- **Extractable nutrients** ppm ....: Ca-1,035; Cu-1.3; Mg-280; P-10; K-79; Na-44; S-9.0; Zn-0.7

Crop/Variety ....: Rice / CL151
- **Planting method/date** ....: Drill seeded / March 24
- **Seeding rate/depth** ....: 33 seeds/ft^2 / .75 inch
- **Emergence date** ....: April 3
- **Harvest date** ....: August 4
- **Ratoon harvest date** ....: November 14

Seed treatment/cwt ....: Dithane (fungicide)-114 g
Release (gibberellic acid)-10 g
Zinc Plus (10% Zn & 4.9% combined sulfur)-296 ml

Fertilization ....: 100 lb/A 0-0-60, March 24
42.3 lb/A $ZnSO_4$, March 24
120 lb N/A 46-0-0, May 6
90 lb N/A 46-0-0, August 5

Water management ....:
- **Flush** ....: March 29 (rain)
- **Flood** ....: May 6
- **Drain** ....: July 22
- **Ratoon flood** ....: August 5
- **Ratoon drain** ....: October 18

Pest management ....:
- **Herbicides** ....: 6 oz/A Newpath, April 15
6 oz/A Newpath, May 5
- **Insecticides** ....: 0.137 lb ai/cwt Dermacor seed treatment
.77 oz/cwt Cruiser seed treatment
- **Fungicides** ....: 20 oz/A Stratego, June 25

Table 48. Evaluation of Phosphorus timing on CL151 main and ratoon rice yields and agronomics (1.1). Evangeline Parish.

Crop Name					Rice	Rice	Rice	Rice	Rice	Rice
Rating Date						8/3/2011	8/4/2011	8/4/2011		
Rating Type					50% HD	Height	Test Wt.	Yield	Yield	Total Yield
Rating Unit					days	in	lb/bu	lb/A	lb/A	lb/A
Crop Stage Majority					Main	Main	Main	Main	Ratoon	MC+RC
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage						
1	Untreated Check	0	lb ai/A		97 a	40 a	43.6 a	9994 a		
2	TSP	120	lb ai/A	ATPLAN	94 b	40 a	43.7 a	9873 a	4137 a	14009 a
3	TSP	120	lb ai/A	PREFLD	96 a	40 a	43.8 a	10097 a	4543 a	14630 a
4	TSP	120	lb ai/A	MIDTILL	97 a	40 a	43.7 a	9922 a	4338 a	14402 a
5	TSP	120	lb ai/A	GR	96 a	40 a	43.7 a	9999 a	4329 a	14203 a
6	TSP	120	lb ai/A	50%HD	97 a	40 a	43.5 a	10014 a	4005 a	13968 a
7	TSP	120	lb ai/A	ATHARV	96 a	41 a	43.4 a	10281 a		
8	TSP	60	lb ai/A	ATPLAN	95 b	40 a	43.5 a	10423 a	4289 a	14029 a
	TSP	60	lb ai/A	GR						
9	TSP	60	lb ai/A	ATPLAN	95 b	40 a	43.8 a	10144 a	3761 a	13652 a
	TSP	60	lb ai/A	ATHARV						
LSD (P=.05)					1	1	0.3	574	522	1401
Standard Deviation					1	1	0.2	393	302	810
CV					1	2	0.5	4	7	6

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls).
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Evaluation of Nitrogen Rate, Potassium Rate, and Potassium Timing on CL151 Yield and Agronomics

Experiment number ....: 11-RF-32

Site and design ....:
- **Location/Cooperator** ....: Evangeline Parish / R & N Farms
- **Tillage type** ....: Conventional
- **Experimental design** ....: Randomized complete block
- **Number of reps** ....: 4
- **Plot size** ....: 4.66 x 16 ft
- **Row width/rows per plot** ....: 8 in / 7

Soil type ....:
- **% organic matter** ....: NA
- **pH** ....: 5.1
- **Extractable nutrients** ppm ....: Ca-1,035; Cu-1.3; Mg-280; P-10; K-79; Na-44; S-9.0; Zn-0.7

Crop/Variety ....: Rice / CL151
- **Planting method/date** ....: Drill seeded / March 24
- **Seeding rate/depth** ....: 33 seeds/ft^2 / .75 inch
- **Emergence date** ....: April 3
- **Harvest date** ....: August 4
- **Ratoon harvest date** ....: November 9

Seed treatment/cwt ....: Dithane (fungicide)-114 g
Release (gibberellic acid)-10 g
Zinc Plus (10% Zn & 4.9% combined sulfur)-296 ml

Fertilization ....: 130 lb/A 0-46-0, March 24
42.3 lb/A $ZnSO_4$, March 24
90 lb N/A 46-0-0, August 5

Water management ....:
- **Flush** ....: March 29 (rain)
- **Flood** ....: May 6
- **Drain** ....: July 22
- **Ratoon flood** ....: August 5
- **Ratoon drain** ....: October 18

Pest management ....:
- **Herbicides** ....: 6 oz/A Newpath, April 15
  6 oz/A Newpath, May 5
- **Insecticides** ....: 0.137 lb ai/cwt Dermacor seed treatment
  .77 oz/cwt Cruiser seed treatment
- **Fungicides** ....: 20 oz/A Stratego, June 25

Table 49a. Treatment means for the main effects of Nitrogen rate, Potassium rate, and Potassium application timing. Evaluation of Nitrogen rate, Potassium rate, and Potassium timing on CL151 yield and agronomics (1.2). Evangeline Parish.

Crop Name					Rice	Rice		Rice			Rice		Rice	Rice		Rice	Rice	Rice
Description														Tissue		Tissue	N Uptake	K Uptake
Part Rated														Abvgrd -			total -	total -
Rating Date						8/3/2011		8/4/2011			11/9/2011			7/7/2011		7/7/2011	7/7/2011	7/7/2011
Rating Type					50% HD	Height	Moist	Test Wt.	Yield	Moist	Yield	Total Yield	N	K	Biomass	N	K
Rating Unit					days	in	%	lb/bu	lb/A	%	lb/A	lb/A	%	%	grams	lb/A	lb/A
Sample Size, Unit															3 ft		
Collection Basis, Unit															1 row		
Crop Stage Majority					Main	Main	Main	Main	Main	Ratoon	Ratoon	MC+RC	Main	Main	50% HD	50% HD	50%HD
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage													
N Rate Means																	
1	100 lb N	100	lb ai/A	PF	95	39.0	20.7	43.4	10594	18.6	3594	14188	1.24	1.54	220	131	161
2	200 lb N	200	lb ai/A	PF	97	40.5	23.2	42.7	10467	19.6	3642	14109	1.72	1.53	223	183	164
				P	0.0002	0.0287	0.0012	0.0019	0.5320	0.0181	0.6679	0.7316	0.0007	0.9769	0.8069	0.0042	0.6933
				LSD (0.05)	1	1.3	0.7	0.2	574	0.7	324	666	0.10	0.08	38	21	23
K Rate Means																	
1	45 lb K_2O	45	lb ai/A		96	39.6	21.9	43.1	10456	19.0	3604	14060	1.47	1.52	230	161	167
2	90 lb K_2O	90	lb ai/A		96	39.8	22.1	43.0	10625	19.4	3560	14185	1.49	1.51	220	158	159
3	135 lb K_2O	135	lb ai/A		96	39.9	22.0	43.1	10512	18.8	3690	14201	1.48	1.57	215	152	160
				P	0.4219	0.5841	0.4540	0.3020	0.0756	0.2931	0.8001	0.7118	0.8969	0.6271	0.1431	0.4128	0.5137
				LSD (0.05)	1	0.7	0.4	0.1	147	0.8	476	446	0.11	0.15	16	17	18
K Application Timing Means																	
1	K applied Preflood			PF	96	39.7	22.2	43.0	10553	18.8	3606	14159	1.47	1.56	219	153	163
2	K applied at greenring			GR	96	39.8	21.8	43.1	10508	19.4	3630	14139	1.49	1.51	224	161	161
				P	0.3910	0.7306	0.3616	0.3273	0.6831	0.1922	0.8964	0.9367	0.1886	0.1717	0.6308	0.1695	0.5573
				LSD (0.05)	0	0.7	1.1	0.3	318	1.0	553	754	0.05	0.10	28	15	11

Table 49b. Treatment means for the 2-way interactions between Nitrogen rate, Potassium rate, and Potassium application timing. Evaluation of Nitrogen rate, Potassium rate, and Potassium timing on CL151 yield and agronomics (1.2). Evangeline Parish.

Crop Name					Rice	Rice		Rice			Rice		Rice	Rice		Rice	Rice	Rice
Description														Tissue		Tissue	N Uptake	K Uptake
Part Rated														Abvgrd -			total -	total -
Rating Date						8/3/2011		8/4/2011			11/9/2011			7/7/2011		7/7/2011	7/7/2011	7/7/2011
Rating Type					50% HD	Height	Moist	Test Wt.	Yield	Moist	Yield	Total Yield	N	K	Biomass	N	K
Rating Unit					days	in	%	lb/bu	lb/A	%	lb/A	lb/A	%	%	grams	lb/A	lb/A
Sample Size, Unit															3 ft		
Collection Basis, Unit															1 row		
Crop Stage Majority					Main	Main	Main	Main	Main	Ratoon	Ratoon	MC+RC	Main	Main	50% HD	50% HD	50% HD
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage													
N-rate x K-Rate Means																	
1	100 lb N	100	lb ai/A	PF	95	38.6	20.7	43.4	10501	18.3	3832	14333	1.20	1.50	228	131	164
1	45 lb K_2O	45	lb ai/A														
2	200 lb N	200	lb ai/A	PF	97	40.5	23.0	42.8	10412	19.8	3375	13787	1.74	1.54	231	192	171
1	45 lb K_2O	45	lb ai/A														
1	100 lb N	100	lb ai/A	PF	95	39.3	21.0	43.3	10617	19.2	3391	14008	1.30	1.53	213	134	156
2	90 lb K_2O	90	lb ai/A														
2	200 lb N	200	lb ai/A	PF	97	40.4	23.2	42.8	10633	19.6	3729	14362	1.68	1.50	227	182	162
2	90 lb K_2O	90	lb ai/A														
1	100 lb N	100	lb ai/A	PF	95	39.0	20.5	43.4	10665	18.2	3559	14224	1.22	1.58	218	128	162
3	135 lb K_2O	135	lb ai/A														
2	200 lb N	200	lb ai/A	PF	97	40.8	23.4	42.7	10358	19.4	3821	14179	1.74	1.57	211	176	159
3	135 lb K_2O	135	lb ai/A														
				P	0.4219	0.6162	0.7063	0.6856	0.4407	0.6209	0.5155	0.6077	0.0915	0.7691	0.8418	0.8544	0.9154
				LSD (0.05)	0	1.4	1.4	0.4	415	2.1	1247	1499	0.11	0.16	58	46	42
N-Rate x K Application Timing Means																	
1	100 lb N	100	lb ai/A	PF	95	38.8	20.8	43.3	10607	18.2	3521	14127	1.22	1.55	228	134	168
1	K applied Preflood			PF													
2	200 lb N	200	lb ai/A	PF	97	40.6	23.5	42.7	10500	19.5	3691	14191	1.71	1.57	210	172	158
1	K applied Preflood			PF													
1	100 lb N	100	lb ai/A	PF	95	39.1	20.6	43.4	10582	19.0	3667	14249	1.26	1.52	212	128	153
2	K applied at greenring			GR													
2	200 lb N	200	lb ai/A	PF	97	40.5	22.9	42.8	10435	19.8	3593	14028	1.73	1.50	236	195	169
2	K applied at greenring			GR													
				P	0.391	0.7275	0.2909	0.1054	0.766	0.6575	0.7146	0.6812	0.5591	0.5805	0.4888	0.5148	0.5423
				LSD (0.05)	0	2	0.6	0.1	285	2.0	1363	1413	0.08	0.15	121	88	86
K-Rate x K Application Timing Means																	
1	45 lb K_2O	45	lb ai/A		96	39.4	22.0	43.1	10458	18.5	3680	14138	1.48	1.56	224	157	168
1	K applied Preflood			PF													
2	90 lb K_2O	90	lb ai/A		96	39.6	22.2	43.0	10629	18.9	3447	14076	1.44	1.50	229	159	164
1	K applied Preflood			PF													
3	135 lb K_2O	135	lb ai/A		96	40.1	22.2	43.0	10573	19.1	3690	14263	1.47	1.62	204	142	158
1	K applied Preflood			PF													
1	45 lb K_2O	45	lb ai/A		96	39.8	21.7	43.1	10455	19.6	3528	13982	1.46	1.48	235	166	166
2	K applied at greenring			GR													
2	90 lb K_2O	90	lb ai/A		96	40.0	22.0	43.1	10621	20.0	3672	14293	1.54	1.52	211	157	154
2	K applied at greenring			GR													
3	135 lb K_2O	135	lb ai/A		96	39.6	21.7	43.2	10450	18.6	3690	14140	1.49	1.52	225	161	163
2	K applied at greenring			GR													
				P	0.4219	0.6378	0.9611	0.7953	0.5964	0.2852	0.6282	0.6351	0.5271	0.1428	0.4400	0.7453	0.8280
				LSD (0.05)	0	1.8	1.3	0.3	221	1.9	655	721	0.17	0.10	51	47	42

Table 49c. Treatment means for the 3-way interactions between Nitrogen rate, Potassium rate, and Potassium application timing. Evaluation of Nitrogen rate, Potassium rate, and Potassium timing on CL151 yield and agronomics (1.2). Evangeline Parish.

Crop Name					Rice	Rice	Rice			Rice		Rice	Rice		Rice	Rice	Rice
Description													Tissue		Tissue	N Uptake	K Uptake
Part Rated													Abvgrd -			total -	total -
Rating Date						8/3/2011	8/4/2011			11/9/2011			7/7/2011		7/7/2011	7/7/2011	7/7/2011
Rating Type					50% HD	Height	Moist	Test Wt.	Yield	Moist	Yield	Total Yield	N	K	Biomass	N	K
Rating Unit					days	in	%	lb/bu	lb/A	%	lb/A	lb/A	%	%	grams	lb/A	lb/A
Sample Size, Unit															3 ft		
Collection Basis, Unit															1 row		
Crop Stage Majority					Main	Main	Main	Main	Main	Ratoon	Ratoon	MC+RC	Main	Main	50% HD	50% HD	50% HD
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage													
N-Rate x K-Rate x K Application Timing Means																	
1	100 lb N	100	lb ai/A	PF	95	38.5	20.4	43.5	10613	17.4	3918	14531	1.19	1.54	240	137	177
1	45 lb K_2O	45	lb ai/A														
1	K applied Preflood			PF													
2	200 lb N	200	lb ai/A	PF	97	40.3	23.7	42.6	10303	19.5	3442	13745	1.77	1.59	209	178	160
1	45 lb K_2O	45	lb ai/A														
1	K applied Preflood			PF													
1	100 lb N	100	lb ai/A	PF	95	39.3	21.2	43.2	10460	18.2	3173	13634	1.28	1.49	233	146	167
2	90 lb K_2O	90	lb ai/A														
1	K applied Preflood			PF													
2	200 lb N	200	lb ai/A	PF	97	40.0	23.3	42.8	10798	19.6	3721	14519	1.60	1.51	225	172	161
2	90 lb K_2O	90	lb ai/A														
1	K applied Preflood			PF													
1	100 lb N	100	lb ai/A	PF	95	38.8	21.0	43.3	10746	19.0	3471	14217	1.19	1.63	212	119	161
3	135 lb K_2O	135	lb ai/A														
1	K applied Preflood			PF													
2	200 lb N	200	lb ai/A	PF	97	41.5	23.5	42.6	10400	19.3	3908	14308	1.76	1.62	196	165	155
3	135 lb K_2O	135	lb ai/A														
1	K applied Preflood			PF													
1	100 lb N	100	lb ai/A	PF	95	38.8	21.1	43.3	10389	19.1	3746	14135	1.21	1.47	217	125	151
1	45 lb K_2O	45	lb ai/A														
2	K applied at greenring			GR													
2	200 lb N	200	lb ai/A	PF	97	40.8	22.3	43.0	10521	20.1	3309	13829	1.70	1.49	254	206	182
1	45 lb K_2O	45	lb ai/A														
2	K applied at greenring			GR													
1	100 lb N	100	lb ai/A	PF	95	39.3	20.7	43.4	10774	20.3	3608	14382	1.32	1.56	194	123	146
2	90 lb K_2O	90	lb ai/A														
2	K applied at greenring			GR													
2	200 lb N	200	lb ai/A	PF	97	40.8	23.2	42.7	10467	19.6	3737	14204	1.76	1.49	228	191	162
2	90 lb K_2O	90	lb ai/A														
2	K applied at greenring			GR													
1	100 lb N	100	lb ai/A	PF	95	39.3	20.1	43.6	10584	17.5	3646	14230	1.25	1.53	224	137	163
3	135 lb K_2O	135	lb ai/A														
2	K applied at greenring			GR													
2	200 lb N	200	lb ai/A	PF	97	40.0	23.3	42.8	10316	19.6	3734	14050	1.73	1.51	226	186	164
3	135 lb K_2O	135	lb ai/A														
2	K applied at greenring			GR													
				P	0.4219	0.1576	0.0064	0.0192	0.0334	0.1721	0.9241	0.5217	0.1360	0.7720	0.8064	0.7278	0.7198
				LSD (0.05)	0	1.6	0.7	0.3	381	2.3	1507	1567	0.13	0.15	92	65	62

Evaluation of Nitrogen Rate, Potassium Rate, and Potassium Timing on CL151 Yield and Agronomics

Experiment number ....: 11-CM-32

Site and design ....:
- **Location/Cooperator**..................: Rice Research Station (Crowley Main)
- **Tillage type**..................................: Fall Stale
- **Experimental design**...................: Randomized complete block
- **Number of reps**...........................: 4
- **Plot size**..: 4.66 x 16 ft
- **Row width/rows per plot**...........: 8 in / 7

Soil type ....: Crowley silt loam
- **% organic matter** ....: 1.2
- **pH** ....: 7.1
- **Extractable nutrients** ppm ....: Ca-1,096; Cu-1.7; Mg-210; P-10; K-58; Na-85; S-7.7; Zn-4.4

Crop/Variety ....: Rice / CL151
- **Planting method/date** ....: Drill seeded / March 15
- **Seeding rate/depth**......................: 33 seeds/ft^2 / .75 inch
- **Emergence date** ....: March 24
- **Harvest date**................................: July 28
- **Ratoon harvest date** ....: November 7

Seed treatment/cwt ....: Dithane (fungicide)-114 g
Release (gibberellic acid)-10 g
Zinc Plus (10% Zn & 4.9% combined sulfur)-296 ml

Fertilization..: 90 lb N/A 46-0-0, August 8

Water management ....:
- **Flush** ....: March 23, April 7, April 15
- **Flood**..: April 29
- **Drain**..: July 14
- **Ratoon flood**.................................: August 10
- **Ratoon drain** ....: October 14

Pest management...............................:
- **Herbicides** ....: 1.5 qt/A Glyphosate, March 2
  1 qt/A Glyphosate, March 21
  3 qt/A Propanil + .5 oz/A Permit + 1 oz/A Londax, April 6
  2 qt/A Rice Beaux + 2 qt/A Propanil + 1 oz/A Londax + .75 oz/A Permit, April 19
  19 oz/A Clincher, May 27
  1.5 qt/A Basagran, August 9
- **Insecticides**..................................: 0.137 lb ai/cwt Dermacor seed treatment
- **Fungicides** ....: 12 oz/A Quadris, June 18

Table 50a. Treatment means for the main effects of Nitrogen rate, Potassium rate, and Potassium application timing. Evaluation of Nitrogen rate, Potassium rate, and Potassium timing on CL151 yield and agronomics (1.1). Rice Research Station.

Crop Name					Rice	Rice	Rice			Rice	Rice		Rice	Rice		Rice	Rice	Rice
Description														Tissue		Biomass	N Uptake	K Uptake
Part Rated														Abvgrd -		Abvgrd -	total -	total -
Rating Date						7/22/2011	7/28/2011				11/7/2011			6/23/2011		6/23/2011	6/23/2011	6/23/2011
Rating Type					50% HD	Height	Moist	Test Wt	Yield	50% HD	Moist	Yield	Total Yield	N	K	Biomass	N	K
Rating Unit					days	in	%	lb/bu	lb/A	days	%	lb/A	lb/A	%	%	grams	lb/A	lb/A
Sample Size, Unit																3 ft		
Collection Basis, Unit																1 row		
Crop Stage Majority					Main	Main	Main	Main	Main	Ratoon	Ratoon	Ratoon	MC+RC	Main	Main	Main	Main	Main
Crop Stage Scale														50% HD	50% HD	50% HD	50% HD	50% HD
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage														
N-Rate Means																		
1	100 lb N	100	lb ai/A	PF	99	36.4	18.4	47.3	9184	54	15.5	3122	12306	0.91	1.28	215	94	133
2	200 lb N	200	lb ai/A	PF	100	39.8	21.4	46.6	10110	54	15.9	3008	13118	1.28	1.36	256	157	166
				P	-	0.0015	0.0069	0.0155	0.0394	-	0.1538	0.1334	0.0370	0.0047	0.0847	0.0230	0.0001	0.0076
				LSD (0.05)	-	1.0	1.4	0.5	842	-	0.6	178	720	0.16	0.10	30	7	16
K-Rate Means																		
1	45 lb K_2O	45	lb ai/A		100	37.9	19.1	47.2	9471	54	16.0	3049	12520	1.06	1.26	227	117	136
2	90 lb K_2O	90	lb ai/A		100	38.1	20.3	46.9	9621	54	15.5	3007	12628	1.09	1.32	234	122	149
3	135 lb K_2O	135	lb ai/A		100	38.3	20.2	46.8	9848	54	15.5	3139	12987	1.14	1.39	246	138	163
				P	-	0.4655	0.4121	0.5302	0.1928	-	0.5745	0.1616	0.0415	0.1121	0.0018	0.0139	0.0319	0.0018
				LSD (0.05)	-	0.7	2.2	0.7	443	-	1.1	146	355	0.08	0.05	10	15	10
K Application Timing Means																		
1	K applied Preflood			PF	100	38.5	20.0	46.9	9634	54	15.7	3088	12722	1.13	1.42	234	128	160
2	K applied at greenring			GR	100	37.6	19.8	47.0	9659	54	15.7	3042	12701	1.06	1.23	237	123	140
				P	-	0.0618	0.6745	0.5568	0.8120	-	0.8388	0.3759	0.8794	0.2190	0.0275	0.7243	0.5475	0.1605
				LSD (0.05)	-	1.0	1.6	0.6	306	-	0.8	142	411	0.15	0.15	26	25	34

Table 50b. Treatment means for the 2-way interactions between Nitrogen rate, Potassium rate, and Potassium application timing. Evaluation of Nitrogen rate, Potassium rate, and Potassium timing on CL151 yield and agronomics (1.1). Rice Research Station.

Crop Name					Rice	Rice	Rice			Rice	Rice		Rice	Rice		Rice	Rice	Rice
Description														Tissue		Biomass	N Uptake	K Uptake
Part Rated														Abvgrd -		Abvgrd -	total -	total -
Rating Date						7/22/2011	7/28/2011				11/7/2011			6/23/2011		6/23/2011	6/23/2011	6/23/2011
Rating Type					50% HD	Height	Moist	Test Wt	Yield	50% HD	Moist	Yield	Total Yield	N	K	Biomass	N	K
Rating Unit					days	in	%	lb/bu	lb/A	days	%	lb/A	lb/A	%	%	grams	lb/A	lb/A
Sample Size, Unit																3 ft		
Collection Basis, Unit																1 row		
Crop Stage Majority					Main	Main	Main	Main	Main	Ratoon	Ratoon	Ratoon	MC+RC	Main	Main	Main	Main	Main
Crop Stage Scale														50% HD	50% HD	50% HD	50% HD	50% HD
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage														
N-rate x K-Rate Means																		
1	100 lb N	100	lb ai/A	PF	99	36.5	18.5	47.3	8975	54	15.9	3036	12011	0.88	1.24	208	88	123
1	45 lb K_2O	45	lb ai/A															
2	200 lb N	200	lb ai/A	PF	100	39.3	19.8	47.0	9968	54	16.1	3062	13030	1.24	1.28	246	145	150
1	45 lb K_2O	45	lb ai/A															
1	100 lb N	100	lb ai/A	PF	99	36.3	18.5	47.4	9257	54	15.6	3090	12347	0.93	1.27	226	101	140
2	90 lb K_2O	90	lb ai/A															
2	200 lb N	200	lb ai/A	PF	100	39.9	22.0	46.5	9985	54	15.4	2925	12910	1.24	1.37	242	144	159
2	90 lb K_2O	90	lb ai/A															
1	100 lb N	100	lb ai/A	PF	99	36.4	18.1	47.4	9319	54	15.0	3241	12559	0.90	1.34	212	93	137
3	135 lb K_2O	135	lb ai/A															
2	200 lb N	200	lb ai/A	PF	100	40.1	22.4	46.3	10377	54	16.1	3037	13414	1.38	1.43	279	183	190
3	135 lb K_2O	135	lb ai/A															
				P	-	0.1707	0.2702	0.2540	0.5157	-	0.3131	0.6173	0.5996	0.0191	0.6104	0.1441	0.0231	0.0610
				LSD (0.05)	-	0.9	2.9	0.7	499	-	1.4	417	758	0.07	0.10	38	22	20

Continued.

Table 50b. Continued.

Crop Name					Rice	Rice	Rice			Rice	Rice		Rice	Rice		Rice	Rice	Rice
Description														Tissue		Biomass	N Uptake	K Uptake
Part Rated														Abvgrd -		Abvgrd -	total -	total -
Rating Date						7/22/2011	7/28/2011				11/7/2011			6/23/2011		6/23/2011	6/23/2011	6/23/2011
Rating Type					50% HD	Height	Moist	Test Wt	Yield	50% HD	Moist	Yield	Total Yield	N	K	Biomass	N	K
Rating Unit					days	in	%	lb/bu	lb/A	days	%	lb/A	lb/A	%	%	grams	lb/A	lb/A
Sample Size, Unit																3 ft		
Collection Basis, Unit																1 row		
Crop Stage Majority					Main	Main	Main	Main	Main	Ratoon	Ratoon	Ratoon	MC+RC	Main	Main	Main	Main	Main
Crop Stage Scale														50% HD	50% HD	50% HD	50% HD	50% HD
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage														
N-Rate x K Application Timing Means																		
1	100 lb N	100	lb ai/A	PF	99	36.9	18.3	47.3	9233	54	15.5	3145	12378	0.93	1.37	223	99	147
1	K applied Preflood			PF														
2	200 lb N	200	lb ai/A	PF	100	40.2	21.7	46.5	10036	54	15.9	3031	13067	1.34	1.46	246	157	172
1	K applied Preflood			PF														
1	100 lb N	100	lb ai/A	PF	99	35.8	18.4	47.4	9134	54	15.5	3099	12234	0.89	1.19	208	89	119
2	K applied at greenring			GR														
2	200 lb N	200	lb ai/A	PF	100	39.3	21.1	46.7	10184	54	15.8	2985	13169	1.23	1.26	266	157	160
2	K applied at greenring			GR														
				P	-	0.8255	0.6484	0.6006	0.4647	-	0.8967	0.9920	0.4388	0.2247	0.6053	0.3101	0.5322	0.4415
				LSD (0.05)	-	2.3	2.7	0.7	666	-	0.9	242	622	0.10	0.09	66	33	40
K-Rate x K Application Timing Means																		
1	45 lb K_2O	45	lb ai/A		100	38.5	18.9	47.2	9492	54	15.8	3098	12590	1.10	1.33	213	114	137
1	K applied Preflood			PF														
2	90 lb K_2O	90	lb ai/A		100	38.3	20.1	46.9	9598	54	16.0	3019	12617	1.13	1.42	255	137	173
1	K applied Preflood			PF														
3	135 lb K_2O	135	lb ai/A		100	38.9	21.0	46.6	9813	54	15.3	3148	12961	1.17	1.50	234	134	169
1	K applied Preflood			PF														
1	45 lb K_2O	45	lb ai/A		100	37.3	19.4	47.1	9450	54	16.1	3000	12451	1.02	1.18	242	119	136
2	K applied at greenring			GR														
2	90 lb K_2O	90	lb ai/A		100	37.9	20.4	46.9	9644	54	15.1	2996	12640	1.04	1.23	213	107	126
2	K applied at greenring			GR														
3	135 lb K_2O	135	lb ai/A		100	37.6	19.5	47.0	9883	54	15.8	3129	13013	1.11	1.27	257	142	157
2	K applied at greenring			GR														
				P	-	0.7280	0.3898	0.6437	0.9698	-	0.2695	0.7869	0.9315	0.8316	0.1027	0.0875	0.1068	0.0741
				LSD (0.05)	-	2.1	2.6	0.8	826	-	1.4	218	945	0.10	0.05	50	29	29

Table 50c. Treatment means for the 3-way interactions between Nitrogen rate, Potassium rate, and Potassium application timing. Evaluation of Nitrogen rate, Potassium rate, and Potassium timing on CL151 yield and agronomics (1.1). Rice Research Station.

Crop Name				Rice	Rice		Rice		Rice	Rice		Rice
Description												
Part Rated												
Rating Date					7/22/2011	7/28/2011				11/7/2011		
Rating Type				50% HD	Height	Moist	Test Wt	Yield	50% HD	Moist	Yield	Total Yield
Rating Unit				days	in	%	lb/bu	lb/A	days	%	lb/A	lb/A
Sample Size, Unit												
Collection Basis, Unit												
Crop Stage Majority				Main	Main	Main	Main	Main	Ratoon	Ratoon	Ratoon	MC+RC
Crop Stage Scale												
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage								
N Rate x K Rate x K Application Timing Means												
1	100 lb N	100	lb ai/A	PF	99	37.5	17.5	47.5	9002	54	15.8	3080	12082
1	45 lb K_2O	45	lb ai/A										
1	K applied Preflood			PF									
2	200 lb N	200	lb ai/A	PF	100	39.5	20.2	46.8	9982	54	15.9	3116	13098
1	45 lb K_2O	45	lb ai/A										
1	K applied Preflood			PF									
1	100 lb N	100	lb ai/A	PF	99	36.5	19.3	47.0	9262	54	16.1	3127	12389
2	90 lb K_2O	90	lb ai/A										
1	K applied Preflood			PF									
2	200 lb N	200	lb ai/A	PF	100	40.0	21.0	46.8	9934	54	15.8	2910	12844
2	90 lb K_2O	90	lb ai/A										
1	K applied Preflood			PF									
1	100 lb N	100	lb ai/A	PF	99	36.8	18.1	47.4	9435	54	14.7	3228	12663
3	135 lb K_2O	135	lb ai/A										
1	K applied Preflood			PF									
2	200 lb N	200	lb ai/A	PF	100	41.0	23.8	45.8	10190	54	15.9	3068	13258
3	135 lb K_2O	135	lb ai/A										
1	K applied Preflood			PF									
1	100 lb N	100	lb ai/A	PF	99	35.5	19.4	47.1	8947	54	16.0	2992	11939
1	45 lb K_2O	45	lb ai/A										
2	K applied at greenring			GR									
2	200 lb N	200	lb ai/A	PF	100	39.0	19.5	47.2	9953	54	16.3	3009	12962
1	45 lb K_2O	45	lb ai/A										
2	K applied at greenring			GR									
1	100 lb N	100	lb ai/A	PF	99	36.0	17.7	47.7	9253	54	15.1	3053	12306
2	90 lb K_2O	90	lb ai/A										
2	K applied at greenring			GR									
2	200 lb N	200	lb ai/A	PF	100	39.8	23.1	46.2	10035	54	15.0	2939	12975
2	90 lb K_2O	90	lb ai/A										
2	K applied at greenring			GR									
1	100 lb N	100	lb ai/A	PF	99	36.0	18.1	47.3	9202	54	15.3	3253	12455
3	135 lb K_2O	135	lb ai/A										
2	K applied at greenring			GR									
2	200 lb N	200	lb ai/A	PF	100	39.3	20.9	46.8	10564	54	16.2	3005	13570
3	135 lb K_2O	135	lb ai/A										
2	K applied at greenring			GR									
				P	-	0.4488	0.1413	0.0538	0.7927	-	0.9594	0.6157	0.8584
				LSD (0.05)	-	2.3	3.9	1.0	1105	-	2.1	229	1130

Continued.

Table 50c. Continued.

Crop Name					Rice		Rice	Rice	Rice
Description					Tissue		Biomass	N Uptake	K Uptake
Part Rated					Abvgrd -		Abvgrd -	total -	total -
Rating Date					6/23/2011		6/23/2011	6/23/2011	6/23/2011
Rating Type					N	K	Biomass	N	K
Rating Unit					%	%	grams	lb/A	lb/A
Sample Size, Unit							3 ft		
Collection Basis, Unit							1 row		
Crop Stage Majority					Main	Main	Main	Main	Main
Crop Stage Scale					50% HD	50% HD	50% HD	50% HD	50% HD
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage					
N Rate x K Rate x K Application Timing Means									
1	100 lb N	100	lb ai/A	PF	0.94	1.31	197	88	124
1	45 lb K_2O	45	lb ai/A						
1	K applied Preflood			PF					
2	200 lb N	200	lb ai/A	PF	1.27	1.35	229	139	149
1	45 lb K_2O	45	lb ai/A						
1	K applied Preflood			PF					
1	100 lb N	100	lb ai/A	PF	0.94	1.37	257	116	170
2	90 lb K_2O	90	lb ai/A						
1	K applied Preflood			PF					
2	200 lb N	200	lb ai/A	PF	1.32	1.46	254	158	176
2	90 lb K_2O	90	lb ai/A						
1	K applied Preflood			PF					
1	100 lb N	100	lb ai/A	PF	0.90	1.43	214	93	147
3	135 lb K_2O	135	lb ai/A						
1	K applied Preflood			PF					
2	200 lb N	200	lb ai/A	PF	1.43	1.57	255	175	192
3	135 lb K_2O	135	lb ai/A						
1	K applied Preflood			PF					
1	100 lb N	100	lb ai/A	PF	0.83	1.16	220	88	122
1	45 lb K_2O	45	lb ai/A						
2	K applied at greenring			GR					
2	200 lb N	200	lb ai/A	PF	1.21	1.20	264	150	151
1	45 lb K_2O	45	lb ai/A						
2	K applied at greenring			GR					
1	100 lb N	100	lb ai/A	PF	0.93	1.17	195	85	109
2	90 lb K_2O	90	lb ai/A						
2	K applied at greenring			GR					
2	200 lb N	200	lb ai/A	PF	1.16	1.28	231	129	142
2	90 lb K_2O	90	lb ai/A						
2	K applied at greenring			GR					
1	100 lb N	100	lb ai/A	PF	0.91	1.26	210	93	127
3	135 lb K_2O	135	lb ai/A						
2	K applied at greenring			GR					
2	200 lb N	200	lb ai/A	PF	1.32	1.29	304	192	188
3	135 lb K_2O	135	lb ai/A						
2	K applied at greenring			GR					
				P	0.3132	0.6696	0.7511	0.9028	0.8883
				LSD (0.05)	0.14	0.19	66	42	57

Evaluation of Volatilization from Arborite, Agrotain, N-Zone and Urea Using Semi-Open Volatilization Chambers in the Field

Experiment number	11-CM-17
Site and design	
Location/Cooperator	Rice Research Station (Crowley Main)
Tillage type	Fall Stale
Experimental design	Randomized complete block
Number of reps	4
Plot size	4.66 x 16 ft
Row width/rows per plot	8 in / 7
Soil type	Crowley silt loam
% organic matter	1.2
pH	7.1
Extractable nutrients ppm	Ca-1,096; Cu-1.7; Mg-210; P-10; K-58; Na-85; S-7.7; Zn-4.4
Crop/Variety	Rice / CL151
Planting method/date	Drill seeded / March 15
Seeding rate/depth	33 seeds/ft^2 / .75 inch
Emergence date	March 24
Harvest date	Non Harvest study
Seed treatment/cwt	Dithane (fungicide)-114 g Release (gibberellic acid)-10 g Zinc Plus (10% Zn & 4.9% combined sulfur)-296 ml
Fertilization	240 lb/A 0-24-24-2.8, March 16
Water management	
Flush	March 23, April 7, April 15
Flood	April 29
Drain	July 14
Pest management	
Herbicides	1.5 qt/A Glyphosate, March 2 1 qt/A Glyphosate, March 21 3 qt/A Propanil + .5 oz/A Permit + 1 oz/A Londax, April 6 2 qt/A Rice Beaux + 2 qt/A Propanil + 1 oz/A Londax + .75 oz/A Permit, April 19 19 oz/A Clincher, May 27
Insecticides	0.137 lb ai/cwt Dermacor seed treatment
Fungicides	12 oz/A Quadris, June 18

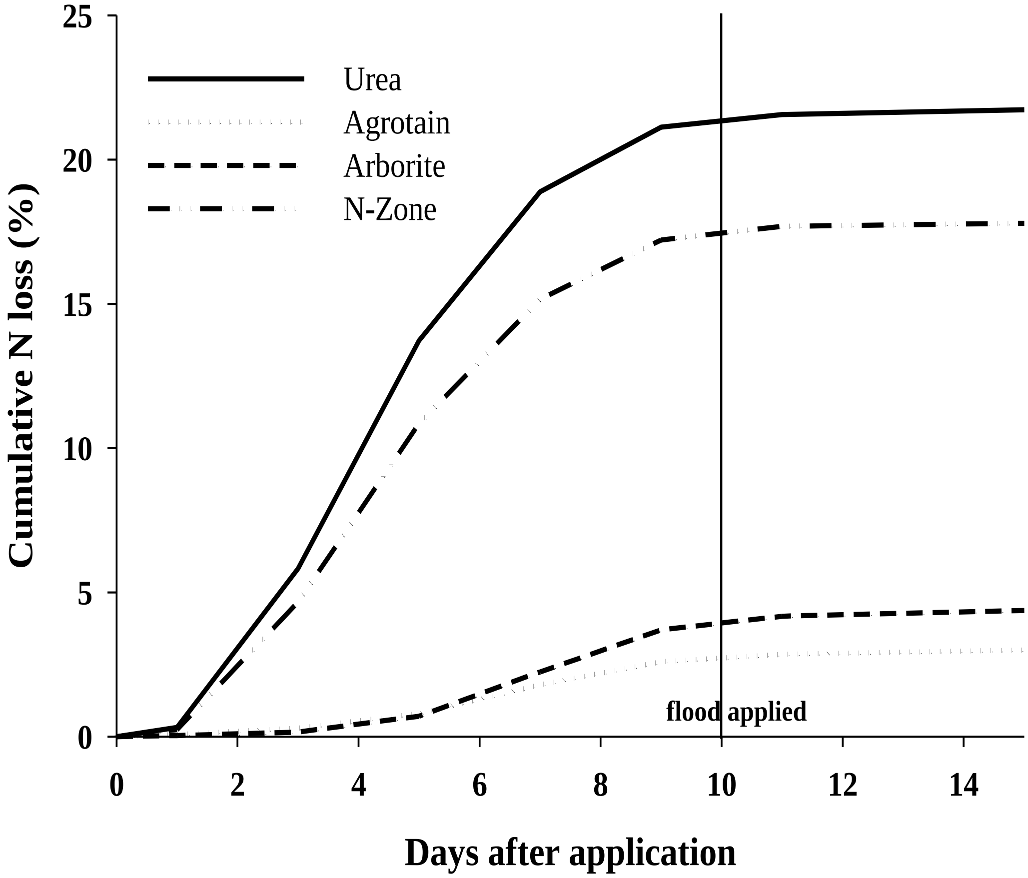


Figure 1. Ammonia volatilization loss evaluation of Urea and Agrotain-, Arborite-, and N-Zone-treated urea over a 15-day period when surface applied on a Crowley silt loam soil at the LSU AgCenter Rice Research Station in Crowley, Louisiana, 2011.

Evaluation of Nitogen Fertilizer Source, Rate, and Time of Application on Rice Yield and Agronomics

Experiment number ....: 11-CM-18

Site and design ....:
- **Location/Cooperator**..................: Rice Research Station (Crowley Main)
- **Tillage type**..................................: Fall Stale
- **Experimental design**...................: Randomized complete block
- **Number of reps**...........................: 4
- **Plot size**..: 4.66 x 16 ft
- **Row width/rows per plot**............: 8 in / 7

Soil type ....: Crowley silt loam
- **% organic matter** ....: 1.2
- **pH** ....: 7.1
- **Extractable nutrients** ppm ....: Ca-1,096; Cu-1.7; Mg-210; P-10; K-58; Na-85; S-7.7; Zn-4.4

Crop/Variety ....: Rice / CL151
- **Planting method/date** ....: Drill seeded / March 15
- **Seeding rate/depth**......................: 33 seeds/ft^2 / .75 inch
- **Emergence date** ....: March 24
- **Harvest date**................................: July 28
- **Ratoon harvest date** ....: November 7

Seed treatment/cwt ....: Dithane (fungicide)-114 g
Release (gibberellic acid)-10 g
Zinc Plus (10% Zn & 4.9% combined sulfur)-296 ml

Fertilization..: 240 lb/A 0-24-24-2.8, March 16
90 lb N/A 46-0-0, August 8

Water management ....:
- **Flush** ....: March 23, April 7, April 15
- **Flood**..: April 29
- **Drain**..: July 14
- **Ratoon flood**.................................: August 10
- **Ratoon drain** ....: October 14

Pest management ....:
- **Herbicides** ....: 1.5 qt/A Glyphosate, March 2
  1 qt/A Glyphosate, March 21
  3 qt/A Propanil + .5 oz/A Permit + 1 oz/A Londax, April 6
  2 qt/A Rice Beaux + 2 qt/A Propanil + 1 oz/A Londax + .75 oz/A Permit, April 19
  19 oz/A Clincher, May 27
  1.5 qt/A Basagran, August 9
- **Insecticides**..................................: 0.137 lb ai/cwt Dermacor seed treatment
- **Fungicides** ....: 12 oz/A Quadris, June 18

Table 51a. Treatment means for the main effects of Nitrogen source, rate, and application timing. Evaluation of Nitrogen source, rate and application timing on CL151 rice yield and volaitilization loss. Rice Research Station.

Crop Name					Rice	Rice		Rice		Rice	Rice		Rice		Rice	Rice
Description															Tissue	N-Uptake
Part Rated															Abvgrd -	total -
Rating Date						7/22/2011	7/28/2011				11/7/2011			6/21/2011		6/21/2011
Rating Type					50% HD	Height	Moist	Test Wt.	Yield	50% HD	Moist	Yield	Total Yield	Biomass	N	C	N
Rating Unit					days	in	%	lb/bu	lb/A	days	%	lb/A	lb/A	grams	%	%	lb/A
Sample Size, Unit														3 ft			
Collection Basis, Unit														1 row			
Crop Stage Majority					Main	Main	Main	Main	Main	Ratoon	Ratoon	Ratoon	MC+RC	Main	Main	Main	Main
Crop Stage Scale														50% HD	50% HD	50% HD	50% HD
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage													
Table of N Source Means																	
1	Urea				97	35.3	18.5	47.2	8408	54	15.2	3502	11910	197	1.02	38.1	97
2	Agrotain				98	35.8	18.3	47.3	8709	54	15.6	3301	12010	210	1.12	38.5	116
3	Arborite				98	36.0	18.4	47.3	8664	54	15.6	3330	11994	206	1.10	38.5	113
4	N-Zone				98	34.6	18.7	47.1	8194	54	15.6	3461	11655	196	1.03	38.5	99
	P				0.0539	0.1167	0.8468	0.7081	0.0781	-	0.0054	0.1232	0.3685	0.1678	0.0342	0.2164	0.0215
	LSD (0.05)				1	1.3	1.2	0.4	431	-	0.20	198	483	15	0.08	0.5	13
Table of N Rate Means																	
1	60 lb N/A	60	lb ai/A	PF	97	34.1	18.1	47.3	7847	54	15.2	3546	11393	179	0.95	38.4	83
2	120 lb N/A	120	lb ai/A	PF	98	36.7	18.9	47.2	9141	54	15.8	3251	12391	226	1.18	38.4	130
	P				0.0173	0.0006	0.1600	0.3107	0.0020	-	0.0250	0.1031	0.0203	0.0042	0.0072	0.7845	0.0002
	LSD (0.05)				1	0.6	1.3	0.4	405	-	0.5	405	704	19	0.11	0.5	7
Table of N Time of Application Means																	
1	10 DPF				97	34.6	17.9	47.4	7843	54	15.1	3543	11386	199	1.03	38.6	101
2	5 DPF				98	36.3	19.2	47.1	9189	54	16.0	3197	12386	210	1.17	38.3	120
3	1 DPF				98	35.3	18.5	47.2	8450	54	15.4	3455	11905	197	1.01	38.2	96
	P				0.0006	0.0354	0.1086	0.3125	0.0001	-	0.0192	0.0083	0.0015	0.2978	0.0019	0.2776	0.0019
	LSD (0.05)				<1	1.2	1.2	0.4	234	-	0.6	181	359	19	0.07	0.5	10

Table 51b. Table of treatment means from the factorial analysis of 2-way interactions. Evaluation of Nitrogen source, rate, and application timing on CL151 rice yield and volaitilization loss.

Crop Name	Rice	Rice		Rice		Rice	Rice	Rice	Rice		Rice		Rice
Description											Tissue		N-Uptake
Part Rated											Abvgrd -		total -
Rating Date		7/22/2011		7/28/2011			11/7/2011				6/21/2011		6/21/2011
Rating Type	50% HD	Height	Moist	Test Wt.	Yield	50% HD	Moist	Yield	Total Yield	Biomass	N	C	N
Rating Unit	days	in	%	lb/bu	lb/A	days	%	lb/A	lb/A	grams	%	%	lb/A
Sample Size, Unit										3 ft			
Collection Basis, Unit										1 row			
Crop Stage Majority	Main	Main	Main	Main	Main	Ratoon	Ratoon	Ratoon	MC+RC	Main	Main	Main	Main
Crop Stage Scale										50% HD	50% HD	50% HD	50% HD
Trt No. / Trt Name / Rate / Rate Unit / Growth Stage													
Table of N Source and N Rate Interaction													
1 Urea	97	34.4	18.2	47.25	7950	54	14.9	3625	11575	179	0.98	38.4	84
1 60 lb N/A 60 lb ai/A PF													
2 Agrotain	97	34.2	17.8	47.48	8173	54	15.3	3431	11603	187	1.00	38.4	91
1 60 lb N/A 60 lb ai/A PF													
3 Arborite	97	34.3	19.1	46.96	7613	54	15.3	3536	11149	175	0.88	38.6	74
1 60 lb N/A 60 lb ai/A PF													
4 N-Zone	97	33.5	17.4	47.55	7653	54	15.2	3592	11245	176	0.95	38.3	81
1 60 lb N/A 60 lb ai/A PF													
1 Urea	98	36.2	18.8	47.16	8866	54	15.5	3378	12244	216	1.05	37.8	110
2 120 lb N/A 120 lb ai/A PF													
2 Agrotain	99	37.4	18.9	47.19	9246	54	15.9	3171	12417	233	1.25	38.5	140
2 120 lb N/A 120 lb ai/A PF													
3 Arborite	99	37.7	17.7	47.54	9716	54	16.0	3123	12839	238	1.32	38.4	151
2 120 lb N/A 120 lb ai/A PF													
4 N-Zone	98	35.7	20.1	46.72	8735	54	16.0	3330	12065	216	1.11	38.7	117
2 120 lb N/A 120 lb ai/A PF													
P	0.1284	0.4508	0.0862	0.118	0.1373	-	0.9745	0.6693	0.2127	0.5260	0.0005	0.2083	0.0133
LSD (0.05)	1	1.8	2.2	0.82	799	-	0.9	242	782	29	0.09	0.7	20

Continued.

Table 51b. Continued.

Crop Name	Rice	Rice	Rice			Rice	Rice	Rice	Rice	Rice			Rice
Description										Tissue			N-Uptake
Part Rated										Abvgrd -			total -
Rating Date		7/22/2011	7/28/2011				11/7/2011			6/21/2011			6/21/2011
Rating Type	50% HD	Height	Moist	Test Wt.	Yield	50% HD	Moist	Yield	Total Yield	Biomass	N	C	N
Rating Unit	days	in	%	lb/bu	lb/A	days	%	lb/A	lb/A	grams	%	%	lb/A
Sample Size, Unit										3 ft			
Collection Basis, Unit										1 row			
Crop Stage Majority	Main	Main	Main	Main	Main	Ratoon	Ratoon	Ratoon	MC+RC	Main	Main	Main	Main
Crop Stage Scale										50% HD	50% HD	50% HD	50% HD
Trt No. / Trt Name / Rate / Rate Unit / Growth Stage													
Table of N Source and Time of Application Interaction													
1 Urea	96	33.0	17.6	47.47	7217	54	14.5	3699	10915	177	0.92	38.5	78
1 10 DPF													
2 Agrotain	98	35.4	18.1	47.35	8640	54	15.5	3539	12179	232	1.21	38.6	137
1 10 DPF													
3 Arborite	98	36.9	18.2	47.25	8481	54	15.4	3455	11936	218	1.09	38.7	118
1 10 DPF													
4 N-Zone	96	33.1	17.5	47.46	7035	54	14.9	3478	10512	171	0.88	38.6	73
1 10 DPF													
1 Urea	98	36.8	19.3	47.00	9210	54	15.8	3327	12536	203	1.09	38.2	108
2 5 DPF													
2 Agrotain	98	36.6	18.9	47.26	9337	54	16.3	2943	12279	210	1.20	38.5	123
2 5 DPF													
3 Arborite	98	36.5	19.5	46.98	9105	54	15.6	3166	12271	213	1.22	38.1	131
2 5 DPF													
4 N-Zone	98	35.4	19.0	47.07	9104	54	16.3	3352	12456	213	1.16	38.6	121
2 5 DPF													
1 Urea	98	36.1	18.8	47.14	8797	54	15.4	3480	12277	212	1.03	37.5	104
3 1 DPF													
2 Agrotain	97	35.4	17.9	47.39	8151	54	14.9	3420	11572	188	0.96	38.3	88
3 1 DPF													
3 Arborite	98	34.6	17.5	47.51	8408	54	15.9	3367	11775	187	0.99	38.8	90
3 1 DPF													
4 N-Zone	98	35.3	19.7	46.87	8443	54	15.5	3553	11996	202	1.04	38.3	102
3 1 DPF													
P	0.0007	0.0003	0.4567	0.6996	0.0016	-	0.0756	0.1507	0.0006	0.0011	0.0091	0.4741	0.0008
LSD (0.05)	1	1.3	2.1	0.77	677	-	0.9	246	654	25	0.14	0.9	23

Continued.

Table 51b. Continued.

Crop Name					Rice	Rice		Rice		Rice	Rice	Rice	Rice		Rice		Rice
Description															Tissue		N-Uptake
Part Rated															Abvgrd -		total -
Rating Date						7/22/2011		7/28/2011			11/7/2011				6/21/2011		6/21/2011
Rating Type					50% HD	Height	Moist	Test Wt.	Yield	50% HD	Moist	Yield	Total Yield	Biomass	N	C	N
Rating Unit					days	in	%	lb/bu	lb/A	days	%	lb/A	lb/A	grams	%	%	lb/A
Sample Size, Unit														3 ft			
Collection Basis, Unit														1 row			
Crop Stage Majority					Main	Main	Main	Main	Main	Ratoon	Ratoon	Ratoon	MC+RC	Main	Main	Main	Main
Crop Stage Scale														50% HD	50% HD	50% HD	50% HD
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage													
Table of N Rate and Time of Application Interaction																	
1	60 lb N/A	60	lb ai/A	PF	96	33.3	17.4	47.50	7526	54	14.9	3658	11184	181	0.96	38.6	85
1	10 DPF																
2	120 lb N/A	120	lb ai/A	PF	98	35.9	18.3	47.27	8161	54	15.2	3427	11588	218	1.09	38.6	118
1	10 DPF																
1	60 lb N/A	60	lb ai/A	PF	97	34.9	19.2	46.99	8414	54	15.6	3336	11751	184	0.96	38.3	85
2	5 DPF																
2	120 lb N/A	120	lb ai/A	PF	99	37.8	19.1	47.16	9963	54	16.4	3057	13021	236	1.37	38.4	156
2	5 DPF																
1	60 lb N/A	60	lb ai/A	PF	97	34.2	17.7	47.43	7602	54	15.0	3643	11244	172	0.93	38.4	78
3	1 DPF																
2	120 lb N/A	120	lb ai/A	PF	98	36.5	19.2	47.02	9298	54	15.9	3268	12566	223	1.08	38.1	115
3	1 DPF																
	P				0.1725	0.7848	0.1249	0.1155	0.0882	-	0.5614	0.502	0.0856	0.3801	0.011	0.4658	0.4555
	LSD (0.05)				1	1.4	1.1	0.41	727	-	0.9	203	647	19	0.12	0.7	46

Table 51c. Table of treatment means from the factorial analysis of 3-way interaction. Evaluation of N source, rate, and application timing on CL151 rice yield and volaitilization loss.

Crop Name					Rice	Rice		Rice		Rice	Rice		Rice		Rice		Rice
Description															Tissue		N-Uptake
Part Rated															Abvgrd -		total -
Rating Date						7/22/2011		7/28/2011			11/7/2011				6/21/2011		6/21/2011
Rating Type					50% HD	Height	Moist	Test Wt.	Yield	50% HD	Moist	Yield	Total Yield	Biomass	N	C	N
Rating Unit					days	in	%	lb/bu	lb/A	days	%	lb/A	lb/A	grams	%	%	lb/A
Sample Size, Unit														3 ft			
Collection Basis, Unit														1 row			
Crop Stage Majority					Main	Main	Main	Main	Main	Ratoon	Ratoon	Ratoon	MC+RC	Main	Main	Main	Main
Crop Stage Scale														50% HD	50% HD	50% HD	50% HD
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage													
Table of N Source x N Rate x Time of Application Interaction																	
1	Urea				96	31.8	16.8	47.7	7117	54	14.3	3697	10814	169	0.89	38.6	72
1	60 lb N/A	60	lb ai/A	PF													
1	10 DPF																
2	Agrotain				97	33.5	17.8	47.4	8187	54	15.1	3811	11998	209	1.14	38.6	117
1	60 lb N/A	60	lb ai/A	PF													
1	10 DPF																
3	Arborite				97	35.3	17.9	47.3	7543	54	15.5	3625	11167	183	0.90	38.9	79
1	60 lb N/A	60	lb ai/A	PF													
1	10 DPF																
4	N-Zone				96	32.5	17.2	47.6	7256	54	14.8	3501	10757	162	0.93	38.4	73
1	60 lb N/A	60	lb ai/A	PF													
1	10 DPF																
1	Urea				96	34.3	18.3	47.3	7317	54	14.7	3700	11017	185	0.95	38.4	85
2	120 lb N/A	120	lb ai/A	PF													
1	10 DPF																
2	Agrotain				99	37.3	18.5	47.3	9093	54	15.9	3268	12361	254	1.29	38.7	157
2	120 lb N/A	120	lb ai/A	PF													
1	10 DPF																
3	Arborite				99	38.5	18.5	47.2	9419	54	15.2	3285	12704	253	1.29	38.4	156
2	120 lb N/A	120	lb ai/A	PF													
1	10 DPF																
4	N-Zone				97	33.8	17.9	47.3	6814	54	15.0	3454	10268	181	0.84	38.9	73
2	120 lb N/A	120	lb ai/A	PF													
1	10 DPF																

Continued.

Table 51c. Continued.

Crop Name					Rice	Rice	Rice			Rice	Rice		Rice	Rice			Rice
Description														Tissue			N-Uptake
Part Rated														Abvgrd -			total -
Rating Date						7/22/2011	7/28/2011				11/7/2011			6/21/2011			6/21/2011
Rating Type					50% HD	Height	Moist	Test Wt.	Yield	50% HD	Moist	Yield	Total Yield	Biomass	N	C	N
Rating Unit					days	in	%	lb/bu	lb/A	days	%	lb/A	lb/A	grams	%	%	lb/A
Sample Size, Unit														3 ft			
Collection Basis, Unit														1 row			
Crop Stage Majority					Main	Main	Main	Main	Main	Ratoon	Ratoon	Ratoon	MC+RC	Main	Main	Main	Main
Crop Stage Scale														50% HD	50% HD	50% HD	50% HD
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage													
Table of N Source x N Rate x Time of Application Interaction																	
1	Urea				97	36.3	18.4	47.2	8735	54	15.8	3463	12199	175	1.01	38.4	85
1	60 lb N/A	60	lb ai/A	PF													
2	5 DPF																
2	Agrotain				97	35.5	19.0	47.2	8933	54	15.8	3002	11935	194	0.91	38.2	85
1	60 lb N/A	60	lb ai/A	PF													
2	5 DPF																
3	Arborite				98	34.3	21.8	46.2	7776	54	15.3	3353	11129	176	0.92	38.0	78
1	60 lb N/A	60	lb ai/A	PF													
2	5 DPF																
4	N-Zone				97	33.5	17.6	47.4	8213	54	15.6	3527	11740	191	1.00	38.4	92
1	60 lb N/A	60	lb ai/A	PF													
2	5 DPF																
1	Urea				99	37.3	20.1	46.8	9684	54	15.8	3190	12874	231	1.18	38.0	131
2	120 lb N/A	120	lb ai/A	PF													
2	5 DPF																
2	Agrotain				99	37.8	18.8	47.3	9741	54	16.8	2883	12624	226	1.48	38.8	161
2	120 lb N/A	120	lb ai/A	PF													
2	5 DPF																
3	Arborite				99	38.8	17.2	47.8	10434	54	15.9	2980	13413	250	1.51	38.2	184
2	120 lb N/A	120	lb ai/A	PF													
2	5 DPF																
4	N-Zone				99	37.3	20.5	46.7	9994	54	17.1	3177	13171	236	1.32	38.7	150
2	120 lb N/A	120	lb ai/A	PF													
2	5 DPF																

Continued.

Table 51c. Continued.

Crop Name					Rice	Rice		Rice		Rice	Rice		Rice		Rice		Rice
Description															Tissue		N-Uptake
Part Rated															Abvgrd -		total -
Rating Date						7/22/2011		7/28/2011			11/7/2011				6/21/2011		6/21/2011
Rating Type					50% HD	Height	Moist	Test Wt.	Yield	50% HD	Moist	Yield	Total Yield	Biomass	N	C	N
Rating Unit					days	in	%	lb/bu	lb/A	days	%	lb/A	lb/A	grams	%	%	lb/A
Sample Size, Unit														3 ft			
Collection Basis, Unit														1 row			
Crop Stage Majority					Main	Main	Main	Main	Main	Ratoon	Ratoon	Ratoon	MC+RC	Main	Main	Main	Main
Crop Stage Scale														50% HD	50% HD	50% HD	50% HD
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage													
Table of N Source x N Rate x Time of Application Interaction																	
1	Urea				97	35.3	19.4	46.9	7998	54	14.8	3716	11713	193	1.03	38.0	96
1	60 lb N/A	60	lb ai/A	PF													
3	1 DPF																
2	Agrotain				97	33.5	16.6	47.8	7398	54	15.0	3479	10877	156	0.95	38.4	72
1	60 lb N/A	60	lb ai/A	PF													
3	1 DPF																
3	Arborite				98	33.5	17.5	47.4	7521	54	15.1	3629	11150	165	0.83	38.9	66
1	60 lb N/A	60	lb ai/A	PF													
3	1 DPF																
4	N-Zone				98	34.5	17.3	47.6	7490	54	15.1	3747	11237	173	0.92	38.2	77
1	60 lb N/A	60	lb ai/A	PF													
3	1 DPF																
1	Urea				99	37.0	18.1	47.4	9597	54	16.0	3245	12841	232	1.03	37.0	113
2	120 lb N/A	120	lb ai/A	PF													
3	1 DPF																
2	Agrotain				98	37.3	19.3	47.0	8905	54	14.9	3362	12267	219	0.98	38.1	104
2	120 lb N/A	120	lb ai/A	PF													
3	1 DPF																
3	Arborite				98	35.8	17.4	47.6	9295	54	16.8	3106	12401	210	1.15	38.6	115
2	120 lb N/A	120	lb ai/A	PF													
3	1 DPF																
4	N-Zone				99	36.0	22.0	46.2	9395	54	15.8	3359	12754	231	1.16	38.5	128
2	120 lb N/A	120	lb ai/A	PF													
3	1 DPF																
	P				0.0021	0.3275	0.0262	0.0375	0.256	-	0.3502	0.1414	0.4139	0.6314	0.3162	0.8651	0.3432
	LSD (0.05)				1	2.2	2.6	0.84	1150	-	1.4	332	1168	45	0.25	1	32

Evaluation of Titan Fertilizer Treatment

Experiment number	: 11-CM-40
Site and design	:
Location/Cooperator	: Rice Research Station (Crowley Main)
Tillage type	: Fall Stale
Experimental design	: Randomized complete block
Number of reps	: 4
Plot size	: 4.66 x 16 ft
Row width/rows per plot	: 8 in / 7
Soil type	: Crowley silt loam
% organic matter	: 1.3
pH	: 6.9
Extractable nutrients ppm	: Ca-1,221; Cu-1.9; Mg-217; P-13; K-64; Na-80; S-9.5; Zn-5.8
Crop/Variety	: Rice / CL111
Planting method/date	: Drill seeded / March 16
Seeding rate/depth	: 33 seeds/ft^2 / .75 inch
Emergence date	: March 24
Harvest date	: August 1
Seed treatment/cwt	: Dithane (fungicide)-114 g Release (gibberellic acid)-10 g Zinc Plus (10% Zn & 4.9% combined sulfur)-296 ml
Fertilization	: 150 lb N/A 46-0-0, April 20
Water management	:
Flush	: March 23, April 7, April 15
Flood	: April 21
Drain	: July 19
Pest management	:
Herbicides	: 1.5 qt/A Glyphosate, March 2 1 qt/A Glyphosate, March 21 3 qt/A Propanil + .5 oz/A Permit + 1 oz/A Londax, April 6 2 qt/A Rice Beaux + 2 qt/A Propanil + 1 oz/A Londax + .75 oz/A Permit, April 19 19 oz/A Clincher, May 27
Insecticides	: 0.137 lb ai/cwt Dermacor seed treatment
Fungicides	: 12 oz/A Quadris, June 18

Table 52. Evaluation of Titan fertilizer treatment (1.1). Rice Research Station.

Crop Name					Rice		Rice		Rice		Rice	
Rating Date							7/29/2011		8/1/2011		8/1/2011	
Rating Type					50% HD		Height		Test Wt.		Yield	
Rating Unit					days		in		lb/bu		lb/A	
Crop Stage Majority					Main		Main		Main		Main	
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage								
1	No Fertilizer				99	a	40	a	44.4	a	10410	a
2	Titan treated 0-24-24	250	lb/A	2-3 leaf	99	a	40	a	44.9	a	10485	a
3	0-24-24	250	lb/A	2-3 leaf	99	a	42	a	44.5	a	10136	a
LSD (P=.05)					0		2		0.67		1065	
Standard Deviation					0		1		0.4		616	
CV					0		3		0.9		6	

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls).

Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Evaluation of Nitrogen Source and Commercially Available Nitrogen Enhancers, Urease Inhibitors, and Nitrification Inhibitors

Experiment number .... : 11-CM-39

Site and design .... :
- **Location/Cooperator** .... : Rice Research Station (Crowley Main)
- **Tillage type** .... : Fall Stale
- **Experimental design** .... : Randomized complete block
- **Number of reps** .... : 4
- **Plot size** .... : 4.66 x 16 ft
- **Row width/rows per plot** .... : 8 in / 7

Soil type .... : Crowley silt loam
- **% organic matter** .... : 1.2
- **pH** .... : 7.1
- **Extractable nutrients** ppm .... : Ca-1,096; Cu-1.7; Mg-210; P-10; K-58; Na-85; S-7.7; Zn-4.4

Crop/Variety .... : Rice / CL111
- **Planting method/date** .... : Drill seeded / March 15
- **Seeding rate/depth** .... : 33 seeds/ft^2 / .75 inch
- **Emergence date** .... : March 24
- **Harvest date** .... : July 28
- **Ratoon harvest date** .... : November 1

Seed treatment/cwt .... : Dithane (fungicide)-114 g
Release (gibberellic acid)-10 g
Zinc Plus (10% Zn & 4.9% combined sulfur)-296 ml

Fertilization .... : 240 lb/A 0-24-24-2.8, March 16
90 lb N/A 46-0-0, August 8

Water management .... :
- **Flush** .... : March 23, April 7, April 15
- **Flood** .... : April 29
- **Drain** .... : July 14
- **Ratoon flood** .... : August 10
- **Ratoon drain** .... : October 14

Pest management .... :
- **Herbicides** .... : 1.5 qt/A Glyphosate, March 2
1 qt/A Glyphosate, March 21
3 qt/A Propanil + .5 oz/A Permit + 1 oz/A Londax, April 6
2 qt/A Rice Beaux + 2 qt/A Propanil + 1 oz/A Londax + .75 oz/A Permit, April 19
19 oz/A Clincher, May 27
1.5 qt/A Basagran, August 9
- **Insecticides** .... : 0.137 lb ai/cwt Dermacor seed treatment
- **Fungicides** .... : 12 oz/A Quadris, June 18

Table 53. Evaluation of nitrogen source and commercially available nitrogen enhancers, urease inhibitors, and nitrification inhibitors (1.1). Rice Research Station.

Crop Name					Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice		Rice		Rice
Crop Variety					CL111	CL111	CL111	CL111	CL111	CL111	CL111	CL111		CL111		CL111
Description														Tissue		N Uptake
Part Rated												Abvgrd -		Abvgrd -		Total -
Rating Date						7/28/2011	7/28/2011	7/28/2011		11/1/2011		6/16/2011		6/16/2011		6/16/2011
Rating Type					50% HD	Height	Test Wt.	Yield	50% HD	Yield	Total Yield	Biomass	Biomass	N	C	N
Rating Unit					days	in	lb/bu	lb/A	days	lb/A	lb/A	g	lb/A	%	%	lb/A
Sample Size, Unit												3 ft				
Collection Basis, Unit												1 row				
Crop Stage Majority					Main	Main	Main	Main	Ratoon	Ratoon	MC+RC	50% HD	50% HD	50% HD	50% HD	50% HD
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage												
1	Agrotain	60	lb ai/A	PF	94 bc	33 bcd	47.2 ab	7159 cd	35 a	3134 a	10293 cd	171 abc	8190 abc	0.93 bc	39.35 a	77 bcd
2	Arborite	60	lb ai/A	PF	94 bc	34 abc	47.3 ab	7069 cd	35 a	3432 a	10501 cd	164 a-d	7869 a-d	0.98 bc	39.68 a	77 bcd
3	Urea	60	lb ai/A	PF	93 cd	31 cd	47.2 ab	5221 gh	35 a	3550 a	8772 e-h	124 def	5945 def	0.86 bc	39.45 a	51 d-g
4	AMS	60	lb ai/A	PF	93 cd	31 cd	47.4 ab	5947 efg	35 a	3476 a	9423 c-g	144 cde	6891 cde	0.90 bc	39.60 a	62 b-g
5	Super-U	60	lb ai/A	PF	94 cd	34 abc	47.2 ab	6781 cde	35 a	3523 a	10304 cd	164 a-d	7886 a-d	0.95 bc	39.50 a	75 b-e
6	Nutrisphere	60	lb ai/A	PF	93 cd	31 cd	47.6 ab	5007 gh	35 a	3675 a	8682 fgh	123 def	5905 def	0.83 bc	39.05 a	49 efg
7	N-Zone	60	lb ai/A	PF	93 cd	30 cd	47.3 ab	4982 gh	35 a	3508 a	8490 gh	127 def	6097 def	0.85 bc	38.98 a	52 d-g
8	Instinct	60	lb ai/A	PF	93 cde	32 cd	47.0 ab	5086 gh	35 a	3497 a	8583 fgh	129 def	6207 def	0.88 bc	38.90 a	54 d-g
9	coated experimental	60	lb ai/A	PF	93 cd	32 cd	47.3 ab	5623 fg	35 a	3614 a	9236 d-g	128 def	6144 def	0.86 bc	39.55 a	53 d-g
10	Stay-N	60	lb ai/A	PF	92 de	31 cd	47.5 ab	4991 gh	35 a	3580 a	8571 fgh	128 def	6117 def	0.81 bc	39.45 a	49 efg
11	Urea-AMS (33%)	60	lb ai/A	PF	93 cde	31 cd	47.5 ab	5139 gh	35 a	3645 a	8783 e-h	120 ef	5736 ef	0.83 bc	39.18 a	48 fg
12	Agrotain	120	lb ai/A	PF	96 a	38 a	46.9 ab	10000 a	35 a	3407 a	13407 a	193 ab	9251 ab	1.25 a	39.43 a	116 a
13	Arborite	120	lb ai/A	PF	96 a	37 ab	46.8 b	9654 a	35 a	3323 a	12977 a	200 a	9615 a	1.32 a	39.30 a	127 a
14	Urea	120	lb ai/A	PF	93 cd	33 cd	47.7 a	6400 def	35 a	3505 a	9904 cde	158 b-e	7577 b-e	0.88 bc	39.68 a	68 b-f
15	AMS	120	lb ai/A	PF	95 ab	35 abc	47.3 ab	8340 b	35 a	3581 a	11922 b	179 abc	8599 abc	0.98 bc	39.68 a	85 bc
16	Super-U	120	lb ai/A	PF	96 a	38 a	46.7 b	9880 a	35 a	3338 a	13218 a	203 a	9722 a	1.27 a	39.35 a	123 a
17	Nutrisphere	120	lb ai/A	PF	94 cd	32 cd	47.2 ab	6693 cde	35 a	3488 a	10181 cd	144 cde	6897 cde	0.88 bc	39.50 a	61 c-g
18	N-Zone	120	lb ai/A	PF	94 cd	34 abc	47.2 ab	6379 def	35 a	3643 a	10022 cd	147 cde	7067 cde	0.92 bc	39.63 a	66 b-f
19	Instinct	120	lb ai/A	PF	94 cd	34 abc	47.2 ab	6408 def	35 a	3332 a	9740 c-f	166 a-d	7943 a-d	0.93 bc	39.60 a	74 b-f
20	coated experimental	120	lb ai/A	PF	94 bc	33 cd	46.9 ab	7402 c	35 a	3302 a	10704 c	180 abc	8646 abc	1.00 b	39.35 a	87 b
21	Stay-N	120	lb ai/A	PF	93 cd	32 cd	47.5 ab	6492 c-f	35 a	3381 a	9873 cde	141 cde	6743 cde	0.94 bc	39.55 a	65 b-f
22	Urea-AMS (33%)	120	lb ai/A	PF	94 cd	33 bcd	47.4 ab	6903 cde	35 a	3203 a	10106 cd	155 b-e	7442 b-e	0.97 bc	39.50 a	73 b-f
23	0 lb N/A				91 e	29 d	47.4 ab	4339 h	35 a	3629 a	7967 h	99 f	4745 f	0.80 c	38.93 a	38 g
LSD (P=.05)					1	3	0.5	616	0	389	771	25	1177	0.11	0.63	15
Standard Deviation					1	2	0.3	436	0	275	545	17	832	0.07	0.44	11
CV					1	6	0.7	7	0	8	5	11	11	7.84	1.12	15

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls).

Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Evaluation of Clearfield Variety Response to Zinc Deficiency

Experiment number ....: 11-RR-01

Site and design ....:
- **Location/Cooperator** ....: Acadia Parish / R & M Farms
- **Tillage type** ....: Conventional
- **Experimental design** ....: Randomized complete block
- **Number of reps** ....: 4
- **Plot size** ....: 4.66 x 16 ft
- **Row width/rows per plot** ....: 8 in / 7

Soil type ....:
- **% organic matter** ....: NA
- **pH** ....: 7.1
- **Extractable nutrients** ppm ....: Ca-912; Cu-0.8; Mg-189; P-4; K-44; Na-63; S-5.8; Zn-0.2

Crop/Variety ....: Rice / Multiple
- **Planting method/date** ....: Drill seeded / March 18
- **Seeding rate/depth** ....: 33 seeds/ft^2 / .75 inch
- **Emergence date** ....: April 9
- **Harvest date** ....: August 10
- **Ratoon harvest date** ....: November 18

Seed treatment/cwt ....: Dithane (fungicide)-114 g
Release (gibberellic acid)-10 g
Zinc Plus (10% Zn & 4.9% combined sulfur)-296 ml

Fertilization ....: 250 lb/A 0-24-24, March 18
120 lb N/A 46-0-0, May 12
90 lb N/A 46-0-0, August 11

Water management ....:
- **Flush** ....: March 29 (rain), April 9
- **Flood** ....: May 13
- **Drain** ....: July 23
- **Ratoon flood** ....: August 15
- **Ratoon drain** ....: October 29

Pest management ....:
- **Herbicides** ....: 6 oz/A Newpath, April 8
6 oz/A Newpath, May 12
1.5 qt/A Basagran + 1 pt/A Crop oil, August 11
- **Insecticides** ....: 0.137 lb ai/cwt Dermacor seed treatment
- **Fungicides** ....: 21.5 oz/A Quilt Xcel, June 13

Table 54. Evaluation of Clearfield variety response to Zinc deficiency. Acadia Parish.

Crop Name			Rice	Rice	Rice	Rice		Rice	Rice	Rice
Description			Tissue							
Rating Date			7/8/2011		8/10/2011	8/10/2011			11/18/2011	
Rating Type			WP dry wt	50% HD	Height	Test Wt.	Yield	50% HD	Yield	Total Yield
Rating Unit			grams	days	in	lb/bu	lb/A	days	lb/A	lb/A
Sample Size, Unit			3 ft							
Collection Basis, Unit			1 row							
Crop Stage Majority			Main	Main	Main	Main	Main	Ratoon	Ratoon	MC+RC
Trt No.	Trt Name	Growth Stage								
1	CL111		267.0 a	102 a	36 ab	42.9 a	8179 a	45 d	3200 a	11379 a
	ST + 15 lb ai/A Zn	ATPLAN								
2	CL111		210.0 a	105 a	36 ab	42.3 ab	7629 a	45 d	2286 a	9915 a
	Seed Trt only (1 lb Zn)									
3	CL151		266.3 a	105 a	35 bc	42.1 ab	8862 a	49 bcd	3430 a	11972 a
	ST + 15 lb ai/A Zn	ATPLAN								
4	CL151		222.0 a	110 a	34 bc	41.1 b	6677 a	49 bcd	2682 a	9358 a
	Seed Trt only (1 lb Zn)									
5	CL152		237.7 a	109 a	35 bc	41.9 ab	7520 a	48 cd	3119 a	10638 a
	ST + 15 lb ai/A Zn	ATPLAN								
6	CL152		193.9 a	115 a	34 bc	41.1 b	6371 a	46 d	3335 a	9706 a
	Seed Trt only (1 lb Zn)									
7	CL162		264.9 a	102 a	37 ab	42.8 a	8454 a	45 d	3117 a	11571 a
	ST + 15 lb ai/A Zn	ATPLAN								
8	CL162		220.5 a	110 a	38 ab	41.7 ab	6330 a	47 cd	3639 a	9969 a
	Seed Trt only (1 lb Zn)									
9	CL142		263.0 a	107 a	40 a	42.1 ab	8018 a	53 a	2249 a	10268 a
	ST + 15 lb ai/A Zn	ATPLAN								
10	CL142		181.7 a	114 a	40 a	41.0 b	5810 a	52 ab	2946 a	8756 a
	Seed Trt only (1 lb Zn)									
11	CL181		256.9 a	109 a	32 c	42.2 ab	7229 a	51 abc	2103 a	9332 a
	ST + 15 lb ai/A Zn	ATPLAN								
12	CL181		169.6 a	114 a	31 c	41.5 ab	5505 a	50 abc	2150 a	7654 a
	Seed Trt only (1 lb Zn)									
13	CL261		228.7 a	103 a	34 bc	42.4 ab	7668 a	45 d	2405 a	10074 a
	ST + 15 lb ai/A Zn	ATPLAN								
14	CL261		196.3 a	107 a	36 ab	41.9 ab	6676 a	46 d	2729 a	9405 a
	Seed Trt only (1 lb Zn)									
LSD (P=.05)			77.6	8	3	0.9	1994	3	1277	2402
Standard Deviation			54.3	5	2	0.6	1395	2	894	1681
CV			23.9	5	5	1.6	19	4	32	17
Replicate F			20.371	24.1410	26.681	13.569	32.945	23.748	27.776	58.311
Replicate Prob(F)			0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
Treatment F			1.528	2.5690	8.056	3.460	2.098	9.441	1.317	1.862
Treatment Prob(F)			0.1508	0.0115	0.0001	0.0013	0.0373	0.0001	0.2459	0.0681

Continued.

Table 54. Continued.

Description			Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue
Rating Date - 7/8/2011															
Rating Type			Al	B	Ca	Co	Fe	Mg	Mn	Mo	P	K	Na	S	Zn
Rating Unit			ppm	ppm	%	ppm	ppm	%	ppm	ppm	%	%	ppm	%	ppm
Crop Stage Majority			Main	Main	Main	Main	Main	Main	Main	Main	Main	Main	Main	Main	Main
Trt No.	Trt Name	Growth Stage													
1	CL111 ST + 15 lb ai/A Zn	ATPLAN	322.5 a	5.615 a	0.255 a	2.728 a	249.0 a	0.218 a	768.5 a	1.923 ab	0.210 a	1.143 a	4038.8 a	0.118 a	32.10 ab
2	CL111 Seed Trt only (1 lb Zn)		252.0 a	5.808 a	0.260 a	3.658 a	200.8 a	0.258 a	879.3 a	2.078 ab	0.225 a	1.298 a	3885.5 a	0.123 a	20.65 bcd
3	CL151 ST + 15 lb ai/A Zn	ATPLAN	216.0 a	5.465 a	0.238 a	2.185 a	176.3 a	0.220 a	617.5 a	1.690 ab	0.205 a	1.090 a	4912.3 a	0.110 a	27.15 a-d
4	CL151 Seed Trt only (1 lb Zn)		1094.5 a	9.080 a	0.450 a	6.675 a	733.0 a	0.270 a	862.5 a	2.000 ab	0.243 a	1.270 a	4548.8 a	0.140 a	25.60 a-d
5	CL152 ST + 15 lb ai/A Zn	ATPLAN	221.0 a	5.035 a	0.220 a	2.438 a	181.0 a	0.243 a	647.3 a	1.900 ab	0.195 a	1.160 a	3764.0 a	0.105 a	28.30 a-d
6	CL152 Seed Trt only (1 lb Zn)		822.8 a	8.018 a	0.445 a	6.220 a	628.3 a	0.305 a	894.0 a	2.460 ab	0.218 a	1.313 a	3781.8 a	0.143 a	24.65 a-d
7	CL162 ST + 15 lb ai/A Zn	ATPLAN	175.5 a	5.090 a	0.208 a	2.400 a	160.8 a	0.210 a	648.0 a	1.485 b	0.193 a	1.100 a	2824.5 a	0.103 a	28.95 a-d
8	CL162 Seed Trt only (1 lb Zn)		513.3 a	7.658 a	0.398 a	4.950 a	337.8 a	0.303 a	915.8 a	2.240 ab	0.218 a	1.295 a	3922.0 a	0.143 a	19.45 d
9	CL142 ST + 15 lb ai/A Zn	ATPLAN	174.8 a	5.300 a	0.275 a	2.185 a	144.8 a	0.265 a	750.0 a	2.033 ab	0.208 a	1.165 a	3752.3 a	0.108 a	31.75 abc
10	CL142 Seed Trt only (1 lb Zn)		400.0 a	7.015 a	0.363 a	3.765 a	275.8 a	0.313 a	1010.5 a	2.615 a	0.228 a	1.278 a	5001.3 a	0.133 a	22.53 bcd
11	CL181 ST + 15 lb ai/A Zn	ATPLAN	334.5 a	5.750 a	0.303 a	2.860 a	273.3 a	0.280 a	992.8 a	2.305 ab	0.203 a	1.188 a	4505.3 a	0.128 a	35.88 a
12	CL181 Seed Trt only (1 lb Zn)		648.5 a	7.705 a	0.428 a	5.790 a	371.3 a	0.323 a	1041.5 a	2.235 ab	0.205 a	1.193 a	3265.3 a	0.138 a	20.18 cd
13	CL261 ST + 15 lb ai/A Zn	ATPLAN	321.8 a	5.130 a	0.255 a	2.638 a	239.8 a	0.188 a	902.3 a	1.615 ab	0.195 a	1.078 a	4406.8 a	0.113 a	26.40 a-d
14	CL261 Seed Trt only (1 lb Zn)		249.0 a	4.283 a	0.240 a	3.178 a	161.3 a	0.198 a	817.8 a	1.990 ab	0.180 a	1.128 a	3600.5 a	0.115 a	17.55 d
LSD (P=.05)			836.2	3.860	0.249	3.938	551.1	0.079	322.4	0.599	0.034	0.219	1366.1	0.040	7.05
Standard Deviation			585.2	2.701	0.174	2.756	385.6	0.055	225.6	0.419	0.024	0.154	955.9	0.028	4.93
CV			142.6	43.490	56.260	74.670	130.6	21.550	26.9	20.550	11.410	12.870	23.8	22.580	19.13
Replicate F			5.092	5.740	7.636	8.452	3.691	11.371	2.856	8.583	40.732	1.230	0.852	4.673	24.646
Replicate Prob(F)			0.0045	0.0024	0.0004	0.0002	0.0197	0.0001	0.0494	0.0002	0.0001	0.3118	0.4740	0.0070	0.0001
Treatment F			0.865	1.101	1.020	1.299	0.850	2.643	1.480	2.284	1.870	1.175	1.623	1.096	4.721
Treatment Prob(F)			0.5939	0.3867	0.4524	0.2547	0.6075	0.0095	0.1687	0.0240	0.0658	0.3324	0.1203	0.3904	0.0001

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls).

Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Evaluation of Rice Response to Potassium Rate

Experiment number	: 11-RR-02
Site and design	:
Location/Cooperator	: Acadia Parish / R & M Farms
Tillage type	: Conventional
Experimental design	: Randomized complete block
Number of reps	: 4
Plot size	: 4.66 x 16 ft
Row width/rows per plot	: 8 in / 7
Soil type	:
% organic matter	: NA
pH	: 7.1
Extractable nutrients ppm	: Ca-912; Cu-0.8; Mg-189; P-4; K-44; Na-63; S-5.8; Zn-0.2
Crop/Variety	: Rice / CL151
Planting method/date	: Drill seeded / March 18
Seeding rate/depth	: 33 seeds/ft^2 / .75 inch
Emergence date	: April 9
Harvest date	: August 10
Ratoon harvest date	: November 18
Seed treatment/cwt	: Dithane (fungicide)-114 g Release (gibberellic acid)-10 g Zinc Plus (10% Zn & 4.9% combined sulfur)-296 ml
Fertilization	: 130 lb/A 0-46-0, March 18 42.3 lb/A $ZnSO_4$, March 18 120 lb N/A 46-0-0, May 12 90 lb N/A 46-0-0, August 11
Water management	:
Flush	: March 29 (rain), April 9
Flood	: May 13
Drain	: July 23
Ratoon flood	: August 15
Ratoon drain	: October 29
Pest management	:
Herbicides	: 6 oz/A Newpath, April 8 6 oz/A Newpath, May 12 1.5 qt/A Basagran + 1 pt/A Crop oil, August 11
Insecticides	: 0.137 lb ai/cwt Dermacor seed treatment
Fungicides	: 21.5 oz/A Quilt Xcel, June 13

Table 55. Evaluation of rice response to Potassium rate. Acadia Parish.

Crop Name					Rice	Rice	Rice	Rice		Rice	Rice	Rice
Description					Tissue							
Rating Date					7/8/2011		8/10/2011	8/10/2011			11/18/2011	
Rating Type					WP dry wt	50% HD	Height	Test Wt.	Yield	50% HD	Yield	Total Yield
Rating Unit					grams	days	in	lb/bu	lb/A	days	lb/A	lb/A
Sample Size, Unit					3 ft							
Collection Basis, Unit					1 row							
Crop Stage Majority					Main	Main	Main	Main	Main	Ratoon	Ratoon	MC+RC
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage								
1	0 lb K_2O	0	lb ai/A	2-3 leaf	229.6 a	105 a	36 a	42.9 a	9299 a	50 a	2715 a	12014 a
2	30 lb K_2O	30	lb ai/A	2-3 leaf	252.0 a	105 a	35 a	43.0 a	9377 a	50 a	2427 a	11803 a
3	60 lb K_2O	60	lb ai/A	2-3 leaf	240.1 a	105 a	36 a	43.0 a	9403 a	50 a	1995 a	11411 a
4	90 lb K_2O	90	lb ai/A	2-3 leaf	236.3 a	105 a	35 a	42.7 a	9260 a	49 a	2684 a	11944 a
5	120 lb K_2O	120	lb ai/A	2-3 leaf	257.6 a	104 a	36 a	42.8 a	9214 a	50 a	3065 a	12279 a
6	150 lb K_2O	150	lb ai/A	2-3 leaf	253.4 a	104 a	35 a	42.8 a	9330 a	50 a	2329 a	11659 a
LSD (P=.05)					43.0	1	1	0.4	465	1	1234	1472
Standard Deviation					28.5	1	1	0.3	308	1	814	970
CV					11.6	1	3	0.6	3	1	32	8
Replicate F					5.598	30.205	20.556	5.142	98.449	201.800	14.191	39.158
Replicate Prob(F)					0.0088	0.0001	0.0001	0.0121	0.0001	0.0001	0.0002	0.0001
Treatment F					0.604	1.877	1.519	0.694	0.212	0.680	0.824	0.383
Treatment Prob(F)					0.6981	0.1584	0.2427	0.6362	0.9519	0.6454	0.5529	0.8521

Continued.

Table 55. Continued.

Crop Name	Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice
Description	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue
Part Rated	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -
Rating Date -7/28/2011													
Rating Type	Al	B	Ca	Co	Fe	Mg	Mn	Mo	P	K	Na	S	Zn
Rating Unit	ppm	ppm	%	ppm	ppm	%	ppm	ppm	%	%	ppm	%	ppm
Crop Stage Majority	Main-HD	Main-HD	Main-HD	Main-HD	Main-HD	Main-HD	Main-HD	Main-HD	Main-HD	Main-HD	Main-HD	Main-HD	Main-HD
Trt No. / Trt Name													
1 0 lb K_2O	157.3 a	4.77 a	0.203 a	2.078 a	137.5 a	0.215 a	561.5 a	1.682 a	0.205 a	0.950 d	4861.8 a	0.098 a	28.68 a
2 30 lb K_2O	197.3 a	4.72 a	0.228 a	2.318 a	148.3 a	0.225 a	624.8 a	1.473 a	0.193 a	1.020 d	4686.8 a	0.108 a	28.45 a
3 60 lb K_2O	514.3 a	5.30 a	0.270 a	2.390 a	337.8 a	0.230 a	880.0 a	1.488 a	0.203 a	1.138 c	4900.3 a	0.108 a	27.13 a
4 90 lb K_2O	177.3 a	4.84 a	0.238 a	2.180 a	147.8 a	0.213 a	665.3 a	1.241 a	0.198 a	1.220 bc	3907.3 a	0.105 a	25.13 a
5 120 lb K_2O	280.3 a	4.27 a	0.238 a	2.160 a	194.5 a	0.213 a	776.0 a	1.226 a	0.198 a	1.308 ab	3541.5 a	0.105 a	24.83 a
6 150 lb K_2O	247.5 a	5.31 a	0.233 a	2.278 a	182.0 a	0.205 a	757.8 a	1.708 a	0.193 a	1.363 a	3723.5 a	0.098 a	27.65 a
LSD (P=.05)	430.0	1.33	0.046	0.427	250.4	0.027	310.1	0.426	0.037	0.096	1700.5	0.013	4.39
Standard Deviation	285.4	0.87	0.030	0.281	166.1	0.018	205.8	0.267	0.024	0.063	1128.5	0.008	2.91
CV	108.8	17.97	12.880	12.600	86.9	8.270	29.0	18.140	12.330	5.440	26.4	8.160	10.79
Replicate F	2.342	1.543	0.686	19.485	3.057	0.450	3.064	10.951	24.047	13.850	0.944	2.032	10.497
Replicate Prob(F)	0.1144	0.2472	0.5743	0.0001	0.0608	0.7211	0.0604	0.0023	0.0001	0.0001	0.4441	0.1527	0.0006
Treatment F	0.850	0.821	2.064	0.668	0.817	1.049	1.263	2.409	0.175	25.903	1.182	1.219	1.283
Treatment Prob(F)	0.5358	0.5549	0.1272	0.6542	0.5561	0.4259	0.3301	0.1190	0.9679	0.0001	0.3634	0.3478	0.3222

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls).

Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Evaluation of Rice Response to Phosphorus Rate

Experiment number ....: 11-RR-03

Site and design ....:
- **Location/Cooperator** ....: Acadia Parish / R & M Farms
- **Tillage type** ....: Conventional
- **Experimental design** ....: Randomized complete block
- **Number of reps** ....: 4
- **Plot size** ....: 4.66 x 16 ft
- **Row width/rows per plot** ....: 8 in / 7

Soil type ....:
- **% organic matter** ....: NA
- **pH** ....: 7.1
- **Extractable nutrients** ppm ....: Ca-912; Cu-0.8; Mg-189; P-4; K-44; Na-63; S-5.8; Zn-0.2

Crop/Variety ....: Rice / CL151
- **Planting method/date** ....: Drill seeded / March 18
- **Seeding rate/depth** ....: 33 seeds/ft^2 / .75 inch
- **Emergence date** ....: April 9
- **Harvest date** ....: August 10
- **Ratoon harvest date** ....: November 18

Seed treatment/cwt ....: Dithane (fungicide)-114 g
Release (gibberellic acid)-10 g
Zinc Plus (10% Zn & 4.9% combined sulfur)-296 ml

Fertilization ....: 100 lb/A 0-0-60, March 18
42.3 lb/A $ZnSO_4$, March 18
120 lb N/A 46-0-0, May 12
90 lb N/A 46-0-0, August 11

Water management ....:
- **Flush** ....: March 29 (rain), April 9
- **Flood** ....: May 13
- **Drain** ....: July 23
- **Ratoon flood** ....: August 15
- **Ratoon drain** ....: October 29

Pest management ....:
- **Herbicides** ....: 6 oz/A Newpath, April 8
6 oz/A Newpath, May 12
1.5 qt/A Basagran + 1 pt/A Crop oil, August 11
- **Insecticides** ....: 0.137 lb ai/cwt Dermacor seed treatment
- **Fungicides** ....: 21.5 oz/A Quilt Xcel, June 13

Table 56. Evaluation of rice response to Phosphorus rate. Acadia Parish.

Crop Name					Rice	Rice	Rice	Rice		Rice	Rice	Rice
Description					Tissue							
Rating Date					7/8/2011		8/10/2011	8/10/2011			11/18/2011	
Rating Type					WP dry wt	50% HD	Height	Test Wt.	Yield	50% HD	Yield	Total Yield
Rating Unit					grams	days	in	lb/bu	lb/A	days	lb/A	lb/A
Sample Size, Unit					3 ft							
Collection Basis, Unit					1 row							
Crop Stage Majority					Main	Main	Main	Main	Main	Ratoon	Ratoon	MC+RC
Crop Stage Scale					50%HD							
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage								
1	0 lb P_2O_5	0	lb ai/A	2-3 leaf	138.5 a	115 a	34.3 a	42.1 b	6191 b	51 ab	626 bc	6817 c
2	30 lb P_2O_5	30	lb ai/A	2-3 leaf	209.2 a	107 b	35.0 a	42.7 a	8308 a	52 a	235 c	8852 bc
3	60 lb P_2O_5	60	lb ai/A	2-3 leaf	233.8 a	105 b	34.3 a	43.1 a	8991 a	51 ab	1897 abc	10889 ab
4	90 lb P_2O_5	90	lb ai/A	2-3 leaf	209.4 a	104 b	35.0 a	42.9 a	9041 a	49 b	3167 a	12208 a
5	120 lb P_2O_5	120	lb ai/A	2-3 leaf	248.5 a	104 b	34.8 a	43.0 a	9451 a	49 b	2772 a	12223 a
6	150 lb P_2O_5	150	lb ai/A	2-3 leaf	225.2 a	104 b	35.8 a	43.0 a	9448 a	49 b	2196 ab	11644 a
LSD (P=.05)					74.5	6	1.9	0.6	1644	2	1385	2270
Standard Deviation					49.4	4	1.3	0.4	1091	1	913	1496
CV					23.5	4	3.6	1.0	13	3	50	14
Replicate F					0.980	7.006	15.208	2.676	15.725	9.337	1.242	11.231
Replicate Prob(F)					0.4282	0.0036	0.0001	0.0846	0.0001	0.0010	0.3319	0.0005
Treatment F					2.420	4.896	0.792	3.301	5.160	4.598	6.533	8.432
Treatment Prob(F)					0.0846	0.0074	0.5720	0.0330	0.0060	0.0096	0.0025	0.0007

Continued.

Table 56. Continued.

Crop Name	Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice
Description	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue
Part Rated	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -
Rating Date - 7/8/2011													
Rating Type	Al	B	Ca	Co	Fe	Mg	Mn	Mo	P	K	Na	S	Zn
Rating Unit	ppm	ppm	%	ppm	ppm	%	ppm	ppm	%	%	ppm	%	ppm
Crop Stage Majority	Main	Main	Main	Main	Main	Main	Main	Main	Main	Main	Main	Main	Main
Crop Stage Scale	50%HD	50%HD	50%HD	50%HD	50%HD	50%HD	50%HD	50%HD	50%HD	50%HD	50%HD	50%HD	50%HD
Trt Trt													
No. Name													
1 0 lb P_2O_5	753.5 a	8.340 a	0.478 a	3.450 a	459.5 a	0.223 a	1218.5 a	2.693 a	0.130 b	0.965 a	4215.5 a	0.140 a	32.03 a
2 30 lb P_2O_5	190.5 a	4.925 ab	0.283 a	2.368 a	160.5 a	0.220 a	723.0 a	2.418 ab	0.135 b	1.095 a	4877.5 a	0.110 a	28.30 ab
3 60 lb P_2O_5	214.8 a	3.445 b	0.265 a	2.418 a	193.5 a	0.230 a	746.3 a	2.313 ab	0.188 a	1.000 a	5109.8 a	0.108 a	29.13 ab
4 90 lb P_2O_5	228.8 a	2.840 b	0.253 a	2.273 a	189.8 a	0.233 a	712.0 a	1.510 b	0.203 a	1.043 a	4778.8 a	0.105 a	26.30 ab
5 120 lb P_2O_5	209.8 a	3.030 b	0.250 a	2.638 a	173.0 a	0.240 a	710.5 a	1.913 ab	0.215 a	1.003 a	4945.0 a	0.105 a	21.30 b
6 150 lb P_2O_5	391.8 a	3.935 b	0.245 a	2.543 a	316.3 a	0.240 a	742.3 a	1.745 b	0.223 a	1.053 a	4190.5 a	0.110 a	27.45 ab
LSD (P=.05)	714.5	3.509	0.262	0.986	371.4	0.023	632.3	0.640	0.033	0.254	1762.2	0.029	5.49
Standard Deviation	474.2	2.329	0.174	0.654	246.5	0.015	419.6	0.425	0.022	0.168	1169.5	0.020	3.64
CV	143.0	52.700	58.750	25.020	99.1	6.680	51.9	20.230	12.040	16.400	25.0	17.260	13.29
Replicate F	0.675	1.555	1.414	2.901	0.513	2.500	0.284	1.267	8.605	1.733	1.781	1.737	0.457
Replicate Prob(F)	0.5805	0.2416	0.2778	0.0695	0.6793	0.0990	0.8363	0.3213	0.0015	0.2032	0.1939	0.2022	0.7162
Treatment F	0.856	3.132	1.081	1.722	0.909	1.206	0.920	4.467	13.464	0.302	0.444	1.907	3.832
Treatment Prob(F)	0.5321	0.0392	0.4101	0.1903	0.5010	0.3533	0.4945	0.0108	0.0001	0.9041	0.8111	0.1528	0.0195

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls).

Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Evaluation of Zinc Rate

Experiment number	11-RR-04
Site and design	
Location/Cooperator	Acadia Parish / R & M Farms
Tillage type	Conventional
Experimental design	Randomized complete block
Number of reps	4
Plot size	4.66 x 16 ft
Row width/rows per plot	8 in / 7
Soil type	
% organic matter	NA
pH	7.1
Extractable nutrients ppm	Ca-912; Cu-0.8; Mg-189; P-4; K-44; Na-63; S-5.8; Zn-0.2
Crop/Variety	Rice / CL151
Planting method/date	Drill seeded / March 18
Seeding rate/depth	33 seeds/ft^2 / .75 inch
Emergence date	April 9
Harvest date	August 10
Ratoon harvest date	November 18
Seed treatment/cwt	Dithane (fungicide)-114 g Release (gibberellic acid)-10 g Zinc Plus (10% Zn & 4.9% combined sulfur)-296 ml
Fertilization	250 lb/A 0-24-24, March 18 120 lb N/A 46-0-0, May 12 90 lb N/A 46-0-0, August 11
Water management	
Flush	March 29 (rain), April 9
Flood	May 13
Drain	July 23
Ratoon flood	August 15
Ratoon drain	October 29
Pest management	
Herbicides	6 oz/A Newpath, April 8 6 oz/A Newpath, May 12 1.5 qt/A Basagran + 1 pt/A Crop oil, August 11
Insecticides	0.137 lb ai/cwt Dermacor seed treatment
Fungicides	21.5 oz/A Quilt Xcel, June 13

Table 57. Evaluation of Zinc rate. Acadia Parish.

Crop Name					Rice	Rice	Rice	Rice		Rice	Rice	Rice	Rice	Rice
Crop Variety					CL151	CL151	CL151	CL151		CL151	CL151	CL151	CL151	CL151
Description					Tissue								Tissue	Biomass
Part Rated														Abvgrd -
Rating Date - 7/8/2011					7/8/2011		8/10/2011	8/10/2011			11/18/2011		5/25/2011	5/25/2011
Rating Type					WP dry wt	50% HD	Height	Test Wt.	Yield	50% HD	Yield	Total Yield	WP dry wt	WP dry wt
Rating Unit					grams	days	in	lb/bu	lb/A	days	lb/A	lb/A	grams	lb/A
Sample Size, Unit					3 ft								3 ft	
Collection Basis, Unit					1 row								1 row	
Crop Stage Majority					Main	Main	Main	Main	Main	Ratoon	Ratoon	MC+RC	Main	Main
Crop Stage Scale					50%HD								Midtill	Midtill
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage										
1	0 Zn				128.0 b	115 a	35 a	41.7 a	6830 a	50 a	1710 a	8540 a	12.1 b	579 b
2	5 lb Zn/A	5	lb ai/A	ATPLAN	198.4 ab	105 a	36 a	42.4 a	8695 a	50 a	1285 a	9980 a	26.6 a	1274 a
3	7.5 lb Zn/A	7.5	lb ai/A	ATPLAN	208.0 ab	105 a	35 a	42.9 a	9370 a	50 a	1373 a	10743 a	23.6 a	1130 a
4	10 lb Zn/A	10	lb ai/A	ATPLAN	234.6 a	105 a	36 a	42.7 a	9406 a	50 a	1610 a	11016 a	25.7 a	1232 a
5	15 lb Zn/A	15	lb ai/A	ATPLAN	211.3 ab	105 a	35 a	43.2 a	9148 a	52 a	1053 a	10201 a	36.4 a	1748 a
6	20 lb Zn/A	20	lb ai/A	ATPLAN	240.1 a	105 a	36 a	43.3 a	9446 a	51 a	1463 a	10908 a	29.1 a	1394 a
LSD (P=.05)					68.2	7	2	1.2	1963	2	471	2142	10.2	487
Standard Deviation					45.2	5	1	0.8	1303	1	312	1421	6.7	323
CV					22.2	4	3	1.8	15	2	22	14	26.4	26
Replicate F					1.401	3.751	20.055	1.040	10.589	13.349	29.617	17.425	10.749	10.749
Replicate Prob(F)					0.2812	0.0342	0.0001	0.4035	0.0005	0.0002	0.0001	0.0001	0.0005	0.0005
Treatment F					3.173	3.178	1.286	2.245	2.413	1.411	2.267	1.688	5.600	5.600
Treatment Prob(F)					0.0376	0.0374	0.3211	0.1032	0.0853	0.2798	0.1007	0.1982	0.0042	0.0042

Continued.

Table 57. Continued.

Crop Name				Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice
Crop Variety				CL151	CL151	CL151	CL151	CL151	CL151	CL151	CL151	CL151	CL151	CL151	CL151	CL151
Description				Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue
Part Rated				Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -
Rating Date - 5/25/2011																
Rating Type				Al	B	Ca	Co	Fe	Mg	Mn	Mo	P	K	Na	S	Zn
Rating Unit				ppm	ppm	%	ppm	ppm	%	ppm	ppm	%	%	ppm	%	ppm
Crop Stage Majority				Main-MT	Main-MT	Main-MT	Main-MT	Main-MT	Main-MT	Main-MT	Main-MT	Main-MT	Main-MT	Main-MT	Main-MT	Main-MT
Trt No.	Trt Name	Rate	Rate Unit													
1	0 Zn			1161.0 b	7.045 a	0.350 a	12.070 a	620.5 b	0.300 a	488.0 a	2.483 a	0.248 a	1.768 a	2828.0 a	0.300 a	21.83 a
2	5 lb Zn/A	5	lb ai/A	954.3 b	6.430 a	0.305 b	8.793 b	565.8 b	0.220 b	529.5 a	3.155 a	0.203 ab	1.905 a	4095.3 a	0.275 a	21.85 a
3	7.5 lb Zn/A	7.5	lb ai/A	1209.0 b	6.598 a	0.295 b	8.855 b	687.8 b	0.225 b	568.3 a	3.228 a	0.215 ab	1.933 a	4340.8 a	0.278 a	22.38 a
4	10 lb Zn/A	10	lb ai/A	1052.5 b	6.235 a	0.285 b	8.838 b	615.0 b	0.195 b	487.0 a	2.673 a	0.210 ab	2.253 a	3737.8 a	0.288 a	29.40 a
5	15 lb Zn/A	15	lb ai/A	2545.8 a	5.908 a	0.285 b	8.090 b	2642.8 a	0.200 b	595.0 a	2.500 a	0.188 b	2.020 a	4191.0 a	0.255 a	37.68 a
6	20 lb Zn/A	20	lb ai/A	975.8 b	5.653 a	0.285 b	7.898 b	716.8 b	0.195 b	512.3 a	2.148 a	0.190 b	2.105 a	3774.3 a	0.288 a	46.08 a
LSD (P=.05)				908.50	2.6058	0.0400	0.9444	957.17	0.0426	77.69	0.9883	0.0340	0.4150	969.89	0.0291	19.137
Standard Deviation				602.92	1.7293	0.0265	0.6267	635.22	0.0283	51.56	0.6559	0.0226	0.2754	643.66	0.0193	12.700
CV				45.8	27.4	8.82	6.89	65.17	12.72	9.73	24.32	10.82	13.79	16.82	6.88	42.52
Replicate F				1.002	1.163	7.749	23.450	1.179	4.944	32.121	2.419	2.537	0.772	0.817	9.900	0.936
Replicate Prob(F)				0.4191	0.3564	0.0023	0.0001	0.3509	0.0139	0.0001	0.1066	0.0959	0.5277	0.5044	0.0008	0.4476
Treatment F				4.102	0.331	3.664	23.442	6.649	8.026	2.894	1.634	3.742	1.506	2.852	2.512	2.524
Treatment Prob(F)				0.0151	0.8864	0.0229	0.0001	0.0019	0.0007	0.0504	0.2114	0.0213	0.2464	0.0527	0.0764	0.0754

Continued.

Table 57. Continued.

Crop Name				Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice
Crop Variety				CL151	CL151	CL151	CL151	CL151	CL151	CL151	CL151	CL151	CL151	CL151	CL151	CL151
Description				Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue	Tissue
Part Rated				Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -	Abvgrd -
Rating Date - 7/8/2011																
Rating Type				Al	B	Ca	Co	Fe	Mg	Mn	Mo	P	K	Na	S	Zn
Rating Unit				ppm	ppm	%	ppm	ppm	%	ppm	ppm	%	%	ppm	%	ppm
Crop Stage Majority				Main-HD	Main-HD	Main-HD	Main-HD	Main-HD	Main-HD	Main-HD	Main-HD	Main-HD	Main-HD	Main-HD	Main-HD	Main-HD
Trt No.	Trt Name	Rate	Rate Unit													
1	0 Zn			1530.8 a	15.320 a	1.060 a	6.288 a	726.5 a	0.365 a	1448.8 a	2.338 a	0.218 a	1.285 a	4350.5 a	0.158 a	26.06 a
2	5 lb Zn/A	5	lb ai/A	122.0 a	4.953 a	0.260 a	2.405 a	116.5 a	0.240 b	647.3 b	2.505 a	0.173 b	1.075 ab	4181.3 a	0.110 a	20.83 a
3	7.5 lb Zn/A	7.5	lb ai/A	130.3 a	4.438 a	0.263 a	2.398 a	119.0 a	0.243 b	667.5 b	2.448 a	0.188 ab	1.083 ab	4158.0 a	0.108 a	22.28 a
4	10 lb Zn/A	10	lb ai/A	193.3 a	4.273 a	0.265 a	2.350 a	155.8 a	0.228 b	670.3 b	1.990 a	0.188 ab	1.028 b	4916.0 a	0.108 a	21.50 a
5	15 lb Zn/A	15	lb ai/A	219.3 a	4.280 a	0.263 a	1.993 a	171.5 a	0.230 b	778.3 b	2.098 a	0.170 b	0.985 b	5734.3 a	0.095 a	23.23 a
6	20 lb Zn/A	20	lb ai/A	190.3 a	8.658 a	0.255 a	2.188 a	157.5 a	0.233 b	632.0 b	1.845 a	0.200 ab	1.035 b	4429.0 a	0.103 a	26.23 a
LSD (P=.05)				1614.4	8.093	0.968	3.409	685.5	0.088	491.3	0.581	0.028	0.175	2204.7	0.045	6.15
Standard Deviation				1071.4	5.371	0.642	2.263	454.9	0.059	326.0	0.385	0.019	0.116	1463.2	0.030	4.05
CV				269.4	76.870	162.970	77.050	188.7	22.820	40.4	17.490	9.800	10.760	31.6	26.170	17.36
Replicate F				1.064	0.816	1.120	0.904	0.998	0.976	0.359	1.146	14.514	2.369	1.180	0.227	2.510
Replicate Prob(F)				0.3937	0.5047	0.3722	0.4623	0.4206	0.4302	0.7832	0.3626	0.0001	0.1116	0.3504	0.8759	0.1011
Treatment F				1.079	2.706	1.031	2.125	1.102	3.358	3.815	1.905	3.660	3.300	0.689	2.258	1.295
Treatment Prob(F)				0.4109	0.0617	0.4345	0.1185	0.3997	0.0311	0.0198	0.1532	0.0230	0.0330	0.6393	0.1018	0.3207

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls).

Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Evaluation of Potassium Timing on CL151 Main and Ratoon Rice Yields and Agronomics

Experiment number ....: 11-RR-33

Site and design ....:
- **Location/Cooperator** ....: Acadia Parish / R & M Farms
- **Tillage type**..................................: Conventional
- **Experimental design**...................: Randomized complete block
- **Number of reps** ....: 4
- **Plot size**..: 4.66 x 16 ft
- **Row width/rows per plot**............: 8 in / 7

Soil type ....:
- **% organic matter**........................: NA
- **pH**...: 7.1
- **Extractable nutrients** ppm ....: Ca-912; Cu-0.8; Mg-189; P-4; K-44; Na-63; S-5.8; Zn-0.2

Crop/Variety ....: Rice / CL151
- **Planting method/date** ....: Drill seeded / March 18
- **Seeding rate/depth**......................: 33 seeds/ft^2 / .75 inch
- **Emergence date**...........................: April 9
- **Harvest date** ....: August 10
- **Ratoon harvest date**....................: November 18

Seed treatment/cwt ....: Dithane (fungicide)-114 g
Release (gibberellic acid)-10 g
Zinc Plus (10% Zn & 4.9% combined sulfur)-296 ml

Fertilization..: 130 lb/A 0-46-0, March 18
42.3 lb/A $ZnSO_4$, March 18
120 lb N/A 46-0-0, May 12
90 lb N/A 46-0-0, August 11

Water management ....:
- **Flush** ....: March 29 (rain), April 9
- **Flood** ....: May 13
- **Drain**..: July 23
- **Ratoon flood**................................: August 15
- **Ratoon drain** ....: October 29

Pest management ....:
- **Herbicides**....................................: 6 oz/A Newpath, April 8
  6 oz/A Newpath, May 12
  1.5 qt/A Basagran + 1 pt/A Crop oil, August 11
- **Insecticides** ....: 0.137 lb ai/cwt Dermacor seed treatment
- **Fungicides**....................................: 21.5 oz/A Quilt Xcel, June 13

Table 58. Evaluation of Potassium timing on CL151 main and ratoon rice yields and agronomics (1.3). Acadia Parish.

Crop Name					Rice	Rice	Rice		Rice	Rice	Rice
Rating Date						8/10/2011	8/10/2011			11/18/2011	
Rating Type					50% HD	Height	Test Wt.	Yield	50% HD	Yield	Total Yield
Rating Unit					days	in	lb/bu	lb/A	days	lb/A	lb/A
Crop Stage Majority					Main	Main	Main	Main	Ratoon	Ratoon	MC+RC
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage							
1	Untreated Check	0	lb ai/A		106 a	35 a	43.4 a	8324 ab	53 a	1139 a	9463 ab
2	Muriate of Potash 0-0-60	120	lb ai/A	ATPLAN	105 a	35 a	43.2 a	9169 ab	53 a	1502 a	10671 a
3	Muriate of Potash 0-0-60	120	lb ai/A	PREFLD	106 a	36 a	43.1 a	8903 ab	53 a	1384 a	10286 ab
4	Muriate of Potash 0-0-60	120	lb ai/A	MIDTILL	105 a	35 a	43.1 a	8598 ab	53 a	1342 a	9940 ab
5	Muriate of Potash 0-0-60	120	lb ai/A	GR	105 a	34 a	43.0 a	8733 ab	53 a	1432 a	10165 ab
6	Muriate of Potash 0-0-60	120	lb ai/A	50%HD	106 a	34 a	43.2 a	8463 ab	52 a	896 a	9359 ab
7	Muriate of Potash 0-0-60	120	lb ai/A	ATHARV	107 a	34 a	43.2 a	7999 b	55 a	684 a	8682 b
8	Muriate of Potash 0-0-60	60	lb ai/A	ATPLAN	105 a	34 a	43.2 a	9154 ab	53 a	1130 a	10284 ab
	Muriate of Potash 0-0-60	60	lb ai/A	GR							
9	Muriate of Potash 0-0-60	60	lb ai/A	ATPLAN	105 a	35 a	43.5 a	9318 a	53 a	1179 a	10497 a
	Muriate of Potash 0-0-60	60	lb ai/A	ATHARV							
LSD (P=.05)					2	1	0.4	734	2.2	596.3	1101.8
Standard Deviation					1	1	0.3	503	1.5	408.6	754.9
CV					1	2	0.7	6	2.81	34.4	7.6
Replicate F					59.604	18.375	10.145	55.045	32.971	34.607	64.257
Replicate Prob(F)					0.0001	0.0001	0.0002	0.0001	0.0001	0.0001	0.0001
Treatment F					1.120	1.792	0.880	3.036	1.218	1.696	2.878
Treatment Prob(F)					0.3853	0.1285	0.5469	0.0166	0.3309	0.1510	0.0213

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls).

Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Evaluation of Phosphorus Timing on CL151 Main and Ratoon Rice Yields and Agronomics

Experiment number ....: 11-RR-34

Site and design ....:
- **Location/Cooperator** ....: Acadia Parish / R & M Farms
- **Tillage type**..................................: Conventional
- **Experimental design**...................: Randomized complete block
- **Number of reps** ....: 4
- **Plot size**..: 4.66 x 16 ft
- **Row width/rows per plot**............: 8 in / 7

Soil type ....:
- **% organic matter**........................: NA
- **pH**...: 7.1
- **Extractable nutrients** ppm ....: Ca-912; Cu-0.8; Mg-189; P-4; K-44; Na-63; S-5.8; Zn-0.2

Crop/Variety ....: Rice / CL151
- **Planting method/date** ....: Drill seeded / March 18
- **Seeding rate/depth**......................: 33 seeds/ft^2 / .75 inch
- **Emergence date**...........................: April 9
- **Harvest date** ....: August 10
- **Ratoon harvest date**....................: November 18

Seed treatment/cwt ....: Dithane (fungicide)-114 g
Release (gibberellic acid)-10 g
Zinc Plus (10% Zn & 4.9% combined sulfur)-296 ml

Fertilization..: 100 lb/A 0-0-60, March 18
42.3 lb/A $ZnSO_4$, March 18
120 lb N/A 46-0-0, May 12
90 lb N/A 46-0-0, August 11

Water management ....:
- **Flush** ....: March 29 (rain), April 9
- **Flood**..: May 13
- **Drain**..: July 23
- **Ratoon flood**................................: August 15
- **Ratoon drain** ....: October 29

Pest management ....:
- **Herbicides**...................................: 6 oz/A Newpath, April 8
6 oz/A Newpath, May 12
1.5 qt/A Basagran + 1 pt/A Crop oil, August 11
- **Insecticides** ....: 0.137 lb ai/cwt Dermacor seed treatment
- **Fungicides**...................................: 21.5 oz/A Quilt Xcel, June 13

Table 59. Evaluation of Phosphorus timing on CL151 main and ratoon rice yields and agronomics (1.2). Acadia Parish.

Crop Name					Rice	Rice	Rice		Rice	Rice	Rice
Rating Date						8/10/2011	8/10/2011			11/18/2011	
Rating Type					50% HD	Height	Test Wt.	Yield	50% HD	Yield	Total Yield
Rating Unit					days	in	lb/bu	lb/A	days	lb/A	lb/A
Crop Stage Majority					Main	Main	Main	Main	Ratoon	Ratoon	MC+RC
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage							
1	Untreated Check	0	lb ai/A		112 ab	34 a	31.5 a	5293 b	53 a	925 a	6218 c
2	TSP	120	lb ai/A	ATPLAN	105 b	35 a	43.4 a	9137 a	51 a	2531 a	11668 a
3	TSP	120	lb ai/A	PREFLD	106 b	35 a	42.6 a	8936 a	51 a	2026 a	10963 ab
4	TSP	120	lb ai/A	MIDTILL	109 ab	36 a	41.6 a	6743 ab	51 a	1666 a	8409 abc
5	TSP	120	lb ai/A	GR	110 ab	36 a	41.8 a	6690 ab	49 a	1136 a	7826 bc
6	TSP	120	lb ai/A	50%HD	119 a	34 a	31.6 a	5306 b	46 a	1616 a	6923 c
7	TSP	120	lb ai/A	ATHARV	111 ab	33 a	30.9 a	5210 b	52 a	1522 a	6732 c
8	TSP	60	lb ai/A	ATPLAN	106 b	36 a	38.9 a	8231 ab	50 a	1637 a	9868 abc
	TSP	60	lb ai/A	GR							
9	TSP	60	lb ai/A	ATPLAN	106 b	36 a	44.5 a	9122 a	52 a	2471 a	11592 a
	TSP	60	lb ai/A	ATHARV							
LSD (P=.05)					8	4	15.0	2215	4	1023	2470
Standard Deviation					5	2	10.2	1511	3	698	1684
CV					5	7	26.5	21	6	40	19
Replicate F					8.401	19.978	6.091	31.068	4.037	8.324	37.778
Replicate Prob(F)					0.0007	0.0001	0.0035	0.0001	0.0198	0.0007	0.0001
Treatment F					2.853	0.781	1.217	5.077	1.798	2.413	6.575
Treatment Prob(F)					0.0245	0.6239	0.3349	0.0011	0.1318	0.0487	0.0002

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls).

Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

CULTURAL MANAGEMENT RESEARCH

D.L. Harrell, J.P. Leonards, R.P. Regan, and J.S. Fluitt

Cultural Management Research

A study was established in 2011 to evaluate the combined effects of stubble management practices and ratoon fungicide applications on ratoon rice grain yield and disease pressure. Two varieties, CL131 and Catahoula, were evaluated in the trial. Stubble management techniques included harvesting at a normal harvest height (approximately 16 inches), harvesting at a low harvest height (approximately 8 inches), post-harvest mowing with a Bush Hog to approximately 2 inches, and harvesting at a normal height followed by rolling the stubble. Two fungicide treatments included applications of QuiltXL at a rate of either 0 or 21 oz/A approximately 4 weeks after main crop harvest. Results of the main effects of stubble height, fungicide application, and variety are presented in Table 1a. Two- and the three-way interactions of the main effects are presented in Tables 1b and 1c, respectively. Mean grain yields pooled across varieties for the main crop were not significantly different prior stubble management and ranged between 8,249 to 8,458 lb/A. A significant yield difference in the main crop was observed for variety. Mean yields for Catahoula and CL131 were 7,719 and 8,996 lb/A, respectively. Foliar ratings for cercospora and bacterial panicle blight were taken approximately 2 weeks prior to ratoon harvest. Two- and three-way interactions of the main effects for foliar disease ratings were not observed. Fungicide application did have a significant effect (P = 0.03) on foliar disease ratings for cercosopra but not bacterial panicle blight. When a fungicide was applied, cercospora ratings decreased from 2.6 to 2.1. Stubble management had a significant effect on both cercospora (P = 0.0001) and bacterial panicle blight (P = 0.04) when the disease ratings were pooled across variety and fungicide application. Cercospora foliar disease ratings were reduced for rolling (1.6), bush hogging (1.8), and low harvest height (1.9) compared with normal harvesting practices (4.1). Bacterial panicle blight foliar disease ratings were significant or only slightly reduced by rolling (2.7) and bush hogging (2.5) compared with normal harvest practices (3.0). Low harvesting was not significant for reducing bacterial panicle blight. Ratoon grain yield was not affected by the fungicide application when pooled across varieties and stubble management practices. All stubble management provided a yield advantage over normal harvesting (P = 0.0001) when pooled across variety and fungicide application. Normal harvest height ratoon yield was 2,736 lb/A while rolling, bush hogging, and low harvest height yielded 3,101, 3,541, and 3,918 lb/A, respectively.

During the 2011 season, several trials focused on determining the optimum seeding rates and target plant populations needed to achieve maximum yields in drill-seeded systems for all currently available Clearfield rice varieties. Clearfield varieties evaluated included CL152, CL162, CL111, CL131, CL151, CL142, CL181, and CL261. Treatments include nine seeding rates (5, 10, 15, 20, 25, 30, 35, 40, and 45 seed ft^2; or approximately 10 to 110 lb seed/A, depending on variety) and two tillage systems, conventional tillage and a fall-stale seedbed. All varieties received a standard rate of 150 lb N/A preflood as urea.

The results of the CL152 trial are presented in Table 2. Plant population at the 2- to 3-leaf development stage increased linearly from 3 to 21 plants/ft^2 from the lowest to highest seeding rate when using conventional tillage and from 2 to 18 plants/ft^2 when using a stale seedbed. Yield was statistically increased by seeding rate in conventional tillage from 5 to 10 seed/ft^2 while yield in a stale seedbed increased from 5 to 10 seed/ft^2 and again from the 10 to 20 seed/ft^2. Ninety-five percent of the relative grain yield was achieved in the conventional tillage system at a plant population of 12 plants/ft^2 and a seeding rate of 25 seed/ft^2. Ninety-five percent of the relative grain yield was achieved in the stale seedbed tillage system at a plant population of 9 plants/ft^2 and a seeding rate of 20 seed/ft^2.

The results of the CL162 trial are presented in Table 3. Plant population at the 2- to 3-leaf development stage increased linearly from 3 to 31 plants/ft^2 from the lowest to highest seeding rate when using conventional tillage and from 3 to 24 plants/ft^2 when using a stale seedbed. Ninety-five percent of the relative grain yield was achieved in the conventional tillage system at a plant population of 15 plants/ft^2 and a seeding rate of 20 seed/ft^2. Ninety-five percent of the relative grain yield was achieved in the stale seedbed tillage system at a plant population of 18 plants/ft^2 and a seeding rate of 30 seed/ft^2.

The results of the CL111 trial are presented in Table 4. Plant population at the 2- to 3-leaf development stage increased linearly from 3 to 28 plants/ft^2 from the lowest to highest seeding rate when using either conventional or a stale seedbed tillage. Yield was statistically increased by seeding rate in both conventional and stale seedbed tillage from 5 to the 10 seed/ft^2. Ninety-five percent of the relative grain yield was achieved in the conventional tillage system at a plant population of 5 plants/ft^2 and a seeding rate of 10 seed/ft^2. Ninety-five percent of the relative grain yield was achieved in the stale seedbed tillage system at a plant population of 14 plants/ft^2 and a seeding rate of 20 seed/ft^2.

The results of the CL131 trial are presented in Table 5. Plant population at the 2- to 3-leaf development stage increased linearly from 5 to 27 plants/ft^2 from the lowest to highest seeding rate when using conventional tillage and from 4 to 29 plants/ft^2 when using stale seedbed tillage. Yield was statistically increased by seeding rate in both conventional and stale seedbed tillage from the 5 to the 10 seed/ft^2 rates. Ninety-five percent of the relative grain yield was achieved in the conventional tillage system at a plant population of 7 plants/ft^2 and a seeding rate of 10 seed/ft^2. Ninety-five percent of the relative grain yield was achieved in the stale seedbed tillage system at a plant population of 11 plants/ft^2 and a seeding rate of 15 seed/ft^2.

The results of the CL151 trial are presented in Table 6. Plant population at the 2- to 3-leaf development stage increased linearly from 3 to 27 plants/ft^2 from the lowest to highest seeding rate when using conventional tillage and from 3 to 27 plants/ft^2 when using a stale seedbed. Yield was statistically increased by seeding rate in conventional tillage from the 5 to the 10 seed/ft^2 rate while yield in a stale seedbed increased from 5 to 10 seed/ft^2 and again from the 10 to 25 seed/ft^2 seeding rates. Ninety-five percent of the relative grain yield was achieved in the conventional tillage system at a plant population of 6 plants/ft^2 and a seeding rate of 10 seed/ft^2. Ninety-five percent of the relative grain yield was achieved in the stale seedbed tillage system at a plant population of 13 plants/ft^2 and a seeding rate of 20 seed/ft^2.

The results of the CL142 trial are presented in Table 7. Plant population at the 2- to 3-leaf development stage increased linearly from 3 to 23 plants/ft^2 from the lowest to highest seeding rate when using conventional tillage and from 3 to 25 plants/ft^2 when using a stale seedbed. Yield was statistically increased by seeding rate in conventional tillage from the 5 to the 10 seed/ft^2 and again from 10 to 45 seeds/ft^2 while yield in a stale seedbed increased from 5 to 10 seed/ft^2 and again from the 10 to 20 seed/ft^2 seeding rate. Ninety-five percent of the relative grain yield was achieved in the conventional tillage system at a plant population of 20 plants/ft^2 and a seeding rate of 40 seed/ft^2. Ninety-five percent of the relative grain yield was achieved in the stale seedbed tillage system at a plant population of 9 plants/ft^2 and a seeding rate of 20 seed/ft^2.

The results of the CL181 trial are presented in Table 8. Plant population at the 2- to 3-leaf development stage increased linearly from 4 to 25 plants/ft^2 from the lowest to highest seeding rate when using conventional tillage and from 3 to 23 plants/ft^2 when using a stale seedbed. Yield was statistically increased by seeding rate in conventional tillage from the 5 to the 10 seed/ft^2 and again from 10 to 20 seed/ft^2 while yield in a stale seedbed increased from 5 to 10 seed/ft^2 and again from the 10 to 20 seed/ft^2. Ninety-five percent of the relative grain yield was achieved in the conventional tillage system at a plant population of 10 plants/ft^2 and a seeding rate of 15 seed/ft^2. Ninety-five percent of the relative grain yield was achieved in the stale seedbed tillage system at a plant population of 12 plants/ft^2 and a seeding rate of 20 seed/ft^2.

The results of the CL261 trial are presented in Table 9. Plant population at the 2- to 3-leaf development stage increased linearly from 3 to 27 plants/ft^2 from the lowest to highest seeding rate when using conventional tillage and from 3 to 29 plants/ft^2 when using a stale seedbed. Yield was statistically increased by seeding rate in conventional tillage from 5 to the 10 seed/ft^2 and again from 10 to 20 seed/ft^2 while yield in a stale seedbed increased from 5 to 10 seed/ft^2 and again from the 10 to 15 seed/ft^2. Ninety-five percent of the relative grain yield was achieved in the conventional tillage system at a plant population of 10 plants/ft^2 and a seeding rate of 15 seed/ft^2. Ninety-five percent of the relative grain yield was achieved in the stale seedbed tillage system at a plant population of 10 plants/ft^2 and a seeding rate of 15 seed/ft^2.

Evaluation of Stubble Management Practices and Fungicide Use
4 Weeks Post-Harvest on Ratoon Yield and Disease Pressure

Experiment number ....: 11-CM-23

Site and design ....:
Location/Cooperator ....: Rice Research Station (Crowley Main)
Tillage type ....: Fall Stale
Experimental design ....: Randomized complete block
Number of reps ....: 4
Plot size ....: 4.66 x 16 ft
Row width/rows per plot ....: 8 in / 7

Soil type ....: Crowley silt loam
% organic matter ....: 1.4
pH ....: 7.2
Extractable nutrients ppm ....: Ca-1,408; Cu-1.9; Mg-196; P-31; K-63; Na-81; S-9.6; Zn-6.2

Crop/Variety ....: Rice / CL131, Catahoula
Planting method/date ....: Drill seeded / March 16
Seeding rate/depth ....: 33 seeds /ft^2/ .75 inch
Emergence date ....: March 24
Harvest date ....: August 5
Ratoon harvest date ....: November 4

Seed treatment/cwt ....: Dithane (fungicide)-114 g
Release (gibberellic acid)-10 g
Zinc Plus (10% Zn & 4.9% combined sulfur)-296 ml

Fertilization ....: 240 lb/A 0-24-24-2.8, March 16
150 lb N/A 46-0-0, April 20
90 lb N/A 46-0-0, August 9

Water management ....:
Flush ....: March 23, April 7, April 15
Flood ....: April 21
Drain ....: July 19
Ratoon flood ....: August 11
Ratoon drain ....: October 14
Pest management ....:
Herbicides ....: 1.5 qt/A Glyphosate, March 2
1 qt/A Glyphosate, March 21
3 qt/A Propanil + .5 oz/A Permit + 1 oz/A Londax, April 6
2 qt/A Rice Beaux + 2 qt/A Propanil + 1 oz/A Londax + .75 oz/A Permit, April 19
19 oz/A Clincher, May 27
1.5 qt/A Basagran, August 9
Insecticides ....: 0.137 lb ai/cwt Dermacor seed treatment
Fungicides ....: 12 oz/A Quadris, June 18

Table 1a. Treatment means for the main effects of fungicide, stubble management, and variety. Evaluation of stubble management practices and fungicide use 4WAH on CL131 and Catahoula ratoon yields and disease pressure (2.1). Rice Research Station.

Crop Name					Rice	Rice		Rice		Rice	Rice	Rice	Rice	Rice	Rice
Description														Disease	Disease
Part Rated														foliar -	foliar -
Rating Date						7/29/2011	8/5/2011				11/4/2011			10/24/2011	10/24/2011
Rating Type					50% HD	Height	Moist	Test Wt.	Yield	50% HD	Moist	Yield	Total Yield	Cer	BPB
Rating Unit					days	in	%	lb/bu	lb/A	days	%	lb/A	lb/A	0-9	0-9
Crop Stage Majority					Main	Main	Main	Main	Main	Ratoon	Ratoon	Ratoon	MC+RC	Ratoon	Ratoon
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage											
Fungicide															
1	W/o QuiltXL	0	fl oz/A	4WPH	101	37	12.6	45.7	8353	48	16.1	3285	11638	2.6	2.7
2	QuiltXL	21	fl oz/A	4WPH	101	37	12.7	45.7	8361	47	16.7	3363	11724	2.1	2.8
	P				.	0.372	0.7406	0.7022	0.9618	.	0.0051	0.3935	0.7070	0.0321	0.6073
	LSD (0.05)				.	1	0.5	0.4	352	.	0.4	182	460	0.4	0.2
Stubble management															
1	Norm harv ht (16")				101	37	13.1	45.4	8294	46	15.2	2736	11030	4.1	3.0
2	Low harv ht (8")				101	37	13.2	45.5	8428	48	16.0	3918	12346	1.9	2.8
3	Bush hog (2")				101	38	12.3	45.9	8458	48	16.9	3541	11998	1.8	2.5
4	Rolled (16")				101	37	12.2	46.0	8249	48	17.4	3101	11350	1.6	2.7
	P				.	0.4986	0.0061	0.0583	0.7988	0.0001	0.0001	0.0001	0.0006	0.0001	0.0387
	LSD (0.05)				.	1	0.7	0.5	498	1	0.6	258	651	0.6	0.3
Variety															
1	CL131				99	35	12.1	46.0	8996	50	16.3	3729	12725	2.6	2.1
2	Catahoula				102	39	13.2	45.4	7719	45	16.4	2918	10637	2.1	3.4
	P				.	0.0001	0.0001	0.0031	0.0001	.	0.7415	0.0001	0.0001	0.0321	0.0001
	LSD (0.05)				.	1	0.5	0.4	352	.	0.4	182	460	0.4	0.2

232

Table 1b. Table of treatment means from the factorial analysis of 2-way interactions. Rice Research Station.

Trt No.	Trt Name	Rate	Rate Unit	Growth Stage											
	Crop Name				Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice
	Description													Disease	Disease
	Part Rated													foliar -	foliar -
	Rating Date					7/29/2011	8/5/2011				11/4/2011			10/24/2011	10/24/2011
	Rating Type				50% HD	Height	Moist	Test Wt.	Yield	50% HD	Moist	Yield	Total Yield	Cer	BPB
	Rating Unit				days	in	%	lb/bu	lb/A	days	%	lb/A	lb/A	0-9	0-9
	Crop Stage Majority				Main	Main	Main	Main	Main	Ratoon	Ratoon	Ratoon	MC+RC	Ratoon	Ratoon
	Fungicide x Stubble Management														
2	Low harv ht (8")														
1	W/o QuiltXL	0	fl oz/A	4WPH	101	36	12.5	45.8	8394	49	16.7	3597	11990	1.9	2.5
3	Bush hog (2")														
2	QuiltXL	21	fl oz/A	4WPH	101	39	12.1	46.0	8521	48	17.1	3484	12006	1.6	2.5
3	Bush hog (2")														
1	W/o QuiltXL	0	fl oz/A	4WPH	101	36	12.1	46.0	8072	48	16.9	3030	11102	1.9	2.6
4	Rolled (16")														
2	QuiltXL	21	fl oz/A	4WPH	101	37	12.2	46.0	8426	48	18.0	3172	11598	1.4	2.8
4	Rolled (16")														
	P					0.0084	0.4885	0.5778	0.5527	0.7783	0.3196	0.5269	0.7735	0.7780	0.7210
	LSD (0.05)					2	0.9	0.7	705	1	0.8	365	920	0.8	0.5
	Fungicide x Variety														
1	W/o QuiltXL	0	fl oz/A	4WPH	99	35	12.2	45.9	8870	50	15.7	3671	12540	2.8	2.1
1	CL131														
2	QuiltXL	21	fl oz/A	4WPH	99	36	12.0	46.0	9122	50	17.0	3788	12910	2.3	2.2
1	CL131														
1	W/o QuiltXL	0	fl oz/A	4WPH	102	39	13.0	45.6	7836	45	16.4	2899	10736	2.3	3.4
2	Catahoula														
2	QuiltXL	21	fl oz/A	4WPH	102	39	13.4	45.3	7601	45	16.4	2937	10538	1.9	3.4
2	Catahoula														
	P					0.1233	0.1751	0.1923	0.1690	0.1182	0.0039	0.6595	0.2191	0.7536	0.6073
	LSD (0.05)					1	0.7	0.5	498	1	0.6	258	651	0.6	0.3
	Stubble Management x Variety														
1	Norm harv ht (16")				99	35	12.6	45.6	8546	50	15.2	2936	11483	4.4	2.3
1	CL131														
2	Low harv ht (8")				99	35	12.8	45.6	9220	50	16.3	4398	13617	1.9	2.1
1	CL131														
3	Bush hog (2")				99	36	11.7	46.2	9137	50	16.7	4071	13207	2.0	2.0
1	CL131														
4	Rolled (16")				99	35	11.3	46.5	9080	50	17.2	3513	12593	2.0	2.1
1	CL131														
1	Norm harv ht (16")				102	38	13.5	45.2	8042	42	15.2	2536	10578	3.9	3.8
2	Catahoula														
2	Low harv ht (8")				102	39	13.5	45.4	7636	46	15.6	3438	11074	1.9	3.5
2	Catahoula														
3	Bush hog (2")				102	39	12.9	45.6	7778	47	17.2	3010	10789	1.5	3.0
2	Catahoula														
4	Rolled (16")				102	39	13.1	45.5	7419	46	17.6	2688	10107	1.3	3.3
2	Catahoula														
	P					0.8166	0.3515	0.3209	0.0885	0.0001	0.2139	0.0644	0.0397	0.5983	0.4522
	LSD (0.05)					2	0.9	0.7	705	1	0.8	365	920	0.8	0.5

Table 1c. Table of treatment means from the factorial analysis of 3-way interaction. Rice Research Station.

Crop Name				Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice
Description													Disease	Disease
Part Rated													foliar -	foliar -
Rating Date					7/29/2011	8/5/2011				11/4/2011			10/24/2011	10/24/2011
Rating Type				50% HD	Height	Moist	Test Wt.	Yield	50% HD	Moist	Yield	Total Yield	Cer	BPB
Rating Unit				days	in	%	lb/bu	lb/A	days	%	lb/A	lb/A	0-9	0-9
Crop Stage Majority				Main	Main	Main	Main	Main	Ratoon	Ratoon	Ratoon	MC+RC	Ratoon	Ratoon
Trt No. / Trt Name	Rate	Rate Unit	Growth Stage											
1 W/o QuiltXL 2 Low harv ht (8") 1 CL131	0	fl oz/A	4WPH	99	35	13.1	45.4	9196	50	15.6	4275	13471	1.8	2.3
2 QuiltXL 2 Low harv ht (8") 1 CL131	21	fl oz/A	4WPH	99	35	12.5	45.8	9244	50	17.0	4520	13764	2	2
1 W/o QuiltXL 3 Bush hog (2") 1 CL131	0	fl oz/A	4WPH	99	34	11.8	46.2	8882	50	16.2	4126	13008	2.5	2
2 QuiltXL 3 Bush hog (2") 1 CL131	21	fl oz/A	4WPH	99	39	11.7	46.2	9391	50	17.2	4015	13406	1.5	2
1 W/o QuiltXL 4 Rolled (16") 1 CL131	0	fl oz/A	4WPH	99	34	11.2	46.6	8897	50	16.1	3486	12383	2.5	2
2 QuiltXL 4 Rolled (16") 1 CL131	21	fl oz/A	4WPH	99	35	11.4	46.5	9262	50	18.4	3540	12802	1.5	2.3
1 W/o QuiltXL 1 Norm harv ht (16") 2 Catahoula	0	fl oz/A	4WPH	102	39	13.2	45.3	8400	42	15.3	2425	10825	4.5	3.8
2 QuiltXL 1 Norm harv ht (16") 2 Catahoula	21	fl oz/A	4WPH	102	38	13.7	45.1	7684	42	15.2	2647	10331	3.3	3.8
1 W/o QuiltXL 2 Low harv ht (8") 2 Catahoula	0	fl oz/A	4WPH	102	39	12.6	46.1	7793	46	15.6	3532	11325	2.3	3.5
2 QuiltXL 2 Low harv ht (8") 2 Catahoula	21	fl oz/A	4WPH	102	38	14.4	44.8	7479	45	15.7	3344	10823	1.5	3.5
1 W/o QuiltXL 3 Bush hog (2") 2 Catahoula	0	fl oz/A	4WPH	102	38	13.2	45.4	7905	47	17.3	3067	10973	1.3	3
2 QuiltXL 3 Bush hog (2") 2 Catahoula	21	fl oz/A	4WPH	102	40	12.5	45.7	7652	46	17.0	2953	10605	1.8	3
1 W/o QuiltXL 4 Rolled (16") 2 Catahoula	0	fl oz/A	4WPH	102	38	13.1	45.5	7247	46	17.6	2573	9820	1.3	3.3
2 QuiltXL 4 Rolled (16") 2 Catahoula	21	fl oz/A	4WPH	102	39	13.1	45.5	7590	46	17.6	2804	10394	1.3	3.3
P					0.4077	0.0969	0.1581	0.8398	0.7783	0.3808	0.6819	0.8379	0.0530	0.7210
LSD (0.05)					3	1.3	1	996	1	1.2	516	1301	1.1	0.7

Determination of Optimum Seeding Rate in a Conventional and Stale Seedbed Tillage System for Clearfield Varieties

Experiment number	11-CM-24 through 11-CM-31
Site and design	
Location/Cooperator	Rice Research Station (Crowley Main)
Tillage type	Fall Stale vs. Conventional
Experimental design	Randomized complete block
Number of reps	4
Plot size	4.66 x 16 ft
Row width/rows per plot	8 in / 7
Soil type	Crowley silt loam
% organic matter	1.4
pH	7.2
Extractable nutrients ppm	Ca-1,408; Cu-1.9; Mg-196; P-31; K-63; Na-81; S-9.6; Zn-6.2
Crop/Variety	Rice / See Data Sheet
Planting method/date	Drill seeded / March 16
Seeding rate/depth	5, 10, 15, 20, 25, 30, 35, 40, 45 seeds/ft^2 / .75 inch
Emergence date	March 24
Harvest date	See Data Sheet
Ratoon harvest date	See Data Sheet
Seed treatment/cwt	Dithane (fungicide)-114 g Release (gibberellic acid)-10 g Zinc Plus (10% Zn & 4.9% combined sulfur)-296 ml
Fertilization	240 lb/A 0-24-24-2.8, March 16 150 lb N/A 46-0-0, April 20 90 lb N/A 46-0-0, August 8
Water management	
Flush	March 23, April 7, April 15
Flood	April 21
Drain	July 19
Ratoon flood	August 11
Ratoon drain	October 14
Pest management	
Herbicides	1.5 qt/A Glyphosate, March 2 1 qt/A Glyphosate, March 21 3 qt/A Propanil + .5 oz/A Permit + 1 oz/A Londax, April 6 2 qt/A Rice Beaux + 2 qt/A Propanil + 1 oz/A Londax + .75 oz/A Permit, April 19 19 oz/A Clincher, May 27 1.5 qt/A Basagran, August 9
Insecticides	0.137 lb ai/cwt Dermacor seed treatment (≥ 30 seed/ft^2) 0.274 lb ai/cwt Dermacor seed treatment (< 30 seed/ft^2)
Fungicides	12 oz/A Quadris, June 18

Table 2. Determination of optimum seeding rate in a conventional and stale seedbed tillage system for CL152 (1.1). Rice Research Station.

Crop Name	Rice	Rice	Rice	Rice		Rice	Rice		Rice
Crop Variety	Density								
Rating Date	4/12/2011		7/29/2011	8/2/2011			10/25/2011		
Rating Type	Stand Cnt	50% HD	Height	Test Wt.	Yield	50% HD	TestWt	Yield	Yield
Rating Unit	number	days	in	lb/bu	lb/A	days	lb/bu	lb/A	lb/A
Sample Size, Unit	1 sq ft								
Collection Basis, Unit									
Crop Stage Majority	Main	Main	Main	Main	Main	Ratoon	Ratoon	Ratoon	MC+RC
Trt No. / Trt Name									
1 Conventional Till 5 seed/ft^2	3 k	103 b	40 ab	44.8 f	7559 e	44 a	46.7 a-d	2118 e	9725 g
2 Conventional Till 10 seed/ft^2	5 jk	103 b	40 abc	45.3 b-f	9321 d	44 a	46.9 a	2844 a-d	12165 ef
3 Conventional Till 15 seed/ft^2	9 hi	103 bc	39 abc	45.3 b-f	9426 cd	44 a	46.6 bcd	2723 bcd	12148 ef
4 Conventional Till 20 seed/ft^2	10 hi	101 def	39 abc	45.5 a-e	9622 bcd	44 a	46.6 a-d	2855 a-d	12477 de
5 Conventional Till 25 seed/ft^2	12 fgh	101 d-g	39 abc	45.3 b-f	10306 ab	44 a	46.6 a-d	2830 a-d	13137 a-d
6 Conventional Till 30 seed/ft^2	15 def	101 efg	39 abc	45.5 a-e	10458 a	44 a	46.6 a-d	3195 ab	13654 ab
7 Conventional Till 35 seed/ft^2	19 abc	100 g	39 abc	45.8 ab	10203 ab	44 a	46.6 a-d	2463 de	12800 cde
8 Conventional Till 40 seed/ft^2	20 ab	100 efg	39 abc	45.8 abc	10239 ab	44 a	46.5 cd	2648 cd	12887 b-e
9 Conventional Till 45 seed/ft^2	21 a	100 fg	41 a	45.7 a-d	10637 a	44 a	46.4 d	2656 cd	13351 abc
10 Stale Seedbed 5 seed/ft^2	2 k	105 a	39 abc	45.2 b-f	7139 e	44 a	46.9 ab	2111 e	9250 g
11 Stale Seedbed 10 seed/ft^2	5 jk	103 b	40 ab	45.2 c-f	8940 d	44 a	46.8 abc	2679 bcd	11619 f
12 Stale Seedbed 15 seed/ft^2	6 ij	104 ab	39 abc	45.1 def	9296 d	44 a	46.8 abc	2941 a-d	12237 ef
13 Stale Seedbed 20 seed/ft^2	9 hi	102 bcd	37 c	45.5 a-e	10055 abc	44 a	46.7 a-d	2666 cd	12799 cde
14 Stale Seedbed 25 seed/ft^2	11 gh	102 bcd	39 abc	45.0 ef	10156 ab	44 a	46.5 d	2619 cde	12775 cde
15 Stale Seedbed 30 seed/ft^2	13 efg	102 cde	37 bc	45.8 abc	10121 abc	44 a	46.8 a-d	2744 bcd	12865 b-e
16 Stale Seedbed 35 seed/ft^2	17 b-e	101 d-g	39 abc	45.3 b-f	10074 abc	44 a	46.6 a-d	3058 abc	13132 a-d
17 Stale Seedbed 40 seed/ft^2	16 cde	101 efg	39 abc	45.7 a-d	10531 a	44 a	46.5 cd	2657 cd	13187 a-d
18 Stale Seedbed 45 seed/ft^2	18 a-d	100 g	40 abc	46.0 a	10504 a	44 a	46.6 a-d	3324 a	13827 a
LSD (P=.05)	4	2	3	0.6	704	0	0.3	525	850
Standard Deviation	2	1	2	0.4	493	0	0.2	371	595
CV	21	1	5	1.0	5	0	0.5	14	5

Continued.

Table 2. Continued. Yield Component Data.

		Rice		Rice		Rice		Rice		Rice		Rice		
Crop Name		Rice		Rice		Rice		Rice		Rice		Rice		
Crop Variety						(w/o 10 P gr wt)				filled grain				
Rating Date		8/1/2011												
Rating Type		WP dry wt.		Panicle #		PGrain wt.		10 P gr wt.		10 P seed		Milling		
Rating Unit		grams		number		grams		grams		number		head		total
Sample Size, Unit		1m		1m		1m		1m		1m		g		g
Collection Basis, Unit		2 row		2 row		2 row		2 row		2 row		100g		100g
Crop Stage Majority		Main		Main		Main		Main		Main		Main		Main
Trt No.	Trt Name													
1	Conventional Till 5 seed/ft^2	756.9	ab	143	bc	345.83	ab	28.88	a	1407	a	66.68	a	74.53 a
2	Conventional Till 10 seed/ft^2	661.8	abc	135	c	313.97	ab	24.27	bcd	1188	c-g	62.46	abc	70.72 c
3	Conventional Till 15 seed/ft^2	669.0	abc	143	bc	303.65	ab	27.55	ab	1365	ab	65.22	ab	72.23 abc
4	Conventional Till 20 seed/ft^2	684.3	abc	157	abc	345.02	ab	22.14	d	1114	c-g	62.22	abc	71.64 abc
5	Conventional Till 25 seed/ft^2	662.5	abc	159	abc	330.70	ab	23.54	cd	1119	c-g	61.52	bc	71.58 abc
6	Conventional Till 30 seed/ft^2	704.1	abc	175	ab	335.68	ab	22.92	cd	1090	d-g	61.92	bc	71.56 abc
7	Conventional Till 35 seed/ft^2	711.4	abc	178	a	358.11	a	26.15	abc	1245	a-d	62.60	abc	74.12 ab
8	Conventional Till 40 seed/ft^2	677.3	abc	171	ab	301.70	ab	23.80	cd	1141	c-g	59.08	c	71.34 bc
9	Conventional Till 45 seed/ft^2	621.9	c	164	abc	286.36	b	22.19	d	1071	efg	59.83	c	73.29 abc
10	Stale Seedbed 5 seed/ft^2	766.2	ab	145	abc	333.43	ab	25.36	a-d	1273	abc	61.72	bc	71.60 abc
11	Stale Seedbed 10 seed/ft^2	773.0	a	157	abc	365.18	a	23.31	cd	1128	c-g	65.26	ab	72.02 abc
12	Stale Seedbed 15 seed/ft^2	666.9	abc	143	bc	309.35	ab	23.88	cd	1150	c-g	64.83	ab	72.47 abc
13	Stale Seedbed 20 seed/ft^2	692.6	abc	173	ab	333.58	ab	25.82	abc	1219	b-f	62.67	abc	74.30 ab
14	Stale Seedbed 25 seed/ft^2	659.4	abc	157	abc	321.51	ab	22.66	cd	1077	d-g	62.45	abc	72.15 abc
15	Stale Seedbed 30 seed/ft^2	601.5	c	145	abc	291.48	b	25.86	abc	1238	a-e	61.08	bc	71.83 abc
16	Stale Seedbed 35 seed/ft^2	641.3	bc	165	abc	290.18	b	23.14	cd	1108	c-g	63.40	abc	71.73 abc
17	Stale Seedbed 40 seed/ft^2	719.0	abc	176	ab	343.23	ab	21.92	d	1056	fg	61.49	bc	71.76 abc
18	Stale Seedbed 45 seed/ft^2	703.1	abc	170	ab	346.17	ab	22.12	d	1026	g	59.30	c	71.69 abc
LSD (P=.05)		126.7		35		64.89		3.57		172		4.71		3.03
Standard Deviation		87.7		24		44.94		2.47		119		3.26		2.10
CV		12.8		15		13.82		10.21		10		5.23		2.91

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls).
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Table 3. Determination of optimum seeding rate in a conventional and stale seedbed tillage system for CL162 (1.1). Rice Research Station.

Crop Name	Rice	Rice	Rice	Rice		Rice	Rice	Rice
Crop Variety	Density							
Rating Date	4/12/2011		7/29/2011	8/1/2011			10/26/2011	
Rating Type	Stand Cnt	50% HD	Height	TestWt	Yield	50% HD	Yield	Yield
Rating Unit	number	days	in	lb/bu	lb/A	days	lb/A	lb/A
Sample Size, Unit	1 sq ft							
Collection Basis, Unit								
Crop Stage Majority	Main	Main	Main	Main	Main	Ratoon	Ratoon	MC+RC
Trt No. Trt Name								
1 Conventional Till 5 seed/ft^2	3 j	98 a	44 ab	44.7 a	10391 ab	35 a	3129 a-d	13703 abc
2 Conventional Till 10 seed/ft^2	7 i	98 a	44 a	44.4 a	10551 ab	35 a	3231 a-d	13782 abc
3 Conventional Till 15 seed/ft^2	12 gh	97 bc	43 abc	45.4 a	10725 ab	35 a	3309 ab	14033 abc
4 Conventional Till 20 seed/ft^2	15 efg	97 bc	44 ab	44.7 a	11441 a	35 a	3377 a	14818 a
5 Conventional Till 25 seed/ft^2	18 de	96 cde	42 abc	44.6 a	10209 b	35 a	3294 abc	13503 abc
6 Conventional Till 30 seed/ft^2	20 cd	95 e	43 abc	45.3 a	10512 ab	35 a	3342 a	13854 abc
7 Conventional Till 35 seed/ft^2	23 bc	96 de	42 abc	45.3 a	10137 b	35 a	2968 bcd	13105 c
8 Conventional Till 40 seed/ft^2	26 b	96 de	40 c	44.8 a	10756 ab	35 a	3167 a-d	13923 abc
9 Conventional Till 45 seed/ft^2	31 a	96 cde	43 abc	44.7 a	10665 ab	35 a	2941 cd	13606 abc
10 Stale Seedbed 5 seed/ft^2	3 j	98 a	43 abc	45.0 a	8869 c	35 a	2886 d	11755 d
11 Stale Seedbed 10 seed/ft^2	7 i	98 a	44 ab	45.2 a	10038 bc	35 a	3130 a-d	13168 bc
12 Stale Seedbed 15 seed/ft^2	11 h	97 ab	44 ab	45.4 a	10278 ab	35 a	3466 a	13745 abc
13 Stale Seedbed 20 seed/ft^2	14 fgh	97 bc	44 ab	45.4 a	10319 ab	35 a	3227 a-d	13546 abc
14 Stale Seedbed 25 seed/ft^2	17 ef	96 cd	43 abc	44.4 a	10414 ab	35 a	3371 a	13785 abc
15 Stale Seedbed 30 seed/ft^2	18 de	96 cd	41 bc	44.7 a	11119 ab	35 a	3360 a	14480 ab
16 Stale Seedbed 35 seed/ft^2	23 c	96 cde	43 abc	44.6 a	10848 ab	35 a	3307 ab	14155 abc
17 Stale Seedbed 40 seed/ft^2	26 b	96 cde	41 abc	44.6 a	9932 bc	35 a	3115 a-d	13047 cd
18 Stale Seedbed 45 seed/ft^2	24 bc	96 cde	43 ab	45.1 a	10224 ab	35 a	3336 a	13561 abc
LSD (P=.05)	3	1	3	1.2	1228	0	359	1347
Standard Deviation	2	1	2	0.9	859	0	254	942
CV	15	1	4	1.9	8	0	8	7

Continued.

Table 3. Continued. Yield Component Data.

Crop Name	Rice	Rice	Rice	Rice	Rice	Rice	
Crop Variety			(w/o 10 P gr wt)		filled grain		
Rating Date	8/1/2011						
Rating Type	WP dry wt.	Panicle #	PGrain wt.	10 P gr wt.	10 P seed	Milling	
Rating Unit	grams	number	grams	grams	number	head	total
Sample Size, Unit	1m	1m	1m	1m	1m	g	g
Collection Basis, Unit	2 row	2 row	2 row	2 row	2 row	100g	100g
Crop Stage Majority	Main	Main	Main	Main	Main	Main	Main
Trt No. / Trt Name							
1 Conventional Till 5 seed/ft^2	818.0 a	146 ef	374.02 a	34.00 a	1361 ab	57.10 bc	73.63 a-d
2 Conventional Till 10 seed/ft^2	791.3 abc	167 cde	358.20 ab	30.67 a-e	1212 a-d	58.66 abc	73.74 ab
3 Conventional Till 15 seed/ft^2	766.3 abc	164 cde	339.08 ab	29.49 a-f	1170 b-f	59.28 abc	73.69 abc
4 Conventional Till 20 seed/ft^2	774.0 abc	162 cde	353.88 ab	32.33 abc	1290 abc	63.09 a	73.66 a-d
5 Conventional Till 25 seed/ft^2	726.7 abc	175 b-e	317.79 ab	29.51 a-f	1154 b-f	57.63 abc	72.99 de
6 Conventional Till 30 seed/ft^2	688.3 bc	173 b-e	309.06 ab	25.29 ef	970 f	55.71 c	73.08 b-e
7 Conventional Till 35 seed/ft^2	758.7 abc	204 ab	338.41 ab	24.64 f	971 ef	54.62 c	73.47 a-d
8 Conventional Till 40 seed/ft^2	728.7 abc	192 abc	324.98 ab	24.47 f	950 f	57.10 bc	72.78 e
9 Conventional Till 45 seed/ft^2	685.7 bc	184 a-d	302.31 b	27.07 c-f	1060 def	59.56 abc	73.28 b-e
10 Stale Seedbed 5 seed/ft^2	713.0 abc	115 f	332.66 ab	33.53 ab	1404 a	62.58 ab	74.09 a
11 Stale Seedbed 10 seed/ft^2	768.3 abc	165 cde	355.88 ab	27.48 c-f	1096 c-f	57.48 abc	73.16 b-e
12 Stale Seedbed 15 seed/ft^2	672.7 c	150 def	325.32 ab	31.14 a-d	1229 a-d	58.49 abc	73.33 b-e
13 Stale Seedbed 20 seed/ft^2	676.0 bc	162 cde	299.13 b	26.72 def	1057 def	56.76 c	73.26 b-e
14 Stale Seedbed 25 seed/ft^2	768.0 abc	189 abc	344.80 ab	30.86 a-e	1199 a-e	57.99 abc	73.15 b-e
15 Stale Seedbed 30 seed/ft^2	799.3 ab	190 abc	364.92 ab	26.08 def	1019 def	59.30 abc	73.48 a-d
16 Stale Seedbed 35 seed/ft^2	735.7 abc	190 abc	321.27 ab	28.23 b-f	1080 c-f	56.48 c	73.04 cde
17 Stale Seedbed 40 seed/ft^2	820.3 a	214 a	365.00 ab	28.55 a-f	1118 c-f	58.81 abc	73.21 b-e
18 Stale Seedbed 45 seed/ft^2	683.0 bc	166 cde	322.06 ab	27.99 b-f	1092 c-f	58.66 abc	73.22 b-e
LSD (P=.05)	126.6	35	69.37	5.59	229	5.79	0.69
Standard Deviation	75.9	21	41.60	3.35	137	3.47	0.41
CV	10.2	12	12.38	11.65	12	5.95	0.56

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls).
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Table 4. Determination of optimum seeding rate in a conventional and stale seedbed tillage system for CL111 (2.1). Rice Research Station.

	Rice	Rice	Rice	Rice		Rice	Rice	Rice
Crop Name	Rice	Rice	Rice	Rice		Rice	Rice	Rice
Crop Variety	Density							
Rating Date	4/13/2011		7/29/2011	8/1/2011			10/26/2011	
Rating Type	Stand Cnt	50% HD	Height	TestWt	Yield	50% HD	Yield	Yield
Rating Unit	number	days	in	lb/bu	lb/A	days	lb/A	lb/A
Sample Size, Unit	1 sq ft							
Collection Basis, Unit								
Crop Stage Majority	Main	Main	Main	Main	Main	Ratoon	Ratoon	MC+RC
Trt No. / Trt Name								
1 Conventional Till 5 seed/ft^2	3 h	98 b	41 a-d	45.8 d	9846 ef	35 a	3150 e	12996 d
2 Conventional Till 10 seed/ft^2	5 h	96 cd	42 a	46.1 bcd	11179 ab	35 a	3396 a-e	14575 a
3 Conventional Till 15 seed/ft^2	12 f	96 de	40 a-d	46.3 a-d	11217 ab	35 a	3488 a-d	14705 a
4 Conventional Till 20 seed/ft^2	13 f	95 fg	41 a-d	46.7 ab	11339 a	35 a	3346 a-e	14685 a
5 Conventional Till 25 seed/ft^2	12 f	95 fg	40 a-d	46.4 abc	11099 abc	35 a	3654 a	14753 a
6 Conventional Till 30 seed/ft^2	21 cd	95 fg	39 b-e	46.7 ab	11000 a-d	35 a	3483 a-d	14483 a
7 Conventional Till 35 seed/ft^2	23 bcd	95 fg	38 de	46.5 abc	10356 de	35 a	3204 cde	13560 cd
8 Conventional Till 40 seed/ft^2	25 ab	95 g	39 cde	46.7 abc	10784 a-d	35 a	3429 a-e	14213 abc
9 Conventional Till 45 seed/ft^2	28 a	95 g	38 de	46.5 abc	10455 cde	35 a	3176 de	13631 bcd
10 Stale Seedbed 5 seed/ft^2	3 h	99 a	41 a-d	46.2 a-d	9151 f	35 a	2651 f	11802 e
11 Stale Seedbed 10 seed/ft^2	7 gh	97 c	41 a-d	46.1 cd	10462 cde	35 a	3509 abc	13971 abc
12 Stale Seedbed 15 seed/ft^2	11 fg	96 de	42 ab	46.7 abc	10579 bcd	35 a	3556 ab	14134 abc
13 Stale Seedbed 20 seed/ft^2	14 ef	95 efg	40 a-e	46.3 a-d	11019 a-d	35 a	3420 a-e	14439 ab
14 Stale Seedbed 25 seed/ft^2	14 ef	96 ef	42 abc	46.2 a-d	10786 a-d	35 a	3326 a-e	14112 abc
15 Stale Seedbed 30 seed/ft^2	18 de	95 fg	39 b-e	46.8 a	10889 a-d	35 a	3244 b-e	14133 abc
16 Stale Seedbed 35 seed/ft^2	23 abc	95 fg	37 e	46.3 a-d	11146 abc	35 a	3123 e	14269 abc
17 Stale Seedbed 40 seed/ft^2	21 bcd	95 fg	40 a-e	46.7 ab	10877 a-d	35 a	3273 b-e	14149 abc
18 Stale Seedbed 45 seed/ft^2	28 a	95 efg	39 cde	46.6 abc	10841 a-d	35 a	3201 cde	14042 abc
LSD (P=.05)	5	1	3	0.6	701	0	330	851
Standard Deviation	3	1	2	0.4	496	0	233	602
CV	21	1	4	0.9	5	0	7	4

Continued.

Table 4. Continued. Yield Component Data.

Crop Name	Rice	Rice	Rice	Rice	Rice	Rice	
Crop Variety			(w/o 10 P gr wt)		filled grain		
Rating Date	8/1/2011						
Rating Type	WP dry wt.	Panicle #	PGrain wt.	10 P gr wt.	10 P seed	Milling	
Rating Unit	grams	number	grams	grams	number	head	total
Sample Size, Unit	1m	1m	1m	1m	1m	g	g
Collection Basis, Unit	2 row	2 row	2 row	2 row	2 row	100g	100g
Crop Stage Majority	Main	Main	Main	Main	Main	Main	Main
Trt No. Trt Name							
1 Conventional Till 5 seed/ft^2	745.3 a-d	176 e	369.59 ab	25.72 abc	1058 ab	63.66 a	74.20 abc
2 Conventional Till 10 seed/ft^2	744.3 a-d	185 de	351.60 ab	26.07 ab	1038 ab	63.23 abc	74.13 abc
3 Conventional Till 15 seed/ft^2	799.7 ab	216 a-d	364.42 ab	23.61 b-e	924 bc	62.03 a-d	75.11 a
4 Conventional Till 20 seed/ft^2	747.0 a-d	212 a-d	363.16 ab	20.96 efg	833 cd	62.00 a-d	74.53 abc
5 Conventional Till 25 seed/ft^2	755.3 a-d	196 b-e	364.06 ab	21.81 ef	870 c	62.42 a-d	74.51 abc
6 Conventional Till 30 seed/ft^2	739.7 a-d	220 abc	367.13 ab	17.23 hi	692 e	62.01 a-d	74.36 abc
7 Conventional Till 35 seed/ft^2	737.7 a-d	227 ab	339.15 ab	21.90 def	880 c	62.35 a-d	74.59 abc
8 Conventional Till 40 seed/ft^2	718.3 a-d	234 a	332.03 b	19.49 f-i	816 cde	62.06 a-d	73.82 c
9 Conventional Till 45 seed/ft^2	680.0 d	228 ab	342.22 ab	17.11 i	683 e	61.27 b-f	74.22 abc
10 Stale Seedbed 5 seed/ft^2	800.7 a	177 e	390.10 a	27.10 a	1089 a	63.52 ab	74.85 ab
11 Stale Seedbed 10 seed/ft^2	788.3 abc	203 a-e	376.01 ab	25.35 a-d	1026 ab	60.26 def	74.43 abc
12 Stale Seedbed 15 seed/ft^2	705.3 a-d	188 cde	343.21 ab	21.09 efg	828 cd	61.01 c-f	74.25 abc
13 Stale Seedbed 20 seed/ft^2	723.3 a-d	200 b-e	345.67 ab	22.32 c-f	887 c	62.19 a-d	74.66 abc
14 Stale Seedbed 25 seed/ft^2	694.0 cd	200 b-e	344.75 ab	20.26 e-i	830 cd	59.05 f	73.71 c
15 Stale Seedbed 30 seed/ft^2	700.0 bcd	206 a-e	327.53 b	21.58 efg	859 cd	60.90 def	74.42 abc
16 Stale Seedbed 35 seed/ft^2	701.7 a-d	204 a-e	337.66 ab	20.68 e-h	827 cd	60.93 def	74.41 abc
17 Stale Seedbed 40 seed/ft^2	713.7 a-d	208 a-e	326.89 b	20.59 e-h	833 cd	59.65 ef	73.93 bc
18 Stale Seedbed 45 seed/ft^2	669.3 d	211 a-d	322.53 b	18.14 ghi	730 de	61.62 a-e	74.43 abc
LSD (P=.05)	100.3	32	57.04	3.47	134	2.27	1.02
Standard Deviation	60.2	19	34.21	2.08	80	1.36	0.61
CV	8.2	9	9.76	9.57	9	2.21	0.82

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls).
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Table 5. Determination of optimum seeding rate in a conventional and stale seedbed tillage system for CL131 (2.1). Rice Research Station.

Crop Name	Rice	Rice	Rice	Rice		Rice	Rice		Rice
Crop Variety	Density								
Rating Date	4/13/2011		7/29/2011	8/2/2011			10/25/2011		10/25/2011
Rating Type	Stand Cnt	50% HD	Height	TestWt	Yield	50% HD	TestWt	Yield	Yield
Rating Unit	number	days	in	lb/bu	lb/A	days	lb/bu	lb/A	lb/A
Sample Size, Unit	1 sq ft								
Collection Basis, Unit									
Crop Stage Majority	Main	Main	Main	Main	Main	Ratoon	Ratoon	Ratoon	MC+RC
Trt No. Trt Name									
1 Conventional Till 5 seed/ft^2	5 ij	98 a	37 a	46.1 bc	8925 b	48 a	48.2 bc	2597 d-g	11522 c
2 Conventional Till 10 seed/ft^2	7 hi	98 b	36 abc	46.3 abc	10024 a	48 a	48.4 abc	2961 ab	12985 ab
3 Conventional Till 15 seed/ft^2	10 gh	97 de	36 a-d	46.3 abc	10400 a	48 a	48.3 abc	2919 abc	13319 a
4 Conventional Till 20 seed/ft^2	13 fg	97 cd	36 a-d	46.4 abc	10148 a	48 a	48.6 ab	2923 abc	13071 ab
5 Conventional Till 25 seed/ft^2	16 ef	96 de	35 a-e	46.3 abc	10345 a	48 a	48.5 abc	2985 a	13330 a
6 Conventional Till 30 seed/ft^2	20 d	96 e	36 a-e	46.4 abc	10205 a	48 a	48.5 abc	2798 a-e	13004 ab
7 Conventional Till 35 seed/ft^2	25 bc	96 e	34 de	46.4 a	10019 a	48 a	48.6 ab	2406 fg	12425 b
8 Conventional Till 40 seed/ft^2	27 ab	96 de	34 cde	46.3 abc	10243 a	48 a	48.7 a	2419 fg	12662 ab
9 Conventional Till 45 seed/ft^2	27 abc	96 de	35 a-e	46.1 c	10198 a	48 a	48.1 c	2362 g	12560 b
10 Stale Seedbed 5 seed/ft^2	4 j	98 a	36 a-e	46.4 a	9009 b	48 a	48.4 abc	2447 fg	11456 c
11 Stale Seedbed 10 seed/ft^2	7 hij	97 bc	36 abc	46.3 abc	9878 a	48 a	48.6 abc	2656 b-g	12534 b
12 Stale Seedbed 15 seed/ft^2	11 g	97 de	35 a-e	46.5 a	9970 a	48 a	48.6 ab	2844 a-d	12813 ab
13 Stale Seedbed 20 seed/ft^2	12 fg	96 de	36 a-d	46.3 abc	10236 a	48 a	48.7 a	2684 a-f	12920 ab
14 Stale Seedbed 25 seed/ft^2	18 de	97 de	36 a-d	46.2 abc	10151 a	48 a	48.6 ab	2703 a-f	12854 ab
15 Stale Seedbed 30 seed/ft^2	20 d	96 de	35 b-e	46.4 ab	10244 a	48 a	48.7 a	2616 c-g	12860 ab
16 Stale Seedbed 35 seed/ft^2	24 c	96 e	35 a-e	46.5 a	10421 a	48 a	48.6 ab	2566 d-g	12987 ab
17 Stale Seedbed 40 seed/ft^2	25 abc	96 e	34 e	46.4 a	10297 a	48 a	48.3 abc	2350 g	12647 ab
18 Stale Seedbed 45 seed/ft^2	29 a	96 de	37 ab	46.5 a	10351 a	48 a	48.6 ab	2523 efg	12874 ab
LSD (P=.05)	4	1	2	0.3	613	0	0.5	313	735
Standard Deviation	3	1	1	0.2	434	0	0.3	221	520
CV	16	1	4	0.5	4	0	0.7	8	4

Continued.

Table 5. Continued. Yield Component Data.

	WP dry wt.	Panicle #	PGrain wt.	10 P gr wt.	10 P seed	Milling	
Crop Name	Rice	Rice	Rice	Rice	Rice	Rice	
Crop Variety			(w/o 10 P gr wt)		filled grain		
Rating Date	8/1/2011						
Rating Type	WP dry wt.	Panicle #	PGrain wt.	10 P gr wt.	10 P seed	Milling	
Rating Unit	grams	number	grams	grams	number	head	total
Sample Size, Unit	1m	1m	1m	1m	1m	g	g
Collection Basis, Unit	2 row	2 row	2 row	2 row	2 row	100g	100g
Crop Stage Majority	Main	Main	Main	Main	Main	Main	Main
Trt No. / Trt Name							
1 Conventional Till 5 seed/ft^2	761.0 ab	216 efg	372.21 a	21.78 a	996 a	61.18 ab	72.62 ab
2 Conventional Till 10 seed/ft^2	657.0 b	215 efg	306.34 b	18.26 b-e	858 abc	62.41 a	73.04 a
3 Conventional Till 15 seed/ft^2	719.0 ab	237 b-f	353.73 ab	16.55 de	755 b-e	61.48 ab	72.53 abc
4 Conventional Till 20 seed/ft^2	782.0 a	266 abc	360.78 ab	16.53 de	758 b-e	61.36 ab	72.29 a-d
5 Conventional Till 25 seed/ft^2	741.0 ab	256 a-e	361.07 ab	16.77 cde	767 b-e	62.08 ab	72.56 abc
6 Conventional Till 30 seed/ft^2	709.3 ab	269 abc	338.65 ab	16.03 de	712 de	61.21 ab	72.23 a-d
7 Conventional Till 35 seed/ft^2	727.3 ab	264 a-d	342.27 ab	16.78 cde	767 b-e	61.03 ab	72.12 bcd
8 Conventional Till 40 seed/ft^2	727.0 ab	267 abc	365.81 ab	14.97 e	690 e	61.89 ab	72.55 abc
9 Conventional Till 45 seed/ft^2	730.0 ab	275 ab	365.68 ab	15.76 de	724 cde	62.44 a	72.37 abc
10 Stale Seedbed 5 seed/ft^2	709.3 ab	193 g	336.30 ab	21.43 ab	982 a	61.28 ab	72.45 abc
11 Stale Seedbed 10 seed/ft^2	758.0 ab	224 d-g	372.59 a	17.62 cde	780 b-e	61.63 ab	72.39 abc
12 Stale Seedbed 15 seed/ft^2	661.7 b	214 fg	310.57 ab	19.86 abc	881 ab	59.86 b	71.78 cd
13 Stale Seedbed 20 seed/ft^2	729.0 ab	232 c-g	342.23 ab	18.31 bcd	835 bcd	60.71 ab	72.43 abc
14 Stale Seedbed 25 seed/ft^2	721.7 ab	238 b-f	337.22 ab	17.16 cde	762 b-e	61.73 ab	72.28 a-d
15 Stale Seedbed 30 seed/ft^2	768.3 ab	283 a	367.75 ab	17.47 cde	799 b-e	60.26 ab	71.53 d
16 Stale Seedbed 35 seed/ft^2	691.7 ab	230 c-g	310.41 ab	17.76 cde	790 b-e	61.79 ab	72.25 a-d
17 Stale Seedbed 40 seed/ft^2	703.7 ab	266 abc	338.43 ab	16.25 de	733 cde	60.05 b	71.82 bcd
18 Stale Seedbed 45 seed/ft^2	711.0 ab	265 abc	323.91 ab	16.89 cde	760 b-e	60.98 ab	72.07 bcd
LSD (P=.05)	114.2	41	62.86	3.31	145	2.23	0.83
Standard Deviation	68.5	24	37.70	1.98	87	1.34	0.50
CV	9.5	10	10.94	11.28	11	2.18	0.69

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls).
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Table 6. Determination of optimum seeding rate in a conventional and stale seedbed tillage system for CL151 (2.1). Rice Research Station.

Crop Name	Rice	Rice	Rice	Rice		Rice	Rice	Rice
Crop Variety	Density							
Rating Date	4/13/2011		7/29/2011	8/2/2011			11/4/2011	
Rating Type	Stand Cnt	50% HD	Height	TestWt	Yield	50% HD	Yield	Yield
Rating Unit	number	days	in	lb/bu	lb/A	days	lb/A	lb/A
Sample Size, Unit	1 sq ft							
Collection Basis, Unit								
Crop Stage Majority	Main	Main	Main	Main	Main	Ratoon	Ratoon	MC+RC
Trt No. Trt Name								
1 Conventional Till 5 seed/ft^2	3 j	99 a	41 ab	45.1 b	9897 de	50 a	1993 e	11890 d
2 Conventional Till 10 seed/ft^2	6 ij	98 ab	41 ab	45.2 ab	10638 abc	50 a	2498 cd	13135 bc
3 Conventional Till 15 seed/ft^2	11 gh	98 c	41 ab	45.2 ab	10841 abc	50 a	2654 bc	13495 abc
4 Conventional Till 20 seed/ft^2	13 fg	97 cd	41 ab	45.1 ab	10675 abc	50 a	2673 bc	13348 abc
5 Conventional Till 25 seed/ft^2	15 ef	97 de	42 a	45.4 ab	10667 abc	50 a	2842 abc	13509 abc
6 Conventional Till 30 seed/ft^2	19 d	97 ef	40 abc	45.3 ab	11003 ab	50 a	2954 ab	13957 ab
7 Conventional Till 35 seed/ft^2	24 bc	97 de	39 bc	45.2 ab	10246 cd	50 a	2775 abc	13021 c
8 Conventional Till 40 seed/ft^2	25 ab	96 ef	39 bc	45.3 ab	10552 a-d	50 a	2716 bc	13268 abc
9 Conventional Till 45 seed/ft^2	27 a	96 ef	41 ab	45.3 ab	10900 abc	50 a	2826 abc	13726 abc
10 Stale Seedbed 5 seed/ft^2	3 j	99 a	40 abc	45.1 ab	9469 e	50 a	2290 de	11759 d
11 Stale Seedbed 10 seed/ft^2	6 ij	98 ab	42 a	45.2 ab	10400 bcd	50 a	2703 bc	13102 c
12 Stale Seedbed 15 seed/ft^2	8 hi	98 bc	40 abc	45.3 ab	10574 a-d	50 a	2777 abc	13351 abc
13 Stale Seedbed 20 seed/ft^2	13 fg	97 cd	39 bc	45.4 a	10965 ab	50 a	3090 a	14056 a
14 Stale Seedbed 25 seed/ft^2	14 fg	97 de	40 abc	45.2 ab	11157 a	50 a	2675 bc	13831 abc
15 Stale Seedbed 30 seed/ft^2	18 de	97 ef	41 ab	45.3 ab	10639 abc	50 a	2870 ab	13509 abc
16 Stale Seedbed 35 seed/ft^2	20 cd	96 f	40 abc	45.3 ab	10811 abc	50 a	2663 bc	13473 abc
17 Stale Seedbed 40 seed/ft^2	24 bc	96 f	38 c	45.5 a	11115 a	50 a	2927 ab	14042 a
18 Stale Seedbed 45 seed/ft^2	27 ab	96 f	41 ab	45.5 a	10779 abc	50 a	2668 bc	13446 abc
LSD (P=.05)	3	1	2	0.4	696	0	347	834
Standard Deviation	2	1	1	0.3	492	0	245	590
CV	16	1	3	0.6	5	0	9	4

Continued.

Table 6. Continued. Yield Component Data.

Crop Name	Rice	Rice	Rice	Rice	Rice	Rice	
Crop Variety			(w/o 10 P gr wt)		filled grain		
Rating Date	8/2/2011						
Rating Type	WP dry wt.	Panicle #	PGrain wt.	10 P gr wt.	10 P seed	Milling	
Rating Unit	grams	number	grams	grams	number	head	total
Sample Size, Unit	1m	1m	1m	1m	1m	g	g
Collection Basis, Unit	2 row	2 row	2 row	2 row	2 row	100g	100g
Crop Stage Majority	Main	Main	Main	Main	Main	Main	Main
Trt No. / Trt Name							
1 Conventional Till 5 seed/ft^2	835 ab	197 c-f	428 a	27 ab	1204 ab	59.52 ab	70.58 ab
2 Conventional Till 10 seed/ft^2	713 bc	173 efg	341 d	25 a-d	1116 a-d	59.85 ab	70.35 abc
3 Conventional Till 15 seed/ft^2	827 abc	207 b-f	412 abc	25 a-f	1082 a-e	58.29 abc	70.74 ab
4 Conventional Till 20 seed/ft^2	777 abc	213 a-d	384 a-d	23 b-g	1052 b-e	55.72 cde	70.24 bcd
5 Conventional Till 25 seed/ft^2	833 ab	243 ab	412 abc	22 c-h	982 c-f	57.25 b-e	70.08 bcd
6 Conventional Till 30 seed/ft^2	783 abc	234 abc	389 a-d	20 gh	906 ef	57.03 b-e	70.11 bcd
7 Conventional Till 35 seed/ft^2	739 abc	228 abc	374 a-d	18 h	825 f	57.83 a-d	70.23 bcd
8 Conventional Till 40 seed/ft^2	849 a	248 a	420 ab	22 c-h	991 c-f	55.44 cde	69.73 cd
9 Conventional Till 45 seed/ft^2	771 abc	227 a-d	381 a-d	21 e-h	915 ef	56.10 cde	69.59 cd
10 Stale Seedbed 5 seed/ft^2	721 abc	153 g	368 a-d	28 a	1250 a	60.41 a	71.11 a
11 Stale Seedbed 10 seed/ft^2	707 bc	170 fg	351 cd	28 a	1196 ab	57.85 a-d	70.65 ab
12 Stale Seedbed 15 seed/ft^2	785 abc	196 c-f	393 a-d	26 abc	1155 abc	57.72 a-d	70.15 bcd
13 Stale Seedbed 20 seed/ft^2	727 abc	197 c-f	363 a-d	22 c-h	960 def	55.28 de	69.66 cd
14 Stale Seedbed 25 seed/ft^2	692 c	189 d-g	357 bcd	22 d-h	931 def	54.58 e	69.73 cd
15 Stale Seedbed 30 seed/ft^2	740 abc	210 a-e	377 a-d	20 fgh	909 ef	54.56 e	69.63 cd
16 Stale Seedbed 35 seed/ft^2	777 abc	232 abc	392 a-d	22 c-h	1004 c-f	56.00 cde	69.64 cd
17 Stale Seedbed 40 seed/ft^2	728 abc	215 a-d	364 a-d	25 a-e	1090 a-e	56.38 cde	69.45 d
18 Stale Seedbed 45 seed/ft^2	712 bc	211 a-e	358 bcd	24 a-g	1061 b-e	55.58 cde	69.51 d
LSD (P=.05)	136	39	67	4	186	2.90	0.83
Standard Deviation	82	23	40	3	111	1.74	0.50
CV	11	11	10	11	11	3.05	0.71

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls).
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Table 7. Determination of optimum seeding rate in a conventional and stale seedbed tillage system for CL142 (2.1). Rice Research Station.

Crop Name	Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice
Crop Variety	Density							
Rating Date	4/13/2011		7/29/2011	8/2/2011			11/4/2011	
Rating Type	Stand Cnt	50% HD	Height	TestWt	Yield	50% HD	Yield	Yield
Rating Unit	number	days	in	lb/bu	lb/A	days	lb/A	lb/A
Sample Size, Unit	1 sq ft							
Collection Basis, Unit								
Crop Stage Majority	Main	Main	Main	Main	Main	Ratoon	Ratoon	MC+RC
Trt No. / Trt Name								
1 Conventional Till 5 seed/ft^2	3 j	102 ab	47 ab	45.8 b	8106 g	55 a	2162 cde	10151 d
2 Conventional Till 10 seed/ft^2	4 j	102 bc	44 bcd	45.8 b	9603 de	55 a	2504 ab	12107 bc
3 Conventional Till 15 seed/ft^2	8 hi	101 d	47 a	45.9 ab	9785 cde	55 a	2460 abc	12245 bc
4 Conventional Till 20 seed/ft^2	10 gh	100 e	47 ab	45.9 ab	9940 b-e	55 a	2408 a-d	12348 bc
5 Conventional Till 25 seed/ft^2	14 ef	99 efg	45 a-d	45.9 ab	9869 b-e	55 a	2530 a	12399 bc
6 Conventional Till 30 seed/ft^2	17 cde	99 efg	44 bcd	45.7 b	10334 a-d	55 a	2476 abc	12810 ab
7 Conventional Till 35 seed/ft^2	21 b	99 efg	45 a-d	46.0 ab	10393 abc	55 a	2298 a-d	12691 ab
8 Conventional Till 40 seed/ft^2	20 bc	99 efg	45 a-d	45.9 ab	10479 abc	55 a	2281 a-d	12760 ab
9 Conventional Till 45 seed/ft^2	23 ab	99 g	47 ab	45.8 ab	10950 a	55 a	2425 a-d	13375 a
10 Stale Seedbed 5 seed/ft^2	3 j	103 a	43 d	46.0 ab	6926 h	55 a	1870 e	8796 e
11 Stale Seedbed 10 seed/ft^2	5 ij	102 bcd	45 a-d	45.9 ab	8688 fg	55 a	2170 cde	10858 d
12 Stale Seedbed 15 seed/ft^2	9 h	101 cd	46 abc	45.8 b	9328 ef	55 a	2499 ab	11826 c
13 Stale Seedbed 20 seed/ft^2	9 gh	100 ef	47 ab	45.9 ab	10155 bcd	55 a	2371 a-d	12526 bc
14 Stale Seedbed 25 seed/ft^2	12 fg	99 efg	43 d	46.2 a	10284 a-d	55 a	2368 a-d	12652 ab
15 Stale Seedbed 30 seed/ft^2	15 de	99 efg	45 a-d	46.0 ab	10414 abc	55 a	2130 de	12544 bc
16 Stale Seedbed 35 seed/ft^2	18 cd	99 efg	43 d	45.9 ab	10035 b-e	55 a	2372 a-d	12407 bc
17 Stale Seedbed 40 seed/ft^2	22 ab	99 fg	45 a-d	45.9 ab	10557 ab	55 a	2202 bcd	12760 ab
18 Stale Seedbed 45 seed/ft^2	25 a	99 efg	44 cd	45.9 ab	10250 a-d	55 a	2352 a-d	12602 abc
LSD (P=.05)	3	1	3	0.4	741	0	315	776
Standard Deviation	2	1	2	0.3	519	0	222	543
CV	16	1	3	0.6	5	0	10	4

Continued.

Table 7. Continued. Yield Component Data.

Crop Name		Rice		Rice		Rice		Rice		Rice		Rice			
Crop Variety						(w/o 10 P gr wt)				filled grain					
Rating Date		8/2/2011													
Rating Type		WP dry wt.		Panicle #		PGrain wt.		10 P gr wt.		10 P seed		Milling			
Rating Unit		grams		number		grams		grams		number		head		total	
Sample Size, Unit		1m		1m		1m		1m		1m		g		g	
Collection Basis, Unit		2 row		2 row		2 row		2 row		2 row		100g		100g	
Crop Stage Majority		Main		Main		Main		Main		Main		Main		Main	
Trt No.	Trt Name														
1	Conventional Till 5 seed/ft^2	793.7	a	133	bcd	349.37	ab	30.10	b	1204	b	52.25	a	73.27	a
2	Conventional Till 10 seed/ft^2	732.7	a	132	cd	317.78	ab	28.02	bcd	1077	bc	50.78	a-d	72.67	ab
3	Conventional Till 15 seed/ft^2	751.3	a	146	a-d	322.67	ab	28.28	bcd	1097	bc	49.08	a-d	73.17	ab
4	Conventional Till 20 seed/ft^2	852.0	a	170	a	381.84	a	29.52	bc	1106	bc	49.87	a-d	73.07	ab
5	Conventional Till 25 seed/ft^2	807.0	a	162	abc	341.81	ab	26.01	bcd	993	bc	52.62	a	72.94	ab
6	Conventional Till 30 seed/ft^2	800.0	a	170	a	347.85	ab	22.68	d	877	c	51.76	ab	72.95	ab
7	Conventional Till 35 seed/ft^2	791.0	a	178	a	340.79	ab	23.84	cd	918	c	49.97	a-d	72.86	ab
8	Conventional Till 40 seed/ft^2	772.0	a	170	a	327.65	ab	25.23	bcd	956	bc	47.82	a-d	72.37	b
9	Conventional Till 45 seed/ft^2	826.7	a	176	a	348.44	ab	25.90	bcd	975	bc	48.85	a-d	72.64	ab
10	Stale Seedbed 5 seed/ft^2	714.3	a	118	d	299.10	b	38.90	a	1553	a	48.76	a-d	72.44	ab
11	Stale Seedbed 10 seed/ft^2	765.0	a	133	bcd	327.05	ab	29.74	bc	1135	bc	47.79	a-d	72.37	b
12	Stale Seedbed 15 seed/ft^2	728.3	a	125	d	317.26	ab	29.40	bc	1110	bc	51.68	abc	72.92	ab
13	Stale Seedbed 20 seed/ft^2	824.0	a	169	a	332.63	ab	25.94	bcd	990	bc	50.26	a-d	72.65	ab
14	Stale Seedbed 25 seed/ft^2	775.7	a	165	abc	341.44	ab	26.05	bcd	965	bc	45.98	bcd	72.92	ab
15	Stale Seedbed 30 seed/ft^2	812.0	a	176	a	364.68	ab	26.12	bcd	994	bc	47.31	a-d	72.88	ab
16	Stale Seedbed 35 seed/ft^2	763.7	a	164	abc	316.59	ab	24.71	bcd	1055	bc	46.70	a-d	72.92	ab
17	Stale Seedbed 40 seed/ft^2	738.3	a	167	ab	339.09	ab	25.68	bcd	962	bc	45.11	d	72.57	ab
18	Stale Seedbed 45 seed/ft^2	744.3	a	165	abc	315.76	ab	27.17	bcd	1016	bc	45.68	cd	72.36	b
LSD (P=.05)		156.8		34		82.00		5.92		261		6.02		0.88	
Standard Deviation		94.0		21		49.18		3.55		157		3.61		0.53	
CV		12.1		13		14.68		12.96		15		7.36		0.73	

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls).

Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Table 8. Determination of optimum seeding rate in a conventional and stale seedbed tillage system for CL181 (2.1). Rice Research Station.

Crop Name		Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice
Crop Variety		Density							
Rating Date		4/14/2011		7/29/2011	8/2/2011			11/4/2011	
Rating Type		Stand Cnt	50% HD	Height	TestWt	Yield	50% HD	Yield	Yield
Rating Unit		number	days	in	lb/bu	lb/A	days	lb/A	lb/A
Sample Size, Unit		1 sq ft							
Collection Basis, Unit									
Crop Stage Majority		Main	Main	Main	Main	Main	Ratoon	Ratoon	MC+RC
Trt No.	Trt Name								
1	Conventional Till 5 seed/ft^2	4 j	103 a	36 a	46.0 ab	7907 d	57 a	2095 e	10002 e
2	Conventional Till 10 seed/ft^2	6 ij	102 bc	36 a	46.3 a	8841 bc	57 a	2542 bcd	11383 cd
3	Conventional Till 15 seed/ft^2	10 gh	101 de	36 a	46.3 a	9497 ab	57 a	2737 ab	12233 ab
4	Conventional Till 20 seed/ft^2	14 ef	101 de	36 a	46.1 ab	9530 a	57 a	2532 bcd	12062 abc
5	Conventional Till 25 seed/ft^2	18 cde	100 e	35 ab	46.3 a	9600 a	57 a	2626 a-d	12226 ab
6	Conventional Till 30 seed/ft^2	20 bcd	100 e	36 a	46.2 a	9543 a	57 a	2564 bcd	12107 abc
7	Conventional Till 35 seed/ft^2	21 bc	100 e	33 b	46.5 a	9424 abc	57 a	2703 abc	12126 abc
8	Conventional Till 40 seed/ft^2	23 ab	100 e	35 ab	46.5 a	9571 a	57 a	2709 abc	12281 ab
9	Conventional Till 45 seed/ft^2	25 a	100 e	36 a	46.2 ab	9820 a	57 a	2923 a	12743 a
10	Stale Seedbed 5 seed/ft^2	3 j	104 a	35 ab	46.0 ab	7266 d	57 a	1732 f	8998 f
11	Stale Seedbed 10 seed/ft^2	7 hi	102 b	34 ab	46.2 ab	8818 c	57 a	2371 cde	11189 d
12	Stale Seedbed 15 seed/ft^2	8 ghi	101 cd	35 ab	46.5 a	9231 abc	57 a	2306 de	11537 bcd
13	Stale Seedbed 20 seed/ft^2	12 fg	100 e	35 ab	46.5 a	9554 a	57 a	2598 a-d	12152 abc
14	Stale Seedbed 25 seed/ft^2	18 cd	100 e	36 a	46.6 a	9451 abc	57 a	2719 abc	12169 abc
15	Stale Seedbed 30 seed/ft^2	17 de	100 e	35 ab	46.4 a	9347 abc	57 a	2625 a-d	11972 a-d
16	Stale Seedbed 35 seed/ft^2	20 bcd	100 e	35 ab	45.4 b	9531 a	57 a	2610 a-d	12141 abc
17	Stale Seedbed 40 seed/ft^2	22 ab	100 e	34 ab	46.8 a	9593 a	57 a	2690 abc	12282 ab
18	Stale Seedbed 45 seed/ft^2	23 ab	100 e	33 b	46.7 a	9802 a	57 a	2615 a-d	12417 a
LSD (P=.05)		3	1	2	0.8	675	0	353	839
Standard Deviation		2	1	1	0.6	477	0	250	593
CV		16	1	4	1.3	5	0	10	5

Continued.

Table 8. Continued. Yield Component Data.

Crop Name	Rice	Rice	Rice	Rice	Rice	Rice	
Crop Variety			(w/o 10 P gr wt)		filled grain		
Rating Date	8/2/2011						
Rating Type	WP dry wt.	Panicle #	PGrain wt.	10 P gr wt.	10 P seed	Milling	
Rating Unit	grams	number	grams	grams	number	head	total
Sample Size, Unit	1m	1m	1m	1m	1m	g	g
Collection Basis, Unit	2 row	2 row	2 row	2 row	2 row	100g	100g
Crop Stage Majority	Main	Main	Main	Main	Main	Main	Main
Trt No. / Trt Name							
1 Conventional Till 5 seed/ft^2	668.0 ab	159 g	251.19 c	26.43 ab	1158 ab	62.91 a	73.07 a
2 Conventional Till 10 seed/ft^2	681.3 ab	183 d-g	289.26 bc	23.86 bcd	1088 bc	60.52 a-d	72.40 ab
3 Conventional Till 15 seed/ft^2	771.3 ab	221 a-e	332.44 ab	21.21 def	926 de	61.22 abc	72.72 ab
4 Conventional Till 20 seed/ft^2	705.3 ab	200 b-g	334.78 ab	21.99 cde	998 cd	58.18 b-f	72.84 ab
5 Conventional Till 25 seed/ft^2	695.0 ab	209 a-f	320.32 ab	19.93 efg	874 de	58.72 b-f	72.90 ab
6 Conventional Till 30 seed/ft^2	690.7 ab	207 a-f	350.25 ab	19.37 efg	839 ef	58.06 b-f	72.68 ab
7 Conventional Till 35 seed/ft^2	696.0 ab	214 a-f	324.05 ab	19.59 efg	854 def	59.11 a-e	72.93 ab
8 Conventional Till 40 seed/ft^2	782.0 ab	248 a	347.62 ab	16.67 g	721 f	58.39 b-f	72.71 ab
9 Conventional Till 45 seed/ft^2	682.0 ab	214 a-f	308.20 abc	20.35 ef	890 de	61.46 ab	72.97 ab
10 Stale Seedbed 5 seed/ft^2	771.7 ab	173 efg	325.34 ab	28.39 a	1303 a	59.05 a-e	72.18 b
11 Stale Seedbed 10 seed/ft^2	656.7 b	170 fg	304.27 abc	24.55 bc	1092 bc	58.46 b-f	72.70 ab
12 Stale Seedbed 15 seed/ft^2	725.3 ab	187 c-g	333.55 ab	24.70 bc	1088 bc	56.75 def	72.53 ab
13 Stale Seedbed 20 seed/ft^2	708.3 ab	199 b-g	309.76 abc	21.21 def	933 de	54.95 f	72.58 ab
14 Stale Seedbed 25 seed/ft^2	682.7 ab	195 b-g	307.21 abc	20.35 ef	890 de	55.98 ef	72.73 ab
15 Stale Seedbed 30 seed/ft^2	803.0 a	238 ab	365.53 a	21.76 cde	939 de	60.41 a-d	72.80 ab
16 Stale Seedbed 35 seed/ft^2	719.3 ab	232 abc	354.08 ab	19.85 efg	880 de	56.69 def	72.66 ab
17 Stale Seedbed 40 seed/ft^2	723.7 ab	225 a-d	320.80 ab	20.83 def	891 de	57.26 c-f	72.55 ab
18 Stale Seedbed 45 seed/ft^2	671.7 ab	213 a-f	311.55 abc	18.33 fg	805 ef	56.73 def	72.75 ab
LSD (P=.05)	136.4	48	65.04	3.33	148	4.03	0.81
Standard Deviation	81.8	29	39.01	2.00	89	2.42	0.49
CV	11.5	14	12.13	9.24	9	4.13	0.67

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls).
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Table 9. Determination of optimum seeding rate in a conventional and stale seedbed tillage system for CL261 (2.1). Rice Research Station.

Crop Name		Rice	Rice	Rice	Rice		Rice	Rice	Rice
Crop Variety		Density							
Rating Date		4/14/2011		7/29/2011	8/5/2011			10/26/2011	
Rating Type		Stand Cnt	50% HD	Height	TestWt	Yield	50% HD	Yield	Yield
Rating Unit		number	days	in	lb/bu	lb/A	days	lb/A	lb/A
Sample Size, Unit		1 sq ft							
Collection Basis, Unit									
Crop Stage Majority		Main	Main	Main	Main	Main	Ratoon	Ratoon	MC+RC
Trt No.	Trt Name								
1	Conventional Till 5 seed/ft^2	3 i	99 a	40 a	44.0 b	7877 e	38 a	3332 c	11209 d
2	Conventional Till 10 seed/ft^2	7 gh	99 a	40 a	44.4 a	8517 cd	38 a	3485 abc	12002 bc
3	Conventional Till 15 seed/ft^2	10 g	99 ab	39 ab	44.2 ab	9019 abc	38 a	3762 ab	12781 a
4	Conventional Till 20 seed/ft^2	15 f	98 bc	39 ab	44.2 ab	8656 bcd	38 a	3622 abc	12278 abc
5	Conventional Till 25 seed/ft^2	16 f	97 c	38 ab	44.3 ab	8917 abc	38 a	3677 abc	12594 abc
6	Conventional Till 30 seed/ft^2	17 ef	98 c	39 ab	44.3 ab	8982 abc	38 a	3658 abc	12640 ab
7	Conventional Till 35 seed/ft^2	21 cd	97 c	37 b	44.5 a	8988 abc	38 a	3577 abc	12565 abc
8	Conventional Till 40 seed/ft^2	23 bc	97 c	38 ab	44.4 a	9075 ab	38 a	3566 abc	12640 ab
9	Conventional Till 45 seed/ft^2	27 a	97 c	39 ab	44.4 ab	9152 ab	38 a	3765 ab	12917 a
10	Stale Seedbed 5 seed/ft^2	3 hi	99 a	39 ab	44.2 ab	7361 f	38 a	2928 d	10289 e
11	Stale Seedbed 10 seed/ft^2	6 ghi	99 ab	39 ab	44.4 ab	8378 de	38 a	3454 abc	11833 cd
12	Stale Seedbed 15 seed/ft^2	10 g	99 a	40 a	44.3 ab	8969 abc	38 a	3793 a	12762 ab
13	Stale Seedbed 20 seed/ft^2	15 f	97 c	38 ab	44.5 a	8824 a-d	38 a	3425 bc	12249 abc
14	Stale Seedbed 25 seed/ft^2	18 def	97 c	38 ab	44.2 ab	9218 a	38 a	3692 abc	12909 a
15	Stale Seedbed 30 seed/ft^2	20 cde	98 c	38 ab	44.4 a	9050 ab	38 a	3458 abc	12508 abc
16	Stale Seedbed 35 seed/ft^2	21 cd	98 c	38 ab	44.4 ab	8894 abc	38 a	3764 ab	12659 ab
17	Stale Seedbed 40 seed/ft^2	26 ab	97 c	38 ab	44.4 ab	9154 ab	38 a	3359 c	12513 abc
18	Stale Seedbed 45 seed/ft^2	29 a	97 c	39 ab	44.4 a	9188 a	38 a	3566 abc	12754 ab
LSD (P=.05)		4	1	3	0.3	510	0	364	773
Standard Deviation		3	1	2	0.2	361	0	257	546
CV		17	1	4	0.5	4	0	7	4

Continued.

Table 9. Continued. Yield Component Data.

Crop Name		Rice	Rice	Rice	Rice	Rice	Rice	
Crop Variety				(w/o 10 P gr wt)		filled grain		
Rating Date		8/2/2011						
Rating Type		WP dry wt.	Panicle #	PGrain wt.	10 P gr wt.	10 P seed	Milling	
Rating Unit		grams	number	grams	grams	number	head	total
Sample Size, Unit		1m	1m	1m	1m	1m	g	g
Collection Basis, Unit		2 row	2 row	2 row	2 row	2 row	100g	100g
Crop Stage Majority		Main	Main	Main	Main	Main	Main	Main
Trt No.	Trt Name							
1	Conventional Till 5 seed/ft^2	843.0 a	190 abc	391.95 a	27.35 a	1188 a	68.96 ab	72.07 ab
2	Conventional Till 10 seed/ft^2	711.0 ab	159 cd	327.21 ab	24.33 bcd	1051 c	69.35 a	72.19 ab
3	Conventional Till 15 seed/ft^2	703.0 ab	157 cd	301.02 b	24.29 bcd	1049 cd	68.14 ab	71.92 ab
4	Conventional Till 20 seed/ft^2	727.0 ab	196 ab	315.62 b	22.98 cde	1000 cde	68.38 ab	71.70 b
5	Conventional Till 25 seed/ft^2	750.0 ab	202 a	327.29 ab	22.48 de	978 c-f	67.98 b	72.08 ab
6	Conventional Till 30 seed/ft^2	668.0 b	187 abc	294.07 b	22.39 de	956 c-f	68.54 ab	72.03 ab
7	Conventional Till 35 seed/ft^2	678.0 b	184 a-d	298.54 b	21.63 ef	930 ef	68.16 ab	71.96 ab
8	Conventional Till 40 seed/ft^2	702.0 ab	201 a	292.00 b	19.85 f	869 f	67.70 b	71.70 b
9	Conventional Till 45 seed/ft^2	671.0 b	188 abc	291.08 b	21.13 ef	917 ef	68.24 ab	71.60 b
10	Stale Seedbed 5 seed/ft^2	757.0 ab	162 bcd	337.00 ab	26.72 ab	1169 ab	68.35 ab	72.50 a
11	Stale Seedbed 10 seed/ft^2	652.0 b	150 d	305.16 b	25.08 abc	1062 bc	67.89 b	72.33 ab
12	Stale Seedbed 15 seed/ft^2	671.0 b	165 bcd	296.15 b	22.48 de	976 c-f	68.44 ab	71.94 ab
13	Stale Seedbed 20 seed/ft^2	769.0 ab	192 abc	337.45 ab	22.50 de	980 c-f	68.04 ab	71.71 b
14	Stale Seedbed 25 seed/ft^2	693.0 ab	187 abc	304.21 b	21.62 ef	937 def	68.73 ab	71.97 ab
15	Stale Seedbed 30 seed/ft^2	759.0 ab	210 a	333.20 ab	22.53 de	972 c-f	68.69 ab	72.12 ab
16	Stale Seedbed 35 seed/ft^2	647.0 b	176 a-d	289.85 b	22.67 cde	960 c-f	68.03 b	71.67 b
17	Stale Seedbed 40 seed/ft^2	746.0 ab	211 a	331.63 ab	21.10 ef	906 ef	67.89 b	71.64 b
18	Stale Seedbed 45 seed/ft^2	685.0 b	196 ab	300.91 b	21.31 ef	921 ef	68.09 ab	71.65 b
LSD (P=.05)		151.7	35	65.76	2.45	114	1.32	0.74
Standard Deviation		91.0	21	39.44	1.47	68	0.79	0.44
CV		12.8	12	12.51	6.42	7	1.16	0.62

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls).
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

FOUNDATION SEED RICE PROGRAM

Lawrence M. White III

INTRODUCTION

Foundation seed rice has been produced by the LSU AgCenter's Rice Research Station for distribution to Louisiana farmers since 1949. The Rice Research Station's seed rice program was instituted in response to the critical shortage of pure planting stocks that existed during and after World War II. Since its inception, the program has made available to Louisiana growers more than 166,000 cwt. of pedigreed stock of 45 rice varieties.

Concurrent with the distribution of pure seed by the Rice Research Station, an industry was developed in Louisiana composed 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 farmer's link with the work of the plant breeder. It is the product of hybridization and 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 that will ensure 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 Rice Research Station's breeding program and of established commercial varieties originating either at Crowley or at research centers in neighboring states.

To fulfill the objectives of the seed program, the Rice Research Station uses 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 Rice Research Station's breeding program that 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 is determined by the percentage of the state's 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 and Forestry. 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 the Agronomic Programs Division of the Louisiana Department of Agriculture and Forestry. 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. To eliminate noxious weeds, especially red rice, that 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.

Seedbed preparation of foundation fields is performed in the fall. Burndown herbicides are applied prior to seeding. The foundation fields are planted into a stale seedbed by means of a 24-runner minimum tillage drill. The breeder stock is planted at rates that may vary from 10 to 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, as well as basic fertilizer applications based on soil test recommendations. A midseason application of N, ranging from 21 to 55 lb/A, is also applied.

Seedling grasses and weeds are controlled by means of commercially available herbicides applied by airplane or ground rig. 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 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 eight 21-foot diameter grain bins, equipped with vented drying floors and centrifugal fans with temperature-controlled heaters. The rice is dried to a moisture level of approximately 12%. During the storage period between drying and cleaning, the rice is treated with an insecticide 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 that removes chaff, straw, and other foreign material and grades the grain according to width and thickness.

It then flows through three length-grading machines that consist of rotating, indented metal cylinders. The first two remove small grains and broken or dehulled kernels of rice. The third one removes stemmy rice, grains that have very long awns that are attached to portions of the panicle. In the next phase of cleaning, the rice moves through a machine that performs precision grading of the grain by means of rotating perforated cylinders. This machine is designed to separate medium-grain and/or red rice from long-grain rice. It is also capable of removing shriveled and other slender kernels from medium-grain rice.

In the final phase of cleaning, the rice moves through a machine that aspirates the grain, removing any chaff, straw, and other foreign material from the conditioned product.

From the cleaning machines, foundation and breeder seed rice are bagged, assigned lot numbers, and placed in storage in the Rice Research Station's seed rice warehouse where they remain until they are 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 to prevent these impurities from contaminating the seed stocks. It is routine procedure at the Rice Research Station to partially disassemble all planting and harvesting equipment and to clean it thoroughly with water and/or compressed air before using it in the field. The dryer 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. Tractors, plows, harrows, and land levelers are carefully washed before they enter land that is in a fallow cycle. These measures, together with the inspection and roguing, which are done during the growing season, help to ensure that foundation seed is genetically pure and free of mechanical mixtures and noxious weed seeds.

2011 ACTIVITIES

Of the 1,529 cwt. of foundation seed rice sold in 2011, the varieties and quantities were as follows: Caffey, 470 cwt.; Jazzman-2, 358 cwt.; Jupiter, 281 cwt.; Cheniere, 139 cwt.; Cocodrie, 92 cwt.; Jazzman, 54 cwt.; Dellrose, 40 cwt.; Pirogue, 30 cwt.; Della, 24 cwt.; Toro-2, 21 cwt.; and Neptune, 20 cwt.

The Rice Research Station's foundation seed crop in 2011 consisted of 12.5 acres of Cheniere, 10 acres of Mermentau, 8 acres of Caffey, 4 acres of Jazzman-2, 3.5 acres of Della-2, and 1 acre of Cypress.

Headrows of Caffey, Jazzman-2, Jupiter, Mermentau, Cheniere, and Della-2 were grown for replenishment of breeder seed stock.

AQUACULTURE RESEARCH

ANNUAL SUMMARY OF ENVIRONMENTAL CONDITIONS AND CRAWFISH PRODUCTION

W.R. McClain and J.J. Sonnier

Table 1 contains the average weekly data for environmental conditions and crawfish catch, 2010-2011 season, crawfish research project, Rice Research Station, Crowley, LA. The catch consisted exclusively of red swamp crawfish (*Procambarus clarkii*). The production summary is composed of averages across all experimental plots and management conditions.

Pond History: Ponds were fallow for a period of 9 months following the previous crawfish season of 2009 - 2010. Rice crops were planted in April 2010, and fields were stocked with brood crawfish at rate of 80 lb/A in May - June 2010.

Soil Type: Crowley silt loam

Water Source: Groundwater

Pond Area: Twelve 1-acre ponds in a contiguous arrangement

Forage Crops: Rice variety 'Neptune' was drill seeded on 7 Apr 2010 at 133 lb/A. Grain was harvested by a rice combine on 2 Sept 2010, and a ratoon forage crop was managed for crawfish production.

Fertilizer: Main Crop: 8-24-24 at 250 lb/A post plant application, 46-0-0 at 200 lb/A (topdress) on 26 May, 46-0-0 125 lb/A (topdress) on 16 June; Ratoon Crop: No further fertilization

Herbicide: Stam at 5 qt/A and Permit at 1 oz/A on 15 Apr; Rice Star at 24 oz/A, Grand Stand at 2/3 pt/A, and Facet at ½ pt/A on 25 May; Clincher at 15 oz/A and Crop Oil at 1 qt/A on 5 June

Insecticide: None

Fungicide: Quilt Xcel, 21 oz/A on 9 July

Crawfish Stocking Rate: 80 lb/A from 28 May - 4 June

Permanent Flood Date: 8 Oct 2010

Feed: None

Trap Type and Density: 3-funnel pyramid trap: (0.75-inch square mesh); Density = 16 traps/A

Bait Used: Manufactured bait: *Southern Pride* (Purina Mills, Inc., Shreveport, LA) or fish baits that included gizzard shad or menhaden (pogy).

Crawfish Harvest: 2 Feb - 14 June 2011 (960 total trap-sets/A)

Fields Drained: 22 June 2011

Table 1. Annual environmental conditions and crawfish production (averaged or totaled weekly).

Weeks	Soil Temp.[1]		Air Temp.		Water Temp.		Avg. D.O.[2]	Total Rainfall	Crawfish Harvest	Total Trapsets
	Min.	Max.	Min.	Max.	Min.	Max.				
	---------------------------deg.F---------------------------						(mg/L)	(inches)	(lb/A)	(#/A)
June 1-5	78.2	83.2	74.4	86.8				2.70		
June 6-12	81.1	86.6	75.7	89.6				3.70		
June 13-19	82.9	89.3	75.7	92.0				.78		
June 20-26	84.0	90.0	76.4	92.4				1.04		
June 27-July 3	82.0	86.6	75.7	88.7				2.17		
July 4-10	81.9	88.3	75.0	89.6				4.60		
July 11-17	83.6	90.4	75.4	93.7						
July 18-24	83.6	90.0	76.3	91.3				2.38		
July 25-31	82.9	89.3	75.3	92.1				1.88		
Aug 1-7	85.4	92.9	77.9	95.9				2.70		
Aug 8-14	83.4	90.1	77.0	93.7						
Aug 15-21	82.0	87.0	76.7	91.4				2.70		
Aug 22-28	82.6	89.9	73.7	93.0						
Aug 29-Sept 4	82.9	88.7	74.3	90.9				.15		
Sept 5-11	81.1	85.4	72.9	90.9				.83		
Sept 12-18	79.7	84.9	69.6	94.0				2.80		
Sept 19-25	80.9	84.9	72.4	92.3						
Sept 26-Oct 2	76.4	81.7	60.0	85.6						
Oct 3-9	69.9	75.7	50.0	81.0	66.1	74.9				
Oct 10-16	70.0	75.4	56.7	83.7	65.3	75.0				
Oct 17-23	69.6	74.7	59.7	84.1	67.2	75.0		1.65		
Oct 24-30	70.7	75.0	60.7	82.7	67.2	74.1				
Oct 31-Nov 6	65.0	69.3	51.0	72.0	60.6	65.7		3.22		
Nov 7-13	59.6	65.1	46.4	73.3	57.1	64.2				
Nov 14-20	59.7	64.0	47.1	65.4	57.0	61.7		1.53		
Nov 21-27	63.1	68.1	56.1	73.7	61.0	67.5		.90		
Nov 28-Dec 4	54.6	60.7	39.3	64.1	51.0	58.1		.62		
Dec 5-11	51.1	56.0	34.1	57.4	46.0	52.4		.30		
Dec 12-18	50.9	55.4	39.9	60.0	46.1	52.7				
Dec 19-25	53.1	57.9	37.1	61.1	49.5	55.3				

Continued.

Table 1. Continued.

Weeks	Soil Temp.[1] Min.	Soil Temp.[1] Max.	Air Temp. Min.	Air Temp. Max.	Water Temp. Min.	Water Temp. Max.	Avg. D.O.[2]	Total Rainfall	Crawfish Harvest	Total Trapsets
	---deg.F---						(mg/L)	(inches)	(lb/A)	(#/A)
Dec 26-Jan 1	50.4	55.3	41.7	62.6	47.6	53.3		3.07		
Jan 2-8	52.1	57.7	37.6	60.6	48.3	54.2		.50		
Jan 9-15	46.4	49.6	31.7	47.3	41.6	46.8		.40		
Jan 16-22	50.6	54.6	39.7	60.9	48.6	54.8		.74		
Jan 23-29	48.9	53.6	40.1	59.9	48.3	53.9		1.90		
Jan 30-Feb 5	48.9	52.9	35.3	51.7	45.8	50.4		2.83	4.1	16
Feb 6-12	43.9	48.9	29.1	50.7	42.7	50.6		1.24	1.2	16
Feb 13-19	49.7	55.4	45.0	68.4	55.1	65.3				
Feb 20-26	59.9	65.3	58.4	75.1	64.9	74.5			1.2	16
Feb 27-Mar-5	60.6	68.1	54.4	77.1	62.4	73.8		1.35	4.3	32
Mar 6-12	58.0	63.7	44.7	66.0	56.5	68.5		.16	7.0	32
Mar 13-19	61.0	66.4	53.7	73.7	63.1	76.8			18.9	80
Mar 20-26	66.6	71.9	60.4	80.0	68.5	81.8			13.5	48
Mar 27-Apr 2	66.3	72.3	55.3	74.9	64.3	79.8		.10	40.3	80
Apr 3-9	66.9	73.4	58.9	79.9	67.3	81.4			41.9	64
Apr 10-16	69.9	76.6	61.1	83.3	68.8	82.5			44.4	64
Apr 17-23	71.0	76.7	65.1	84.0	71.1	84.8			41.3	48
Apr 24-30	70.7	77.1	63.3	84.4	69.5	81.5		2.45	52.4	64
May 1-7	66.3	73.0	59.3	77.1	66.3	81.7		1.38	51.0	64
May 8-14	72.7	78.9	68.0	85.9	73.4	88.0		.16	81.0	64
May 15-21	71.1	78.6	61.3	80.7	68.8	83.5			46.4	48
May 22-28	78.4	83.9	72.7	89.7	76.4	89.8			71.9	64
May 29-June 4	81.1	87.6	72.4	93.3	79.9	91.8			75.9	80
June 5-11	81.4	89.3	72.1	95.4	79.3	94.6		.30	41.0	64
June 12-18	83.1	90.4	73.9	94.6	80.9	96.3			16.4	16
								52.93[3]	**654.1**	**960**

[1] Soil temperature was measured at a depth of 4 inches.
[2] Dissolved oxygen readings were taken about 8:00 a.m.
[3] Rainfall total is for one year only (June 1, 2010 - May 31, 2011) and does not include additional rainfall for the extended harvest period (June 2011).

INVESTIGATION OF TEST INGREDIENTS AS POTENTIAL ATTRACTANTS FOR CRAWFISH IN COOL WATER

W.R. McClain and J.J. Sonnier

INTRODUCTION

Crawfish are harvested in more than 185,000 acres of aquaculture ponds using baited wire-mesh traps that are lifted 3 to 5 days a week beginning as early as November and continuing through May to July of the following year. Traps are typically baited with manufactured formulated bait in warmer weather, but because formulated baits are inferior at cooler water temperatures (less than 70 degrees F), fresh-frozen cut fish is used. Fish for crawfish bait has become expensive, costing twice that of commercially formulated bait, and fish bait is frequently in short supply. More than half of the annual crawfish harvesting effort occurs during cool-water periods (December through late March), and with availability and price issues with fish, as well as the need to transport and store fish baits in a frozen state, fish baits has become problematic for the crawfish industry. Development of an effective, economical cool-water formulated crawfish bait will address not only some of the cost and handling/storage issues with fish baits but also will help conserve the fishery for many of these species.

Few studies have attempted to identify effective attractants for capturing crawfish. Some studies compared behavioral (feeding) responses of crawfish in the lab to various dietary items, chemical extracts, and other potential attractants. With the exception of one field study employing short trap-soak intervals (less than 80 minutes) at 64 degrees F, all trials were conducted at water temperatures greater than 70 degrees F. Studies with marine crustaceans, such as lobsters, crabs, and shrimp, have observed that amino acids and related biochemical compounds tend to elicit chemo-attraction responses and may act as feeding stimulants. However, detection does not necessarily equal attraction, and an induced feeding response may not equate to attraction over some distance to elicit entry of crawfish into a baited trap.

All previous efforts in this lab to develop an effective protocol for testing potential attractants in the laboratory have failed. The response of crawfish to field-proven attractants in a controlled laboratory environment, even at optimum temperatures with acclimated and/or starved captive stock, proved inconsistent and unpredictable. However, an effective protocol and basic bait medium from which to test potential attractants in ponds has been developed and tested in this project. Known attractants and variations of those attractants have been included in the test medium – a gelatin-based matrix, and these have resulted in catch numbers of crawfish equal to cut fish in cool water. Therefore, this protocol was utilized to test a number of experimental ingredients for their ability to attract crawfish to traps under commercial pond culture conditions in cool water. Results were compared with the industry standard (cut fish), as well as a popular (warm water) formulated bait and a non-baited trap.

Test Site: A commercial crawfish pond in Acadia Parish, located east of Crowley, LA

Crawfish Production Scenario: Rice-crawfish field rotational practice

Trap Type: Industry standard 3-funnel pyramid traps that were equipped with bait retention wells constructed of 0.75-inch plastic hexagon mesh. Bait wells extended above the water line and were used to position the bait in the center of the trap.

Baits: Various test baits were employed and constituted the experimental treatments in this study. Baits consisted of various commercial plant or animal products, test products, and commercial experimental products of a proprietary nature. Cut fish (pogy or menhaden) was used as a positive control treatment, and traps without bait were used as a negative control. A commercially available manufactured bait (Southern Pride, Purina Mills, Shreveport, LA) was also used in some trials for comparative results.

Cool Water Experimental Attractants: Various feedstuffs, high in crude protein, and a proprietary amino acid mixture were tested as attractants in the three trials. Fish (menhaden, or pogy) meal, krill meal, and squid meal were obtained from a commercial feedstuff products source. Minced fresh pogy and air-dried minced pogy (dried with forced air at room temperature for 3 days) were also incorporated as attractants in some treatments. Due to an excessive amount of protease enzyme in the minced fish flesh, which prevented the gelatin from setting up when incorporated, the mince was heated to 203°F for 7 minutes prior to incorporating into the gelatin mix.

Test Matrix: A gelatin-based matrix was used as a means to test the various attractants in the lab-formulated products (Figure 1). A lab-grade beef gelatin (Sigma-Aldrich, St. Louis, MO), 250 bloom, 40 mm mesh, was utilized, and activated with water heated to 103°F, except for the minced treatments, which were heated to a greater degree as described above. Oatmeal was added to the gelatin baits as an aid to help bind the gelatin and maintain the bait block as a single piece for the duration of the trap-soak interval.

Bait Quantity: All fish and commercially manufactured baits were used at approximately 1/4 lb (115 g) per trap wet weight. Formulations for the gelatin-based test products resulted in an apportionment of the feedstuff attractants based on an approximate attractant dry weight basis. The amino acid mixture was formulated to represent 1 or 3% of the bait by weight. All baits, whether controls or experimental bait blocks, resulted in relatively large quantities of residuals, largely intact, after the trap-soak duration. Bait quantity was not a limiting factor in this study.

Trap Soak Duration: Approximately 24 hours

Water Temperature: Water temperature remained below 70°F for trials 1 and 2 but was slightly warmer for Trial 3.

Experimental Design: Traps were placed in a cordoned-off section of the pond and were isolated from ongoing commercial harvesting activities. All traps were placed in a row within designated trapping lanes and spaced at approximately 50-ft intervals. Bait selection order was randomly assigned for each trial with the exception that no replicates of the same treatment were placed in successive order.

Replicas: A single trap-set or soak constituted a replica for each bait treatment per trial, and there were 3 to 12 replicas per trial. Replication was usually achieved over 2 or more days.

Parameters: Crawfish catch per unit effort, by numbers of crawfish and weight of crawfish per trap; average weight of individual crawfish; and percentage captured (by numbers and by weight) compared with cut pogy, the industry standard. Results were summarized by trial.

Support: USDA Southern Regional Aquaculture Center

Comments: Initial tests during the first year of this project involved baits composed of the gelatin medium and various proteinaceous ingredients as test attractants. The test attractants consisted of selected commercially available ingredients, ground flesh products, and proprietary mixtures of synthetic amino acids. Trials were conducted from January to early March at water temperatures ranging from 47 to 77°F and consisted of baited wire mesh traps (standard commercial trap of the crawfish aquaculture industry) placed at 45-ft intervals within a random location in the pond. Trap soak duration was 24 hours. The response variables consisted of average number and weight of crawfish captured per trap per treatment. Capture rates with experimental baits were compared with cut fish (pogy, an industry standard), no bait, and in one trial, the commercially formulated bait Southern Pride. Results of these trials are provided in Table 1.

Of the experimental attractants tested, only minced pogy in the matrix bait block caught as many crawfish as cut pogy. While other baits generally yielded higher catches than traps without bait, few differences were observed among the other proteinaceous attractants. The primary impact of the results to date has provided scientists with valuable information regarding what direction to take the research, in an attempt to identify methods and potential attractants for further testing. The recent findings have provided some quantitative assessments of the value of a few common feedstuff ingredients and an amino acid mixture as crawfish attractants and have provided valuable information regarding the physical aspect of a matrix for testing crawfish attractants. Specifically, this research indicated that attractant fragments (minced flesh products) were as effective as intact fish flesh when suspended in a suitable medium. This provides the impetus to evaluate decreasing quantities of mince (or similar attractants) to further appraise quantity requirements of attractants in bait. Further testing of other ingredients is planned, and an approach to investigate and quantify the component of fish flesh that acts as the primary attractant is also planned.

Table 1. Quantity of ingredients in experimental bait blocks by treatment to yield approximately 1/4 to 1/3 pound of bait per trap. Water was heated to 103 degrees F prior to its addition to the gelatin mixture, with the exception of the two treatments in trial 3, whereby the mince/water mixture was heated to 203°F to decrease protease activity and increase firmness of resulting gelatin blocks.

Treatment	Gelatin (g)	Oats (g)	Attractant (g)	Water (ml)
Trial 1				
Gelatin-Minced Crawfish	21	9.5	75	62.5
Gelatin-Krill Meal	21	9.5	20	62.5
Gelatin-Squid Meal	21	9.5	20	62.5
Gelatin-Fish Meal	21	9.5	20	62.5
Gelatin-Minced Fresh Pogy	21	9.5	75	62.5
Gelatin-Minced Air-dried Pogy	21	9.5	26	62.5
Trial 2				
Gelatin-Caprio (1%)	21	28.2	1.2	66
Gelatin-No Caprio	21	29.8	0	66
Gelatin-Krill Meal	21	9.5	20	66
Gelatin-Squid Meal	21	9.5	20	66
Gelatin-Minced Crawfish	21	9.5	75	66
Gelatin-Fish Meal	21	9.5	20	66
Gelatin-Minced Fresh Pogy	21	9.5	75	66
Gelatin-Minced Air-dried Pogy	21	9.5	26	66
Trial 3				
Gelatin-Caprio (3%)	21	26.2	3.5	66
Gelatin-Minced Crawfish[1]	21	9.5	75	25
Gelatin-Fish/Squid/Krill Meal	21	9.5	6.7 each[2]	66
Gelatin-Minced Fresh Pogy[1]	21	9.5	75	25

[1] Mince was headed to 203 degrees F for 7 minutes to inactivate protease activity that prevents the gelatin for setting up.

[2] Attractants were provided in equal amounts at 6.7 g each.

Table 2. Average crawfish catch (by number and total weight of crawfish per trap), average weight of crawfish captured, and average catch (by number and by total weight) expressed as a percentage of that caught with cut pogy (the industry standard) for experimental cool water attractants.

Treatment	No. Trps	Avg Catch (No/Trp)	Avg Catch (lb/Trp)	Avg Wt. (g)	% of Cut Pogy (by No.)	% of Cut Pogy (by Wt.)
Trial 1 (temp = 47.2 min / 56.7 max / 52.4 average)						
No Bait	3	1.7	0.04	10.9	35.4	20.0
Gelatin-Minced Crawfish	3	0.5	0.02	15.0	10.4	10.0
Gelatin-Krill Meal	3	1.2	0.05	15.0	25.0	25.0
Gelatin-Squid Meal	3	2.3	0.07	14.1	47.9	35.0
Gelatin-Fish Meal	3	3.5	0.11	14.3	72.9	55.0
Gelatin-Minced Fresh Pogy	3	2.8	0.12	19.4	58.3	60.0
Gelatin-Minced Air-dried Pogy	3	5.5	0.22	17.6	114.6	110.0
Cut Pogy	3	4.8	0.20	17.4		
Trial 2 (temp = 53.2 min / 66.3 max / 60.2 average)						
No Bait	12	5.3	0.16	13.8	29.3	26.7
Gelatin-Amino Acid Mix (1%)	12	10.3	0.31	13.5	56.9	51.7
Gelatin-No Attractant	12	9.3	0.32	15.5	51.4	53.3
Gelatin-Krill Meal	12	10.8	0.38	15.5	59.7	63.3
Gelatin-Squid Meal	12	11.1	0.38	14.8	61.3	63.3
Gelatin-Minced Crawfish	12	11.6	0.41	15.8	64.1	68.3
Gelatin-Fish Meal	12	13.6	0.47	15.9	75.1	78.3
Gelatin-Minced Fresh Pogy	12	21.8	0.69	14.3	120.4	115.0
Gelatin-Minced Air-dried Pogy	12	19.3	0.61	14.3	106.6	101.7
Cut Pogy	12	18.1	0.6	14.9		
Trial 3 (temp = 67.7 min / 76.7 max / 71.3 average)						
No Bait	12	6.3	0.2	14.3	25.3	20.8
Gelatin-Amino Acid Mix (3%)	12	12.8	0.45	16.0	51.4	46.9
Gelatin-Minced Crawfish	12	15.8	0.62	17.9	63.5	64.6
Gelatin-Fish/Squid/Krill Meal	12	16.3	0.62	17.1	65.5	64.6
Gelatin-Minced Fresh Pogy	12	26.2	0.99	17.2	105.2	103.1
Purina Pellets-Southern Pride	12	27.1	1.04	17.4	108.8	108.3
Cut Pogy	12	24.9	0.96	17.6		

Figure 1. Example of one gelatin-matrix bait block prior to use (left bait) and after 24 hours in the trap (right bait).

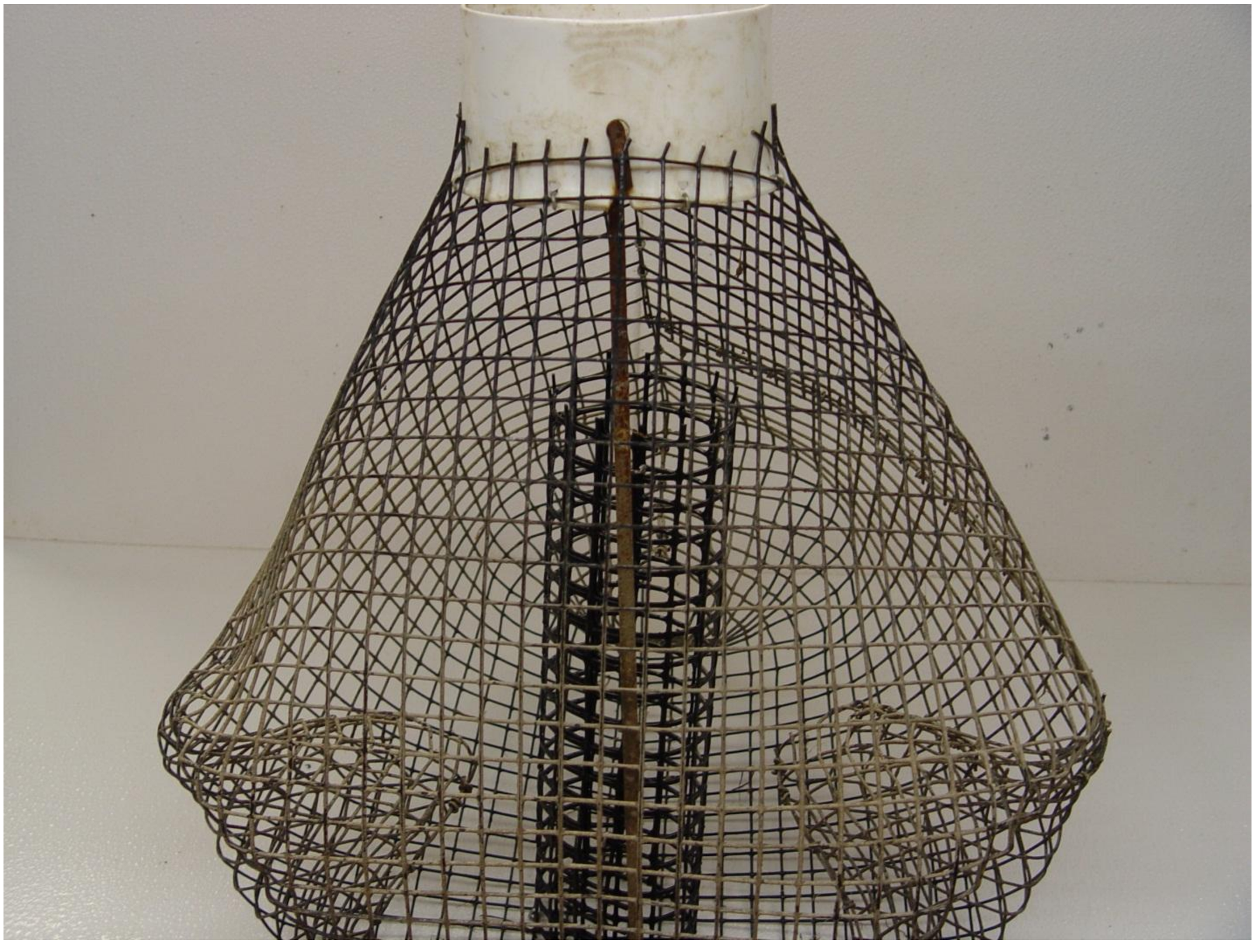


Figure 2. Typical 3-funnel "pyramid" crawfish trap used for this study with the exception of the bait retention well. The bait block was placed in the bait well fastened to the center of the trap.

KEY BIOMETRICS ASSOCIATED WITH SIZE GRADING OF LIVE CRAWFISH AT HARVEST

W.R. McClain and J.J. Sonnier

INTRODUCTION

Sales of farm-raised crawfish are high in rural areas of Louisiana, where most of the crawfish are produced, but large volumes of live crawfish are also delivered to metropolitan areas within and outside of Louisiana, such as Baton Rouge, New Orleans, Shreveport, Little Rock, Dallas, Houston, Mobile, Jackson, Memphis, and Atlanta. Major wholesale buyers and distributors of crawfish operate fleets of refrigerated trucks that deliver product to distant markets several times a week when live crawfish are available, starting in November and continuing into June or July. Marketing issues for live crawfish include significant variation in size and appearance of the product during the harvest season. These issues are exacerbated by the short shelf life (2 to 5 days) of live crawfish. Some producers and wholesale buyers selectively grade live crawfish for size with various mechanical grading devices.

Crawfish grading is presently accomplished with space increments, such as mesh size of traps, parallel bar spacings of shop-built graders, or motorized variable spacing grids of commercial graders.

No commonly accepted grade standards exist for crawfish, and subjective descriptors, such as large, selects, jumbo, number 1, number 2, etc., are not consistently used and applied by sellers of live crawfish. A lack of industry-wide size grades leads to marketing difficulties with producers, wholesale buyers, distributors, and retailers of crawfish. The lack of industry adopted grading standards potentially hampers market expansion and leads to tension among sellers and buyers of crawfish in regards to what constitutes "quality." To improve and expand markets for live crawfish, acceptable grading standards are needed.

Crawfish can be effectively graded according to the two-dimensional cross-section of the widest part of the carapace. However, potential problems occur when graded crawfish are characterized by weight, or more specifically, the number of individuals per pound of product—such as used with marine shrimp—because, unlike shrimp, crawfish weight varies with stage of maturity even though carapace width may remain unchanged. When crawfish attain sexual maturity, the claws become larger and the exoskeleton is thicker and heavier. Significant variation in weight (or number of individual crawfish per pound) can exist among crawfish that have the same total length and carapace width. Thus, variation in body weight must be considered when establishing grading standards based on grader spacing dimensions where the subsequent grades are characterized by weight.

Therefore, this research focused on identifying grader bar spacings necessary for several potential grade classifications and examined whether the grade classifications were compatible with grading bar spacing requirements throughout the season as the percentage of mature individuals increased. These data were useful in verifying whether or not spacing increments of parallel grader bars are effective in segregating crawfish into appropriate grades of a 3-, 4-, 5-, and 6-grade system throughout a harvest season without adjustments in grader bar spacing to account for changes in crawfish age and maturity.

Test Site: Experimental crawfish ponds (12 acres total area) at the Rice Research Station in Crowley, LA. Ponds were managed to simulate typical rice-crawfish field rotational operations common to the region.

Pond History: Ponds were fallow for a period of 9 months following the previous crawfish season of 2009 - 2010. Rice crops were planted in April 2010, and fields were stocked with brood crawfish at rate of 80 lb/A in May - June 2010.

Forage Crops: Rice, variety 'Neptune,' was drill seeded on 7 Apr 2010 at 133 lb/A. Grain was harvested by a rice combine on 2 Sept 2010, and a ratoon forage crop was managed for crawfish production.

Permanent Flood Date: 8 Oct 2010

Feed: None

Trap Type and Density: 3-funnel pyramid trap: (0.75-inch square mesh); Density = 16 traps/A

Bait Used: Manufactured bait: Southern Pride (Purina Mills, Inc., Shreveport, LA) or fish baits including gizzard shad or menhaden (pogy)

Crawfish Harvest: 2 Feb - 14 June 2011 (960 total trap-sets/A)

Morphometric Measurements: *For determining target size classes and grader bar spacing*: Individual crawfish were weighed, chephalothorax width and depth measured (at the area of largest girth) with digital calipers, and maturity was noted. *For quantifying results following grading runs*: Group weights and count per pound were determined for each grade within each category daily and percent maturity noted.

Grader: Adjustable floating fish grader (Model # G1B, Aquatic Ecosystems http://www.aquaticeco.com/) was used. The grader has 50 adjustable bar spacing gradations between 5/32-inch and 1 3/8-inch controlled by a single lockable lever.

Grade Classifications Tested: Target grades were established based on size categories within a 3-, 4-, 5- and 6-grade classification system. Size grade categories within each classification system were based on arbitrary increments of bar spacings associated with corresponding chephalothorax measurements.

Amounts Subjected to Grader Bar Spacings: Harvested crawfish were subjected to each grader bar setting until approximately 10 pounds of crawfish were retained by the grader bar spacing or until harvesting was completed for the day.

Extreme Spread: The minimum size of crawfish retained by each grader bar setting and the maximum size of crawfish passing through the grader bar spacing were determined by weighing and measuring the smallest and largest 10%, respectively, associated with each grader bar setting.

Schedule: Beginning in February and continuing into June, yield and biometric data were collected biweekly for each grade category within each classification system. These data require approximately 1 week of harvesting. Extreme spread data were collected for each category by classification system biweekly during offset weeks.

Support: USDA Southern Regional Aquaculture Center

Comments: Crawfish (n=212) representing various sizes (weights, ranging from 9.5 to 91 g), maturity status, and both sexes were measured for carapace width and height and overall length. Preliminary grading of crawfish at various bar spacings with the variable fish grader (Figure 1) revealed that carapace width was the best indicator for determining grader bar spacing. Arbitrary grade categories for each of four grading systems (6-, 5-, 4-, and 3-grade systems) were determined for this study (Table 1) based on observations and discussions of previously used grading categories by some in the industry. These were established to represent a range of possible/practical standards and were used solely for testing purposes. Based on carapace width measurements and measurements of fixed grader bar spacing of the fish grader, settings were established that closely matched the biological target data for each grade category within the chosen grade systems. As reflected in Table 2, the closest fixed settings altered only two target grade categories – that of the largest two size grade categories under the 3-grade classification system. In lieu of the desired separation point of 14 count/lb as the point separating the largest and middle grade categories, the fixed settings of the grader closest to the actual carapace measurements resulted in an actual separation point of 12 count/lb.

Crawfish were subjected to each grader bar spacing directly as they were emptied from traps over the course of a production season. For one component of this study, a random sample of the smallest crawfish retained by each grader setting and a random sample of the largest crawfish passing through each setting were collected (on 2-week intervals) and weighed and assessed for sex and maturity. Data were summarized by month and a seasonal average was calculated. Using these data to represent crawfish sizes that fall at either end of the target category when graded, we can determine if a theoretical batch of crawfish, uniform in size and maturity but at the extreme ends of each grade category, might fall outside of the targeted grade. The results (Table 3) indicated that monthly averages were smaller than the targeted minimum size for a category 5 times in the 6-grade system, 3 times in the 5-grade system, 3 times in the 4-grade systems, and 2 times in the 3-grade system. Likewise, there were 1, 4, 1, and 0 monthly category averages that represented averages larger than the targeted grade for the 6-, 5-, 4-, and 3-grade systems, respectively. Only one seasonal grade average was outside (under) the targeted size for a category. It should be noted that all averages outside of the targeted range in this exercise were outside of the range only by small fractions when expressed in count per pound – likely due to the slight difference in actual bar spacings from the desired target spacing.

For the second part of this study, crawfish were subjected at harvest to each grader bar setting every other week offset with Objective 1. Crawfish that passed through the grader at each setting were then placed in holding tanks and graded again after 3 hours. Each batch of crawfish within the holding tanks was subjected to the next grader setting corresponding to the appropriate target standard and no crawfish were subjected to more than the initial grading and one other after the 3-hr reprieve. Crawfish falling into each grading category encompassed a range of sizes (and maturity status) within the spectrum of the two grader settings at time of harvest. Average weight and maturity percentage were determined for each grade category, and this is presented in Table 4 by month of harvest and as a seasonal average. While there were three monthly averages slightly outside of the target range, all of the seasonal averages were within the desired grade ranges for category within each grading classification system tested. Small adjustments in grader bar settings could possibly reduce or eliminate the undesirable results. It should be noted though that resulting count per pound averages were all within the desired ranges for the 3- and 4-grade system categories. This is likely due to a wider range of individual crawfish sizes contained within each category, which tends to mitigate influences on weight per carapace width as maturity is reached. In conclusion, these results suggest that setting grader bar spacings to closely correspond with the carapace width of crawfish within the desired size ranges, within reason, can achieve suitable results for sorting crawfish by size, even when weight per given carapace width is influenced by physical changes as crawfish mature. Moreover, it is likely that grading standard results will be easier to achieve and less influenced by morphological differences in crawfish if grade categories encompass a wider range of individual sizes when contrasted to a narrow range.

The results of this research has provided confirmation that dimorphism associated with maturity in crawfish can impact results of grading operations based on exterior measurements (specifically carapace width) of the animal. However, tangible evidence is presented that suggests satisfactory results can be achieve in grading crawfish by size if precise grader bar spacings are used and if grade standards are kept to a manageable number while avoiding narrow ranges in the acceptable sizes within a grade category. This is all predicated on grading crawfish at a time when they are less likely to grab and hold onto one another while grading, thereby giving the cleanest grades possible. This information, including the arbitrary target grade specifications used in this study, should be an asset and basis for discussion for the industry when deciding if and what grading standards are needed industry wide.

Table 1. Estimated bar spacing settings (in millimeters) for arbitrary target grade separations of live crawfish under each of the four grading classification systems. Bar spacing increments to separate size classes are derived from carapace width measurements. Size count headings in **bold black** print represent the desired range of sizes (in count per pound) for each grade category within the different grading classification systems. First subheadings (red font) represent the breaking points (count per pound) for inclusion within the respective grade categories. Second subheadings (blue font) represent the breaking points in grams.

6-Grade System

	<10 <9.5 **>47.5**		**10-14** 9.6-14.5 **31.2-7.4**		**15-19** 14.6-19.5 **23.2-31.1**		**20-24** 19.6-24.5 **18.5-23.1**		**25-29** 24.6-29.5 **15.4-18.4**		**>29** >29.6 **<15.3**
Width		26.4		23.2		21.0		18.9		17.9	

5-Grade System

	<12 <11.5 **>39.3**		**12-17** 11.6-17.5 **25.8-39.2**		**18-23** 17.6-23.5 **19.3-25.7**		**24-29** 23.6-29.5 **15.4-19.2**		**>29** >29.6 **<15.3**
Width		24.7		21.7		19.9		17.9	

4-Grade System

	<12 <11.5 **>39.3**		**12-18** 11.6-18.5 **24.5-39.2**		**19-25** 18.6-24.5 **18.5-24.4**		**>25** >24.6 **<18.4**
Width		24.7		21.0		18.9	

3-Grade System

	<14 <13.5 **>33.5**		**14-21** 13.6-21.5 **21.0-33.4**		**>21** >21.6 **<20.9**
Width		24.5		20.2	

Table 2. Bar spacing breaking points (target and actual) applied to a variable fish grader for sorting crawfish into various size classes within different grade classification systems.

6-Grade System

	<10		**10-14**		**15-19**		**20-24**		**25-29**		**>29**
Target		26.4		23.2		21.0		18.9		17.9	
Actual		26.33		23.02		20.75		19.05		17.79	
Bar #		38		34		31		29		27	

5-Grade System

	<12		**12-17**		**18-23**		**24-29**		**>29**
Target		24.7		21.7		19.9		17.9	
Actual		24.58		21.49		19.92		17.79	
Bar #		36		32		30		27	

4-Grade System

	<12		**12-18**		**19-25**		**>25**
Target		24.7		21.0		18.9	
Actual		24.58		20.75		19.05	
Bar #		36		31		29	

3-Grade System

	<14[a]		**14-21[a]**		**>21**
Target		24.5		20.2	
Actual		24.58		19.92	
Bar #		36		30	

[a] The closest fixed spacing on variable grader breakpoints resulted in actual target grades of <12, 12-21, and >21 crawfish per pound.

Table 3. Results for smallest crawfish retained and largest crawfish passing through each grader bar spacing arranged as minimum and maximum count/lb observed within each target grade for each of the four grading systems. Summary is by month and for a seasonal average. Highlighted (yellow) values indicates averages that fall outside of the target range. NA references missing values (i.e., no observations).

Grade Classification System	Target Grade (Cnt/lb)	Feb Max - Min	March Max - Min	April Max - Min	May Max - Min	June Max - Min	Seasonal Max - Min
6-Grade System	< 10	NA	9.1	9.1	9.3	9.3	9.2
	10 - 14	NA - 12.9	9.9 - 13.4	10.0 - 13.6	10.6 - 13.6	10.2 - 13.3	10.2 - 13.4
	15 - 19	15.6 - 18.6	15.2 - 20.0	15.1 - 17.8	15.2 - 19.1	14.8 - 18.7	15.2 - 18.8
	20 - 24	24.0 - 24.6	22.1 - 24.5	19.9 - 24.0	21.1 - 23.7	20.8 - 24.7	21.6 - 24.3
	25 - 29	27.2 - 29.7	28.8 - 31.9	24.6 - 28.1	25.2 - 28.5	24.4 - 26.0	26.0 - 28.8
	> 29	37.6	36.4	30.3	31.6	30.8	33.3
5-Grade System	< 12	10.4	10.6	11.0	11.5	11.4	11.0
	12 - 17	12.7 - 16.5	12.1 - 16.8	12.2 - 16.7	12.2 - 16.8	12.1 - 17.5	12.3 - 16.9
	18 - 23	19.7 - 20.1	19.9 - 22.2	17.5 - 21.0	17.1 - 20.5	19.3 - 21.2	18.7 - 21.0
	24 - 29	27.2 - 29.7	25.3 - 31.9	22.1 - 28.1	22.6 - 28.5	21.1 - 26.0	23.7 - 28.8
	> 29	37.6	36.4	30.3	31.6	30.8	33.3
4-Grade System	< 12	10.4	10.6	11.0	11.5	11.4	11.0
	12 - 18	12.7 - 18.6	12.1 - 20.0	12.2 - 17.8	12.2 - 19.1	12.1 - 18.7	12.3 - 18.8
	19 - 25	24.0 - 24.6	22.1 - 24.5	19.9 - 24.0	21.1 - 23.7	20.8 - 24.7	21.6 - 24.3
	>25	27.2	28.8	24.6	25.2	24.4	26.0
3-Grade System	< 12	10.4	10.6	11.0	11.5	11.4	11.0
	12 - 21	12.7 - 20.1	12.1 - 22.2	12.2 - 21.0	12.2 - 20.5	12.1 - 21.2	12.3 - 21.0
	> 21	27.2	25.3	22.1	22.6	21.1	28.4

Table 4. Target crawfish grade (cnt/lb) and nearest settings on the fish grader (based on crawfish carapace width measurements) for the categories within each numbered grade system. Also presented are the average size (cnt/lb) and percentage maturity for crawfish harvested and graded according to the various grader bar spacings for each grade category within the 6-, 5-, 4-, and 3-grade systems. Averages were determined for each month of harvest and for the season. Highlighted (yellow) values indicate averages that fall outside of the targeted range.

Grade Classification System	Target Grade (cnt/lb)	Nearest Setting (mm)	March		April		May		June		Seasonal	
			% Mat	cnt/lb	% Mat	cnt/lb	% Mat	cnt/lb	% Mat	cnt/lb	% Mat	cnt/lb
6-Grade System	< 10	< 26.3	71.7	8.7	84.9	9.8	47.2	9.6	88.9	10.8	72.6	9.6
	10 - 14	23. 0- 26.3	47.7	12.9	55.5	12.4	35.7	13.0	68.6	14.0	49.5	12.9
	15 - 19	20.8 - 23.0	44.1	17.8	63.0	17.1	35.1	16.6	50.7	16.9	47.2	17.1
	20 - 24	19.1 - 20.8	44.9	23.0	41.1	21.2	28.4	20.6	48.2	21.3	40.0	21.9
	25 - 29	17.8 - 19.1	25.9	28.7	41.4	27.7	43.2	24.9	42.3	24.8	39.6	26.5
	> 29	> 17.8	34.4	35.0	27.8	35.7	41.0	32.3	32.7	30.1	33.9	33.0
5-Grade System	< 12	< 24.6	69.6	11.2	80.4	10.2	48.2	10.6	92.7	10.4	69.9	10.5
	12 - 17	21.5 - 24.6	39.7	17.3	48.4	15.2	60.1	15.1	61.1	14.6	51.4	15.6
	18 - 23	19.9 - 21.5	43.1	18.9	44.7	18.9	54.7	19.8	46.2	19.2	47.4	19.2
	24 - 29	17.8 - 19.9	35.3	25.8	41.0	25.8	44.6	24.1	49.3	23.6	41.5	25.2
	> 29	> 17.8	20.7	36.5	34.1	36.6	43.0	31.4	39.7	31.1	35.8	33.9
4-Grade System	< 12	< 24.6	77.3	10.5	78.5	10.5	45.8	10.9	76.4	11.1	67.1	10.7
	12 - 18	20.8 - 24.6	39.8	17.3	46.4	17.4	47.1	15.7	53.3	15.7	46.2	16.6
	19 - 25	19.1 - 20.8	39.7	23.5	43.1	23.5	49.9	21.3	41.5	21.1	44.3	22.6
	>25	> 19.1	40.9	26.1	46.1	26.1	48.4	26.0	38.1	26.1	44.7	26.0
3-Grade System	< 12	< 24.6	58.1	10.7	60.1	10.7	53.2	10.8	73.1	11.2	59.6	10.8
	12 - 21	19.9 - 24.6	50.2	17.0	52.9	16.8	52.7	16.1	43.5	17.0	51.1	16.6
	> 21	> 19.9	24.7	31.9	27.9	29.9	49.8	25.0	40.4	24.2	36.8	27.6

Figure 1. Size grading of crawfish was accomplished in the boat at harvest with a variable fish grader. Grader was adjustable for different size categories.

Figure 2. Smaller crawfish dropped through to a tote and larger crawfish were emptied into a tote in front of the grader. Graded crawfish were sorted once more in the laboratory using a similar technique.

Figure 3. Size grading in crawfish is accomplished according to width of the carapace.

EFFECTS ON CRAWFISH CATCH WITH REDUCED QUANTITY OF BAIT USING BAIT RETENTION WELLS IN TRAPS

W.R. McClain and J.J. Sonnier

INTRODUCTION

Crawfish harvesting is a passive process that utilizes trapping because 1) crawfish are continually recruited into the harvestable population; 2) production ponds are large, shallow, and often irregular in shape, with standing vegetation that serves as a crawfish food resource; and 3) the population consists of a homogenous mix of hard- and soft-shelled (molted) individuals. Crawfish are harvested in baited wire-mesh traps that are lifted 3 to 5 days a week beginning as early as November and continuing through May to July of the following year.

Traps are typically baited with either manufactured formulated baits consisting of a mixture of processed grain by-products and other proprietary ingredients or fresh-frozen fish. The most widely used fish for crawfish baits include the gizzard shad and menhaden (pogy), but common carp, buffalofish, herring, and other fish species may be used.

At water temperatures exceeding 70°F, manufactured grain-based bait pellets are effective crawfish attractants, and nearly 11,000 tons of formulated bait are sold annually. However, at temperatures less than 70°F, current formulations of manufactured bait are inferior to fresh-frozen fish as an attractant for crawfish. At water temperatures between about 65 and 75°F, either bait type works relatively well. However, using fish for crawfish bait has become expensive, costing nearly twice that of commercially formulated bait, and fish bait is frequently in short supply. More than half of the annual crawfish harvesting effort occurs during cool-water periods (December through late March), and the availability and price of fish, as well as the need to transport and store fish baits in a frozen state, is problematic for the crawfish industry.

Bait retention wells (or bait protection containers) were once thought to increase the catch, or at least increase the retention of crawfish that enter the trap, by limiting access of crawfish inside the trap to the bait, thus allowing the bait to last longer. However, research at the LSU Aquaculture Research Station in the early 1980s found that bait wells resulted in 40% fewer crawfish per trap lift than traps with exposed bait. That work was conducted with a different, less efficient, trap design compared with what is used today. More recent work at the Rice Research Station documented no adverse effects on catch with the use of bait wells in the more efficient square-mesh pyramid trap in use today. Therefore, the next logical question is: can bait quantity be effectively reduced without affecting daily yields when employed with bait retention wells in traps that limit crawfish access to the bait, thus allowing a given quantity to last longer? This research project provided some preliminary data that addresses this question.

Test Site: A commercial crawfish pond in Acadia Parish, located east of Crowley, LA

Crawfish Production Scenario: Rice-crawfish field rotational practice

Trap Type: Industry standard 3-funnel pyramid traps that were equipped with bait retention wells constructed of 0.75-inch plastic hexagon mesh. Bait wells extended above the water line and were used to position the bait in the center of the trap.

Bait Retention Well: See photograph in report above entitled "*Investigation of test ingredients as potential attractants for crawfish in cool water*."

Baits: Consisted of two industry standards, cut pogy (menhaden) or Southern Pride Pellets (Purina Mills, Shreveport, LA)

Bait Quantity: For Trial 1, both baits were used at approximately 1/4 lb (115 g) per trap wet weight (the industry standard) and at a reduced weight of approximately 1/8 lb (57 g). For Trial 2, treatments were 1/4 lb, 3/16 lb, and 1/8 lb per trap (wet weight) per day. Any bait residual was discarded and fresh bait was used each day.

Trap Soak Duration: Approximately 24 hours

Water Temperature: Water temperature ranged from a low of 60.5 to a high of 71.5°F and averaged 68.2°F for Trial 1 and 66.2°F for Trial 2.

Experimental Design: Traps were placed in a cordoned-off section of the pond and were isolated from ongoing commercial harvesting activities. All traps were placed in a row within designated trapping lanes and spaced at approximately 45-ft intervals. Bait selection order was randomly assigned for each trial with the exception that no replicates of the same treatment were placed in successive order.

Replicas: A single trap-set or soak constituted a replica for each bait treatment per trial, and there were 30 replicas for Trial 1 and 12 for Trial 2. Replication was achieved over several days.

Parameters: Crawfish catch per unit effort, by numbers of crawfish and weight of crawfish per trap; average weight of individual crawfish per treatment; and percentage captured (by numbers and by weight) compared with full bait treatments (1/4 lb). Results were summarized by trial.

Comments: Results of the catch data are presented in Table 1. In both trials, there was a corresponding reduction in catch as the quantity of bait was decreased, for both cut fish and the manufactured bait. This held true whether the catch was expressed in number or weight. For the most part, the percentage reduction in catch was greater for fish than for manufactured bait. It is unclear whether the fish treatment was more affected by quantity due to the cooler temperature of the water or the fact that manufactured baits seem to leave more residue (albeit not all intact) as they erode, providing a greater quantity of attractants over the soak duration. In either case, there was some intact bait residue remaining with all traps following the 24-hr soak duration.

These preliminary results suggest that bait retention wells, at least when constructed of 0.75-inch mesh wire, do not effectively mitigate large reductions in bait quantity. The theory that use of bait wells could possibly permit similar catches with less quantity of bait, by limiting access to the bait by crawfish and by retaining the bait in the center of the trap during the soak interval, does not seem plausible from these results. However, some of the many factors that could influence outcomes and help to support or refute this theory include water temperature, bait type, bait quantity, crawfish density, mesh size of the bait well, and trap soak duration. This study examined only one factor – bait quantity, and although a reduction in bait quantity of 25 to 50% negatively affected the catch, it is possible that a slightly lower reduction in bait quantity, say 10%, may have yielded a different result. Nonetheless, these limited and preliminary data provide a baseline of information and suggest that it may be difficult to mitigate the use of a substantially lower quantity of bait by simply placing bait retention wells inside crawfish traps.

Table 1. Average crawfish catch (by number and total weight of crawfish per trap), average weight of crawfish captured, and average catch (by number and by total weight) expressed as a percentage of that caught with full bait quantities (1/4 lb per trap per set).

Treatment	No. Trps	Avg Catch (No/Trp)	Avg Catch (lb/Trp)	Avg Wt. (g)	% Reduction From ¼ lb By No.	% Reduction From ¼ lb By Wt.
Trial 1 (temp = 64.5 min / 70.9 max / 68.2 average)						
1/4 lb Cut Fish	30	26.7	1.01	17.2	-	-
1/4 lb Southern Pride Bait	30	29.1	1.06	16.4	-	-
1/8 lb Cut Fish	30	18.9	0.71	17.0	29.2	29.7
1/8 lb Southern Pride Bait	30	24.9	0.82	14.9	14.4	22.6
Trial 2 (temp = 60.5 min / 71.5 max / 66.2 average)						
1/4 lb Cut Fish	12	26.6	0.98	27.1	-	-
1/4 lb Southern Pride Bait	12	24.5	0.95	26.0	-	-
3/16 Cut Fish	12	23.3	0.91	25.7	12.4	7.1
3/16 Southern Pride Bait	12	23.9	0.87	27.8	2.4	8.4
1/8 lb Cut Fish	12	22.2	0.82	27.2	16.5	16.3
1/8 lb Southern Pride Bait	12	21.3	0.77	27.8	13.1	18.9

AVERAGE TEMPERATURES INSIDE NATURAL CRAWFISH BURROWS

W.R. McClain and J.J. Sonnier

INTRODUCTION

Crawfish aquaculture depends solely on natural reproduction from stocked or indigenous broodstock. Variability in the successful recruitment of young-of-the-year crawfish to the pond has been attributed to the wide variability in annual production within and among years. Low yields have a negative impact on cash flow and profits, and unpredictability of yield from pond to pond and from year to year clearly hinders management operations and marketing plans. The ability to access the degree to which recruitment is successful is largely elusive to most farmers, and options to correct any inadequacies in recruitment once suspected are logistically and economically nonexistent. Only by understanding the factors that influence reproductive outcomes and development of management tools that could possibly mitigate some of the most destructive factors can crawfish producers ever expect to exert a positive influence on the young-of-the-year recruitment process.

Limited research has focused on reproduction and recruitment in crawfish aquaculture, and that research has been generated almost exclusively by the LSU AgCenter. One aspect of previous research has been the use of artificial burrows in a laboratory setting to ascertain the effect of various environmental factors on spawning success. While the artificial burrows simulate conditions in the terminal chamber of natural burrows very well, temperature at which the artificial burrows are maintained is a critical factor and can vary from month to month. Natural burrow temperatures were measured in this project at various times in various years, with several types of temperature probes, to satisfy the requirements of the various studies utilizing artificial burrows. Therefore, for this report to be used as a future reference, those data of natural burrow temperatures, spanning different months and several years, are compiled into a composite database, which is used to profile typical burrow temperatures by month for south Louisiana. The resolved chart represents the overall averages, by month, for these data collectively.

Study Site: Experimental crawfish ponds at the Rice Research Station in Crowley, LA. Ponds were managed to simulate typical rice-crawfish field rotational operations common to the region. Burrows were randomly chosen from the perimeter levees of the pond complex.

Burrow Selection: Burrows were chosen at random for temperature data collection, but efforts were made to select freshly completed and sealed burrows, and temperature probes remained with burrows for at least one month or until burrows were opened by the occupant crawfish.

Procedure: Sealed burrow caps were removed, probe was inserted at or near the bottom of the burrow, and mud cap was replaced and manually sealed to the extent possible. For the 4-channel temperature data logger, four burrows were selected within close proximities of each other and a temperature probe was inserted individually in each one. Weatherproof coverings were placed over the exposed part of each temperature device aboveground.

Data Collection Time Frame - Years (by Month): 2000: Aug, Sep, Oct; 2001: May, June, July, Aug; 2004: July, Aug, Sep, Oct, Nov, Dec; 2005: Jan, Feb, Mar, Apr, May, June, Oct, Nov, Dec; 2006: Jan, Feb, Mar, Apr, May, June

Devices: Three types of thermometers were used in the study: 1) Reotemp (San Diego, CA) sealed dial compost thermometer with 36-inch stem; 2) AquaCal Clinefinder (Tucson, AZ) digital thermometer with 50 feet of cable attached to a probe; and 3) Hobo (Onset Corp., Cape Cod, MA) U12 Outdoor/Industrial 4-channel data logger with four 6-feet cables, each attached to temperature probe, connecting to a central data logger component.

Devise Use by Year: Reotemp was used in 2000, 2001, and 2004; Clinefinder was used in 2001, 2004, and early 2005; and Hobo was used in 2005 and 2006.

Reading Intervals: Non-recording thermometers (Reotemp and Clinefinder models) were manually observed and data recorded on random days and at random times throughout the day with varying degrees of frequency. The temperature data logger (Hobo U12) was set to record temperature readings every 4 hours from each probe and the data, respective of probe, was logged individually.

Air/Soil/Water Temperatures: Average air, soil, and water temperature readings corresponding to the respective months are presented in addition to the average burrow temperatures. Air and soil data (soil measured at a depth of 4 inches) were obtained from the automated weather station located near the Rice Research Station main complex in Crowley, LA. Water temperature data (when available) were obtained from additional Hobo temperature data loggers placed inside crawfish ponds (when inundated) at the experimental crawfish pond complex near the respective crawfish burrows that were being monitored.

Comments: Table 1 represents the average burrow temperatures from data obtained manually with the non-recording devices. Data from the temperature data logger are presented in Table 2. The resulting composite of data from all sources and all years is presented in chart form in Figure 1. The bold line represents the composite monthly average burrow temperatures over the course of a year. It should be noted, however, that this composite represents a typical burrow observed for that month alone, as any given burrow may be occupied by the same crawfish only for a period of 2 to 3 months up to 6 or 7 months. The resulting air, soil, and water (when present) temperatures represent the values for corresponding data points during the same month/year that burrow temperatures were taken.

The chart illustrates the effects of seasonal changes on burrow temperature, which shows the variations in temperature that crawfish are able to spawn in. Because the red swamp crawfish are known to spawn year round in the South, they apparently have the capacity to spawn under a wide array of temperatures – although egg development time is temperature dependent. These data have and will continue to be useful for research that simulates conditions in natural burrows.

The temperature profile of more easily measured parameters and their relationship to measured burrow temperatures may also be useful for predicting actual burrow temperatures during any month of the year in south Louisiana. It appears from the chart that pond water temperature, at least for non-summer months, may be the best predicted of actual burrow temperatures. However, additional data and further work are needed before more precise predictors can be derived.

Table 1. Average temperature inside crawfish burrows, by month, as measured manually over 1 to 3 years, and average corresponding air, soil, and water (when present) temperature. Number of burrows sampled and number of temperature readings recorded are also presented by month.

Month	Years	No. of Burrows	No. of Readings	Probe Depth	Burrow Temp.	Air Temp.	Soil Temp.	Water Temp.
Jan	2005	2	24	32.0	55.9	53.4	58.1	56.3
Feb	2005	2	36	32.0	57.5	56.4	59.7	58.1
Mar	2005	2	20	32.0	59.7	57.0	61.5	62.3
Apr	2005	2	14	32.0	65.7	65.7	69.0	68.7
May	2001, 2005	4	7	28.5	72.2	73.7	78.5	66.4
June	2001	2	18	25.0	79.5	79.2	82.0	-
July	2001, 2004	4	41	29.9	80.9	82.5	87.3	-
Aug	2000, 2001, 2004	5	46	31.0	80.8	83.2	87.0	-
Sept	2000, 2004	3	47	26.9	78.2	78.4	82.3	-
Oct	2000, 2004	3	24	28.8	74.8	75.8	78.8	77.8
Nov	2004	2	16	27.5	70.8	64.6	66.8	66.4
Dec	2004	2	14	32.0	62.7	54.8	59.6	57.3

Table 2. Average temperature inside crawfish burrows, by month, as measured by data loggers over 1 or 2 years, and average corresponding air, soil, and water (when present) temperature. Number of burrows sampled and number of temperature readings recorded are also presented by month.

Month	Years	No. of Burrows	No. of Readings	Probe Depth	Burrow Temp.	Air Temp.	Soil Temp.	Water Temp.
Jan	2005, 2006	4	690	27.8	57.3	55.5	57.8	57.1
Feb	2005, 2006	4	672	27.8	56.5	54.0	57.8	57.4
Mar	2005, 2006	4	744	27.8	63.8	59.5	62.9	64.9
Apr	2005, 2006	4	720	27.8	71.7	69.3	73.0	73.2
May	2005, 2006	4	744	27.8	76.7	74.8	78.8	80.1
Jun	2005, 2006	4	326	27.8	80.6	80.3	84.6	83.7
Oct	2005	2	360	23.5	68.5	61.5	63.8	62.6
Nov	2005	2	236	23.5	62.2	69.0	75.4	67.1
Dec	2005	2	372	23.5	52.3	50.5	52.4	52.7

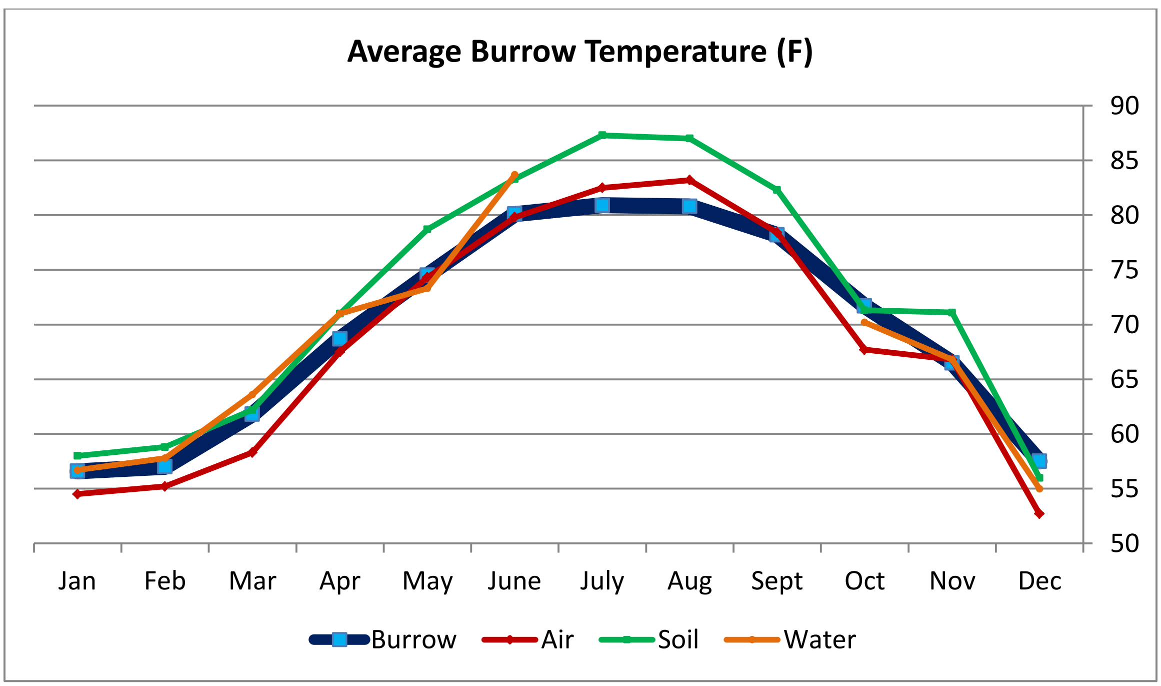


Figure 1. Composite profile of average monthly temperature inside crawfish burrows over different years and measured with different instruments. This chart represents reasonable expectations for air/water temperatures at or near the terminal chamber in typical crawfish burrows in south Louisiana.

RICE DISEASE CONTROL RESEARCH

RICE DISEASE CONTROL STUDIES, 2011[1]

D.E. Groth, C.W. Dischler, L.L. Monte, and M.J. Frey

Rice diseases pose a major threat to rice production. The two most important fungal diseases, sheath blight and blast, cause significant yield and quality reductions that cost farmers millions of dollars each year. Diseases caused by the fungus *Cercospora* have also become major problems in recent years. Bacterial panicle blight is also a major rice disease, but fungicides have no activity against this disease. Disease resistance is the best control option, but often, it is not available. Cultural control can reduce disease development but usually involves reducing inputs – especially nitrogen and seeding rates, which can limit yield. As a result, rice farmers often rely on fungicides to control diseases. Several rice fungicides are available, but timing is critical for maximum return. Fungicide timing, rate, and efficiency trials have been conducted at the LSU AgCenter Rice Research Station and in Louisiana growers' fields for a number of years. Fungicides were applied at either 7 days after panicle differentiation, 2- to 4-inch boot, 50 to 70% heading (heads emerging from the boot but not completely emerged), or 5, 10, or 15 days after heading. Varieties selected were susceptible to sheath blight, blast or *Cercospora* and were managed to favor disease, i.e. inoculated, fertilized with high N rates, planted late, and planted in high disease pressure fields. The studies demonstrated that fungicide timing was important in sheath blight, blast, and *Cercospora* control. Boot stage appeared to be the best timing for *Cercospora* and sheath blight control. Earlier applications were not as effective or higher rates were needed to provide season-long control. Heading applications were effective. However, this allowed more sheath blight to spread up the plant, and in one of three years, *Cercospora* control was weak. Blast control was best when fungicides were applied at heading. Post-heading applications for both sheath blight and blast lost effectiveness when delayed by as little as 5 days after heading. Fungicides also differed in their effectiveness against different diseases. Propiconazole was most effective against *Cercospora* but was weak against sheath blight and had no activity against blast when used alone. Azoxystrobin-containing fungicides were more effective against sheath blight than trifloxystrobin-containing fungicides. But, trifloxystrobin fungicides were more effective against blast. Effective fungicide use must be based on the presence of damaging disease in a field and when it starts to develop. This is determined by knowing the varietal susceptibility, field disease history, weather conditions in your area, and most importantly by scouting for disease in the field multiple times during the growing season. If sheath blight and *Cercospora* are present in a field, boot applications would be best. Earlier applications would only be advisable if sheath blight started earlier and was causing significant damage before the boot growth stage. If blast is present, delaying fungicide application to heading would be best because blast can be more damaging than other diseases, and heading applications can be effective against sheath blight. Most importantly, fungicides must be applied no later than by when 50 to 70% of the heads have emerged to maximize disease control and yields. Remember, if there is little or no disease, there is little or no loss.

Rice disease resistance screening has been conducted for many years at the LSU AgCenter Rice Research Station and at off-station trials. Typically, it takes three years of data to accurately determine the resistance of a variety because of environmental differences, erratic disease development, and absence of some diseases in some years. This screening includes current varieties, potential releases, the Uniform Regional Rice Nursery, breeding lines in the preliminary yield, single plot, and early generation populations. The primary diseases screened include sheath blight, bacterial panicle blight, blast, Cercospora, and several minor diseases. Screening for resistance is conducted in disease nurseries, which consist of rice planted in rows in the field, with each row being a different entry. Each entry is replicated two to four times and randomized within the experiment to increase accuracy and eliminate cross interference between rows. Sheath blight and bacterial panicle blight plots are inoculated to create severe and uniform disease development because these diseases do not spread extensively within the plots. All other diseases, including blast and Cercospora, which spread rapidly through windblown spores, depend on natural inoculum. Off-station trials depend on natural inoculum since inoculations are only done on station. All of the tests are culturally managed to favor disease. At maturity, rows are rated on 0-9 severity scales, where 0 indicates no

[1] This research is supported in part by funds provided by rice producers through the Louisiana Rice Research Board and various agricultural chemical companies.

disease development (immunity) and 9 indicates maximum disease development possible (very susceptible). Data are analyzed and used by the breeders in line advancement decisions and in varietal recommendations. In general, there is a high correlation between on- and off-station disease reactions. The disease resistance screening program has been successful over the years in maintaining disease resistance levels in released varieties and increasing resistance levels to certain diseases. Some of the sources of this resistance include current varieties, introduced foreign germplasm, and the USDA rice collection. One of the major difficulties in determining disease resistance levels is that the pathogen populations have multiple races or genetic types that have developed to overcome resistant varieties, making them susceptible. Determining which race or races to use is one of the most important decisions a plant pathologist makes. One way to overcome this is to allow the rice to be infected by the natural populations in an area. Even with all of this work, we do not always get a good indication of a variety's resistance level until it is planted in commercial fields. The problem with this is that a variety may be susceptible to a rare race that will become the most prevalent race when the variety becomes popular and is exposed to many different environments. Usually, this happens over time, and a variety stays resistant over several years. The end result of varietal resistance development is that every variety will become susceptible to diseases over time and screening for new resistant varieties will be a nonstop ongoing process.

Table 1. List of fungicides tested in 2011.

	Common Name	**Company**
Quadris 2.08 SC	Azoxystrobin	Syngenta
Stratego 2.08 EC	Trifloxystrobin/Propiconazole	Bayer
GEM 500 SC	Trifloxystrobin	Bayer
Quilt 1.66 SC	Azoxystrobin/Propiconazole	Syngenta
Moncut 4 SC	Flutolanil	Gowan
Tilt 3.6 EC	Propiconazole	Syngenta
Quilt Xcel 2.2SC	Azoxystrobin/Propiconazole	Syngenta

2011 Variety Trial

Location: Rice Research Station, Crowley, LA

Soil Type: Crowley silt loam (pH 6.0, Clay 12%, Silt 71%, Sand 17%, CEC 9.4 /kg)

Variety/Seed Rate: Various, 100 lb/A

Plot Size: 1-3 rows, 6 ft long

Planting Method/Date: Drill seeded, Mar 16 and May 17

Fertilization: Preplant 20-60-60, Mar 15; Preflood 135-0-0, April 25; Topdress 46-0-0, May 12; Preplant 20-60-60, May 16; Preflood 159-0-0, June 15

Experimental Design: Randomized complete block design with two to four replications

Water Management: Flushed, Mar 23, Mar 30, and Apr 12; Flooded, May 2; Drained, July 19; Flushed, May 23 and 30; Flooded, June 16; Drained, July 1; Re-Flood, July 11; Drained, Aug 31

Herbicides: Propanil 4 qt/A, Apr 15; Tank-Mix RiceBeaux 3 qt/A and Prowl EC 2.4 pt/A, Apr 30; Tank-Mix Propanil 3 qt/A and Basagran 1 qt/A, June 3; Tank-Mix RiceBeaux 3 qt/A and Prowl EC 2.4 pt/A, June 14

Insecticides: Dermacor seed treatment

Inoculation Dates: *Rhizoctonia solani* culture grown on rice grain/hull mixture, May 19

Application Equipment: N/A

Application Dates:

Growth Stage	Time	Temp	Wind	RH	Clouds	Dew
N/A						

Disease Ratings: See Table 2

Drained: July 19, Aug 31

Results: Table 2

Comments: Sheath blight severity was very severe in inoculated plots, naturally occurring leaf blast was evaluated under upland conditions and flooded conditions after a 1-week drainage, neck blast was evaluated in the flooded field, bacterial panicle blight was evaluated in inoculated plots with moderate severity, naturally occurring Cercospora, narrow brown leaf spot were light in severity, and leaf smut was moderate in severity.

Table 2. Disease reaction of various rice varieties and experimental lines to sheath blight, flooded field leaf blast, leaf smut, upland leaf blast, Cercospora on the sheath, leaf blast, bacterial panicle blight (BPB), rotten neck blast (RNB) and narrow brown leaf spot, at the Rice Research Station, Crowley, LA. 2011. (Variety Trial).

Character Rated	Sheath blight	Leaf blast	Leaf smut	Leaf blast	Cercospora	Leaf blast	BPB.	Neck blast	Narrow br.
Rating Date	7/25/11	7/25/11	7/25/11	8/5/11	8/5/11	8/5/11	9/1/11	9/1/11	9/1/11
Rating Data Type	SB	Perm Flood	Leaf Smut	Upland	Sheath	Perm flood	BPB	RNB	Leaf
Rating Unit	0-9	0-9	0-9	0-9	0-9	0-9	0-9	0-9	0-9
Trt No. Treatment Name									
1 LA0702085	7.8ab	5.0ab	4.5abc	4.5e-i	3.3a-g	2.3d-j	5.8abc	5.0b-e	1.8e-i
2 Bengal	7.3a-d	0.3f	2.8a-g	8.0ab	3.0a-h	4.3bcd	5.8abc	4.8b-e	1.8e-i
3 Bowman	7.8ab	3.0b-f	2.5a-g	6.8abc	2.8b-i	4.3bcd	3.5efg	5.3bcd	0.5ghi
4 Caffey	6.3bcd	0.0f	2.3a-g	6.3b-e	1.0ghi	2.8c-h	3.5efg	1.3hi	1.3f-i
5 Catahoula	7.5abc	4.3abc	4.5abc	3.0hi	0.8hi	0.8ijk	4.0def	1.8f-i	1.0ghi
6 Cheniere	6.8a-d	2.8b-f	3.3a-f	6.3b-e	4.8ab	3.3b-g	4.8cde	3.5c-h	4.0abc
7 CL111	7.8ab	2.3b-f	4.5abc	3.3ghi	3.3a-g	0.5jk	5.5a-d	3.5c-h	3.0b-e
8 CL131	8.0a	3.5b-e	3.8a-e	4.3f-i	5.3a	1.0h-k	6.0abc	1.8f-i	4.5a
9 CL142	5.8d	2.8b-f	2.3a-g	7.5ab	1.8d-i	3.8b-e	6.0abc	5.8bc	1.3f-i
10 CL151	7.5abc	3.8bcd	4.8ab	7.0abc	4.3abc	3.5b-f	6.3abc	4.8b-e	1.5e-i
11 CL161	8.0a	3.8bcd	4.8ab	6.5a-d	4.3abc	3.5b-f	5.8abc	3.5c-h	4.3ab
12 CL162	7.8ab	1.0def	3.0a-g	6.5a-d	2.3c-i	4.3bcd	6.5abc	6.3b	2.3d-g
13 CL181	7.3a-d	0.0f	2.5a-g	6.5a-d	3.0a-h	3.5b-f	5.5a-d	4.3b-e	1.8e-i
14 CL261	7.0a-d	1.0def	3.0a-g	7.8ab	3.8a-e	5.0b	7.0a	5.3bcd	0.8ghi
15 Cocodrie	7.0a-d	1.0def	3.3a-f	5.0c-g	4.8ab	2.0e-k	6.0abc	4.5b-e	4.0abc
16 Cypress	7.8ab	3.0b-f	4.8ab	6.3b-e	5.3a	3.5b-f	5.3a-d	4.5b-e	3.5a-d
17 Jazzman	6.3bcd	0.0f	0.8efg	4.5e-i	4.0a-d	1.8f-k	6.0abc	1.8f-i	0.8ghi
18 Jazzman 2	8.0a	1.8c-f	1.8b-g	4.8d-h	4.0a-d	1.5g-k	6.5abc	2.5e-i	2.8c-f
19 JES	6.5a-d	0.0f	0.0g	1.3j	1.5e-i	0.3k	3.0fgh	0.8i	1.3f-i
20 Jupiter	7.0a-d	0.0f	1.5c-g	8.0ab	1.8d-i	4.3bcd	2.0hi	3.0d-i	1.0ghi
21 LAH10	5.8d	0.0f	0.0g	1.5j	0.5i	0.5jk	2.3ghi	0.8i	0.5ghi
22 LM-1	7.0a-d	0.0f	2.0b-g	6.5a-d	2.5b-i	4.8b	1.5i	4.0b-f	0.0i
23 LMT-1	7.5abc	0.0f	1.5c-g	6.8abc	1.3f-i	4.0bcd	2.3ghi	4.0b-f	0.3hi
24 M202	8.0a	6.3a	4.3a-d	8.5a	1.8d-i	6.5a	6.0abc	7.8a	2.0e-h
25 Neptune	6.3bcd	0.0f	2.0b-g	8.0ab	0.8hi	4.0bcd	4.0def	1.8f-i	0.5ghi
26 Presido	6.0cd	0.8def	2.0b-g	3.3ghi	1.8d-i	1.0h-k	6.0abc	4.3b-e	0.5ghi
27 CL152	7.5abc	1.8c-f	4.0a-d	6.5a-d	2.5b-i	3.8b-e	2.8f-i	3.5c-h	1.8e-i
28 Rex	7.0a-d	3.5b-e	5.3a	7.8ab	1.3f-i	4.5bc	5.5a-d	5.8bc	1.3f-i
29 Roy J	5.8d	0.5ef	0.3fg	5.3c-f	2.3c-i	2.3d-j	4.8cde	5.0b-e	0.3hi
30 Tagart	6.0cd	0.0f	0.0g	4.0f-i	2.5b-i	3.3b-g	5.0b-e	3.8c-g	0.5ghi
31 Templeton	6.3bcd	0.0f	1.3d-g	2.8i	0.8hi	0.5jk	3.8ef	1.5ghi	0.8ghi
32 Trenasse	8.0a	1.0def	2.5a-g	5.3c-f	3.5a-f	2.5d-i	6.8ab	3.8c-g	2.0e-h
33 Wells	7.0a-d	2.0c-f	1.5c-g	7.0abc	2.3c-i	4.0bcd	6.5abc	5.0b-e	1.0ghi
LSD (P=.05)	0.86	1.70	1.75	1.15	1.35	1.09	0.98	1.37	0.98
Standard Deviation	0.61	1.22	1.25	0.82	0.96	0.78	0.70	0.98	0.70
CV	8.67	73.31	47.43	14.46	36.17	26.45	14.25	26.04	42.72
Replicate F	5.635	2.081	2.786	7.466	1.868	3.237	7.746	1.374	0.744
Replicate Prob(F)	0.0013	0.1078	0.0449	0.0002	0.1402	0.0256	0.0001	0.2554	0.5283
Treatment F	6.044	8.205	6.081	22.429	8.226	16.164	19.820	11.815	12.953
Treatment Prob(F)	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001

2011 Uniform Rice Regional Trial

Location: Rice Research Station, Crowley, LA

Soil Type: Crowley silt loam (pH 6.0, Clay 12%, Silt 71%, Sand 17%, CEC 9.4 /kg)

Variety/Seed Rate: Various, 100 lb/A

Plot Size: 1-3 rows, 6 ft long

Planting Method/Date: Drill seeded, Mar 16 and May 17

Fertilization: Preplant 20-60-60, Mar 15; Preflood 135-0-0, Apr 25; Topdress 46-0-0, May 12; Preplant 20-60-60, May 16; Preflood 159-0-0, June 15

Experimental Design: Randomized complete block design with two to four replications

Water Management: Flushed, Mar 23, Mar 30 and Apr 12; Flooded, May 2; Drained, July 19; Flushed, May 23 and 30; Flooded, June 16; Drained, July 1; Re-Flooded, July 11; Drained, Aug 31

Herbicides: Propanil 4 qt/A, Apr 15; Tank-Mix RiceBeaux 3 qt/A and Prowl EC 2.4 pt/A, Apr 30; Tank-Mix Propanil 3 qt/A and Basagran 1 qt/A, June 3; Tank-Mix RiceBeaux 3qt/A and Prowl EC 2.4 pt/A, June 14

Insecticides: Dermacor seed treatment

Inoculation Dates: *Rhizoctonia solani* culture grown on rice grain/hull mixture, May 19

Application Equipment: N/A

Application Dates:

Growth Stage	Time	Temp	Wind	RH	Clouds	Dew
N/A						

Disease Ratings: See Tables 3-8

Drained: July 19, Aug 31

Results: Tables 3-8

Comments: Sheath blight severity was very severe in inoculated plots, naturally occurring leaf blast was evaluated under upland conditions and flooded conditions after a 1-week drainage, neck blast was evaluated in the flooded field, bacterial panicle blight was evaluated in inoculated plots with moderate severity, naturally occurring Cercospora, narrow brown leaf spot were light in severity, and leaf smut was moderate in severity.

Table 3. Disease reaction of various rice varieties and experimental lines to sheath blight, leaf smut, upland leaf blast, Cercospora on the sheath, flooded field leaf blast, bacterial panicle blight (BPB), rotten neck blast (RNB) and narrow brown leaf spot, at the Rice Research Station, Crowley, LA. 2011 (URN Group I).

Character Rated	Sheath blight	Leaf smut	Leaf blast	Cercospora	Leaf blast	BPB	Neck blast	Narrow brow
Rating Date	7/26/11	7/26/11	8/5/11	8/5/11	8/5/11	9/1/11	9/1/11	9/1/11
Rating Data Type	SB	LS	Upland	Sheath	Flooded	BPB	RNB	Leaves
Rating Unit	0-9	0-9	0-9	0-9	0-9	0-9	0-9	0-9
Trt Treatment No. Name								
1 FRNS/6/LBNT/9902/3/DAWN/.........	6.5b-e	4.3abc	4.8a-e	3.3abc	3.0ab	5.8a-d	4.5ab	0.3bc
2 9502008-A//AR1188/CCDR/3/…	8.0a	4.0bc	3.0cde	3.0abc	1.0b	5.0bcd	3.3bc	2.5ab
3 CF4-69/CCDR	6.0de	2.5c	3.5b-e	3.5abc	1.0b	3.8d	0.5d	1.3abc
4 KBNT/Q36194	6.0de	2.3c	5.0a-e	1.5cd	3.3ab	5.3bcd	5.8a	0.5bc
5 9502008/3/MBLE//LMNT/20001-5/4/CFX-18//…	7.8ab	3.5bc	3.5b-e	1.0cd	2.5ab	5.5bcd	3.5abc	1.8abc
6 CPRS/CCDR	7.0a-e	4.0bc	5.0a-e	4.5ab	3.3ab	5.0bcd	1.3cd	1.0abc
7 LGRU//KATY/STBN/3/LGRU	5.8e	3.3bc	4.0a-e	2.0cd	1.5b	5.3bcd	4.3ab	0.0c
8 CPRS/KBNT//9502008-A/3/TRNS	7.3a-d	5.5ab	5.8abc	2.5a-d	3.3ab	6.0abc	0.8d	1.3abc
9 CPRS/9901081			2.2e					
10 DREW/UA99-167	7.3a-d	2.8c	2.8de	0.5d	0.8b	7.5a	1.3cd	0.0c
11 CPRS/9502008-A/3/CFX 29//AR 1142/LA 2031	7.8ab	4.5abc	5.3a-d	2.0cd	2.5ab	6.0abc	1.3cd	0.3bc
12 LCSN/LGRU	7.8ab	3.5bc	4.3a-e	3.3abc	1.7b	5.5bcd	0.0d	0.0c
13 LGRU//LMNT/RA73/3/LGRU/4/WLLS/5/CYBT	6.3cde	2.8c	5.5a-d	2.5a-d	3.5ab	6.3ab	2.3bcd	0.3bc
14 CFX-18(CL161)/9904053	6.3cde	3.3bc	4.3a-e	2.5a-d	1.5b	5.0bcd	0.0d	0.0c
15 248CO16E-1	7.5abc	4.5abc	4.5a-e	3.0abc	2.8ab	5.0bcd	0.3d	2.5ab
16 RSMT//RXMT/IR36	6.5b-e	5.8ab	6.8a	2.5a-d	4.8a	4.5bcd	3.8abc	0.5bc
17 CL111	8.0a	6.5a	4.0a-e	3.3abc	2.0b	5.8a-d	0.3d	2.8a
18 CL151	7.8ab	4.3abc	6.0ab	4.8a	3.0ab	5.5bcd	2.8bcd	2.8a
19 PRESIDIO (PRSD)	6.3cde	3.5bc	3.8b-e	1.0cd	1.3b	4.3bcd	4.0ab	0.8abc
20 CTHL	7.5abc	4.5abc	3.8b-e	2.3bcd	0.8b	4.0cd	0.0d	0.0c
LSD (P=.05)	0.83	1.44	1.62	1.41	1.51	1.20	1.63	1.33
Standard Deviation	0.59	1.02	1.14	1.00	1.05	0.85	1.15	0.94
CV	8.4	25.88	26.16	38.91	46.36	15.95	55.28	97.81
Replicate F	2.742	12.336	3.273	1.316	0.328	0.754	0.173	0.412
Replicate Prob(F)	0.0520	0.0001	0.0280	0.2787	0.8048	0.5248	0.9144	0.7447
Treatment F	6.834	4.832	4.050	4.957	4.460	4.177	10.160	4.666
Treatment Prob(F)	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001

Rating Unit: 0-9 = 0-9 index/scale.

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls).
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Table 4. Disease reaction of various rice varieties and experimental lines to sheath blight, leaf smut, upland leaf blast, Cercospora on the sheath, flooded field leaf blast, bacterial panicle blight (BPB), rotten neck blast (RNB) and narrow brown leaf spot, at the Rice Research Station, Crowley, LA. 2011 (URN II).

Character Rated	Sheath blight	Leaf smut	Leaf blast	Cercospora	Leaf blast	BPB	Neck blast	Narrow br
Rating Date	7/26/11	7/26/11	8/5/11	8/5/11	8/5/11	9/1/11	9/1/11	9/1/11
Rating Data Type	SB	LS	Upland	Sheath	Flooded	BPB	RNB	Leaf
Rating Unit	0-9	0-9	0-9	0-9	0-9	0-9	0-9	0-9
Trt No. Treatment Name								
21 RU0401067/IRAT 13//STG03F5-04-062	5.5d	2.0e	3.0ef	1.8abc	0.3h	3.3cd	0.0f	0.0e
22 CCDR//9502008/LGRU	7.3ab	3.8a-e	2.5f	3.0abc	1.5d-h	4.5bc	4.0a-e	3.0ab
23 LGRU/LSCN/CF4-85	6.5a-d	2.8cde	6.0a-d	2.5abc	3.0a-f	3.3cd	3.5b-e	0.5de
24 MDRK/PI 312777//JING 185-7	5.8cd	3.0b-e	5.8a-e	1.3bc	3.8abc	6.3ab	0.0f	0.0e
25 CPRS//L-205/DLLA	7.5ab	5.3ab	3.0ef	4.5a	1.3e-h	4.5bc	2.5b-f	2.8abc
26 CCDR/LQ275a	6.0bcd	3.3b-e	3.0ef	1.5bc	0.7gh	5.0ab	2.5b-f	0.0e
27 FRNS/6/LBNT/9902/3/DAWN/........	6.8a-d	3.5b-e	5.8a-e	2.8abc	3.3a-e	5.8ab	5.5ab	0.3e
28 CCDR/3/9502008-A//AR1188/CCDR	7.8a	3.8a-e	2.3f	4.0ab	1.7c-h	5.8ab	1.8def	4.3a
29 CPRS/CCDR	8.0a	3.0b-e	3.8c-f	1.8abc	1.0fgh	5.5ab	0.0f	0.8de
30 RU0401084/IRAT 13//STG03F5-04-062	7.3ab	3.8a-e	6.0a-d	1.0c	2.0b-h	6.0ab	0.0f	0.0e
31 RU0602103/3/9502008-A//AR1188/CCDR	7.3ab	3.8a-e	4.0b-f	4.0ab	1.3e-h	5.0ab	3.3b-e	0.3e
32 CCDR/L202	7.8a	4.5a-d	7.0a	3.0abc	3.5a-d	5.8ab	5.0abc	2.5bcd
33 CFX-18(CL161)/0004054	8.0a	5.0abc	7.3a	1.8abc	4.3a	6.0ab	2.0c-f	0.8de
34 CPRS/KBNT//9502008-A	8.0a	5.8a	3.3def	2.0abc	1.0fgh	4.5bc	0.0f	1.0cde
35 GFMT//NWBT/KATY	7.5ab	4.0a-e	3.3def	3.3abc	0.7gh	4.8abc	1.3ef	2.0b-e
36 CPRS//LGRU/PI568891	7.0abc	3.0b-e	7.8a	3.0abc	3.3a-e	6.0ab	5.0abc	0.5de
37 JUPITER	7.3ab	3.5b-e	6.8ab	2.8abc	2.8a-g	2.0d	1.3ef	0.0e
38 WELLS	6.8a-d	2.3de	6.3abc	2.8abc	2.5a-g	6.5a	4.8a-d	0.3e
39 CL162	8.0a	3.3b-e	5.8a-e	2.8abc	3.3a-e	6.5a	4.8a-d	0.5de
40 FRANCIS	6.5a-d	2.8cde	6.8ab	2.3abc	4.0ab	6.5a	6.5a	1.0cde
LSD (P=.05)	0.89	1.31	1.74	1.57	1.28	1.04	1.89	1.26
Standard Deviation	0.63	0.93	1.23	1.11	0.90	0.74	1.34	0.89
CV	8.88	25.87	24.83	43.14	40.28	14.26	49.92	87.87
Replicate F	0.868	16.302	3.509	1.121	1.594	2.051	0.720	1.743
Replicate Prob(F)	0.4631	0.0001	0.0209	0.3483	0.2022	0.1169	0.5444	0.1685
Treatment F	5.843	4.284	8.704	2.859	7.706	11.125	10.154	7.564
Treatment Prob(F)	0.0001	0.0001	0.0001	0.0012	0.0001	0.0001	0.0001	0.0001

Rating Unit: 0-9 = 0-9 index/scale.

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls).
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Table 5. Disease reaction of various rice varieties and experimental lines to sheath blight, leaf smut, upland leaf blast, Cercospora on the sheath, flooded field leaf blast, bacterial panicle blight (BPB), rotten neck blast (RNB) and narrow brown leaf spot, at the Rice Research Station, Crowley, LA. 2011(URN III).

Character Rated	Sheath blight	Leaf smut	Cercospora	Leaf blast	BPB	Neck blast	Narrow brow	Leaf blast
Rating Date	7/26/11	7/26/11	8/9/11	8/9/11	9/1/11	9/1/11	9/1/11	9/16/11
Rating Data Type	SB	LS	Sheath	Flooded	BPB	RNB	Leaf	Upland
Rating Unit	0-9	0-9	0-9	0-9	0-9	0-9	0-9	0-9
Trt No. Treatment Name								
41 CYBT/LM1	6.5efg	3.5a-d	3.3a-d	0.8de	5.0bcd	0.0e	2.5ab	0.8fg
42 9502008-A/DREW//CLR 20	8.0abc	4.8ab	2.5cd	1.0cde	6.0b	3.0abc	1.8b	4.5bc
43 CPRS/CCDR	7.5a-e	5.0a	4.0a-d	0.5de	5.3bc	1.3de	0.8c	2.5c-g
44 STG02F5-07-067/STG02F5-04-034......	8.0abc	2.8bcd	2.0d	0.5de	8.0a	0.0e	0.0c	2.0d-g
45 CPRS//82CAY21/TBNT/3/CFX 29//…	8.5a	3.0a-d	2.8bcd	3.5ab	4.5bcd	2.0b-e	0.0c	4.3bcd
46 CPRS/CCDR	6.3fg	3.3a-d	3.3a-d	1.3cde	5.0bcd	0.0e	3.3a	1.5efg
47 UA99-25/UA99-140//STG03P-03-041	8.3ab	3.3a-d	3.0a-d	0.3de	6.3b	0.0e	0.0c	2.0d-g
48 AR 1188/CCDR//9502008/LGRU	6.8d-g	2.8bcd	4.0a-d	1.0cde	3.8cd	3.5ab	0.5c	1.3efg
49 CPRS/CCDR	7.0c-f	2.8bcd	3.3a-d	1.3cde	4.3bcd	0.0e	0.0c	0.3g
50 FRNS/6/LBNT/9902/3/DAWN/9695.......	6.3fg	2.5cd	1.8d	0.0e	4.8bcd	0.0e	0.0c	1.3efg
51 CFX-18//CPRS/KBNT/3/CFX-29/CCDR	7.8a-d	4.8ab	2.3cd	1.8b-e	5.5bc	0.0e	0.0c	0.5g
52 CPRS/CCDR	6.8d-g	4.8ab	3.0a-d	1.0cde	4.3bcd	0.0e	0.0c	2.5c-g
53 RSMT//8403113/3/KCAL/LEAH//LEAH	7.0c-f	3.3a-d	4.8abc	3.3abc	3.8cd	4.5a	2.8ab	5.3b
54 248CO16E-2	8.0abc	4.3abc	1.8d	1.5b-e	6.0b	1.8cde	0.0c	3.8b-e
55 TBNT/LA110//LMNT/TBNT	7.8a-d	2.8bcd	2.8bcd	1.0cde	3.3d	0.0e	0.0c	1.8efg
56 TEMPLETON	5.8g	2.0d	1.5d	0.3de	4.5bcd	2.5bcd	0.0c	0.5g
57 REX	6.8d-g	4.8ab	1.5d	4.3a	5.8b	0.0e	0.0c	7.3a
58 CHENIERE	7.3b-f	3.5a-d	5.3ab	2.8a-d	4.5bcd	1.0de	2.8ab	5.0b
59 COCODRIE	7.3b-f	4.0a-d	5.5a	1.5b-e	5.0bcd	3.0abc	3.3a	3.3b-f
60 CL 181 AR	7.8a-d	4.8ab	3.3a-d	0.5de	5.3bc	2.0b-e	0.0c	4.8bc
LSD (P=.05)	0.67	1.20	1.50	1.41	1.12	1.14	0.97	1.53
Standard Deviation	0.48	0.85	1.06	1.00	0.80	0.80	0.69	1.09
CV	6.56	23.54	34.63	72.08	15.83	65.64	78.44	39.64
Replicate F	1.620	21.916	0.633	1.912	1.818	2.913	1.168	0.888
Replicate Prob(F)	0.1947	0.0001	0.5965	0.1379	0.1541	0.0420	0.3301	0.4528
Treatment F	10.000	4.822	4.887	5.485	7.194	13.144	13.883	12.661
Treatment Prob(F)	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001

Rating Unit: 0-9 = 0-9 index/scale

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls).
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Table 6. Disease reaction of various rice varieties and experimental lines to sheath blight, leaf smut, upland leaf blast, Cercospora on the sheath, flooded field leaf blast, bacterial panicle blight (BPB), rotten neck blast (RNB) and narrow brown leaf spot, at the Rice Research Station, Crowley, LA. 2011 (URN IV).

Character Rated	Sheath blight	Leaf smut	Cercospora	Leaf blast	BPB	Neck blast	Narrow brow	Leaf blast
Rating Date	7/26/11	7/26/11	8/8/11	8/8/11	9/1/11	9/1/11	9/1/11	9/16/11
Rating Data Type	SB	LS	Sheath	Flooded	BPB	RNB	Leaves	Upland
Rating Unit	0-9	0-9	0-9	0-9	0-9	0-9	0-9	0-9
Trt No. Treatment Name								
61 GP13416/KATY//PI312777	6.8abc	4.0a-e	4.0ab	3.5a	6.8a	5.5a	1.5b	5.5ab
62 BNGL/CL161	7.3abc	4.3a-d	2.5ab	1.8a-d	6.5a	3.5c	0.0c	7.0a
63 CPRS/CCDR	7.8ab	3.8a-e	2.5ab	1.5a-d	4.3c-f	0.0d	0.0c	2.8cd
64 JES	6.8abc	1.5f	3.8ab	0.0d	4.0def	0.0d	0.0c	1.0ef
65 MARS//M201/MARS/5/STRN//MERC/…	7.0abc	3.5b-e	2.3ab	3.3ab	6.0ab	0.0d	0.0c	6.5a
66 SABR/CCDR	6.8abc	2.3ef	2.8ab	0.5bcd	3.8ef	0.0d	0.0c	0.8ef
67 STG02PR-02-067/STG02AC-15-002//RU0401084	7.8ab	5.0ab	2.3ab	0.5bcd	6.8a	0.0d	0.0c	6.5a
68 BNGL//MERC/RICO/3/MERC/RICO//BNGL	7.3abc	4.0a-e	1.5ab	2.0a-d	6.0ab	0.0d	0.0c	5.8ab
69 CF4-69/CCDR	7.0abc	2.5def	3.3ab	1.3a-d	4.8b-f	0.0d	0.0c	0.0f
70 91642//KATY/NWBT/5/RU9201176......	8.0a	4.0a-e	2.0ab	0.0d	5.5a-d	0.0d	1.3bc	1.0ef
71 LAH10	5.5d	0.0g	1.0b	0.0d	3.3f	0.0d	0.0c	0.0f
72 CPRS/NWBT//KATY/3/CCDR	7.5abc	3.0c-f	3.3ab	0.3cd	6.0ab	3.8bc	3.3a	2.0de
73 CFX-18(CL161)/9804054	8.0a	4.5abc	3.3ab	2.5a-d	5.8abc	0.0d	0.0c	4.8b
74 CFX-18(CL161)/0004054	7.8ab	3.8a-e	1.8ab	1.3a-d	4.5b-f	0.0d	0.0c	4.8b
75 CPRS/CCDR	7.8ab	3.8a-e	3.5ab	0.8a-d	5.0b-e	0.0d	1.5b	3.3cd
76 LBNT/9902/3/DAWN/9695//STBN/.....	6.8abc	2.8c-f	4.3a	3.0abc	4.0def	4.0bc	0.0c	5.8ab
77 LCSN/NWBT/KATY	8.0a	5.3a	4.3a	2.0a-d	5.5a-d	4.0bc	0.0c	6.0ab
78 L201/SABR	6.5bc	2.3ef	3.3ab	0.5bcd	4.8b-f	0.0d	0.0c	1.3ef
79 ROY J	6.3c	2.3ef	2.3ab	0.8a-d	4.0def	4.5b	0.0c	3.3cd
80 CAFFEY	6.5bc	2.8c-f	2.0ab	2.0a-d	4.5b-f	0.0d	0.0c	3.5c
LSD (P=.05)	0.73	1.03	1.72	1.61	0.95	0.68	0.77	1.03
Standard Deviation	0.52	0.73	1.21	1.14	0.67	0.48	0.55	0.73
CV	7.26	22.43	43.73	83.41	13.22	38.28	145.42	20.5
Replicate F	1.163	8.277	0.238	1.971	1.000	0.624	2.858	3.959
Replicate Prob(F)	0.3318	0.0001	0.8697	0.1285	0.3995	0.6022	0.0448	0.0124
Treatment F	6.904	11.832	2.321	3.800	9.889	69.349	9.779	41.917
Treatment Prob(F)	0.0001	0.0001	0.0075	0.0001	0.0001	0.0001	0.0001	0.0001

Rating Unit: 0-9 = 0-9 index/scale.

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls).
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Table 7. Disease reaction of various rice varieties and experimental lines to sheath blight, leaf smut, upland leaf blast, Cercospora on the sheath, flooded field leaf blast, bacterial panicle blight (BPB), rotten neck blast (RNB) and narrow brown leaf spot, at the Rice Research Station, Crowley, LA. 2011 (URN V).

Character Rated Rating Date Rating Data Type Rating Unit	Sheath blight 7/26/11 SB 0-9	Leaf smut 7/26/11 LS 0-9	Cercospora 8/9/11 Sheath 0-9	Leaf blast 8/9/11 Flooded 0-9	BPB 9/1/11 BPB 0-9	Neck blast 9/1/11 RNB 0-9	Narrow brow 9/1/11 Leaves 0-9	Leaf blast 9/16/11 Upland 0-9
Trt Treatment No. Name								
81 WLLS/ZHE733//19981434	7.5abc	4.5ab	2.0ab	2.0ab	7.0abc	4.0abc	1.5a-d	1.5c-f
82 LGRU/LCSN/3/CFX-18//CCDR/9770532 DH2	8.0ab	4.0abc	2.5ab	2.5ab	6.0a-e	4.5ab	3.0abc	2.5b-f
83 CL161/PSCL	6.5bcd	2.5a-d	3.5ab	1.0b	5.5a-f	2.5bc	0.0d	3.0b-f
84 STG97F5-01-004/UA99-128	8.5a	2.5a-d	1.5ab	0.5b	4.5c-f	0.0c	0.0d	0.5ef
85 9502008-A//AR 1188/CCDR/3/CFX-26/9702128	7.0a-d	5.5a	4.0ab	3.5ab	6.5a-d	4.0abc	3.0abc	4.5bcd
86 CPRS/CCDR	6.5bcd	2.5a-d	4.0ab	1.0b	4.5c-f	0.0c	0.0d	1.5c-f
87 RU9201176/4/LBNT/STBN//NWBT/3/MILL/.....	6.0cd	4.0abc	1.0ab	2.1ab	6.0a-e	5.0ab	0.0d	3.0b-f
88 CFX18/LM-1/3/9502008-A//AR 1188/CCDR	8.0ab	4.0abc	2.5ab	1.5ab	7.5ab	4.0abc	0.0d	4.5bcd
89 CPRS/CCDR	7.5abc	3.0a-d	3.0ab	1.5ab	3.5ef	3.5bc	2.0a-d	3.5b-f
90 LBNT/9902/3/DAWN/9695//STBN/4/LGRU/....	5.5d	3.5a-d	4.0ab	0.5b	6.0a-e	2.5bc	3.5ab	2.0c-f
91 CCDR/JEFF/3/CFX-18//CCDR/9770532 DH2	8.5a	4.5ab	2.5ab	1.0b	6.0a-e	3.5bc	0.0d	2.0c-f
92 CCDR/L202	7.5abc	3.0a-d	1.5ab	0.5b	4.5c-f	0.0c	3.5ab	2.5b-f
93 19991516/WLLS	7.5abc	3.5a-d	3.5ab	0.5b	7.5ab	0.0c	0.0d	3.0b-f
94 9502008-A//AR 1188/CCDR/3/CFX-26/9702128	7.5abc	4.0abc	4.0ab	0.5b	6.5a-d	5.0ab	3.0abc	4.0b-e
95 LGRU/LSCN/CF4-85	6.0cd	3.0a-d	0.5b	2.5ab	3.5ef	4.5ab	3.0abc	6.0b
96 STG02PR-02-067/STG02AC-15-002//RU0401084	8.0ab	4.0abc	2.0ab	0.5b	5.5a-f	0.0c	0.0d	5.0bc
97 CCDR//CLPY 003	7.0a-d	5.0ab	5.5ab	2.5ab	7.0abc	2.5bc	1.5a-d	4.5bcd
98 CPRS/NWBT//KATY/3/CCDR	8.0ab	4.0abc	3.0ab	1.0b	4.5c-f	4.5ab	2.0a-d	2.0c-f
99 LMNT/QUILLA 65101//DIAMONTE	5.5d	0.5d	2.0ab	0.5b	3.0f	0.0c	0.0d	6.0b
100 RSMT//RXMT/IR36	7.5abc	3.5a-d	3.5ab	2.0ab	5.5a-f	3.5bc	0.0d	6.0b
101 CF4-69/CCDR	7.5abc	3.0a-d	2.5ab	0.0b	4.5c-f	0.0c	0.0d	0.0f
102 STG02F5-07-067/STG02F5-04-034//STG03P-03-041	8.5a	2.0bcd	1.0ab	2.0ab	7.5ab	0.0c	0.5cd	2.0c-f
103 CFX-18//CCDR/9770532 DH2/3/9502008-A//…	7.5abc	4.0abc	3.0ab	2.5ab	5.0b-f	3.5bc	2.0a-d	4.5bcd
104 MILL/JSMN	6.5bcd	2.0bcd	2.0ab	3.5ab	7.0abc	6.0ab	0.0d	6.0b
105 FRNS/5/LBNT/9902//NWBT/3/KATY/NWBT/4/LGRU	7.0a-d	3.5a-d	2.0ab	0.0b	5.0b-f	5.5ab	0.5cd	4.0b-e
106 CCDR/JEFF/3/CFX-18//CCDR/9770532 DH2	8.0ab	4.0abc	3.5ab	2.5ab	7.0abc	3.5bc	1.0bcd	4.5bcd
107 MILL/JSMN	5.5d	1.0cd	1.0ab	1.0b	5.5a-f	3.0bc	0.5cd	6.0b
108 LBNT/9902/3/DAWN/9695//STBN/4/LGRU/....	6.0cd	0.5d	6.0a	0.0b	6.5a-d	0.0c	0.0d	1.0def
109 KATY/CPRS//NWBT/…/3/9502008/4/CLR 9/5/…	8.0ab	4.0abc	2.0ab	2.5ab	5.5a-f	4.5ab	0.0d	3.5b-f
110 MILL/JSMN								
111 RU0401084/IRAT 13//M-401	7.0a-d	5.0ab	2.0ab	1.0b	3.5ef	0.0c	0.0d	3.5b-f
112 CLPY 003 (CL 006)//CFX-26/9702128	8.0ab	5.0ab	2.5ab	3.0ab	5.5a-f	0.0c	2.5a-d	4.0b-e
113 CPRS/CCDR	8.0ab	4.5ab	4.0ab	0.0b	4.0def	2.5bc	0.0d	3.0b-f
114 CPRS//NWBT/KATY	7.5abc	3.5a-d	5.0ab	2.5ab	5.0b-f	5.0ab	4.0a	4.5bcd
115 KATY/CPRS//JKSN/3/AR 1188/CCDR/.....	7.0a-d	4.5ab	4.5ab	2.5ab	8.0a	5.0ab	2.5a-d	5.0bc
116 CPRS/CCDR	7.5abc	4.5ab	3.5ab	0.5b	3.5ef	2.0bc	1.0bcd	1.5c-f
117 JAZZMAN-2	8.0ab	2.5a-d	5.5ab	0.5b	4.5c-f	0.0c	0.0d	1.0def
118 CL 142 AR	6.5bcd	3.0a-d	3.0ab	1.5ab	6.5a-d	4.5ab	0.0d	4.0b-e
119 M206	7.0a-d	4.0abc	2.0ab	6.0a	7.5ab	8.0a	0.0d	9.0a
120 CL261	7.5abc	3.5a-d	6.0a	2.0ab	7.0abc	4.5ab	0.0d	6.0b

Continued.

Table 7. Continued.

Character Rated	Sheath blight	Leaf smut	Cercospora	Leaf blast	BPB	Neck blast	Narrow brow	Leaf blast
Rating Date	7/26/11	7/26/11	8/9/11	8/9/11	9/1/11	9/1/11	9/1/11	9/16/11
Rating Data Type	SB	LS	Sheath	Flooded	BPB	RNB	Leaves	Upland
Rating Unit	0-9	0-9	0-9	0-9	0-9	0-9	0-9	0-9
Trt Treatment No. Name								
LSD (P=.05)	1.06	1.75	2.70	2.63	1.53	2.38	1.48	1.94
Standard Deviation	0.53	0.86	1.34	1.30	0.76	1.18	0.73	0.96
CV	7.25	24.95	44.54	83.0	13.49	41.38	70.71	26.59
Replicate F	0.046	11.624	2.327	0.288	0.358	2.366	0.024	5.043
Replicate Prob(F)	0.8305	0.0016	0.1355	0.5949	0.5534	0.1323	0.8783	0.0306
Treatment F	5.137	3.684	2.211	1.843	6.353	6.946	6.462	7.834
Treatment Prob(F)	0.0001	0.0001	0.0082	0.0328	0.0001	0.0001	0.0001	0.0001

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls).

Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Table 8. Disease reaction of various rice varieties and experimental lines to sheath blight, leaf smut, upland leaf blast, Cercospora on the sheath, flooded field leaf blast, bacterial panicle blight (BPB), rotten neck blast (RNB) and narrow brown leaf spot, at the Rice Research Station, Crowley, LA. 2011(URN VI).

Character Rated	Sheath blight	Leaf smut	Cercospora	Leaf blast	BPB	Neck blast	Narrow brow	Leaf blast
Rating Date	7/26/11	7/26/11	8/8/11	8/8/11	9/1/11	9/1/11	9/1/11	9/16/11
Rating Data Type	SB	LS	Sheath	Flooded	BPB	RNB	NBLS	Upland
Rating Unit	0-9	0-9	0-9	0-9	0-9	0-9	0-9	0-9
Trt Treatment No. Name								
121 RU9901133/DREW//RU0101093	8.0a	3.5a-e	2.5a-d	0.5bc	4.5abc	0.0d	0.0a	2.0d-h
122 CFX-18(CL161)/9804054	8.0a	5.0ab	1.5a-d	1.0abc	4.0abc	5.5a	1.5a	4.0b-e
123 CPRS/CCDR	8.0a	4.5abc	3.5a-d	1.5abc	5.5abc	4.5abc	3.0a	3.0b-g
124 Oryzica Llanos 4/P 1274	5.0e	0.5de	1.5a-d	0.0c			0.0a	3.5b-f
125 CCDR/JEFF/3/9502008//AR1142/MBLE	8.0a	5.0ab	3.5a-d	1.5abc	5.0abc	4.0abc	2.5a	3.5b-f
126 MILL/JSMN								
127 RNS3/RU9101001	8.0a	3.0a-e	3.0a-d	0.5bc	5.0abc	0.0d	1.0a	0.5gh
128 9502008//AR1188/CCDR/3/CCDR	8.0a	4.0a-d	3.0a-d	2.0abc	7.0ab	4.5abc	0.0a	2.5c-h
129 SABR/CCDR	7.0abc	3.5a-e	3.5a-d	0.0c	3.0c	0.0d	0.0a	1.5e-h
130 (4484-1693/FNCS)F4//FNCS	6.5bcd	2.5a-e	1.5a-d	2.5abc	6.5abc	5.0ab	0.0a	2.5c-h
131 WELLS/CTHL	8.0a	4.5abc	3.5a-d	0.0c	5.0abc	0.0d	0.5a	2.0d-h
132 CPRS/9901081	8.0a	4.0a-d	3.5a-d	0.0c	5.5abc	2.5a-d	3.0a	3.5b-f
133 19991516/19981467	7.0abc	3.5a-e	6.0a	4.0ab	6.0abc	4.5abc	3.0a	4.0b-e
134 9502008-A/DREW/3/9502008-A//AR1188/CCDR	8.0a	4.5abc	1.5a-d	3.0abc	6.0abc	4.5abc	1.0a	3.0b-g
135 CPRS/CCDR	7.0abc	2.0a-e	4.5a-d	2.5abc	5.5abc	3.5a-d	1.0a	4.5bcd
136 FNCS/SHU 121-1655	6.0cde	1.0cde	4.0a-d	0.0c	6.0abc	0.0d	0.0a	2.0d-h
137 CPRS/KBNT//9502008-A/3/RU0602180	8.0a	5.0ab	2.5a-d	2.0abc	6.5abc	1.0cd	1.5a	0.5gh
138 CCDR/L202	7.5ab	3.5a-e	5.0abc	4.5a	4.5abc	4.0abc	2.0a	5.5ab
139 BASMATI-370/KATY/4/VSNTLM//L201/.........	8.0a	2.0a-e	2.5a-d	0.0c	3.5bc	0.0d	0.0a	2.5c-h
140 CCDR/JEFF//0402128	8.0a	3.5a-e	4.0a-d	1.5abc	7.0ab	4.0abc	2.5a	2.0d-h

Continued.

Table 8. Continued.

Character Rated	Sheath blight	Leaf smut	Cercospora	Leaf blast	BPB	Neck blast	Narrow brow	Leaf blast
Rating Date	7/26/11	7/26/11	8/8/11	8/8/11	9/1/11	9/1/11	9/1/11	9/16/11
Rating Data Type	SB	LS	Sheath	Flooded	BPB	RNB	NBLS	Upland
Rating Unit	0-9	0-9	0-9	0-9	0-9	0-9	0-9	0-9
Trt Treatment No. Name								
141 CPRS/CCDR	8.0a	3.0a-e	3.0a-d	0.0c	4.5abc	1.5bcd	1.0a	0.5gh
142 KBNT/Q36194	6.0cde	1.5b-e	2.5a-d	3.5abc	6.0abc	4.5abc	0.0a	5.0abc
143 9502008-A/DREW//CFX 26/WELLS	7.5ab	2.0a-e	4.0a-d	2.0abc	6.0abc	0.0d	0.0a	5.0abc
144 CCDR/L202	7.5ab	2.0a-e	1.0bcd	2.0abc	7.0ab	5.5a	1.5a	3.5b-f
145 WLLS/4484-1693	6.0cde	0.5de	1.0bcd	1.5abc	3.0c	0.0d	0.0a	2.0d-h
146 NWBT/KATY//9902207x2/3/JSMN/DLLA//…	8.0a	2.5a-e	4.5a-d	1.0abc	7.5a	0.0d	2.5a	1.0fgh
147 CCDR/L202	8.0a	3.0a-e	5.5ab	2.0abc	6.5abc	1.0cd	1.0a	0.5gh
148 LBNT/9902/3/DAWN/9695//STBN/4/LGRU/.........	7.0abc	4.0a-d	1.0bcd	1.5abc	5.5abc	0.0d	0.0a	3.0b-g
149 LFTE/BNGL	6.0cde	3.5a-e	0.5cd	1.5abc	7.0ab	0.0d	0.0a	5.0abc
150 (JEFF//JEFF/O. RUFIPOGON)43_1-2	7.5ab	2.0a-e	2.5a-d	1.0abc	4.0abc	1.0cd	0.0a	1.0fgh
151 KDMxJASM 85	5.0e	0.0e	2.5a-d	0.0c				0.0h
152 9502008-A/DREW//CLR 20/3/9502008-A/......	8.0a	4.5abc	4.0a-d	1.0abc	7.0ab	3.5a-d	3.0a	2.0d-h
153 CPRS/CCDR	7.5ab	4.0a-d	4.5a-d	3.0abc	5.0abc	6.0a	0.0a	4.0b-e
154 CFX-18(CL161)/PSCL	7.5ab	3.5a-e	3.0a-d	1.5abc	6.0abc	0.0d	0.0a	2.5c-h
155 9502008-A/DREW//CLR 20/4/CPRS/KBNT.......	8.0a	5.5a	2.5a-d	2.0abc	7.0ab	0.0d	1.0a	2.5c-h
156 LMNT//TBNT/LA110	8.0a	4.0a-d	4.0a-d	3.0abc	5.0abc	4.0abc	1.5a	7.0a
157 RSMT//RXMT/IR36	8.0a	3.5a-e	3.0a-d	3.0abc	5.5abc	3.5a-d	1.0a	4.5bcd
158 JAZZMAN	7.0abc	2.0a-e	5.0abc	1.5abc	6.0abc	0.0d	1.5a	3.5b-f
159 Sabine (SABN)	8.0a	3.0a-e	0.0d	0.0c	4.5abc	2.5a-d	0.0a	4.0b-e
160 TAGGART	5.5de	1.0cde	3.0a-d	3.0abc	5.0abc	2.5a-d	0.0a	2.0d-h
LSD (P=.05)	0.77	2.01	2.59	2.09	2.04	1.93	2.08	1.57
Standard Deviation	0.38	0.99	1.28	1.03	1.01	0.96	1.02	0.78
CV	5.21	32.34	42.53	65.99	18.27	42.65	106.13	27.3
Replicate F	3.167	7.460	0.070	2.358	0.480	0.059	0.127	0.085
Replicate Prob(F)	0.0832	0.0095	0.7924	0.1329	0.4930	0.8094	0.7237	0.7723
Treatment F	11.435	3.843	2.380	2.820	2.670	9.792	2.195	8.330
Treatment Prob(F)	0.0001	0.0001	0.0045	0.0009	0.0021	0.0001	0.0107	0.0001

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls).
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Table 9. Disease reaction of various rice varieties and experimental lines to sheath blight, leaf smut, upland leaf blast, Cercospora on the sheath, flooded field leaf blast, bacterial panicle blight (BPB), rotten neck blast (RNB) and narrow brown leaf spot, at the Rice Research Station, Crowley, LA. 2011. (URN VII).

Character Rated		Sheath blight	Leaf smut	Cercospora	Leaf blast	BPB	Neck blast	Narrow brow	Leaf blast
Rating Date		7/26/11	7/26/11	8/8/11	8/8/11	9/1/11	9/1/11	9/1/11	9/16/11
Rating Data Type		SB	LS	Sheath	Flooded	BPB	RNB	NBLS	Upland
Rating Unit		0-9	0-9	0-9	0-9	0-9	0-9	0-9	0-9
Trt No.	Treatment Name								
121	RU9901133/DREW//RU0101093	8.0a	3.5a-e	2.5a-d	0.5bc	4.5abc	0.0d	0.0a	2.0d-h
122	CFX-18(CL161)/9804054	8.0a	5.0ab	1.5a-d	1.0abc	4.0abc	5.5a	1.5a	4.0b-e
123	CPRS/CCDR	8.0a	4.5abc	3.5a-d	1.5abc	5.5abc	4.5abc	3.0a	3.0b-g
124	Oryzica Llanos 4/P 1274	5.0e	0.5de	1.5a-d	0.0c			0.0a	3.5b-f
125	CCDR/JEFF/3/9502008//AR1142/MBLE	8.0a	5.0ab	3.5a-d	1.5abc	5.0abc	4.0abc	2.5a	3.5b-f
126	MILL/JSMN								
127	RNS3/RU9101001	8.0a	3.0a-e	3.0a-d	0.5bc	5.0abc	0.0d	1.0a	0.5gh
128	9502008//AR1188/CCDR/3/CCDR	8.0a	4.0a-d	3.0a-d	2.0abc	7.0ab	4.5abc	0.0a	2.5c-h
129	SABR/CCDR	7.0abc	3.5a-e	3.5a-d	0.0c	3.0c	0.0d	0.0a	1.5e-h
130	(4484-1693/FNCS)F4//FNCS	6.5bcd	2.5a-e	1.5a-d	2.5abc	6.5abc	5.0ab	0.0a	2.5c-h
131	WELLS/CTHL	8.0a	4.5abc	3.5a-d	0.0c	5.0abc	0.0d	0.5a	2.0d-h
132	CPRS/9901081	8.0a	4.0a-d	3.5a-d	0.0c	5.5abc	2.5a-d	3.0a	3.5b-f
133	19991516/19981467	7.0abc	3.5a-e	6.0a	4.0ab	6.0abc	4.5abc	3.0a	4.0b-e
134	9502008-A/DREW/3/9502008-A//AR11…	8.0a	4.5abc	1.5a-d	3.0abc	6.0abc	4.5abc	1.0a	3.0b-g
135	CPRS/CCDR	7.0abc	2.0a-e	4.5a-d	2.5abc	5.5abc	3.5a-d	1.0a	4.5bcd
136	FNCS/SHU 121-1655	6.0cde	1.0cde	4.0a-d	0.0c	6.0abc	0.0d	0.0a	2.0d-h
137	CPRS/KBNT//9502008-A/3/RU0602180	8.0a	5.0ab	2.5a-d	2.0abc	6.5abc	1.0cd	1.5a	0.5gh
138	CCDR/L202	7.5ab	3.5a-e	5.0abc	4.5a	4.5abc	4.0abc	2.0a	5.5ab
139	BASMATI-370/KATY/4/VSNTLM//L201/.....	8.0a	2.0a-e	2.5a-d	0.0c	3.5bc	0.0d	0.0a	2.5c-h
140	CCDR/JEFF//0402128	8.0a	3.5a-e	4.0a-d	1.5abc	7.0ab	4.0abc	2.5a	2.0d-h
141	CPRS/CCDR	8.0a	3.0a-e	3.0a-d	0.0c	4.5abc	1.5bcd	1.0a	0.5gh
142	KBNT/Q36194	6.0cde	1.5b-e	2.5a-d	3.5abc	6.0abc	4.5abc	0.0a	5.0abc
143	9502008-A/DREW//CFX 26/WELLS	7.5ab	2.0a-e	4.0a-d	2.0abc	6.0abc	0.0d	0.0a	5.0abc
144	CCDR/L202	7.5ab	2.0a-e	1.0bcd	2.0abc	7.0ab	5.5a	1.5a	3.5b-f
145	WLLS/4484-1693	6.0cde	0.5de	1.0bcd	1.5abc	3.0c	0.0d	0.0a	2.0d-h
146	NWBT/KATY//9902207x2/3/JSMN/DLLA//…	8.0a	2.5a-e	4.5a-d	1.0abc	7.5a	0.0d	2.5a	1.0fgh
147	CCDR/L202	8.0a	3.0a-e	5.5ab	2.0abc	6.5abc	1.0cd	1.0a	0.5gh
148	LBNT/9902/3/DAWN/9695//STBN/4/LGRU/....	7.0abc	4.0a-d	1.0bcd	1.5abc	5.5abc	0.0d	0.0a	3.0b-g
149	LFTE/BNGL	6.0cde	3.5a-e	0.5cd	1.5abc	7.0ab	0.0d	0.0a	5.0abc
150	(JEFF//JEFF/O. RUFIPOGON)43_1-2	7.5ab	2.0a-e	2.5a-d	1.0abc	4.0abc	1.0cd	0.0a	1.0fgh
151	KDMxJASM 85	5.0e	0.0e	2.5a-d	0.0c				0.0h
152	9502008-A/DREW//CLR 20/3/9502008-A/......	8.0a	4.5abc	4.0a-d	1.0abc	7.0ab	3.5a-d	3.0a	2.0d-h
153	CPRS/CCDR	7.5ab	4.0a-d	4.5a-d	3.0abc	5.0abc	6.0a	0.0a	4.0b-e
154	CFX-18(CL161)/PSCL	7.5ab	3.5a-e	3.0a-d	1.5abc	6.0abc	0.0d	0.0a	2.5c-h
155	9502008-A/DREW//CLR 20/4/CPRS/KBNT......	8.0a	5.5a	2.5a-d	2.0abc	7.0ab	0.0d	1.0a	2.5c-h
156	LMNT//TBNT/LA110	8.0a	4.0a-d	4.0a-d	3.0abc	5.0abc	4.0abc	1.5a	7.0a
157	RSMT//RXMT/IR36	8.0a	3.5a-e	3.0a-d	3.0abc	5.5abc	3.5a-d	1.0a	4.5bcd
158	Jazzman	7.0abc	2.0a-e	5.0abc	1.5abc	6.0abc	0.0d	1.5a	3.5b-f
159	Sabine (SABN)	8.0a	3.0a-e	0.0d	0.0c	4.5abc	2.5a-d	0.0a	4.0b-e
160	Taggart	5.5de	1.0cde	3.0a-d	3.0abc	5.0abc	2.5a-d	0.0a	2.0d-h

Continued.

Table 9. Continued.

Character Rated	Sheath blight	Leaf smut	Cercospora	Leaf blast	BPB	Neck blast	Narrow brow	Leaf blast
Rating Date	7/26/11	7/26/11	8/8/11	8/8/11	9/1/11	9/1/11	9/1/11	9/16/11
Rating Data Type	SB	LS	Sheath	Flooded	BPB	RNB	NBLS	Upland
Rating Unit	0-9	0-9	0-9	0-9	0-9	0-9	0-9	0-9
Trt Treatment No. Name								
LSD (P=.05)	0.77	2.01	2.59	2.09	2.04	1.93	2.08	1.57
Standard Deviation	0.38	0.99	1.28	1.03	1.01	0.96	1.02	0.78
CV	5.21	32.34	42.53	65.99	18.27	42.65	106.13	27.3
Replicate F	3.167	7.460	0.070	2.358	0.480	0.059	0.127	0.085
Replicate Prob(F)	0.0832	0.0095	0.7924	0.1329	0.4930	0.8094	0.7237	0.7723
Treatment F	11.435	3.843	2.380	2.820	2.670	9.792	2.195	8.330
Treatment Prob(F)	0.0001	0.0001	0.0045	0.0009	0.0021	0.0001	0.0107	0.0001

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls).
Mean comparisons performed only when AOV Treatment P (F) is significant at mean comparison OSL.

2011 AY, PY, and SP Trial

Location: Rice Research Station, Crowley, LA

Soil Type: Crowley silt loam (pH 6.0, Clay 12%, Silt 71%, Sand 17%, CEC 9.4 /kg)

Variety/Seed Rate: Various, 100 lb/A

Plot Size: 1-3 rows, 6 ft long

Planting Method/Date: Drill seeded, Mar 16 and May 17

Fertilization: Preplant 20-60-60, Mar 15; Preflood 135-0-0, Apr 25; Topdress 46-0-0, May 12; Preplant 20-60-60, May 16; Preflood 159-0-0, June 15

Experimental Design: Randomized complete block design with two to four replications.

Water Management: Flushed, Mar 23, Mar 30, and Apr 12; Flooded, May 2; Drained, July 19; Flushed, May 23 and 30; Flooded, June 16; Drained, July 1; Re-Flooded, July 11; Drained, Aug 31

Herbicides: Propanil 4 qt/A, Apr 15; Tank-Mix RiceBeaux 3 qt/A and Prowl EC 2.4 pt/A, Apr 30; Tank-Mix Propanil 3 qt/A and Basagran 1 qt/A, June 3; Tank-Mix RiceBeaux 3 qt/A and Prowl EC 2.4 pt/A, June 14

Insecticides: Dermacor seed treatment

Inoculation Dates: *Rhizoctonia solani* culture grown on rice grain/hull mixture, May 19

Application Equipment: N/A

Application Dates:

Growth Stage	Time	Temp	Wind	RH	Clouds	Dew
N/A						

Disease Ratings: See Table 9

Drained: July 19, Aug 31

Results: See rice breeding reports.

Comments: Sheath blight severity was very severe in inoculated plots, naturally occurring leaf blast was evaluated under upland conditions and flooded conditions after a 1-week drainage, neck blast was evaluated in the flooded field, bacterial panicle blight was evaluated in inoculated plots with moderate severity, naturally occurring Cercospora/narrow brown leaf spot were light in severity, and leaf smut was moderate in severity.

2011 Lake Arthur Variety by Fungicide Trial

Location: Errol Lounsberry Farm, Lake Arthur, LA, Vermilion Parish

Soil Type: Crowley silt loam

Variety/Seed Rate: CL111, CL151, CL152, CL261, 100 lb/A

Plot Size: 4 x 14 ft

Planting Method/Date: Drill seeded, Mar 17

Fertilization: Preplant 20-60-60, Mar 17; Preflood 120-0-0, May 2

Experimental Design: Randomized complete block design with four replications.

Water Management: Flushed, Mar 28 and Apr 12; Flooded, May 6; Drained, July 15

Herbicides: NewPath 12 oz/A, Mar 17; Tank mix-Stam 4 qt/A + Londax 1 oz/A + Permit ½ oz/A, Apr 11; Tank mix-SuperWham 4 qt/A + Londax 1 oz/A, May 5; Clincher 18 oz/A, May 27

Insecticides: Dermacor seed treatment

Fungicides: Various (Quadris, Quilt Xcel, Stratego, and untreated check)

Inoculation Dates: All natural inoculums

Application Equipment: CO_2 backpack sprayer, 3-tip (TJ8002) hand wand, 20 gal/A

Application Dates:	Growth Stage	Time	Temp	Wind	RH	Clouds	Dew
June 7	Boot	07:30	82 F	3 mph	89%	30%	Heavy

Disease Ratings: July 11

Drained: July 15

Harvest: Aug 4

Results: See Table 10

Comments: Sheath blight severity was high; other diseases were light in severity.

Table 10. Effect of varietal resistance and fungicide applications on sheath blight development and yield of rice at the Lounsberry Farm, Lake Arthur, LA. 2011.

Description									SB 0-9	% SB	Yield Total	Head	Total
Rating Date									7/11/11	7/11/11	8/4/11	9/19/11	9/19/11
Rating Type											Yield	Milling	Milling
Rating Unit											lb/A	%	%
Trt No.	Type	Treatment Name	Form Conc	Form Unit	Form Type	Rate	Rate Unit	Growth Stage					
1		CL151							7.3ab	83.3ab	7957.5c	60.3b	69.008a
	FUNG	Unsprayed											
2		CL151							5.5b-e	50.0cd	10127.9ab	61.5b	69.895a
	FUNG	Quadris	2.08	lb/gal	SC	12	fl oz/A	Boot					
3		CL151							4.0e	30.8d	11468.7a	62.5b	71.543a
	FUNG	Quilt Xcel	1.2	lb/gal	SC	21	fl oz/A	Boot					
4		CL151							5.8b-e	52.8cd	10414.0ab	61.4b	70.103a
	FUNG	Stratego	2.08	lb/gal	EC	19	fl oz/A	Boot					
5		CL111							8.0a	87.8ab	7983.2c	56.7c	69.100a
	FUNG	Unsprayed											
6		CL111							5.5b-e	49.8cd	10340.2ab	61.0b	70.698a
	FUNG	Quadris	2.08	lb/gal	SC	12	fl oz/A	Boot					
7		CL111							5.5b-e	48.3cd	10195.2ab	61.4b	70.683a
	FUNG	Quilt Xcel	1.2	lb/gal	SC	21	fl oz/A	Boot					
8		CL111							5.8b-e	58.3cd	9990.2ab	60.0b	70.370a
	FUNG	Stratego	2.08	lb/gal	EC	19	fl oz/A	Boot					
9		CL261							6.8abc	79.8ab	8837.3bc	67.2a	70.238a
	FUNG	Unsprayed											
10		CL261							4.8cde	40.0d	9758.8ab	67.8a	70.945a
	FUNG	Quadris	2.08	lb/gal	SC	12	fl oz/A	Boot					
11		CL261							4.5de	36.3d	9528.5b	67.3a	69.678a
	FUNG	Quilt Xcel	1.2	lb/gal	SC	21	fl oz/A	Boot					
12		CL261							5.5b-e	45.5cd	10140.1ab	68.7a	71.025a
	FUNG	Stratego	2.08	lb/gal	EC	19	fl oz/A	Boot					
13		CL152							8.0a	95.0a	7726.7c	56.3c	66.795b
	FUNG	Unsprayed											
14		CL152							6.0b-e	55.3cd	10304.6ab	60.8b	69.505a
	FUNG	Quadris	2.08	lb/gal	SC	12	fl oz/A	Boot					
15		CL152							5.5b-e	55.5cd	10463.2ab	60.60b	69.043a
	FUNG	Quilt Xcel	1.2	lb/gal	SC	21	fl oz/A	Boot					
16		CL152							6.5a-d	70.0bc	9883.7ab	60.1b	69.498a
	FUNG	Stratego	2.08	lb/gal	EC	19	fl oz/A	Boot					
LSD (P=.05)									1.22	16.39	1105.11	2.7332	1.6359
Standard Deviation									0.85	11.47	773.31	1.9126	1.1447
CV									14.37	19.57	7.98	3.08	1.64
Replicate F									1.921	1.999	2.046	5.698	11.237
Replicate Prob(F)									0.1398	0.1276	0.1209	0.0021	0.0001
Treatment F									7.170	11.081	7.308	15.360	3.835
Treatment Prob(F)									0.0001	0.0001	0.0001	0.0001	0.0002

2011 Jefferson Davis Variety by Fungicide Trial

Location: Jimmy Hoppe Farm, Fenton, LA, Jefferson Davis Parish

Soil Type: Crowley silt loam

Variety/Seed Rate: CL111, CL151, CL152, CL261, 100 lb/A

Plot Size: 4 x 16 ft

Planting Method/Date: Drill seeded, Mar 11

Fertilization: Preplant 20-60-60, Mar 11; Preflood 145-0-0, Apr 13

Experimental Design: Randomized complete block design with four replications.

Water Management: Flushed, Mar 29; Flooded, Apr 14; Drained, July 8

Herbicides: Newpath 10 oz/A Mar 13; Tank-Mix Stam 4 qt/A + Permit ½ oz/A + Londax 1 oz/A, May 7; Tank-Mix RiceBeaux 3 qt/A + Permit ½ oz/A + Londax 1 oz/A, Apr 13

Insecticides: Dermacor seed treatment

Fungicides: Various (Quadris, Quilt Xcel, Stratego, and untreated check)

Inoculation Dates: All natural inoculums

Application Equipment: CO_2 backpack sprayer, 3-tip (TJ8002) hand wand, 20 gal/A

Application Dates:	Growth Stage	Time	Temp	Wind	RH	Clouds	Dew
June 3	Boot	09:00	87 F	3 mph	75%	30%	Mod.

Disease Ratings: Aug 4

Drained: July 8

Harvest: Aug 1

Results: See Table 11

Comments: Sheath blight severity was high; other diseases were light in severity.

Table 11. Effect of various fungicides on sheath blight development and yield of various rice varieties at the Jimmy Hoppie Farm, Jefferson Davis Parish, LA. 2011.

Description									SB	SB	Grain	Head	Total
Rating Date									8/4/11	8/4/11	8/3/11	10/6/11	10/6/11
Rating Type									Severity	Incidence	Yield	Milling	Milling
Rating Unit									0-9	%	lb/A	%	%
Trt No.	Type	Treatment Name	Form Conc	Form Unit	Form Type	Rate	Rate Unit	Growth Stage					
1	FUNG	CL151 Unsprayed							7.3a	72.5a	9907abc	61.0d	70.083cd
2	FUNG	CL151 Quadris	2.08	lb/gal	SC	12	fl oz/A	Boot	5.3b	40.0cde	11015ab	62.2bcd	70.435bcd
3	FUNG	CL151 Quilt Xcel	1.2	lb/gal	SC	21	fl oz/A	Boot	5.3b	40.0cde	11129a	63.2a-d	70.833a-d
4	FUNG	CL151 Stratego	2.08	lb/gal	EC	19	fl oz/A	Boot	6.0ab	55.0a-d	10786ab	64.0a-d	71.370abc
5	FUNG	CL111 Unsprayed							7.3a	72.5a	8661c	65.0a-d	71.495abc
6	FUNG	CL111 Quadris	2.08	lb/gal	SC	12	fl oz/A	Boot	5.5b	45.0cde	9370abc	58.2d	71.228abc
7	FUNG	CL111 Quilt Xcel	1.2	lb/gal	SC	21	fl oz/A	Boot	4.5b	37.5cde	9711abc	65.6a-d	71.635abc
8	FUNG	CL111 Stratego	2.08	lb/gal	EC	19	fl oz/A	Boot	6.0ab	57.5abc	9159bc	64.1a-d	71.488abc
9	FUNG	CL261 Unsprayed							6.0ab	50.0b-e	9114bc	68.8abc	72.005ab
10	FUNG	CL261 Quadris	2.08	lb/gal	SC	12	fl oz/A	Boot	4.5b	32.5e	8822c	69.1ab	71.848ab
11	FUNG	CL261 Quilt Xcel	1.2	lb/gal	SC	21	fl oz/A	Boot	5.3b	35.0de	9573abc	69.8a	72.398a
12	FUNG	CL261 Stratego	2.08	lb/gal	EC	19	fl oz/A	Boot	5.0b	37.5cde	9395abc	69.9a	72.255a
13	FUNG	CL152 Unsprayed							7.3a	67.5ab	9664abc	60.8d	69.530d
14	FUNG	CL152 Quadris	2.08	lb/gal	SC	12	fl oz/A	Boot	5.5b	37.5cde	10240abc	61.5cd	70.200cd
15	FUNG	CL152 Quilt Xcel	1.2	lb/gal	SC	21	fl oz/A	Boot	5.5b	42.5cde	10122abc	62.3bcd	70.600bcd
16	FUNG	CL152 Stratego	2.08	lb/gal	EC	19	fl oz/A	Boot	6.0ab	50.0b-e	9848abc	61.4cd	70.188cd
LSD (P=.05)									0.88	13.15	1124.8	4.473	0.9593
Standard Deviation									0.61	9.20	787.1	3.130	0.6713
CV									10.65	19.05	8.05	4.88	0.94
Replicate F									0.556	0.659	3.863	0.855	2.669
Replicate Prob(F)									0.6471	0.5818	0.0154	0.4718	0.0592
Treatment F									8.267	8.301	3.477	5.238	6.504
Treatment Prob(F)									0.0001	0.0001	0.0006	0.0001	0.0001

2011 Variety by Fungicide Trial

Location: Rice Research Station, Crowley, LA

Soil Type: Crowley silt loam (pH 6.0, Clay 12%, Silt 71%, Sand 17%, CEC 9.4 /kg)

Variety/Seed Rate: CL111, CL151, CL152, CL261, Cheniere, 100 lb/A

Plot Size: 4 x 16 ft

Planting Method/Date: Drill seeded, Mar 16

Fertilization: Preplant 20-60-60, Mar 15; Preflood 135-0-0, Apr 25; Topdress 46-0-0, May 12

Experimental Design: Randomized complete block design with four replications.

Water Management: Flushed Mar 23, Mar 30, and Apr 12; Flooded, May 2; Drained, July 19

Herbicides: Propanil 4 qt/A Apr 15; Tank-Mix RiceBeaux 3 qt/A and Prowl EC 2.4 pt/A, Apr 30

Insecticides: Dermacor seed treatment

Fungicides: Various (Quadris, Quilt Xcel, Stratego, and untreated check)

Inoculation Dates: *Rhizoctonia solani* culture grown on rice grain/hull mixture, May 19

Application Equipment: CO_2 backpack sprayer, 3-tip (TJ8002) hand wand, 20 gal/A

Application Dates:	Growth Stage	Time	Temp	Wind	RH	Clouds	Dew
June 6	Boot	08:00	82 F	3 mph	86%	10%	Mod.

Disease Ratings: July 21

Drained: July 19

Harvest: Aug 3

Results: See Table 12

Comments: Sheath blight severity was high.

Table 12. Effect of various fungicides on sheath blight development and yield of various rice varieties at the Rice Research Station, Crowley, LA, 2011.

Description									SB	SB	Yield lb/A	Head	Total
Rating Date									7/21/11	7/21/11	8/3/11	9/22/11	9/22/11
Rating Type									Severity	Infestation	Yield	Milling	Milling
Rating Unit									0-9	% Tiller	lb/A	%	%
Trt No.	Type	Treatment Name	Form Conc	Form Unit	Form Type	Rate	Rate Unit	Growth Stage					
1	FUNG	CL151 Unsprayed							7.0ab	80.6ab	8693ef	60.2cd	69.5a
2	FUNG	CL151 Quadris	2.08	lb/gal	SC	12	fl oz/A	Boot	4.2e-h	30.2ef	11074ab	61.3bcd	69.4a
3	FUNG	CL151 Quilt Xcel	1.2	lb/gal	SC	21	fl oz/A	Boot	3.8fgh	28.8ef	11419a	62.0bcd	70.1a
4	FUNG	CL151 Stratego	2.08	lb/gal	EC	19	fl oz/A	Boot	5.0def	39.8def	11340a	61.7bcd	69.8a
5	FUNG	CL111 Unsprayed							7.8a	87.4a	8260f	59.4d	70.5a
6	FUNG	CL111 Quadris	2.08	lb/gal	SC	12	fl oz/A	Boot	4.2e-h	32.6ef	10414abc	62.7bc	70.3a
7	FUNG	CL111 Quilt Xcel	1.2	lb/gal	SC	21	fl oz/A	Boot	4.4e-h	32.4ef	10566abc	63.0b	70.8a
8	FUNG	CL111 Stratego	2.08	lb/gal	EC	19	fl oz/A	Boot	5.8cd	52.2d	9689cd	62.6bc	71.1a
9	FUNG	CL261 Unsprayed							6.6bc	73.2bc	8845def	66.3a	70.2a
10	FUNG	CL261 Quadris	2.08	lb/gal	SC	12	fl oz/A	Boot	4.6efg	35.4ef	9895c	67.8a	70.6a
11	FUNG	CL261 Quilt Xcel	1.2	lb/gal	SC	21	fl oz/A	Boot	4.6efg	34.4ef	9743cd	67.8a	70.7a
12	FUNG	CL261 Stratego	2.08	lb/gal	EC	19	fl oz/A	Boot	4.6efg	40.6de	10161bc	67.8a	70.8a
13	FUNG	CL152 Unsprayed							7.0ab	81.8ab	8131f	59.9cd	69.3a
14	FUNG	CL152 Quadris	2.08	lb/gal	SC	12	fl oz/A	Boot	3.2h	24.4f	9673cd	61.5bcd	69.2a
15	FUNG	CL152 Quilt Xcel	1.2	lb/gal	SC	21	fl oz/A	Boot	3.6gh	30.4ef	10011c	62.1bcd	69.4a
16	FUNG	CL152 Stratego	2.08	lb/gal	EC	19	fl oz/A	Boot	6.0bcd	51.2d	9491cde	62.3bc	69.4a
17	FUNG	Cheniere Unsprayed							6.8abc	66.6c	8637ef	60.2cd	75.5a
18	FUNG	Cheniere Quadris	2.08	lb/gal	SC	12	fl oz/A	Boot	4.4e-h	35.8ef	10461abc	61.7bcd	70.3a
19	FUNG	Cheniere Quilt Xcel	1.2	lb/gal	SC	21	fl oz/A	Boot	4.4e-h	34.8ef	10434abc	61.7bcd	70.1a
20	FUNG	Cheniere Stratego	2.08	lb/gal	EC	19	fl oz/A	Boot	5.4de	51.6d	9940c	60.9bcd	69.9a
LSD (P=.05)									0.78	9.32	668.0	1.59	3.38
Standard Deviation									0.61	7.37	528.1	1.13	2.39
CV									11.85	15.6	5.36	1.8	3.39
Replicate F									2.570	2.947	2.162	0.299	1.460
Replicate Prob(F)									0.0446	0.0255	0.0815	0.8262	0.2354
Treatment F									22.664	36.795	16.374	22.061	1.260
Treatment Prob(F)									0.0001	0.0001	0.0001	0.0001	0.2468

2011 Sheath Blight Fungicide Trial (SB1)

Location: Rice Research Station, Crowley, LA

Soil Type: Crowley silt loam (pH 6.0, Clay 12%, Silt 71%, Sand 17%, CEC 9.4 /kg)

Variety/Seed Rate: Cocodrie, 100 lb/A

Plot Size: 4 x 16 ft

Planting Method/Date: Drill seeded, Mar 16

Fertilization: Preplant 20-60-60, Mar 15; Preflood 135-0-0, Apr 25; Topdress 46-0-0, May 12

Experimental Design: Randomized complete block design with four replications.

Water Management: Flushed, Mar 23, Mar 30, and Apr 12; Flooded, May 2; Drained, July 19

Herbicides: Propanil 4 qt/A, Apr 7; Tank-Mix RiceBeaux 3 qt/A and Prowl EC 2.4 pt/A, Apr 30

Insecticides: Dermacor seed treatment

Fungicides: Various

Inoculation Dates: Rhizoctonia solani culture grown on rice grain/hull mixture, May 19

Application Equipment: CO_2 backpack sprayer, 3-tip (TJ8002) hand wand, 20 gal/A

Application Dates:	Growth Stage	Time	Temp	Wind	RH	Clouds	Dew
June 2	PD + 14	09:00	90 F	5 mph	77%	20%	Mod.
June 8	Boot	08:00	81 F	2 mph	83%	30%	Mod.
June 16	Heading	11:00	88 F	5 mph	73%	50%	Light

Disease Ratings: July 22

Drained: July 19

Harvest: Aug 3

Results: See Table 13

Comments: Sheath blight severity was high.

Table 13. Effect of various fungicides on sheath blight development and yield of various rice varieties at the Rice Research Station, Crowley, LA, 2011.

Description							SB	SB	Yield	Yield	Total	Head
Rating Date							7/22/11	7/22/11	8/3/11	8/3/11	9/13/11	9/13/11
Rating Type							Severity	Infestation	Grain	Increase	Milling	Milling
Rating Unit							0-9	% Till	LB/A	LB/A	%	%
Trt No.	Treatment Name	Form Conc	Form Unit	Form Type	Rate Rate Unit	Growth Stage						
1	Untreated Check						7.8a	80.5a	8874e	0e	69.4a	59.5a
2	Stratego	250	ga/L	EC	19 fl oz/A	B	6.8a-d	70.8ab	9620b-e	746b-e	69.5a	60.4a
3	Stratego YLD	500	ga/L	SC	6.3 fl oz/A	B	7.0abc	62.0abc	9991a-d	1117a-d	69.7a	60.4a
4	GEM RC	500	ga/L	SC	4.7 fl oz/A	B	6.3a-e	60.3a-d	9962a-d	1088a-d	69.7a	60.0a
5	Stratego YLD	500	ga/L	SC	6.3 fl oz/A	B	6.3a-e	50.8b-e	10141a-d	1267a-d	70.1a	60.7a
	Proline	480	ga/L	SC	2 fl oz/A	B						
6	Stratego	250	ga/L	EC	19 fl oz/A	B	5.3ef	36.8de	10701a	1827a	69.8a	60.6a
	GEM RC	500	ga/L	SC	2 fl oz/A	B						
7	Quilt Xcel	264	ga/L	SE	21 fl oz/A	B	4.5f	29.3e	10875a	2001a	69.6a	60.2a
8	Quilt Xcel	264	ga/L	SE	17.5 fl oz/A	B	4.5f	31.5e	10672a	1798a	69.4a	60.3a
9	Quadris	250	ga/L	SC	9 fl oz/A	B	5.5def	40.0cde	10209a-d	1335a-d	70.0a	60.4a
10	Quadris	250	ga/L	SC	10 fl oz/A	B	5.8c-f	44.8cde	10397abc	1523abc	69.5a	60.5a
11	Convoy + NIS	3.8	lb/gal	SC	0.5 lb ai/A	PD+14	7.5ab	80.5a	8955e	81e	69.1a	60.0a
12	Convoy + NIS	3.8	lb/gal	SC	0.7 lb ai/A	PD+14	7.5ab	81.5a	8875e	1e	69.3a	60.4a
13	Convoy + NIS	3.8	lb/gal	SC	0.5 lb ai/A	PD+21(B)	7.3ab	76.0ab	8998e	124e	69.4a	59.7a
14	Convoy + NIS	3.8	lb/gal	SC	0.7 lb ai/A	PD+21(B)	7.3ab	72.3ab	9364de	490de	69.5a	60.0a
15	Convoy + NIS	3.8	lb/gal	SC	0.5 lb ai/A	PD+28(H)	7.0abc	71.3ab	9237de	363de	69.5a	60.0a
16	Convoy + NIS	3.8	lb/gal	SC	0.7 lb ai/A	PD+28(H)	7.0abc	69.8ab	9528cde	654cde	70.3a	61.2a
17	Convoy + NIS	3.8	lb/gal	SC	0.5 lb ai/A	PD+21(B)	7.5ab	79.5a	8749e	-125e	69.1a	59.8a
	Tilt	3.6	lb/gal	EC	4 fl oz/A	PD+21(B)						
18	Quadris	250	ga/L	SC	9 fl oz/A	PD+14	6.0b-e	52.8b-e	10192a-d	1318a-d	69.6a	60.4a
19	Quilt	125	ga/L	SC	28 fl oz/A	B	5.0ef	33.5e	10593ab	1719ab	69.7a	59.9a
20	Tilt	3.6	lb/gal	EC	10 fl oz/A	B	7.5ab	81.3a	8787e	-87e	69.2a	59.6a
LSD (P=.05)							0.89	16.30	636.4	636.3	0.78	1.36
Standard Deviation							0.63	11.53	450.0	449.9	0.55	0.96
CV							9.78	19.14	4.62	52.2	0.79	1.6
Replicate F							0.251	1.400	4.553	4.558	2.415	2.265
Replicate Prob(F)							0.8602	0.2522	0.0063	0.0062	0.0759	0.0907
Treatment F							11.207	10.536	10.342	10.344	1.268	0.770
Treatment Prob(F)							0.0001	0.0001	0.0001	0.0001	0.2407	0.7301

2011 Sheath Blight Fungicide Trial (SB2)

Location: Rice Research Station, Crowley, LA

Soil Type: Crowley silt loam (pH 6.0, Clay 12%, Silt 71%, Sand 17%, CEC 9.4/kg)

Variety/Seed Rate: CL131, 100 lb/A

Plot Size: 4 x 16 ft

Planting Method/Date: Drill seeded, Mar 16

Fertilization: Preplant 20-60-60, Mar 15; Preflood 135-0-0, Apr 25; Topdress 46-0-0, May 12

Experimental Design: Randomized complete block design with four replications.

Water Management: Flushed, Mar 23, Mar 30, and Apr 12; Flooded, May 2; Drained, July 19

Herbicides: Propanil 4 qt/A, Apr 15; Tank-Mix RiceBeaux 3 qt/A and Prowl EC 2.4 pt/A, Apr 30

Insecticides: Dermacor seed treatment

Fungicides: Various (Quadris, Stratego, Quilt, Quilt Xcel. Gem, Tilt, and untreated check)

Inoculation Dates: *Rhizoctonia solani* culture grown on rice grain/hull mixture, May 19

Application Equipment: CO_2 backpack sprayer, 3-tip (TJ8002) hand wand, 20 gal/A

Application/Dates:	Growth Stage	Time	Temp	Wind	RH	Clouds	Dew
June 10	Boot	07:00	82 F	3 mph	77%	10%	Mod.

Disease Ratings: July 22

Drained: July 19

Harvest: Aug 3

Results: See Table 14

Comments: Sheath blight severity was very high.

Table 14. Effect of various fungicides and tank mixes on sheath blight development and yield of various rice varieties at the Rice Research Station Crowley, LA. 2011.

Description									SB	SB	Yield	Yield	Milling Total	Milling Whole
Rating Date									7/22/11	7/22/11	8/3/11	8/3/11	9/16/11	9/16/11
Rating Type											Grain	Increase		
Rating Unit									0-9	%	lb/A	lb/A	%	%
Trt No.	Type	Treatment Name	Form Conc	Form Unit	Form Type	Rate	Rate Unit	Growth Stage						
1		Unsprayed Check							8.0a	93.5a	6793b	0b	70.6a	55.0b
2	FUNG	Quadris	2.08	lb/gal	SC	9	fl oz/A	B	4.5b	42.3b	9007a	2214a	71.5a	63.1a
3	FUNG	Quadris	2.08	lb/gal	SC	12	fl oz/A	B	5.0b	37.8b	9272a	2479a	71.5a	62.7a
4	FUNG	Stratego	2.08	lb/gal	EC	16	fl oz/A	B	6.0b	54.0b	9715a	2922a	71.2a	60.2a
5	FUNG	Stratego	2.08	lb/gal	EC	19	fl oz/A	B	5.3b	46.3b	9263a	2470a	71.3a	61.6a
6	FUNG	Stratego	2.08	lb/gal	EC	21	fl oz/A	B	5.8b	51.5b	9113a	2320a	71.3a	61.6a
7	FUNG	Quilt	1.66	lb/gal	SC	21	fl oz/A	B	4.8b	38.0b	9601a	2808a	71.6a	62.7a
8	FUNG	Quilt	1.66	lb/gal	SC	28	fl oz/A	B	5.3b	42.8b	9275a	2482a	71.3a	62.4a
9	FUNG	Quilt Xcel	2.2	lb/gal	SC	17.5	fl oz/A	B	5.0b	42.3b	9684a	2891a	71.6a	63.4a
10	FUNG	Quilt Xcel	2.2	lb/gal	SC	28	fl oz/A	B	4.5b	38.5b	9334a	2541a	71.5a	64.1a
11	FUNG	Stratego	2.08	lb/gal	EC	19	fl oz/A	B	5.0b	45.3b	9454a	2661a	71.5a	63.1a
	FUNG	Quadris	2.08	lb/gal	SC	2	fl oz/A	B						
12	FUNG	Stratego	2.08	lb/gal	EC	19	fl oz/A	B	5.0b	45.0b	9124a	2331a	71.4a	63.0a
	FUNG	Gem	4.17	lb/gal	SC	1	fl oz/A	B						
13	FUNG	Quilt Xcel	2.2	lb/gal	SC	14	fl oz/A	B	5.3b	41.0b	9476a	2683a	71.4a	61.5a
	FUNG	Tilt	3.6	lb/gal	EC	2	fl oz/A	B						
14	FUNG	Quilt Xcel	2.2	lb/gal	SC	16	fl oz/A	B	5.0b	39.3b	9250a	2457a	71.3a	62.2a
	FUNG	Tilt	3.6	lb/gal	EC	1.4	fl oz/A	B						
15	FUNG	Quilt	2.2	lb/gal	SC	21	fl oz/A	B	4.5b	40.5b	9556a	2763a	71.4a	63.0a
	FUNG	Quadris	2.08	lb/gal	SC	3	fl oz/A	B						
16	FUNG	Quadris	2.08	lb/gal	SC	9	fl oz/A	B	5.5b	44.3b	8863a	2070a	71.2a	61.6a
	FUNG	Tilt	3.6	lb/gal	EC	6	fl oz/A	B						
LSD (P=.05)									1.07	10.40	710.5	710.5	0.54	2.42
Standard Deviation									0.75	7.28	497.2	497.2	0.38	1.69
CV									14.18	15.7	5.42	20.89	0.53	2.73
Replicate F									1.598	2.778	0.934	0.933	2.928	1.801
Replicate Prob(F)									0.2031	0.0519	0.4323	0.4324	0.0438	0.1606
Treatment F									5.112	13.492	7.451	7.451	1.651	6.018
Treatment Prob(F)									0.0001	0.0001	0.0001	0.0001	0.0977	0.0001

2011 Sheath Blight Fungicide Trial (SB3)

Location: Rice Research Station, Crowley, LA

Soil Type: Crowley silt loam (pH 6.0, Clay 12%, Silt 71%, Sand 17%, CEC 9.4/kg)

Variety/Seed Rate: CL151, 100 lb/A

Plot Size: 4 x 16 ft

Planting Method/Date: Drill seeded, Apr 6

Fertilization: Preplant 20-60-60, Mar 21; Preflood 148-0-0, May 17

Experimental Design: Randomized complete block design with four replications.

Water Management: Flushed, Apr 12, Apr 20, and May 10; Flooded, May 19; Drained, Aug 4

Herbicides: Propanil 4 qt/A May 1; Tank-Mix RiceBeaux 3 qt/A and Prowl EC 2.4 pt/A, May 17

Insecticides: Dermacor seed treatment

Fungicides: Various

Inoculation Dates: *Rhizoctonia solani* culture grown on rice grain/hull mixture, June 7

Application Equipment: CO_2 backpack sprayer, 3-tip (TJ8002) hand wand, 20 gal/A

Application Dates:

	Growth Stage	Time	Temp	Wind	RH	Clouds	Dew
June 22	PD + 14	08:30	84 F	7 mph	86%	100%	Heavy
June 27	Boot	11:00	89 F	3 mph	76%	40%	Light
July 7	Heading	10:30	92 F	1 mph	74%	20%	Light
July 11	Heading + 5	08:30	85 F	3 mph	85%	20%	Mod.
July 15	Heading + 10	10:30	81 F	6 mph	92%	80%	Heavy
July 20	Heading + 15	08:30	84 F	2 mph	91%	50%	Heavy

Disease Ratings: Aug 9

Drained: Aug 4

Harvest: Aug 16

Results: See Table 15

Comments: Sheath blight severity was very high; other diseases were low.

Table 15. Effect of various fungicides, rates, and timings on sheath blight development and yield of various rice varieties at the Rice Research Station Crowley, LA. 2011.

Description								SB	SB	Grain	Head	Total
Rating Date								8/9/11	8/9/11	8/16/11	9/27/11	9/27/11
Rating Type										Yield	Milling	Milling
Rating Unit								0-9	%	lb/A	%	%
Trt No.	Treatment Name	Form Conc	Form Unit	Form Type	Rate	Rate Unit	Growth Stage					
1	Unsprayed check							7.0a	90.8a	7649de	55.4ab	67.7a
2	Quadris	250	ga/l	SC	12	fl oz/A	B	4.3bc	42.3b	8474abc	55.0ab	67.5a
3	Quilt Xcel	264	ga/l	SE	21	fl oz/A	B	3.5c	31.8b	8956ab	55.0ab	67.3a
4	Stratego	250	ga/l	SE	19	fl oz/A	B	4.5bc	44.0b	8582abc	55.0ab	67.4a
5	AM500	5	%aw/w	EC	0.65	% v/v	B	7.0a	76.3a	7342e	54.0ab	66.9a
6	AM500	5	%aw/w	EC	0.65	% v/v	H	7.5a	90.5a	7438e	55.3ab	67.6a
7	Folar X-Cyte	0.18	%	FL	16	fl oz/A	EB	7.0a	80.3a	7742cde	54.2ab	66.8a
8	HarvestMore	1	g/kg	DF	80	oz wt/A	EB	7.3a	80.0a	7755cde	55.2ab	67.3a
	Folar X-Cyte	0.18	%	FL	16	fl oz/A	EB					
9	Fortified Simulate	1	ga/kg	DF	4	fl oz/A	EB	7.3a	83.5a	7595de	53.7B	66.6a
	Folar X-Cyte	0.18	%	FL	16	fl oz/A	EB					
10	Folar X-Cyte	0.18	%	FL	16	fl oz/A	B	7.0a	88.0a	7275e	54.1ab	66.9a
11	Folar X-Cyte	0.18	%	FL	16	fl oz/A	B	7.0a	79.0a	7829cde	54.0ab	67.2a
	HarvestMore	1	ga/kg	DF	80	oz wt/A	B					
12	Quadris	250	ga/l	SC	12	fl oz/A	H	4.3bc	39.8b	8992ab	56.0ab	67.9a
13	Quadris	250	ga/l	SC	12	fl oz/A	H+5	4.8bc	43.5b	9166ab	55.9ab	67.7a
14	Quadris	250	ga/l	SC	12	fl oz/A	H+10	5.0b	45.8b	8559abc	55.5ab	67.6a
15	Quadris	250	ga/l	SC	12	fl oz/A	H+15	4.8bc	48.5b	8345bcd	54.8ab	67.2a
16	Quadris	250	ga/l	SC	12	fl oz/A	EB	5.5b	56.0b	8409a-d	56.5ab	68.1a
17	Quilt Xcel	264	ga/l	SE	21	fl oz/A	EB	5.0b	45.8b	9111ab	55.8ab	68.2a
18	Quilt Xcel	264	ga/l	SE	21	fl oz/A	H	4.3bc	51.3b	9267a	57.2A	68.6a
LSD (P=.05)								0.91	15.27	534.1	1.93	1.11
Standard Deviation								0.64	10.80	377.6	1.36	0.78
CV								11.27	17.4	4.58	2.47	1.16
Replicate F								6.569	0.786	1.557	1.203	1.207
Replicate Prob(F)								0.0008	0.5072	0.2112	0.3181	0.3168
Treatment F								18.148	14.641	12.965	1.919	1.804
Treatment Prob(F)								0.0001	0.0001	0.0001	0.0377	0.0536

2011 Variety Yield Loss Trial

Location: Rice Research Station, Crowley, LA

Soil Type: Crowley silt loam (pH 6.0, Clay 12%, Silt 71%, Sand 17%, CEC 9.4/kg)

Variety/Seed Rate: CL151, CL161, Cocodrie & Cheniere, 100 lb/A

Plot Size: 4 x 16 ft

Planting Method/Date: Drill seeded, Apr 6

Fertilization: Preplant 20-60-60, Mar 21; Preflood 148-0-0, May 17

Experimental Design: Randomized complete block design with four replications.

Water Management: Flushed, Apr 12, Apr 20, and May 10; Flooded, May 19; Drained, Aug 4

Herbicides: Propanil 4 qt/A May 1; Tank-Mix RiceBeaux 3 qt/A and Prowl EC 2.4 pt/A, May 17

Insecticides: Dermacor seed treatment

Fungicides: Quadris and Quilt Xcel

Inoculation Dates: *Rhizoctonia solani* culture grown on rice grain/hull mixture, June 10
Randomized inoculated and non-inoculated plots

Application Equipment: CO_2 backpack sprayer, 3-tip (TJ8002) hand wand, 20 gal/A

Application Dates:	Growth Stage	Time	Temp	Wind	RH	Clouds	Dew
June 21	Early Boot	13:00	86 F	8 mph	85%	100%	Heavy

Disease Ratings: Aug 9

Drained: Aug 4

Harvest: Aug 12

Results: See Table 16

Comments: Sheath blight severity was very high. Fungicides were applied just before a rain and lost activity.

Table 16. Effect of various fungicides on sheath blight development and yield of various rice varieties at the Rice Research Station Crowley, LA, 2011.

Description								SB	SB	Yield	Head	Total
Part Rated								0-9	%		Milling	Milling
Rating Date								8/9/11	8/9/11	8/12/11	9/30/11	9/30/11
Rating Unit										lb/A	%	%
Trt No.	Treatment Name	Form Conc	Form Unit	Form Type	Rate	Rate Unit	Growth Stage					
1	Cocodrie Uninoculated							4.3cd	22.8d	7717abc	53.3a	65.1a
2	Cocodrie Inoculated							8.0a	91.5a	5900efg	54.8a	65.5a
3	Cocodrie Quadris	2.08	lb/gal	SC	12	fl oz/A	Boot	8.0a	96.0a	6111d-g	53.8a	
4	Cocodrie Quilt Xcel	1.2	lb/gal	SC	21	fl oz/A	Boot	6.5abc	55.3bc	8022a	53.7a	64.9a
5	CL161 Uninoculated							4.3cd	26.3d	7060a-f	55.8a	65.8a
6	CL161 Inoculated							8.3a	90.3a	5272g	54.9a	65.4a
7	CL161 Quadris	2.08	lb/gal	SC	12	fl oz/A	Boot	8.0a	95.8a	5707fg		
8	CL161 Quilt Xcel	1.2	lb/gal	SC	21	fl oz/A	Boot	7.3ab	64.8abc	6935a-f	56.1a	65.8a
9	Cheniere Uninoculated							5.0bcd	37.3cd	7319a-e	55.1a	65.9a
10	Cheniere Inoculated							7.0ab	78.0ab	6429b-g	55.4a	65.9a
11	Cheniere Quadris	2.08	lb/gal	SC	12	fl oz/A	Boot	7.5a	89.5a	5984d-g		
12	Cheniere Quilt Xcel	1.2	lb/gal	SC	21	fl oz/A	Boot	6.3a-d	61.0abc	7553abc	56.1a	66.4a
13	CL151 Uninoculated							4.0d	19.5d	7367a-d	53.1a	65.4a
14	CL151 Inoculated							8.0a	91.3a	6325c-g	54.3a	65.0a
15	CL151 Quadris	2.08	lb/gal	SC	12	fl oz/A	Boot	7.3ab	85.8a	6758a-f		
16	CL151 Quilt Xcel	1.2	lb/gal	SC	21	fl oz/A	Boot	6.0a-d	42.8cd	7792ab	54.6a	65.9a
LSD (P=.05)								1.55	21.48	882.4	2.6618	1.41
Standard Deviation								1.08	15.03	617.5	1.8435	0.976
CV								16.41	22.96	9.13	3.37	1.49
Replicate F								0.516	0.182	3.783	0.554	0.063
Replicate Prob(F)								0.6734	0.9078	0.0167	0.6490	0.9792
Treatment F								7.569	14.001	7.268	1.192	0.826
Treatment Prob(F)								0.0001	0.0001	0.0001	0.3285	0.6162

2011 Blast Fungicide Trial

Location: Rice Research Station, Crowley, LA

Soil Type: Crowley silt loam (pH 6.0, Clay 12%, Silt 71%, Sand 17%, CEC 9.4/kg)

Variety/Seed Rate: M202, 100 lb/A

Plot Size: 4 x 16 ft

Planting Method/Date: Drill seeded, May 17

Fertilization: Preplant 20-60-60, May 16; Preflood 159-0-0, June 15

Experimental Design: Randomized complete block design with four replications.

Water Management: Flushed, May 23 and 30; Flooded, June 16; Drained, July 1; Re-Flooded, July 11; Drained, Aug 31

Herbicides: Tank-Mix Propanil 3 qt/A and Basagran 1 qt/A, June 3; Tank-Mix RiceBeaux 3 qt/A and Prowl EC 2.4 pt/A, June 14

Insecticides: Dermacor seed treatment

Fungicides: Various

Inoculation Dates: Natural inoculum

Application Equipment: CO_2 backpack sprayer, 3-tip (TJ8002) hand wand, 20 gal/A

Application Dates:	Growth Stage	Time	Temp	Wind	RH	Clouds	Dew
July 29	Boot	11:00	85 F	6 mph	83%	80%	Slight
Aug 3	Heading	08:00	83 F	2 mph	85%	30%	Heavy
Aug 8	Heading + 5	09:00	87 F	3 mph	82%	10%	Heavy
Aug 12	Heading + 10	10:30	94 F	2 mph	61%	75%	Slight
Aug 17	Heading + 15	11:00	95 F	2 mph	58%	5%	Slight

Disease Ratings: Sep 2

Drained: Aug 31

Harvest: Sept 12

Results: See Table 17

Comments: Blast severity was very high and yield potential was low.

Table 17. Effect of various fungicides, rates, and timings on blast development and yield of M202 rice at the Rice Research Station Crowley, LA. 2011.

Trt No.	Type	Treatment Name	Form Conc	Form Unit	Form Type	Rate	Rate Unit	Growth Stage	9/2/11 RNB %	9/14/11 Yield Lb/A	9/14/11 Yield Increase Lb/A
1		Untreated							96.3a	2388ab	0ab
2	FUNG	Stratego	2.08	lb/gal	EC	19	fl oz/A	H	51.3d	3666a	1278a
3	FUNG	Stratego PRO	4.16	lb/gal	EC	8	fl oz/A	H	58.8cd	3065ab	677ab
4	FUNG	Stratego PRO	4.16	lb/gal	EC	9	fl oz/A	H	47.5d	3146ab	758ab
5	FUNG	Stratego PRO	4.16	lb/gal	EC	8	fl oz/A	H	57.5cd	3165ab	777ab
	FUNG	Tilt	3.6	lb/gal	EC	4	fl oz/A	H			
6	FUNG	Stratego	2.08	lb/gal	EC	19	fl oz/A	H	42.5d	3018ab	630ab
	FUNG	GEM	4.16	lb/gal	SC	2	fl oz/A	H			
7	FUNG	GEM	4.16	lb/gal	SC	4.7	fl oz/A	H	50.0d	3038ab	650ab
8	FUNG	Quilt Excel	2.08	lb/gal	SC	21	fl oz/A	H	60.0cd	2559ab	171ab
9	FUNG	Quadris	2.08	lb/gal	SC	12	fl oz/A	H	58.8cd	2719ab	331ab
10	FUNG	Quadris	2.08	lb/gal	SC	9	fl oz/A	B & H	45.0d	3460a	1072a
11	FUNG	Quilt Excel	2.08	lb/gal	SC	17.5	fl oz/A	B & H	45.0d	3191ab	803ab
12	FUNG	Stratego	2.08	lb/gal	EC	14	fl oz/A	B & H	40.0d	3147ab	759ab
13	FUNG	AM500	5	% aw/w	EC	0.65	% v/v	B	90.0ab	2678ab	290ab
14	FUNG	AM500	5	% aw/w	EC	0.65	% v/v	H	91.3ab	2272ab	-116ab
15		Untreated							87.5ab	2488ab	100ab
16	FUNG	Quadris	2.08	lb/gal	SC	12	fl oz/A	H+5	73.8bc	2439ab	51ab
17	FUNG	Quadris	2.08	lb/gal	SC	12	fl oz/A	H+10	81.3ab	1916b	-472b
18	FUNG	Quadris	2.08	lb/gal	SC	12	fl oz/A	H+15	87.5ab	1918b	-470b
LSD (P=.05)									14.27	828.0	828.0
Standard Deviation									10.09	585.5	585.5
CV									15.61	20.96	144.58
Replicate F									0.203	1.595	1.594
Replicate Prob(F)									0.8936	0.2021	0.2022
Treatment F									14.907	2.882	2.882
Treatment Prob(F)									0.0001	0.0018	0.0018

2011 Bacterial Panicle Blight Trial

Location: Rice Research Station, Crowley, LA

Soil Type: Crowley silt loam (pH 6.0, Clay 12%, Silt 71%, Sand 17%, CEC 9.4/kg)

Variety/Seed Rate: CL151, 100 lb/A

Plot Size: 4 x 16 ft

Planting Method/Date: Drill seeded, May 17

Fertilization: Preplant 20-60-60, May 16; Preflood 159-0-0, June 15

Experimental Design: Randomized complete block design with four replications.

Water Management: Flushed, May 23 and 30; Flooded, June 16; Drained, July 1; Re-Flooded, July 11; Drained, Aug 31

Herbicides: Tank-Mix Propanil 3 qt/A and Basagran 1 qt/A, June 3; Tank-Mix RiceBeaux 3 qt/A and Prowl EC 2.4 pt/A, June 14

Insecticides: Dermacor seed treatment

Fungicides: N/A

Inoculation Dates: N/A

Application Equipment: CO_2 backpack sprayer, 3-tip (TJ8002) hand wand, 20 gal/A

Application Dates:	Growth Stage	Time	Temp	Wind	RH	Clouds	Dew
July 26	Early Boot	08:30	80 F	3 mph	95%	100%	Heavy
July 29	Boot	11:00	85 F	6 mph	83%	80%	Slight
Aug 8	Heading	09:00	87 F	3 mph	82%	10%	Heavy

Disease Ratings: Sept 2

Drained: Aug 31

Harvest: Sept 12

Results: See Table 18

Comments: Bacterial panicle blight severity was moderate. Extensive lodging caused yields to be erratic. Yield losses were moderate.

Table 18. Effect of various pesticides, rates, and timings on sheath blight and bacterial panicle blight development and yield of CL151 rice at the Rice Research Station Crowley, LA. 2011.

Description								SB	SB	BPB	
Rating Date								9/2/11	9/2/11	9/2/11	9/14/11
Rating Type								Severity	Incidence	Severity	Yield
Rating Unit								0-9	%	0-9	Lb/A
Trt No.	Treatment Name	Form Conc	Form Unit	Form Type	Rate	Rate Unit	Growth Stage				
1	Unsprayed check							6.0a	87.5a	5.5a	7108a
2	Quadris	250	ga/l	SC	12	fl oz/A	B	4.8b	62.5b	5.8a	6980a
3	AM500	5	% aw/w	EC	0.65	% v/v	B	5.8a	85.0a	6.0a	6936a
4	AM500	5	% aw/w	EC	0.65	% v/v	H	6.0a	88.8a	6.0a	6437a
5	Folar X-Cyte	0.18%		FL	16	fl oz/A	EB	6.0a	82.5a	5.8a	6212a
6	HarvestMore	1	g/kg	DF	80	oz wt/A	EB	5.8a	80.0a	5.5a	6470a
	Folar X-Cyte	0.18%		FL	16	fl oz/A	EB				
7	Fortified Simulate	1	ga/kg	DF	4	fl oz/A	EB	5.5ab	77.5a	5.5a	7418a
	Folar X-Cyte	0.18%		FL	16	fl oz/A	EB				
8	Folar X-Cyte	0.18%		FL	16	fl oz/A	B	5.5ab	80.0a	5.5a	6217a
9	Folar X-Cyte	0.18%		FL	16	fl oz/A	B	6.3a	87.5a	5.8a	6562a
	HarvestMore	1	ga/kg	DF	80	oz wt/A	B				
LSD (P=.05)								0.67	11.82	0.91	898.8
Standard Deviation								0.46	8.10	0.62	615.9
CV								8.06	9.97	10.92	9.19
Replicate F								2.957	1.365	9.461	2.696
Replicate Prob(F)								0.0527	0.2773	0.0003	0.0685
Treatment F								3.652	3.952	0.449	1.884
Treatment Prob(F)								0.0065	0.0042	0.8791	0.1101

GENETIC STUDIES TO UNDERSTAND AND IMPROVE RICE DISEASE RESISTANCE TO BACTERIAL PANICLE BLIGHT AND SHEATH BLIGHT

J.H. Ham, B.K. Shrestha, H.S. Karki, D.E. Groth, and X. Sha

Overview of this program

The goal of this program is to develop new disease-resistant rice varieties/lines and disease management strategies to overcome major disease problems, including bacterial panicle blight and sheath blight, based on better understanding of genetic and molecular mechanisms underlying rice disease resistance. Research activities to achieve this goal include:

1. Conducting genetic mapping of rice disease resistance traits against bacterial panicle blight and sheath blight.
2. Generating new breeding lines showing high levels of disease resistance.
3. Identifying new chemical and biological agents that can suppress bacterial panicle blight and/or sheath blight.

Jupiter (a medium-grain variety) and LM-1 (a mutant line derived from the long-grain and semidwarf variety Lemont) were chosen as the major sources of disease resistance traits for mapping and breeding projects because they show high levels of partial resistance to both bacterial panicle blight and sheath blight.

Progress

Genetic mapping of disease resistance

Four mapping populations have been generated by crossing Jupiter and LM-1 with Trenasse and Bengal, which are both highly susceptible to bacterial panicle blight and highly susceptible and moderately susceptible to sheath blight, respectively. In the 2011 season, 300 F_4 recombinant inbred lines (RILs) derived from each of LM-1/Trenasse, Jupiter/Trenasse, LM-1/Bengal, and Jupiter/Bengal crosses, were grown as panicle rows in the field at the Rice Research Station. For each mapping population, distribution of RILs in terms of the partial resistance to bacterial panicle blight and sheath blight was determined (Fig. 1 to Fig. 8) and F_5 seeds of individual RILs were collected. For marker-assisted mapping, 1,198 random simple sequence repeat (SSR) markers have been tested to screen polymorphic markers between each parental combination (Table 1). Additional random SSR markers are being tested to obtain enough numbers of polymorphic markers for genetic mapping with each mapping population.

Breeding disease resistant lines

For developing new rice lines resistant to both bacterial panicle blight and sheath blight, Jupiter and LM-1 were hybridized with disease susceptible commercial varieties Trenasse, Bengal, and Cocodrie and with each other. In 2009, more than 3,000 F_2 plants from the above cross combinations were tested for disease resistance to bacterial panicle blight, and 411 F_2 plants showing relatively higher levels of disease resistance were primarily selected. In 2010, ~ 6,000 F_3 progenies from the F_2 plants selected in 2009 were grown in the field and challenged with both *R. solani* and *B. glumae* at different growth stages, then 396 F_3 plants that showed partial resistance to both diseases were selected. In 2011, F_4 progenies from the individual 396 F_3 lines selected in 2010 were grown as panicle rows and each row of F_4 plants was tested for the resistance to both bacterial panicle blight and sheath blight. Promising disease-resistant lines selected this year (Table 2) will be tested for their other agronomic traits, as well as disease resistance next year, and transferred to the rice breeding program at the Rice Research Station.

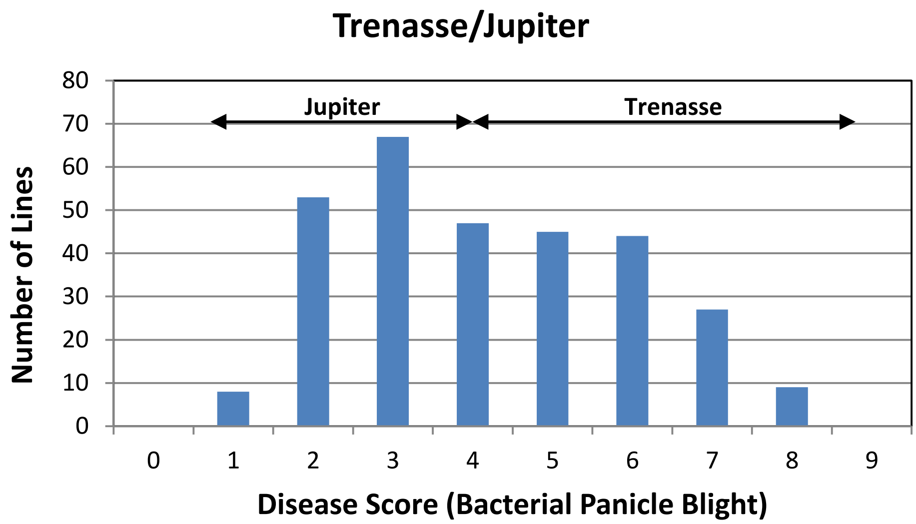


Figure 1. Distribution of the mapping population derived from the Trenasse and Jupiter cross combination in disease resistance to bacterial panicle blight.

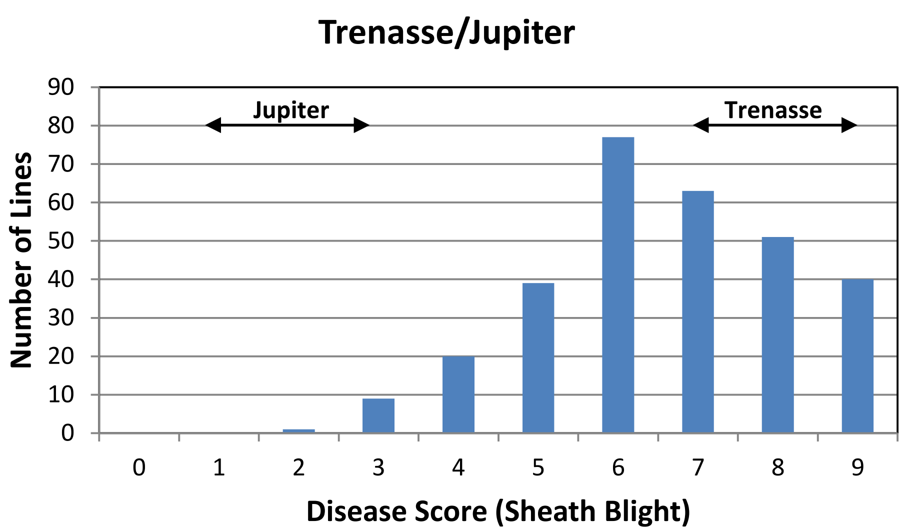


Figure 2. Distribution of the mapping population derived from the Trenasse and Jupiter cross combination in disease resistance to sheath blight.

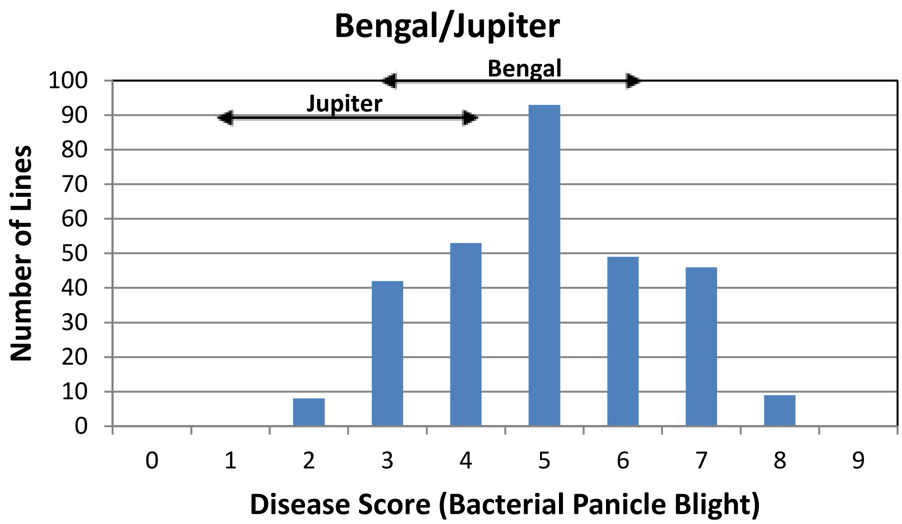


Figure 3. Distribution of the mapping population derived from the Bengal and Jupiter cross combination in disease resistance to bacterial panicle blight.

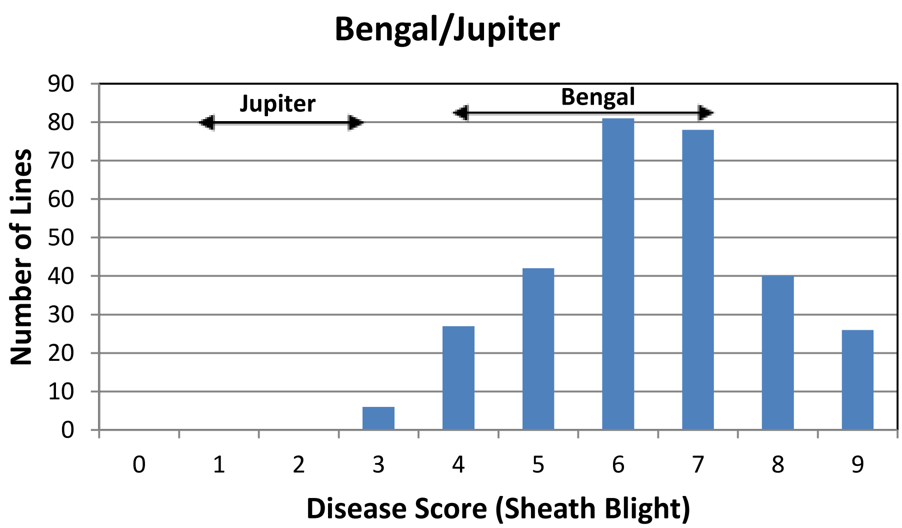


Figure 4. Distribution of the mapping population derived from the Bengal and Jupiter cross combination in disease resistance to sheath blight.

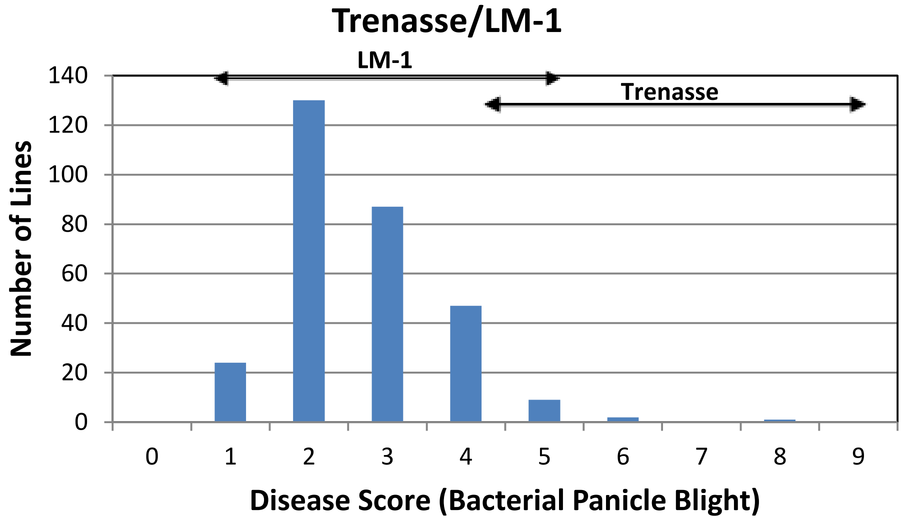


Figure 5. Distribution of the mapping population derived from the Trenasse and LM-1 cross combination in disease resistance to bacterial panicle blight.

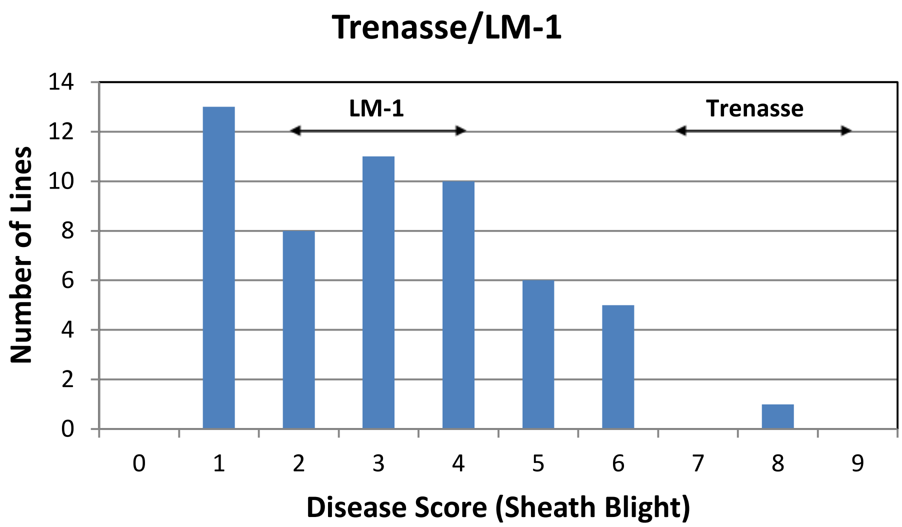


Figure 6. Distribution of the mapping population derived from the Trenasse and LM-1 cross combination in disease resistance to sheath blight.

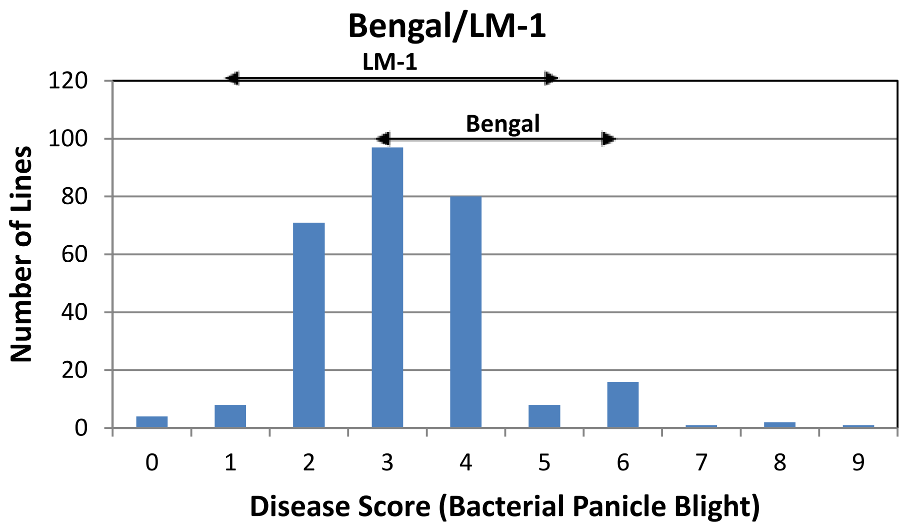


Figure 7. Distribution of the mapping population derived from the Bengal and LM-1 cross combination in disease resistance to bacterial panicle blight.

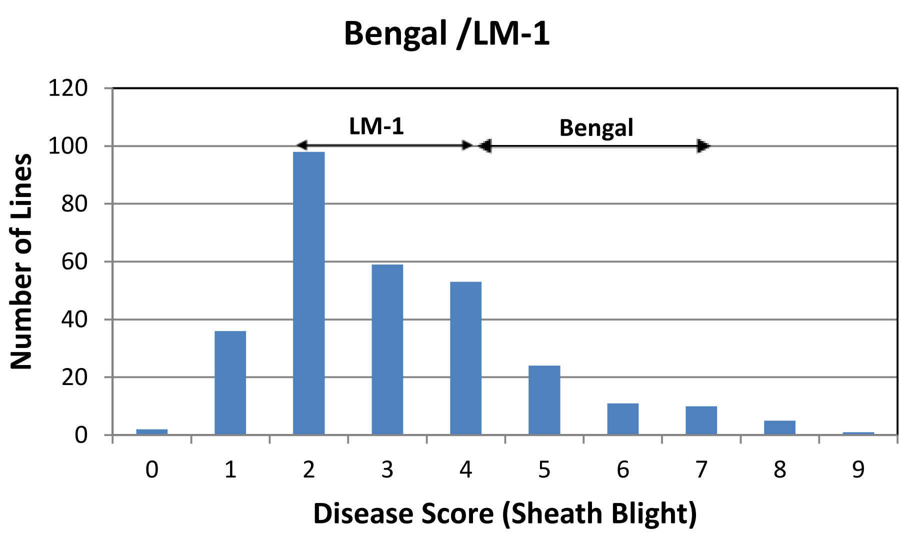


Figure 8. Distribution of the mapping population derived from the Bengal and LM-1 cross combination in disease resistance to sheath blight.

Table 1. Number of SSR markers showing polymorphism in each parental pair.

Parental Pair	Trenasse/Jupiter	Bengal/Jupiter	Trenasse/LM-1	Bengal/LM-1
# of polymorphic SSR markers screened so far	207	154	165	175

Table 2. Number of panicle rows (F_4) selected in 2011 based on disease resistance to both bacterial panicle blight and sheath blight.

Parents	# of Panicle Rows Selected in 2011 / # of Panicle Rows Tested in 2011 (from F_3 Progenies Selected in 2010)
Trenasse/LM1	3 / 56
Trenasse/Jupiter	3 / 60
Bengal/LM1	8 / 94
Bengal/Jupiter	1 / 14
Cocodrie/LM1	1 / 68
Jupiter/LM1	5 / 104

Development of new chemical and biological agents for disease control

Pretreatments that suppressed disease development of bacterial panicle blight

Several chemicals known to elicit plant defense systems (jasmonic acid, salicylic acid, hydrogen peroxide, ethephon, and 2,6-dichloroisonicotinic acid), ascorbic acid (Vitamin C), and the culture filtrates of *Burkholderia glumae* were tested for their effects on the suppression of bacterial panicle blight. These materials were pretreated to the susceptible variety, Trenasse, prior to the inoculation with the bacterial panicle blight pathogen, *B. glumae*. Among the substances tested, ascorbic acid and culture filtrates of *B. glumae* significantly reduced the damages from bacterial panicle blight infection when they were pretreated prior to pathogen inoculation (Fig. 9).

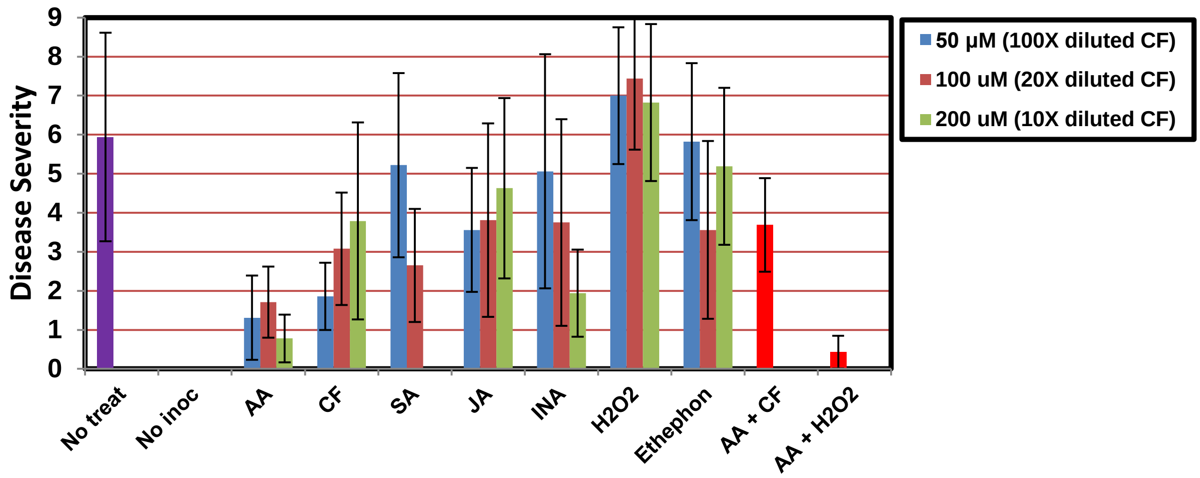
***Antifungal activities of natural avirulent strains of* B. glumae**

Nine virulent and 11 natural avirulent strains of *B. glumae* isolated from rice fields in the southern United States were tested for their antifungal activities against the fungal pathogen causing sheath blight, *Rhizoctonia solani*. All the virulent strains and seven of the 11 avirulent strains tested showed various levels of antifungal activities against *R. solani* in the laboratory (Fig. 10). Natural avirulent strains showing antifungal activities can be good candidates of biological control agents for controlling fungal rice diseases, including sheath blight.

Antibacterial and antifungal activities of rice-associated bacteria

Several hundred bacterial isolates were previously isolated from rice plants in the field, and 29 isolates showed antifungal and antibacterial activities (against *B. glumae* and *R. solani*, respectively) in a preliminary test by Dr. Rush's group. The 29 bacterial isolates were retested for their antifungal and antibacterial activities, and 26 of them were confirmed to have both antimicrobial activities (Fig. 11 and 12). All of the four isolates randomly chosen from the 26 isolates were identified as *Bacillus subtilis*. Identification of the remaining bacterial isolates showing antimicrobial activities is underway. These rice-associated bacteria having antimicrobial activities against both fungal and bacterial pathogens could be good biological control agents effective to a diverse range of bacterial and fungal diseases of rice.

A



B

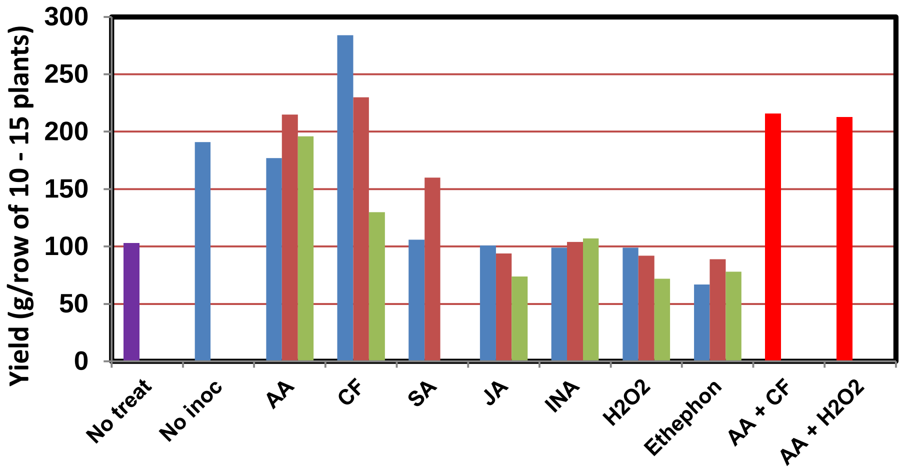


Figure 9. Effects of the pretreatments with various chemical substances on (A) the suppression of bacterial panicle blight symptom development and (B) the reduction of yield loss by subsequent inoculation of *B. glumae*. The tests for this figure were conducted with the bacterial panicle blight susceptible variety, Trenasse. The various treatments indicated on X-axis are: No treat (no treatment before the pathogen infection), No inoc (no pathogen infection), AA (ascorbic acid), CF (*B. glumae* culture filtrate), SA (salicylic acid), JA (jasmonic acid), INA (2,6-dichloroisonicotinic acid), H_2O_2, ethephon, AA + CF (mixture of 100 µM ascorbic acid and the 20X-diluted *B. glumae* culture filtrate), and AA + H_2O_2 (mixture of 100 µM ascorbic acid and 100 µM hydrogen peroxide). The *B. glumae* culture filtrate was prepared by centrifugation of the overnight culture (OD_{600} = 2.0 ~ 3.0) of the pathogen and subsequent filtration of the supernatant fraction through a 0.2 um-pore bacterial filter. The cell-free filtrate was then diluted 10, 20, or 100 times in the sterile tap water before spray. Disease severity was evaluated from 15 plants using the 0-9 scale (0= no symptom and 9 = more than 90% of panicles are infected in each rice plant). Error bars indicates standard deviations. Yield indicates the dry weights of rice seeds after harvest from the 15 rice plants of each treatment.

A

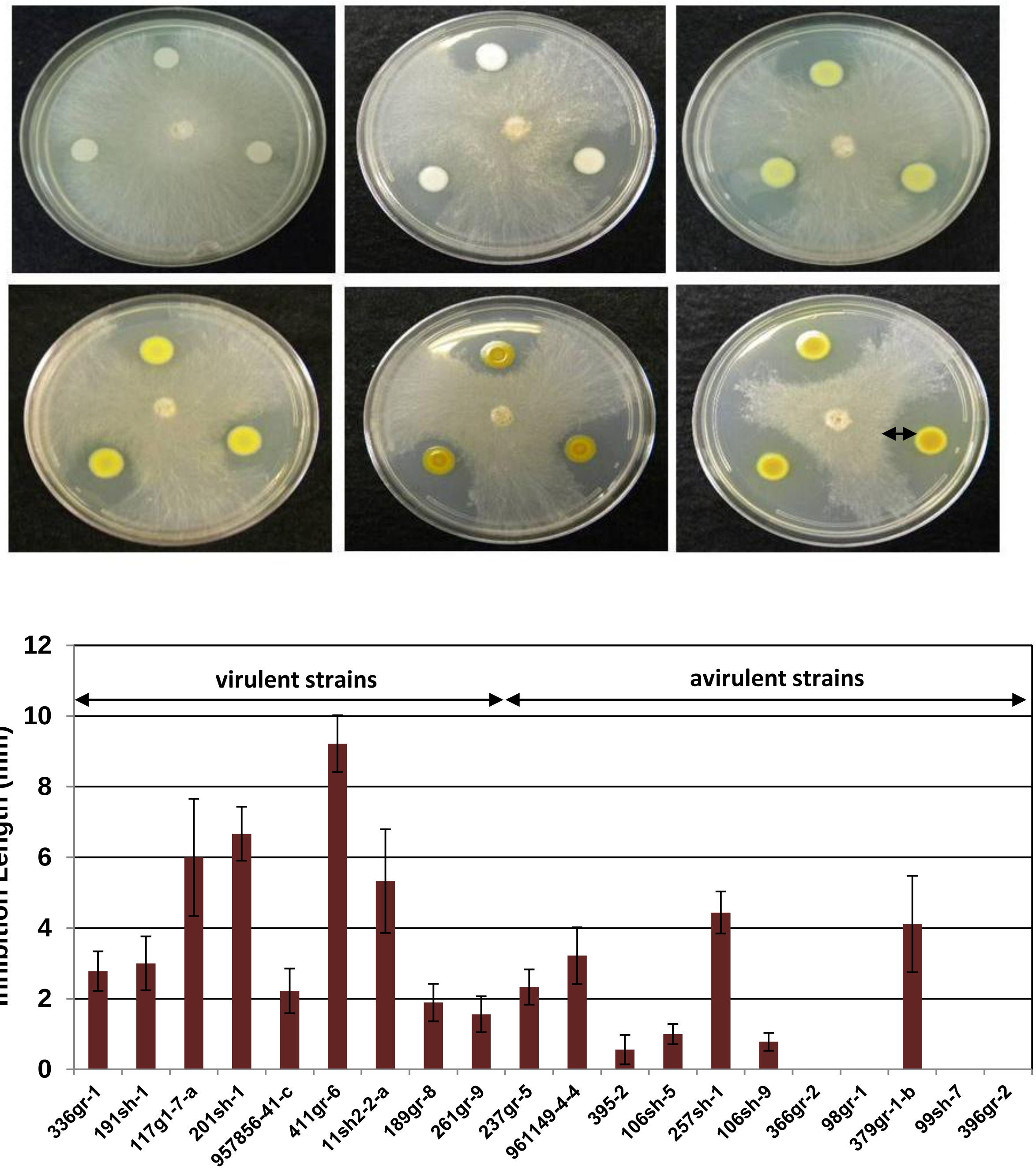
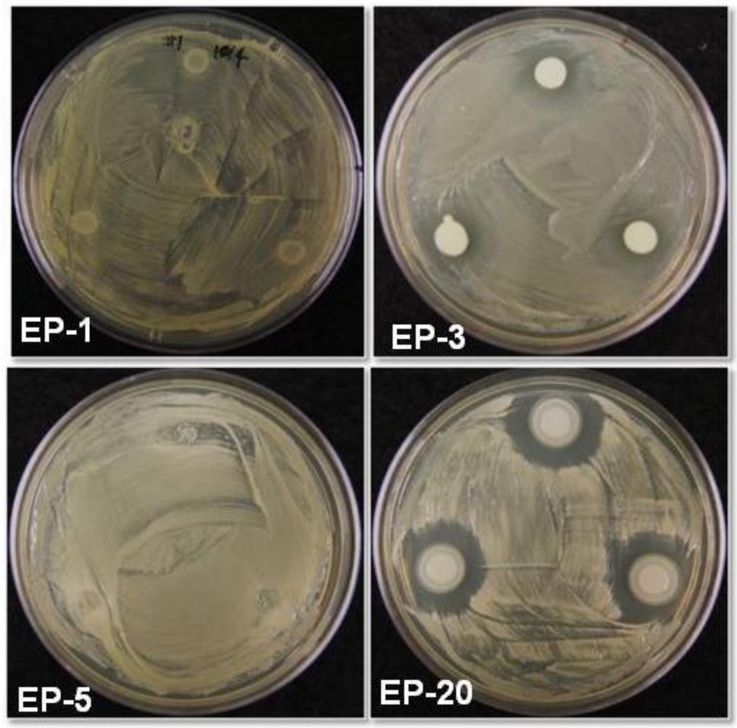


Figure 10. Antifungal activities of *B. glumae* strains against *R. solani*. (A) Images of antifungal activities on potato dextrose agar (PDA) plates. (B) Quantitative data of antifungal activities shown by individual strains of *B. glumae* tested. The bidirectional arrow shown in A indicates the inhibition length measured for the quantification of antifungal activities.

A



B

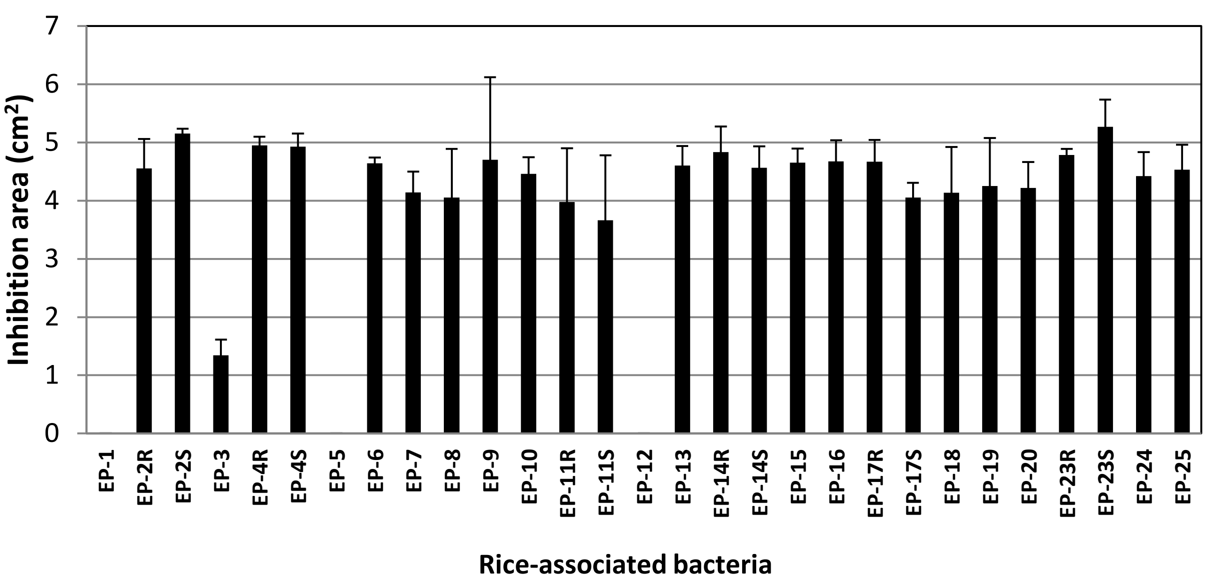
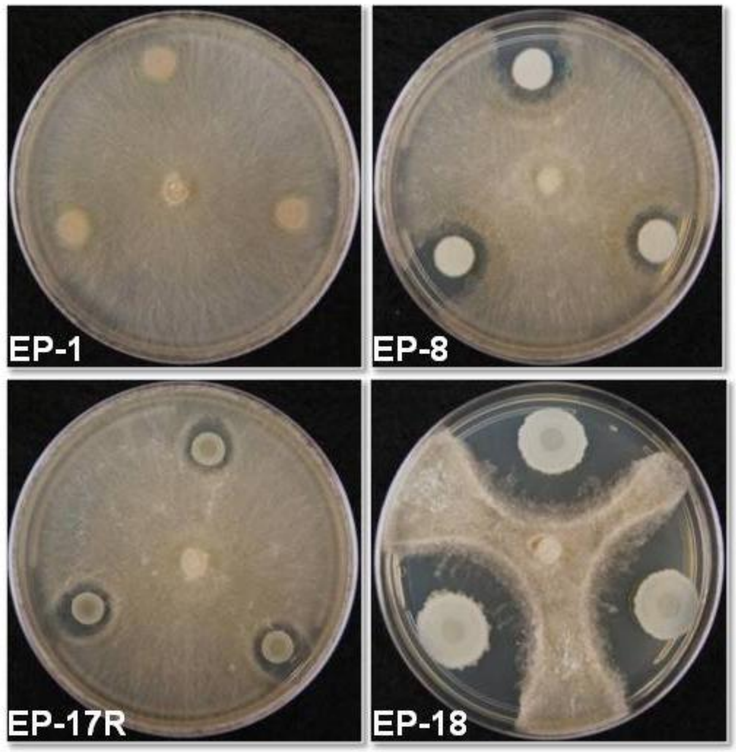


Figure 11. Antibacterial activities of rice-associated bacteria against *B. glumae*. (A) Images of antibacterial activities on potato dextrose agar (PDA) plates. (B) Quantitative data of antibacterial activities shown by individual isolates of rice-associated bacteria.

A



B

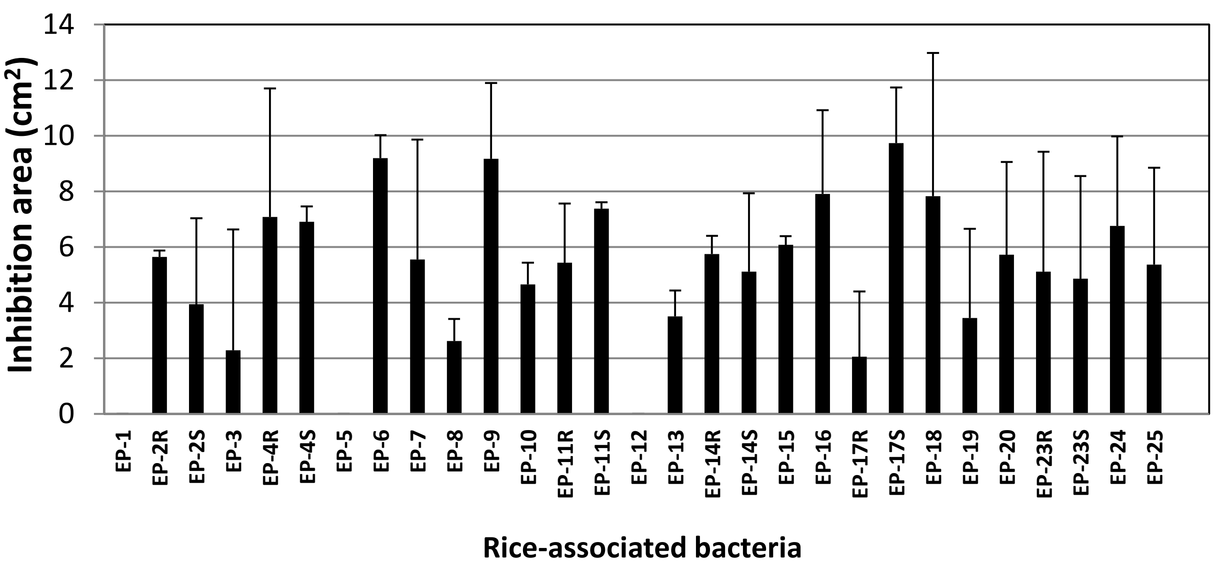


Figure 12. Antifungal activities of rice-associated bacteria against *R. solani*. (A) Images of antifungal activities on potato dextrose agar (PDA) plates. (B) Quantitative data of antifungal activities shown by individual isolates of rice-associated bacteria.

SOYBEAN DISEASE MANAGEMENT RESEARCH
MEASURING YIELD LOSSES DUE TO DISEASES OF SOYBEANS[1]

Clayton A. Hollier and Dustin L. Harrell

Each year, diseases reduce yield and quality and impact profitability of soybeans in Louisiana. Leaf, stem and pod diseases affect soybean production in Louisiana in varying degrees. Leaf diseases, especially soybean rust, frogeye leaf spot, Cercospora blight/purple seed stain and aerial blight can develop rapidly and are difficult to control when the diseases become established. Pod and stem diseases, especially pod and stem blight, anthracnose, stem canker and Phomopsis blight, are major yield reducers in the crop. Although a greater understanding of the biology of the leaf, stem and pod diseases is important to development of newer and more effective management strategies, one major component of disease management is lacking. Yield losses due to disease in soybeans have not been studied holistically. Studies have been conducted to determine individual disease yield losses but diseases do not occur as individuals in a population but rather exist as co-conspirators to reduce yield. Therefore, this project looked at diseases collectively, attempted to determine their overall impact and the best management practices, thus to protect the crop and return otherwise lost income back to the growers. Research included: 1) gaining an understanding of disease epidemiology, 2) measuring yield losses over time, 3) measuring the effectiveness of modern fungicides, and 4) developing effective disease management strategies using a combination of genetic, cultural, and chemical methods.

Effective disease management is a crucial component of a soybean production system to ensure maximum economic returns. Diseases can be managed using genetic resistance, cultural practices, and fungicides when necessary. Genetic resistance is the most effective means for managing diseases, but resistance may be short-lived because new pathogenic races can evolve quickly and unexpectedly. Annually, LSU AgCenter scientists evaluate soybean varieties in statewide variety trials, fungicide trials, and in available uniform disease resistance screening nurseries. Each location represents a unique growing region of the state. Varieties are evaluated for agronomic characteristics and response to naturally-occurring diseases. These tests provide producers with a source of non-biased information for variety performance. In addition, this information serves as the basis for variety recommendations provided by the LSU AgCenter. When disease-resistant varieties are not available, fungicides can be used to manage most soybean diseases; however, applications are not always effective or economical and there is a need to determine when an economic return can be expected. There is a constant need to determine which fungicide programs are most effective for managing foliar diseases. In this project, research was conducted to evaluate the impact of selected fungicide treatments (ranging from no fungicide to high rates of commercial or experimental fungicides) in varieties differing in susceptibility to the major diseases. Other research addressed was the importance of application timings and the combinations and rates of selected fungicides. Results here emphasized the area of disease forecasting and yield loss assessments.

[1]This research is supported by funds provided by the soybean growers of Louisiana through the Louisiana Soybean and Grain Research and Promotion Board.

Table 1. Aerial blight progress curve on Pioneer 95Y40, Rice Research Station, South Farm, Crowley, LA. 2011.

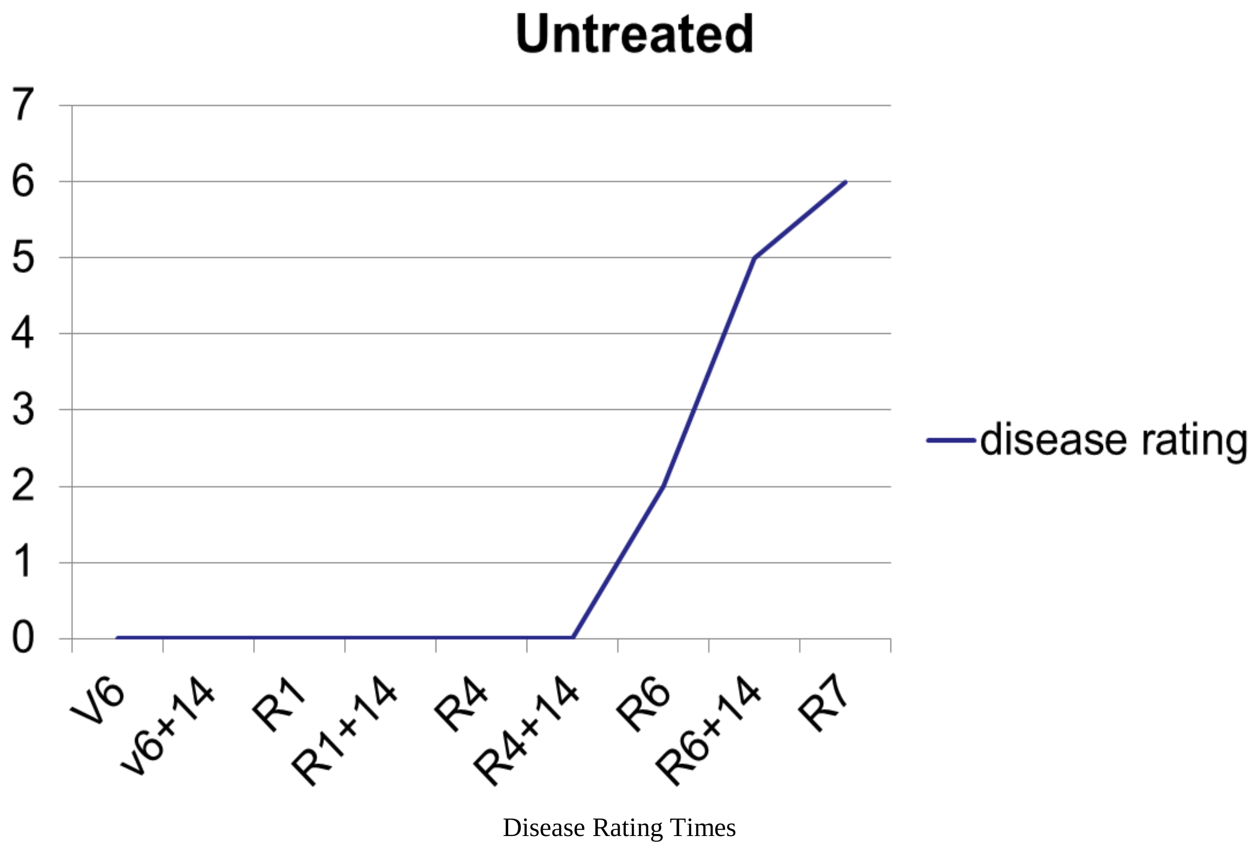


Table 2. Yield loss fungicide application timing, RRS, South Farm, Crowley, LA. 2011.

Treatment[1]	**V6**[2]	**R1**[2]	**Early R4**[2]	**R6**[2]
Q-H-T[3]	X	X	X	X
Q-H-T	X	X	X	
Q-H-T	X	X		
Q-H-T	X			
Q-H-T		X		
Q-H-T			X	
Q-H-T				X
Q-H-T			X	X
Q-H-T		X	X	X
Q-H-T		X		X
Q-H-T	X		X	
Q-H-T	X			X
Q-H-T	X	X		X
Q-H-T	X		X	X
Untreated				
Water check				

[1] Fungicide treatment

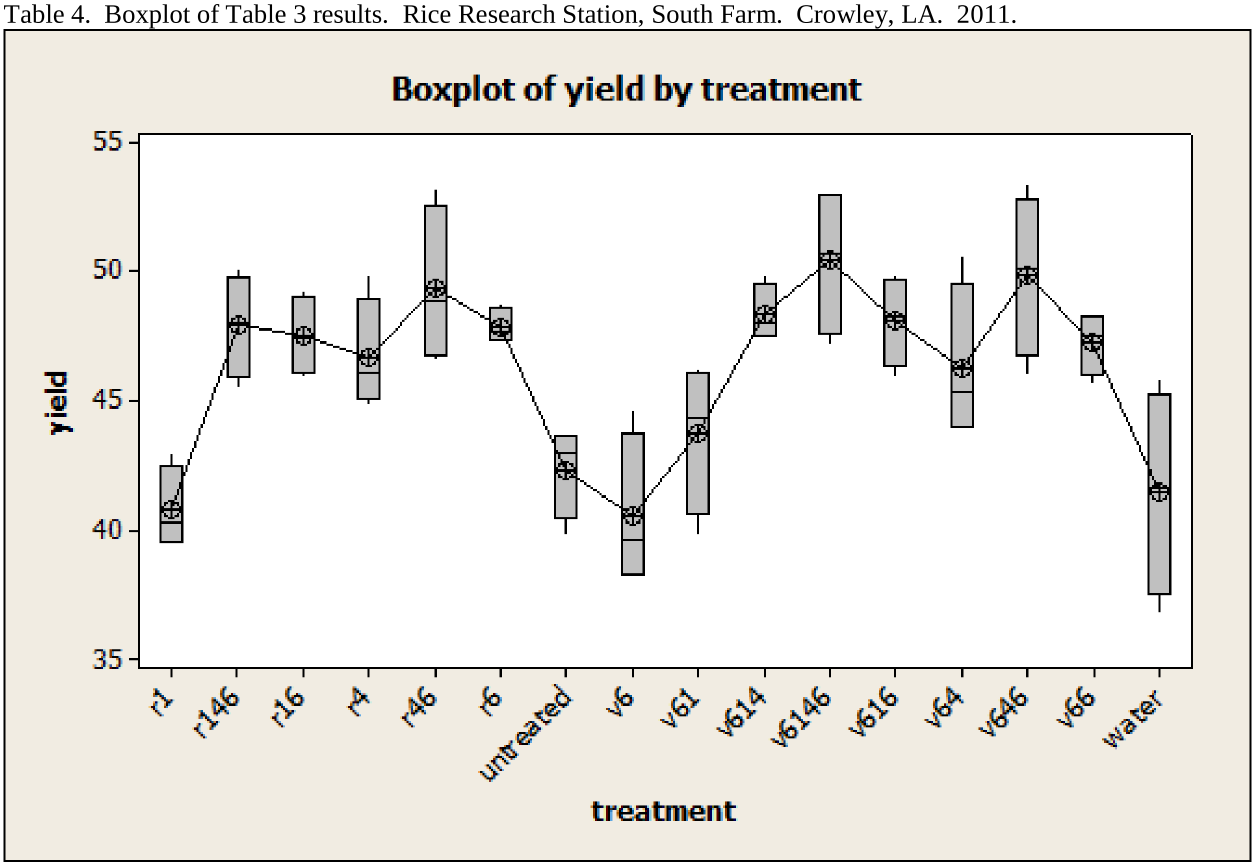
[2] Soybean growth stage (time of application)

[3] Q-H-T = Quilt (14 oz/A) – Headline (4.5 oz/A) – Topsin M (1 lb/A) combination

Table 3. Yield loss assessment due to aerial blight on Pioneer 94Y40 at the Rice Research Station, South Farm, Crowley, LA. 2011.

Treatment	**Time of fungicide application**	**Yield (bu/A)**
Q-H-T	V6R1R4R6	50.450 a
Q-H-T	V6 R4R6	49.900 a
Q-H-T	R4R6	49.400 a
Q-H-T	V6R1R4	48.350 ab
Q-H-T	V6R1 R6	48.100 abc
Q-H-T	R1R4R6	47.900 abc
Q-H-T	R6	47.875 abc
Q-H-T	R1 R6	47.525 abcde
Q-H-T	V6 R6	47.250 abcde
Q-H-T	R4	46.700 abcde
Q-H-T	V6 R4	46.280 abcde
Q-H-T	V6R1	43.700 abcde
Untreated		42.350 bcde
Water	V6R1R4R6	41.450 cde
Q-H-T	R1	40.775 de
Q-H-T	V6	40.530 e
LSD		6.892

Table 4. Boxplot of Table 3 results. Rice Research Station, South Farm. Crowley, LA. 2011.



STUDY OF THE BIOLOGY AND MANAGEMENT OF CERCOSPORA IN RICE[1]

Clayton A. Hollier, Kirandeep Kaur, and Donald E. Groth

Each year, the Cercospora complex of rice diseases (narrow brown leaf spot, sheath deterioration, stem weakness, and panicle blanking) caused by *Cercospora janseana* reduces yield and quality and impacts profitability of rice in Louisiana. Although rice plants are susceptible to the fungus at all stages of growth, they are most susceptible from panicle emergence to maturity. In areas where ratoon growth is possible, *C. janseana* continues to develop and causes additional yield loss in the ratoon crop. The symptoms usually develop during the mid-tillering stage and express most vividly on susceptible varieties during the heading stages. Cercospora is very difficult to control when the disease becomes established. Propiconazole fungicide has been suggested in recent years based on work done by Dr. Don Groth at the Rice Research Station, but there are many components of the Cercospora complex that are not understood. Work this past season has moved forward, and more information is known now than before the season. Emphasis this season was on the first crop and looked at many components associated with disease development.

During the 2011 season, five rice varieties representing very susceptible to resistant were planted and treated with propiconazole fungicide at panicle initiation, early boot, or late boot to determine the best timing of fungicide application. Previous work with fungicides had determined that propiconazole fungicides were the most effective against *C. janseana*, therefore, it was the only fungicide used in the treatments. Early indications are that for April-planted rice, the best time for the fungicide application was late boot, just prior to panicle emergence (heading). For rice planted in May, the best time for treatment was at panicle initiation due to a more conducive environment for Cercospora to develop earlier in the rice plant's development. Work will continue during 2012 to confirm the 2011 results.

One epidemiological factor that is unknown is any relationship of phenotypic growth patterns to Cercospora development. To measure that, five varieties displaying different resistance/susceptibility ratings and different phenotypic growth patterns were planted in a replicated experiment. Inside these plots were inserted in-field weather stations that measured rainfall, wind speed and direction, temperature, and relative humidity above the canopy. Within the canopy, micro-environmental data (temperature and leaf wetness) were taken. Preliminary results will be published by this medium after collection of the 2012 data.

Variety X Seeding Rates and Variety X Fertility practices were rated for Cercospora development. Preliminary results reveal that extremes in nitrogen fertilizer will enhance Cercospora development in the mid- to late growth stages of rice.

Evaluations of Cercospora development in the Variety X Seedbed Preparation revealed more Cercospora in stale vs. conventional tillage programs. Variety X Seeding Rate revealed no observed differences after only a single year of observation.

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

RICE PRODUCTION ECONOMICS RESEARCH IN 2011

Michael E. Salassi

Rice enterprise production cost budget projections for 2011 were developed in the fall of 2010 for alternative rice production systems in Louisiana. A summary of the enterprise budgeting analysis for rice production systems in Southwest Louisiana is presented in Table 1. Values presented represent rice breakeven prices to cover direct (variable) and total estimated rice production costs per hundredweight of rice produced for selected yield levels. Direct production costs include expenses for seed, fertilizer, chemicals, fuel, labor, repairs, custom charges, and interest on operating capital. Total specified expenses include direct expenses plus fixed costs on machinery and equipment. These values can also be interpreted as the breakeven price or income per output unit required to cover total production costs. Tenant-operator situations shown in the tables were budgeted for each enterprise with a 70/30 share rent arrangement with the landlord/waterlord paying the irrigation pumping costs.

Rice production costs were estimated for the following types of rice production systems: water planted, drill planted, conventional variety, Clearfield variety, conventional tillage, stale seedbed, in rotation, and fallow land. Base yield level for Southwest Louisiana was 65.0 cwt/A for water- and drill-planted rice. Variable production costs ranged from $9.84 to $10.62/cwt for water-planted rice and from $8.79 to $10.11/cwt for drill-planted rice at the base yield level of 65.0 cwt/A. Cost differences were influenced by use of conventional or herbicide-resistant variety, conventional versus stale seedbed tillage system, and rice production in rotation or on fallow land. A 10% change in yield per harvested acre resulted in a $0.85 to $1.04/cwt change in variable cost for water-planted rice and a $0.81 to $0.98/cwt change in variable cost for drill-planted rice. Total projected rice production costs for 2011 ranged from $10.59 to $12.03/cwt for water-planted rice and from $9.88 to $11.11/cwt for drill-planted rice at the base yield level of 65.0 cwt/A.

The Projected 2011 Rice Farm Cash Flow Model was developed to assist producers in planning for the 2011 crop year. The model is an Excel spreadsheet that allows rice producers to enter projected acreage, yield, market price, and production cost data for 2011 to estimate net returns above variable production costs and to easily evaluate the impact of changing percent of base planted on net returns. The primary purpose of the model is to evaluate the impact on net returns above variable production costs for alternative rice rental arrangements and percent of base acreage planted. The model also includes entry cells for whole farm fixed expenses to estimate projected returns from rice production over all costs.

Harvest equipment represents a major crop production expense on most farming operations. New technology, larger machines, and higher energy prices have caused the capital expenditure and operating expense of harvest equipment to increase in recent years. A rice combine harvest cost spreadsheet-based decision aid was developed to aid rice growers in estimating both operating and ownership costs associated with rice combines.

A study was continued in 2011 for the purpose of determining the impact on rough rice milling yield and the resulting rough rice market price resulting from downed/lodged rice. Tests were conducted on the Rice Research Station as well as locations in Arkansas, Mississippi, and Texas. Samples were taken from lodged and standing rice for seven varieties (CL151, Jupiter, Wells, Cocodrie, Cheniere, Presidio, and LAH10) at the Rice Research Station. Milling tests were conducted on the samples taken, and rough rice market prices were estimated based on milling yields. Results indicated significant reduction in whole grain milling yield for lodged rice, proportional to the length of time the plant was lodged prior to harvest. Further tests are planned for 2012 in Louisiana as well as other rice states in the south. The general purpose of this project is to develop estimates of milling yield and market price impacts of lodged rice that might be used to develop crop insurance products covering this harvest situation.

Table 1. Estimated Rice Breakeven Prices to Cover Variable and Total Production Costs, Southwest Louisiana, 2011.

	Yield Level in cwt/A				
	-10%	-5%	Base	+5%	+10%
Crop Description	58.5	61.8	65.0	68.3	71.5
	Variable Rice Production Costs				
	-----$/cwt-----				
Southwest Louisiana:					
(1) Water Planted – Tenant Operator:					
(a) Conventional Variety:					
(i) Conventional Tillage:					
- In Rotation	10.79	10.29	9.84	9.43	9.06
(ii) Stale Seedbed:					
- In Rotation	10.61	10.12	9.68	9.28	8.91
(b) Clearfield Variety:					
(i) Conventional Tillage:					
- In Rotation	11.84	11.28	10.78	10.33	9.91
(ii) Stale Seedbed:					
- In Rotation	11.66	11.11	10.62	10.18	9.77
(2) Drill Planted – Tenant Operator:					
(a) Conventional Variety:					
(i) Conventional Tillage:					
- In Rotation	9.63	9.19	8.79	8.43	8.11
(ii) Stale Seedbed:					
- In Rotation	9.90	9.44	9.04	8.67	8.33
(b) Clearfield Variety:					
(i) Conventional Tillage:					
- In Rotation	10.69	10.19	9.74	9.34	8.97
(ii) Stale Seedbed:					
- In Rotation	11.09	10.57	10.11	9.69	9.30
	Total Rice Production Costs				
	-----$/cwt-----				
Southwest Louisiana:					
(1) Water Planted – Tenant Operator:					
(a) Conventional Variety:					
(i) Conventional Tillage:					
- In Rotation	12.18	11.60	11.09	10.62	10.19
(ii) Stale Seedbed:					
- In Rotation	11.63	11.08	10.59	10.14	9.74
(b) Clearfield Variety:					
(i) Conventional Tillage:					
- In Rotation	13.23	12.60	12.03	11.52	11.05
(ii) Stale Seedbed:					
- In Rotation	12.67	12.07	11.53	11.04	10.60
(2) Drill Planted – Tenant Operator:					
(a) Conventional Variety:					
(i) Conventional Tillage:					
- In Rotation	10.84	10.33	9.88	9.47	9.10
(ii) Stale Seedbed:					
- In Rotation	11.05	10.53	10.07	9.65	9.27
(b) Clearfield Variety:					
(i) Conventional Tillage:					
- In Rotation	11.76	11.20	10.71	10.26	9.85
(ii) Stale Seedbed:					
- In Rotation	12.21	11.63	11.11	10.64	10.21

Table 2. Lodged Rice Impacts on Milling Yield and Estimated Market Price, Rice Research Station, 2011.

Rice Variety	Crop Condition	Planting Date	Whole Grain Yield	Broken Grain Yield	Total Milling Yield	Estimated Rough Rice Market Price[1]
CL151	Early[2]	Early	56.05	12.64	68.69	$14.91
	Late[3]		53.65	13.85	67.50	$14.52
	Standing		59.57	9.76	69.33	$15.32
Jupiter	Early[2]	Early	60.07	5.39	54.46	$14.82
	Late[3]		60.52	5.18	65.70	$14.89
	Standing		60.31	4.76	65.08	$14.78
Wells	Early[2]	Early	43.21	24.31	67.52	$13.57
	Late[3]		45.57	22.37	67.93	$13.84
	Standing		47.59	21.59	69.19	$14.21
Cocodrie	Early[2]	Early	53.34	16.34	69.68	$14.80
	Late[3]		51.05	17.48	68.52	$14.43
	Standing		59.82	11.84	71.67	$15.68
Cheniere	Early[2]	Early	59.54	11.55	71.09	$15.57
	Late[3]		60.82	10.65	71.47	$15.74
	Standing		65.03	7.58	72.61	$16.29
Presidio	Early[2]	Early	57.00	11.99	68.99	$15.04
	Late[3]		55.35	13.11	68.46	$14.81
	Standing		61.16	8.44	69.60	$15.51
LAH10	Early[2]	Early	56.03	11.20	67.23	$14.70
	Late[3]		56.88	10.42	67.30	$14.79
	Standing		58.73	7.71	66.44	$14.83
CL151	Early[2]	Late	39.44	24.97	64.41	$12.78
	Late[3]		48.85	18.40	67.24	$14.04
	Standing		47.52	18.88	66.29	$13.78
Jupiter	Early[2]	Late	61.12	6.63	67.75	$15.24
	Late[3]		60.92	5.71	66.63	$15.06
	Standing		58.91	8.07	66.98	$14.93
Wells	Early[2]	Late	42.10	25.05	67.15	$13.41
	Late[3]		47.51	20.81	68.32	$14.08
	Standing		49.13	19.13	68.26	$14.22
Cocodrie	Early[2]	Late	48.60	18.19	66.79	$13.96
	Late[3]		53.44	15.24	68.67	$14.67
	Standing		54.07	14.90	68.97	$14.77
Cheniere	Early[2]	Late	57.63	12.77	70.41	$15.30
	Late[3]		61.06	9.11	70.17	$15.58
	Standing		58.73	11.81	70.54	$15.42
Presidio	Early[2]	Late	41.84	25.42	67.26	$13.41
	Late[3]		45.07	22.22	67.29	$13.71
	Standing		47.12	20.62	67.74	$13.96
LAH10	Early[2]	Late	49.88	14.75	64.64	$13.77
	Late[3]		51.18	13.30	64.48	$13.86
	Standing		49.13	15.93	65.06	$13.76

[1] Based on a $15.00/cwt rough rice market price for 55/70.
[2] Lodged 5-7 days prior to field drainage.
[3] Lodged approximately 1 week prior to harvest.

RICE INSECTS RESEARCH

Overview of 2011 Program

M. Stout, N. Hummel, J. Hamm, A. Meszaros, and M. Frey

The goal of the Rice Entomology Project is the development and implementation of cost-effective management programs for arthropod pests of Louisiana rice. Insects and other arthropods can cause severe yield losses in rice; for example, work done in small plots and in commercial fields suggests that average yield losses from the rice water weevil would range between 5- 10% across the state if effective control measures were not available. The use of insecticides remains the primary means of controlling arthropod pests, but alternatives to insecticides are needed to reduce costs, improve sustainability, and minimize environmental impacts. In 2011, more than 20 separate experiments were conducted at the Rice Research Station to evaluate insecticides, cultural practices, and host-plant resistance as management tactics for rice insect pests. In addition, Dr. Hummel coordinated a series of demonstration trials in commercial fields to compare the effectiveness of commercially available insecticides against the rice water weevil and rice stink bug, and a number of experiments related to rice insect pest management were conducted in Dr. Stout's laboratory and greenhouse on the LSU campus in Baton Rouge. These experiments involved the rice water weevil (the major early-season insect pest of rice), the rice stink bug (the major late-season insect pest of rice), the fall armyworm, and stem-boring insects, which constitute an emerging threat to Louisiana rice.

The Entomology Project continued an active program of evaluating efficacy of insecticides against the rice water weevil and rice stink bug. Data from these evaluations are used to justify registration of new insecticides and to develop recommendations for the effective use of registered insecticides. Over the past several years, two new insecticidal seed treatments, Dermacor X-100 (active ingredient, chlorantraniliprole, DuPont Crop Protection) and CruiserMaxx (active ingredient, thiamethoxam, Syngenta Crop Protection), have been introduced into the rice market for use in dry-seeded rice against the rice water weevil and other early season pests. In addition, a third insecticidal seed treatment, NipsIt INSIDE (active ingredient, clothianidin, Valent U.S.A. Corporation) was registered under an Experimental Use Permit in 2011 and is likely to be introduced for rice water weevil management in the next year. These seed treatments represent effective alternatives to the variety of pyrethroid insecticides (Karate, Mustang Max, Declare, etc.) that have been available for use against the rice water weevil for over 10 years. In addition, the Entomology Project also helped Louisiana obtain a Section 18 emergency exemption for the use of Tenchu against the rice stink bug in 2011. A number of small plot experiments were conducted to confirm the efficacies of registered insecticides against the rice water weevil and rice stink bug and to test the effectiveness of a number of unregistered products against these two pests.

In 2011, multi-year projects in the following research areas were completed:

1) *Impact of seeding rate on efficacy of seed treatment insecticides*. This project addressed the issue of whether insecticidal seed treatments remain effective when used in rice seeded at low rates (e.g., with hybrid varieties planted at 20 to 30 lb seed/A). Results from three years suggest that efficacies of the seed treatments may be compromised at low seeding rates unless per seed insecticide rates are increased.

2) *Use of pyrethroid alternatives in water-seeded rice*. There is a need for identifying foliar and granular insecticides that can be used as alternatives to pyrethroids in water-seeded rice against the rice water weevil. Experiments conducted over the past three years show that the neonicotinoids dinotefuran (granular formulation) and clothianidin (SC formulation, foliar application) are viable alternatives to pyrethroids in water-seeded rice, particularly when weevil populations are not high. Also, Demacor-treated dry seeds sown directly into a flood provided very good control of weevil larvae.

3) *Combined use of tactics in an IPM program*. Three years of data suggest that the use of insecticidal seed treatments, a resistant plant variety ('Jefferson', see below), and a cultural practice (shallow flooding) are compatible with one another. In other words, these tactics do not interfere with each other when used in combination. This suggests the general compatibility of different tactics against the rice water weevil.

4) *Comparative effects of Dermacor and CruiserMaxx on weevil life stages*. A series of greenhouse experiments was completed to investigate how Dermacor and CruiserMaxx seed treatments reduce weevil larval densities on the roots of rice plants. CruiserMaxx but not Dermacor was found to be toxic to adult weevils when they fed on leaves of seed-treated plants, and both insecticides were found to deter egg-laying. Both CruiserMaxx and Dermacor also killed larvae feeding on rice roots.

Data from all of these multi-year projects are being analyzed and will be published in the coming year. Also, we are continuing our cooperation with industry and state and federal agencies to bring new products to market, particularly for water-seeded rice. Control guidelines for the rice water weevil will be revised in the next year to reflect our research findings and the registration of new products. All insecticides that are being considered for registration have been evaluated for compatibility with crawfish production in collaboration with Dr. McClain's laboratory. Results of experiments using caged crawfish in field plots and results of laboratory acute toxicity tests suggest that all of the alternatives being considered for registration against the rice water weevil are less toxic to crawfish than are the pyrethroids.

A long-term goal of the Entomology Project is to cooperate with breeders to develop rice varieties that are more resistant to, or tolerant of, insect injury. In multiple experiments conducted over the past 10 years, the variety Jefferson and several unimproved lines have consistently shown low to moderate levels of resistance to the rice water weevil. Cooperative efforts with Rice Station breeders have begun using Jefferson in crosses in an effort to develop resistant varieties. Other experiments were performed to determine if some varieties, notably hybrids, are able to withstand high populations of weevils without large yield losses.

A new area of research initiated in 2011 involves the effect of CruiserMaxx and other neonicotinoid seed treatments on the growth of rice plants. Field and laboratory experiments support the notion that CruiserMaxx treatment stimulates germination and early growth of rice plants under stressful conditions such as low temperatures. Experiments are undergoing to verify these initial experiments and to determine if CruiserMaxx treatment stimulates yields (apart from the yield benefit gained from insect control).

Revision of the management program for the rice stink bug has begun, supported by a multi-state grant awarded to researchers and extension personnel in Louisiana, Arkansas, Missouri, and Texas. Several new insecticides are being tested for efficacy against the rice stink bug. In particular, several neonicotinoid insecticides have shown promise as alternatives to currently registered pyrethoids and organophosphates. Cage studies in which rice is subjected to different levels of stink bug infestation were conducted in an effort to determine if the current threshold for insecticide applications needs revision. Several other experiments were conducted to investigate the interactive effects of planting date and rice variety on levels of stink bug infestation and damage. Additional evidence was obtained to support the idea that heavy use of pyrethroid insecticides may be leading to insecticide resistance in rice stink bugs. Various aspects of the biology of the rice stink bug were studied, including the chemistry and ecological role of odor compounds emitted by this insect. This multi-state effort will result in new recommendations for managing rice stink bugs.

Greenhouse experiments with the sugarcane borer demonstrated that some widely used commercial varieties of rice possess greater resistance to the sugarcane borer than others. Several aspects of resistance were studied. Also, Dermacor seed treatment was found to be effective against sugarcane borers. These data are particularly important now that the Mexican rice borer has invaded the state. We will continue cooperative efforts with the Louisiana Department of Agriculture and Forestry to monitor the Mexican rice borer threat and to develop a management program. We recently received a grant from the Environmental Protection Agency to expand the Mexican rice borer pheromone trapping program in rice producing parishes across Louisiana. Trap catches will be tracked electronically using a GIS map-based system that has been developed by the Pennsylvania State University. We also worked with Louisiana Department of Agriculture and Forestry to submit a Section 18 request to EPA for the use of Dermacor X-100 in water-seeded rice in hopes that this will delay the establishment and spread of Mexican rice borer in Louisiana.

The extension entomology program focused on four primary programs this year. In January 2010, we launched the "Louisiana Rice Insects" blog (www.louisianariceinsects.wordpress.com). The blog was used to distribute information about meetings and field observations throughout the season. By the end of 2011, it had been viewed more than 32,000 times from more than 115 countries. Blog postings and in-field observations are now shared using social media platforms, including Facebook and Twitter (@NatHummel). This has extended the reach of our information to new clientele across the southeastern United States and around the globe. The rice water weevil demonstration test was repeated for a fourth year. Demonstration sites were located on six commercial farms across the rice producing parishes of Louisiana. The test compared three seed treatments (CruiserMaxx, Dermacor X-100, and NipsIt INSIDE) to an untreated check. Overall, Dermacor X-100 provided the best level of weevil control, followed by CruiserMaxx and NipsIt INSIDE, which were not different from each other. A second demonstration program compared the efficacy of Tenchu 20SG to pyrethroids for rice stink bug management. This demonstration was repeated at nine on-farm locations across Louisiana. We found that there was no significant difference in efficacy, residual activity, or resulting peck injury when we compared the treatments. The Entomology Program is currently restructuring the Rice Insect page at www.lsuagcenter.com using the same structure as the Rice Disease page. The new page layout will make it much easier for farmers and crop consultants to find the information they need for rice pest management. We are also working with the LSU AgCenter Information Technology and Communications service units to create the AgCenter's first mobile application, "RiceScout." This app will assist users in identifying major insect pests, diseases, weeds, and nutritional deficiencies. It will help to improve and speed up field diagnostics and also encourage adoption of IPM strategies in southern rice production. The Entomology Program is leading this multi-disciplinary effort.

COMPARISON OF THE EFFICACIES OF CRUISERMAXX AND DERMACOR X-100 AGAINST THE RICE WATER WEEVIL AT THREE PLANTING DATES, 2011

M.J. Stout, J.C. Hamm, M.J. Frey, and N. Hummel

Two insecticidal seed treatments, CruiserMaxx® (Syngenta Crop Protection) and Dermacor X-100® (DuPont), are now registered for use against the rice water weevil in Louisiana. Evidence from prior small-plot experiments and commercial-scale demonstrations suggests Dermacor X-100 provides better control of rice water weevil larvae than does CruiserMaxx. However, only a few side-by-side comparisons of the two insecticides have been conducted. This study was conducted to compare the efficacies of Dermacor X-100 and CruiserMaxx in small plots seeded on three planting dates and subject to different levels of rice water weevil infestation.

Location: Rice Research Station, Crowley, LA

Variety/Seeding Rate: Cocodrie/30 lb/A (23 g seed/plot)

Plot Size: 4.1 x 18 ft (7 rows at 7-in spacing)

Planting Method/Date: Drill seeded, Mar 21 (PD1), Apr 11 (PD2), and May 9 (PD3), 2011 (Table 1)

Agronomic Practices: Standard for drill-seeded rice

Water Management: Permanent flood, Apr 21 (PD1), May 19 (PD2), and June 2 (PD3) (Table 1). Plants were at 4-leaf/early tillering stage when flooded.

Experimental Design: Randomized complete block, three treatments, four replications

Treatments:
1. Fungicide only (control): Apron, 5.7 g ai/100 kg seed + Maxim, 1.25 g ai/100 kg seed
2. CruiserMaxx, 7.0 fl oz/100 lb seed = approximately 0.03 mg ai/seed
3. Dermacor X-100, 6 fl oz/100 lb seed
4.

All seed treatments were done in the laboratory by mixing appropriate amounts of formulated product with small batches of seed and a dye. Seeds for all three planting dates were treated on March 20, 2011. Since CruiserMaxx contains the fungicides Apron and Maxim, the control treatment was treated with these two fungicides at the same rate that they are found in CruiserMaxx.

Sampling Dates: Three core samples were taken from each plot at 19-21 days after flooding and 32-33 days after flooding to estimate densities of rice water weevil larvae and pupae in plots (Table 1).

Harvest: PD1, Aug. 5; PD3, Aug. 30. The second planting date was not harvested because rice established poorly in this experiment. Only the middle four rows of each seven-row plot were harvested. Yields were adjusted to 12% moisture and are presented as grams of seed harvested per partial plot.

Data Analysis: Treatment effects on yields and densities of rice water weevil larvae and pupae were analyzed by PROC MIXED in SAS with treatment as fixed effect and block as a random effect, followed by Tukey mean separation.

Table 1.Summary of planting, flooding, and sampling dates for the 2011 CruiserMaxx vs. Dermacor study.

Planting date	Flooding date	Dates and timing (days after flooding) of core samplings (three cores per plot)	
Mar 21 (PD1)	Apr 21	May 12 (21 daf)	May 23 (32 daf)
Apr 11 (PD2)	May 19	June 9 (21 daf)	June 20 (32 daf)
May 9 (PD3)	June 2	June 21 (19 daf)	July 5 (33 daf)

Results:

Rice water weevil infestation pressure in the three experiments ranged from moderate to very heavy, and densities of rice water weevil larvae and pupae generally increased with planting date (i.e., infestations were generally higher at the latest planting date and lowest at the earliest planting date). This is consistent with prior data showing increasing weevil pressure at later planting dates. Also, weevil densities increased from the first core sampling date (19-21 d after flooding) to the second core sampling date (32-34 d after flooding).

Although both CruiserMaxx and Dermacor X-100 treatments reduced densities of weevil larvae and pupae, densities tended to be lower in Dermacor-treated plots, particularly in the second core samplings (32-34 d after flooding). This confirms previous results indicating that Dermacor is more effective at reducing weevil populations than CruiserMaxx.

Although no significant differences in yields were observed for PD1 and PD3 (PD2 was not harvested because stands did not establish well), there was a trend toward higher yields in Dermacor- and CruiserMaxx-treated plots.

Table 2. Densities of rice water weevil larvae and pupae (insects per core sample ± S.E.) in plots treated with CruiserMaxx, Dermacor, or fungicides only. Insect densities were determined at two core sampling dates for each of three experiments (PD1, PD2, and PD3) planted on different dates. Means followed by different lower-case letters differ significantly according to Tukey's mean separation.

Treatment	**Densities of larvae and pupae ± S.E. in first core sampling, 19-21 d after flooding**			**Densities of larvae and pupae ± S.E. in second core sampling, 32-33 d after flooding**		
	PD1	**PD2**	**PD3**	**PD1**	**PD2**	**PD3**
Fungicide (control)	6.2 ± 2.6	16.8 ± 3.5 **a**	8.3 ± 2.9	13.6 ± 1.6 **a**	23.2 ± 3.5 **a**	34.6 ± 4.5 **b**
CruiserMaxx	1.7 ± 0.7	3.8 ± 0.6 **b**	5.4 ± 1.6	6.0 ± 2.1 **b**	6.7 ± 1.1 **b**	46.7 ± 6.8 **a**
Dermacor	0.5 ± 0.1	1.0 ± 0.1 **b**	2.2 ± 0.6	0.7 ± 0.2 **b**	2.3 ± 0.8 **b**	24.6 ± 8.1 **a**
	$F_{2,6} = 4.2$, $P = 0.07$	$F_{2,6} = 16.6$, $P = 0.004$	$F_{2,6} = 3.8$, $P = 0.09$	$F_{2,6} = 18.8$, $P = 0.003$	$F_{2,6} = 27.8$, $P = 0.001$	$F_{2,6} = 6.6$, $P = 0.03$

Table 3. Yields, in grams ± S.E., from plots treated with CruiserMaxx, Dermacor X-100, or fungicides only in two experiments planted on different dates. Only four of seven rows of each plot were harvested, and yields were adjusted to 12% moisture.

Treatment	**Partial plot yields (grams ± S.E.)**	
	PD1 (Planted 3/21, harvested 8/5)	**PD 3 (Planted 5/9, harvested 8/30)**
Fungicide (control)	1,990.5 ± 459.5	2,244.9 ± 89.6
CruiserMaxx	2,425.1 ± 282.2	2,562.4 ± 36.1
Dermacor	2,973.2 ± 123.0	2.404.6 ± 88.9
	$F_{2,6} = 2.4$, $P = 0.17$	$F_{2,6} = 4.4$, $P = 0.07$

RICE STINK BUG MANAGEMENT DEMONSTRATION IN COMMERCIAL RICE FIELDS IN LOUISIANA, 2011

B. Blackman, N. Hummel, M. Stout, A. Mészáros, J. Beuzelin, K. Collins,
B. Courville, T. Erwin, R. Ferguson, M. Frey, N. Huff, and L. White

Summary

In August 2011, demonstration trials were conducted throughout Louisiana to compare the efficacy of a new rice stink bug (RSB) insecticide, Tenchu 20 SG, to commonly used pyrethroids in headed rice. Nine field sites in various locations in north and south Louisiana were divided into two adjacent fields. Each field consisted of the same variety of rice, planting date, and management practices. Fields were sampled (100 sweeps with 15-in sweep net) between anthesis and hard dough stage to determine pre-treatment populations of rice stink bugs. The two fields were then treated by a crop duster with a labeled rate of either a pyrethroid (Karate or Mustang Max) or Tenchu 20 SG. Follow-up sampling was performed at 72 hours and 120 hours (7 days) to estimate efficacy and residual activity. Rough rice samples were taken at harvest and dried before being hulled and graded for percent pecky rice.

Background

Rice stink bugs are the most important insect pest of heading rice in the southeastern United States. Currently, two families of insecticides are approved for use by the EPA to prevent RSB from damaging rice panicles during the 4-week period of vulnerability before grain hardens. Formulations of two pyrethroid insecticides, lambda-cyhalothrin and zeta-cypermethrin, are most commonly used for RSB management. In addition, malathion and methyl parathion are organophosphate insecticides that have been labeled for control of RSB longer than any other product. The EPA will rescind registration for sale of methyl parathion on December 31, 2012. By the end of 2013, methyl parathion will no longer be labeled for use in many crops, including rice. Pyrethroids have been labeled for more than 15 years and appear to have reduced efficacy in areas of high RSB pressure in Texas. In 2010 and 2011, the EPA issued a Section 18 label in Louisiana, allowing application of the neonicotinoid pesticide Tenchu 20 SG to a limited number of rice acres for control of RSB. Tenchu 20 SG is in the neonicotinoid family of insecticides, which works at different insect target sites than pyrethroids or organophosphates. Because of the unique action of the chemical, Tenchu 20 SG is believed to have a safer environmental profile with less damage to non-target organisms and very low mammalian toxicity.

Materials and Methods

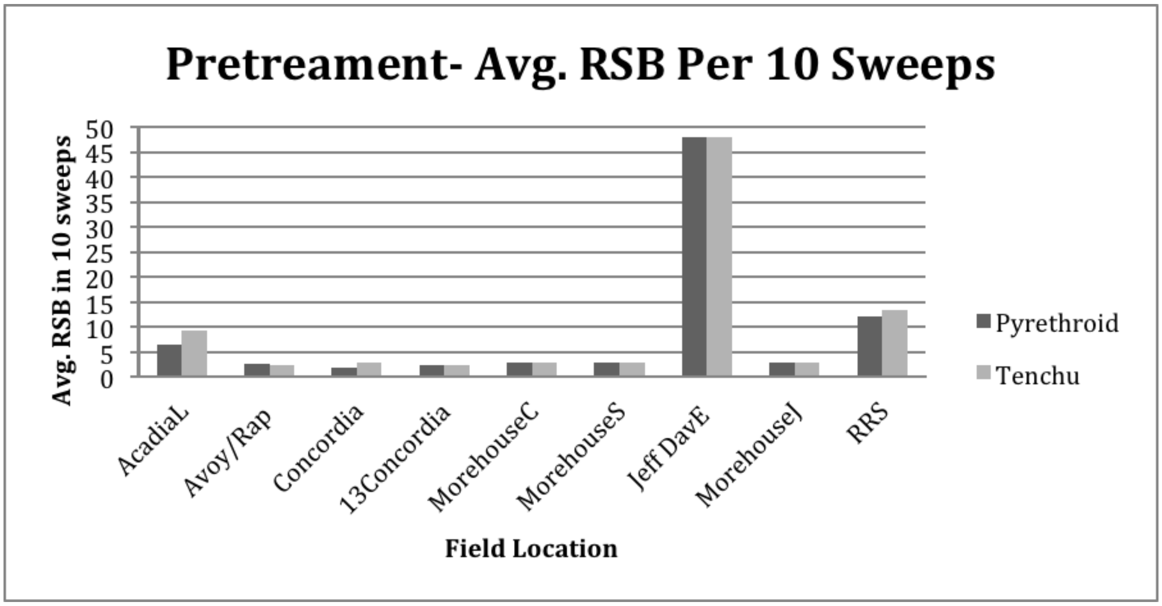
Nine field sites across Louisiana were identified for participation in the insecticide demonstration. At each site, two adjacent fields or cuts were sprayed separately with a pyrethroid or Tenchu 20 SG. Sweep net samples were conducted within 24 to 48 hours prior to spraying at each site between the growth stages of anthesis and hard dough. Insecticides were applied by aerial applicators at recommended rates for both products: 8 oz/A of Tenchu 20 SG, 2 oz/A of Karate, or 4 oz/A of Mustang Max. Post-treatment sweep net counts were taken 48 hours and 7 days after treatment to determine effects of treatments against infestation of RSB. The pyrethroid portion of one field site remained above threshold at the 48-hour sampling point and was treated with a second application at 48 hours to prevent further damage. This field was not included in the analysis for the 7-day sampling period. Samples of rough rice were collected from all sites at harvest and analyzed by a USDA certified inspector at Bertrand Rice in Elton, LA, to determine percentage of pecky rice. Data were analyzed using the Proc. Mixed procedure in SAS and the sampling comparisons were treated as repeated measures.

Results

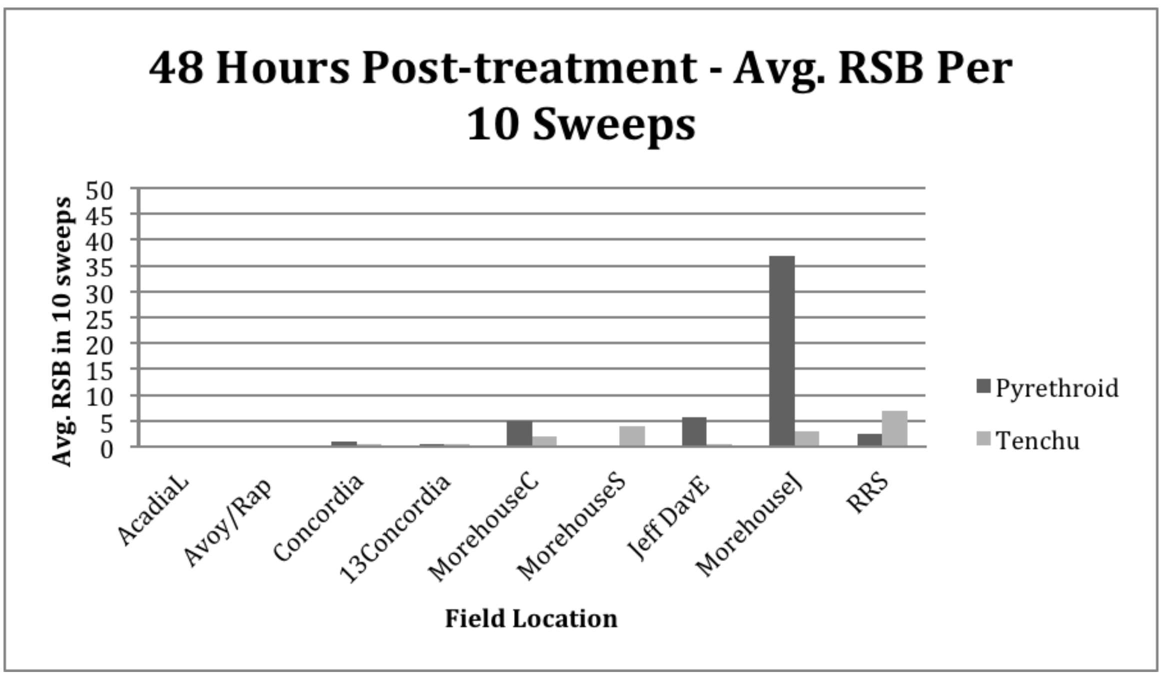
No significant difference was seen between pyrethroid and Tenchu 20 SG treatments for any variable (efficacy at 48 hours and 7 days, and percent pecky rice) measured. Results are provided in the following graphs.

Conclusions

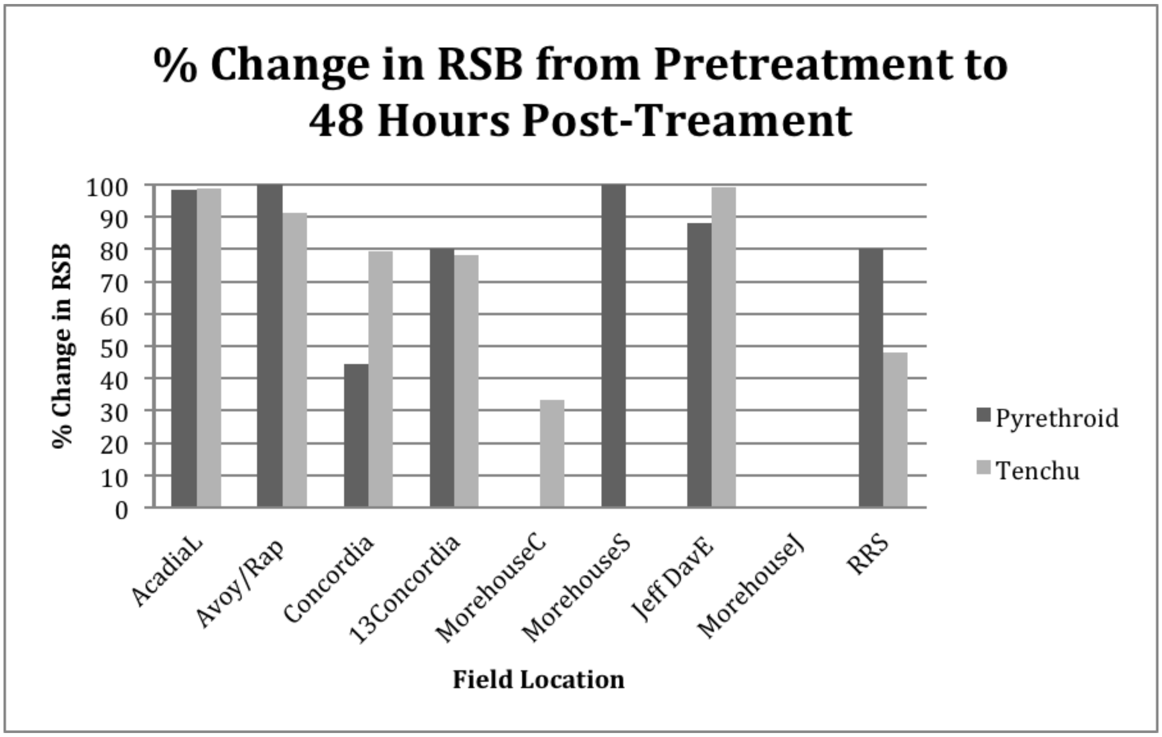
We conclude that either standard pyrethroid or Tenchu 20SG provide good control of RSB in Louisiana rice. Furthermore, there was no difference in the percent of peck and none of the samples received a grade reduction. This year, we conducted this demonstration test late in the rice production season, due to the timeline of Section 18 approval. Thus, we did not always have the ideal field locations. Future tests will be performed with larger sample sizes and greater replication.



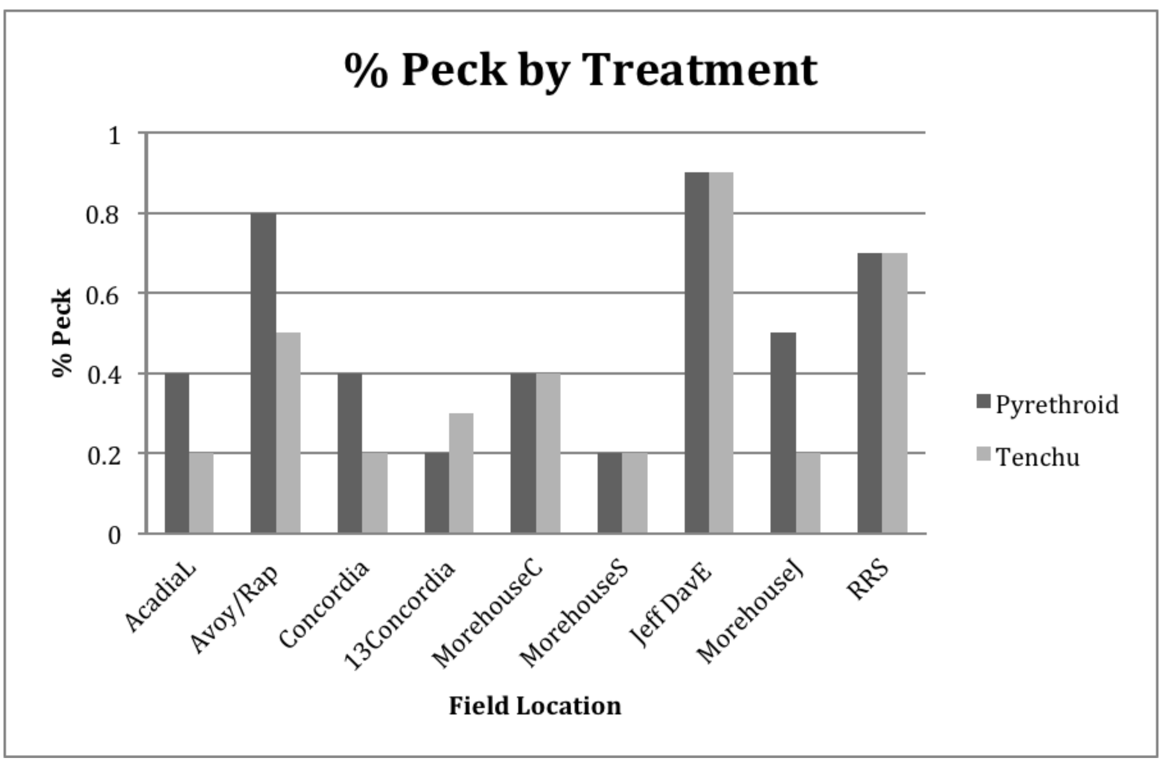
Graph 1. Average number of rice stink bugs (RSB) per 10 sweeps pre-treatment.



Graph 2. Average number of rice stink bugs (RSB) per 10 sweeps 48 hours after treatment.



Graph 3. The percent in rice stink bugs (RSB) before and after treatment with a pyrethroid or Tenchu 20SG.



Graph 4. Percent of peck in harvested grain samples gathered at each location.

RICE WATER WEEVIL MANAGEMENT DEMONSTRATION IN COMMERCIAL RICE FIELDS IN LOUISIANA, 2011

N. Hummel, M. Stout, A. Mészáros, J. Beuzelin, T. Clark, B. Courville, V. Deshotel, R. Ferguson, K. Fontenot, M. Frey, M. Martin, J. Meaux, and D. Zaunbrecher

The rice water weevil is the most important invertebrate pest of the rice production system in the state of Louisiana. In 2011, the extension entomology program at the LSU AgCenter focused on rice water weevil management in a series of demonstration test locations. Commercial farms were located in Acadia, Calcasieu, Evangeline, Jefferson Davis, Rapides, and St. Landry parishes. Fields were managed by producers, with the exception of the RWW management strategy, which was dictated by the experimental design. The purpose of this demonstration was to evaluate the use of some currently available insecticides to control rice water weevils in rice fields.

Locations: Demo tests were located on six commercial farms in Acadia, Calcasieu, Evangeline, Jefferson Davis, Rapides, and St. Landry parishes.

Variety/Seeding Rate: Variety and seeding rate varied by location. The following varieties were included in the test: CLXL745 (22 to 35 lb/A) and Cheniere (75 lb/A). All seed treatments were applied by a certified applicator.

Plot Size: Commercial fields - acreage varied across locations. Each treatment was replicated twice at each location. The dimensions of the plots varied between locations. Plots were 36 to 60 ft wide (depending on the drill width of the cooperator) and ran the length or width of the field (depending on the direction of planting).

Planting Method: Drill-seeded

Agronomic Practices: Standard for drill-seeded rice

Water Management: Permanent flood at the discretion of the farmer

Experimental Design: Eight plots at each location: two replicates per treatment. All seed treatments were present at all locations.

Treatments:

1. Untreated Control (Check)
2. Dermacor™ X-100 (1.75 fl oz/A)
3. CruiserMaxx Rice (7.0 fl oz/cwt)
4. NipsIt INSIDE* (1.92 fl oz/cwt)

   *We analyzed seed samples to verify the application rate of the seed treatments. Some of the samples from NipsIt INSIDE treatments were below the target rate. Thus, it is possible that NipsIt INSIDE would have had greater efficacy if the rate had been correct. This most likely occurred because batches were treated in a cement mixer where it is difficult to accurately coat and treat seed.

Sampling:

1. Soil (core) samples: 10 per plot
2. Stand count was measured by counting the total number of seedlings in 6 row feet, repeated 10 times across each plot.
3. Average plant height (cm) was gathered by measuring the height of 10 randomly selected plants along six row feet, repeated 10 times across each plot.

Sampling Dates: Plant stand counts and plant heights were taken 14 days after seedling emergence. Rice water weevil cores were gathered 4 weeks after application of flood.

Harvested: Varied depending on location. Yield data were not gathered.

Data Analysis: Data were analyzed in SAS using a generalized linear mixed model (SAS Proc. GLIMMIX).

Results: When we analyzed the dataset, no significant difference in stand counts were found among treatments (Figure 1). Seed treatments had significant but small effects on plant height. Plants were taller in CruiserMaxx and NipsIt INSIDE treatments than in Dermacor X-100 (Figure 2). When we analyzed the RWW core sample data, we found that all seed treatments had significantly fewer RWW larvae per core than the untreated check (average 12.9 RWW larvae/core) (Figure 3). Dermacor X-100 (average of 2.5 RWW larvae/core) provided the highest level of control, whereas NipsIt INSIDE (average 7.9 larvae/core) and CruiserMaxx (average 7.9 larvae/core) provided intermediate levels of control.

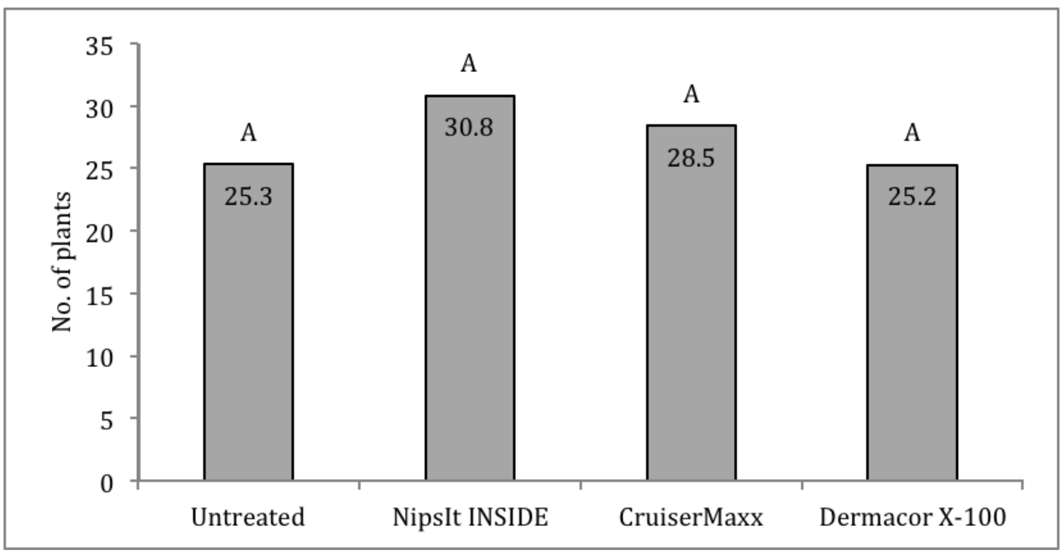


Figure 1. No significant difference between treatments for stand counts. F=2.79; df=3,27; P<0.0594; Bars with the same letter are not significantly different (Tukey's HSD, P>0.05).

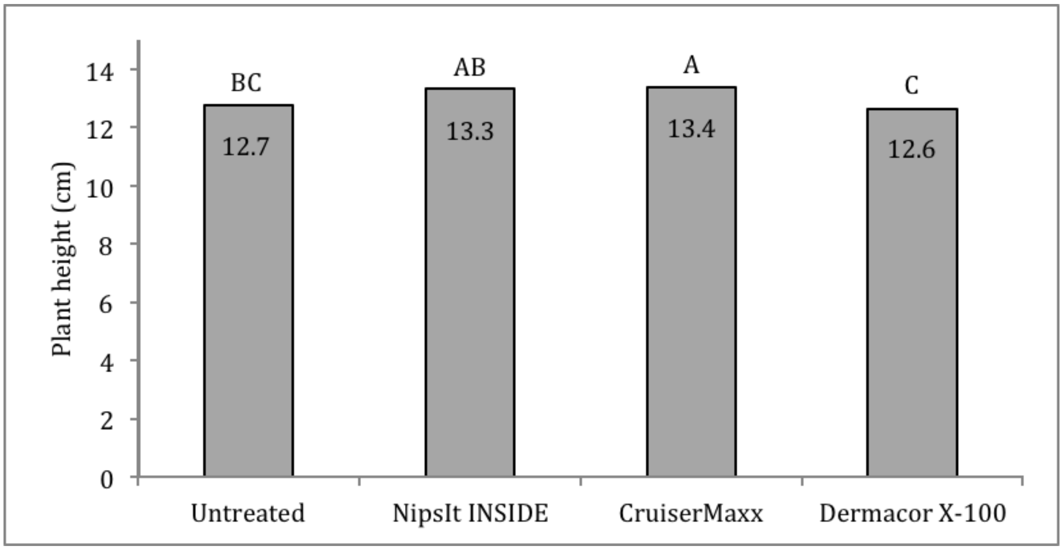


Figure 2. Seed treatments had significant but small effects on plant height. Plants were taller in CruiserMaxx and NipsIt INSIDE treatments than in Dermacor X-100. F=5.49; df=3,182.9; P<0.0012; Bars with the same letter are not significantly different (Tukey's HSD, P>0.05)

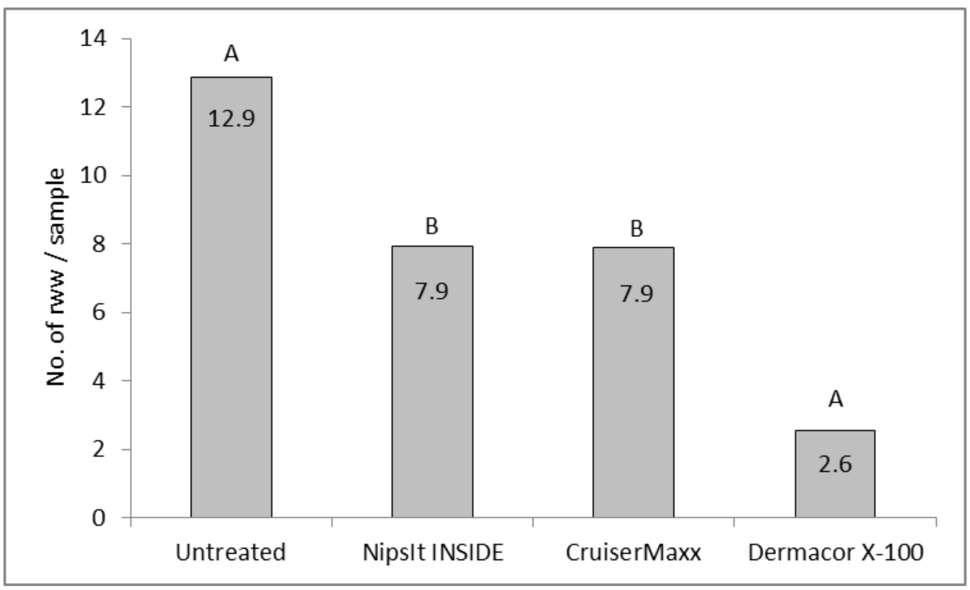


Figure 3. Average number of rice water weevil larvae per core, including six locations in the analysis. F=13.26; df=3,38.98; P<0.0001. Bars with the same letter are not significantly different (Tukey's HSD, P>0.05).

Comments: We conclude from these observations that if you are planting rice at low seeding rates (less than 25 lb) and decide to use a neonicotinoid seed treatment (CruiserMaxx or NipsIt INSIDE), you should scout the field at the time of flood for the presence of RWW adults. If you find a high population of RWW adults, you may want to consider applying a pyrethroid to provide additional protection from RWW. However, if you use Dermacor X-100, be aware that it does not provide protection against other early season pests, such as thrips, aphids, and Colaspis.

COASTAL EROSION CONTROL RESEARCH

AERIAL SEEDING OF POLYC15 SMOOTH CORDGRASS ON NEWLY CONSTRUCTED MARSH IN MARSH ISLAND

H.S. Utomo

In the past several years, extensive aerial planting experiments were carried out in various Louisiana coastal sites. Aerial planting offers speed and accessibility into remote areas in Louisiana coast. In the previous year, a fixed-wing airplane was used in direct seeding over a Bayou DuPont marsh creation site near Belle Chase (Plaquemines Parish). The Bayou DuPont marsh was new marshland created by pumping the sediments from the bottom of the Mississippi River about 8 miles away from the site. An airboat was used in an aerial seeding at a Lake Pontchartrain site within the Big Branch Marsh NWR, near Lacombe, LA. On April 25, 2011, a fixed-wing airplane was used for direct seeding over 10 acres of newly constructed marsh at the Louisiana Department of Wildlife and Fisheries' Marsh Island Refuge on the coast of Iberia Parish. This 1,159-acre marsh creation project was part of a federal- and state-funded CWPPRA project administered by the Louisiana Coastal Protection and Restoration Authority, the Natural Resources Conservation Service, and the Environmental Protection Agency to repair damage from Hurricane Lili on the eastern tip of Marsh Island by pumping a total of 3.8 million cubic yards of dredged material from East Cote Blanche Bay.

Seed Supply

The polyC15 seed production plots are currently being maintained at the Rice Research Station, and the seed harvested is used for all aerial seeding experiments. PolyC15 is produced from random crosses of 15 genetically different smooth cordgrass parental lines. In addition to their capability to produce a high amount of seed, these lines were selected for characteristics that will enhance coastal restoration efforts. A small portion of PolyC15 seed was harvested from PolyC15 plots grown in the Belle Chase and Lake Pontchartrain sites. Production of PolyC15 can be carried out in a wide range of salinity from freshwater to sea water. A total of 200 lb of cleaned seed was used. The average germination rate of PolyC15 seed was 70%. Prior to loading PolyC15 seed onto the airplane, it was mixed with clay absorbent as a spreader.

Seeding Rate and Plot Size

Three seeding rates (10, 20, and 30 lb/A) were used in the study. The hopper opening in the airplane was adjusted according to the given air speed to deliver smooth cordgrass seed at 10 lb/A. The 20- and 30-lb/A treatments were accomplished, respectively, by flying over the target plots two and three times. Each seeded area was a 40- x 2,000-ft strip separated by a 56-ft unplanted area. Following aerial application, seed counting was conducted inside a 2- x 2-ft quadrat from three randomly selected spots from each treated area to determine the consistency of the aerial application.

Exploratory aerial seeding studies over the open water side of the containment dike were conducted using a seeding rate of 10 lb/A. The airplane delivered the seed in a single swath of 40 ft wide along the dike of 1,000 ft long.

Description of local conditions and vegetation formation

Following the aerial seeding, Marsh Island and the adjacent coastal regions experienced an unusually long period without rain. Despite the problem, healthy and robust smooth cordgrass vegetation was produced. By the end of September 2011, the overall seeded area was covered by mature smooth cordgrass plants. Dense smooth cordgrass populations grew in some areas. However, sparse vegetation was also evident, depending on soil elevation relative to the height of water levels and movement. By this time, some of the plants are already flowering, and they produced mature seed in mid-November. Detailed observations on individual plants revealed that the cordgrass population that was produced exhibited high genetic variation. The noticeable variation includes plant type, stem color, plant height, leaf stature, leaf size, leaf color, panicle length, panicle size, and heading date. The diversity observed corroborates well with the DNA fingerprinting data that were used as one of the most important criteria in developing high seed producing PolyC15 experimental lines from which seed for the aerial seeding was obtained.

Seeding over the containment dike on the open water side

In addition to seeding the interior part of the newly constructed marsh, the airplane dropped a swath of seed over the open water side of the containment dike. It yielded extremely dense cordgrass vegetation with significantly smaller stems. This indicated that a lot of seed floated back and landed along the shoreline and ended up growing in a relatively small area. This is an interesting finding that can be further explored to increase seed versatility to better adapt under high wave actions. Varying the seed specific gravity through seed coating could be the key to further improvement of direct seeding for both high- and low-wave action conditions and also to enhance planting and placement precision.

ACKNOWLEDGEMENT

This research is supported in part by the Louisiana Sea Grant Office and a USDA NIFA Special Grant.

Figure 1. An aerial application using a fixed-wing airplane in Marsh Island and field condition when the direct seeding was conducted. (Photo by Bruce Schultz).

Figure 2. Smooth cordgrass population developed from polyC15 seed six months after the aerial seeding.

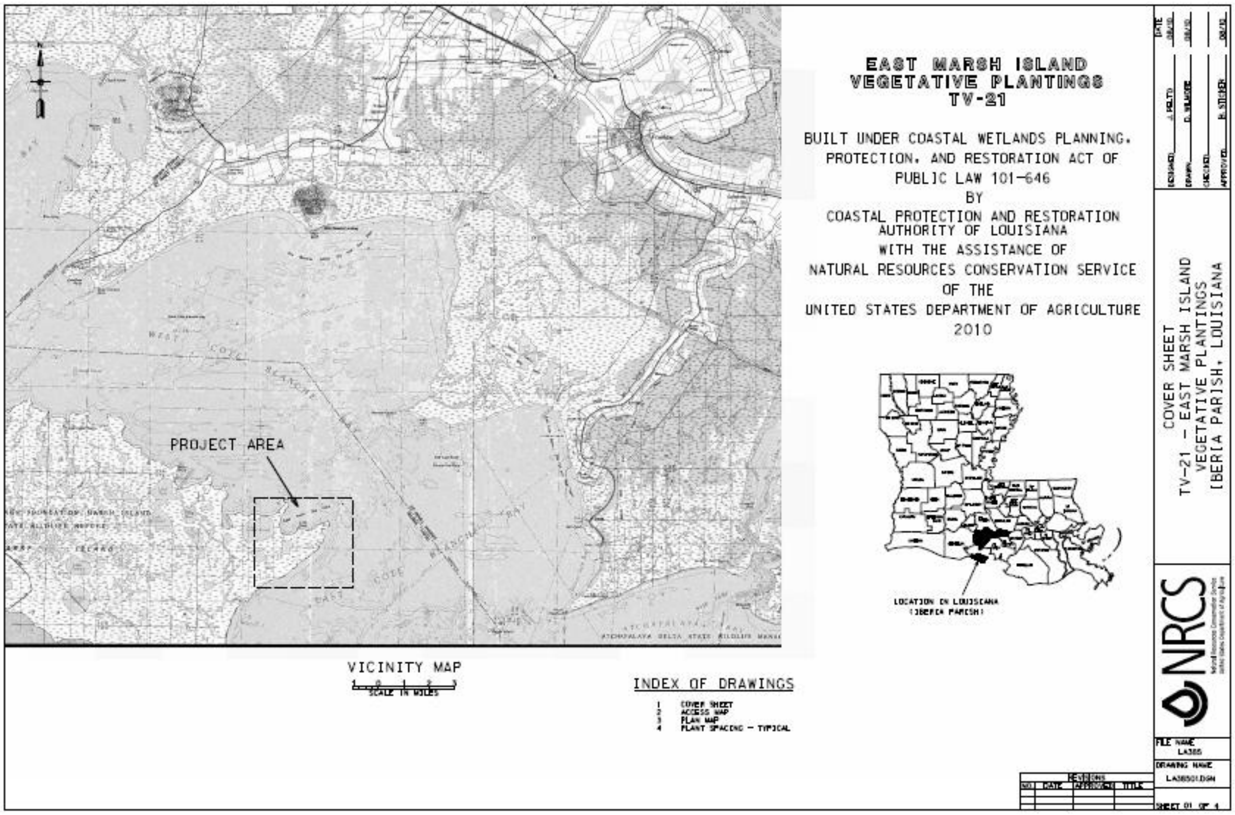


Figure 3. Map of project area (Provided by NRCS).

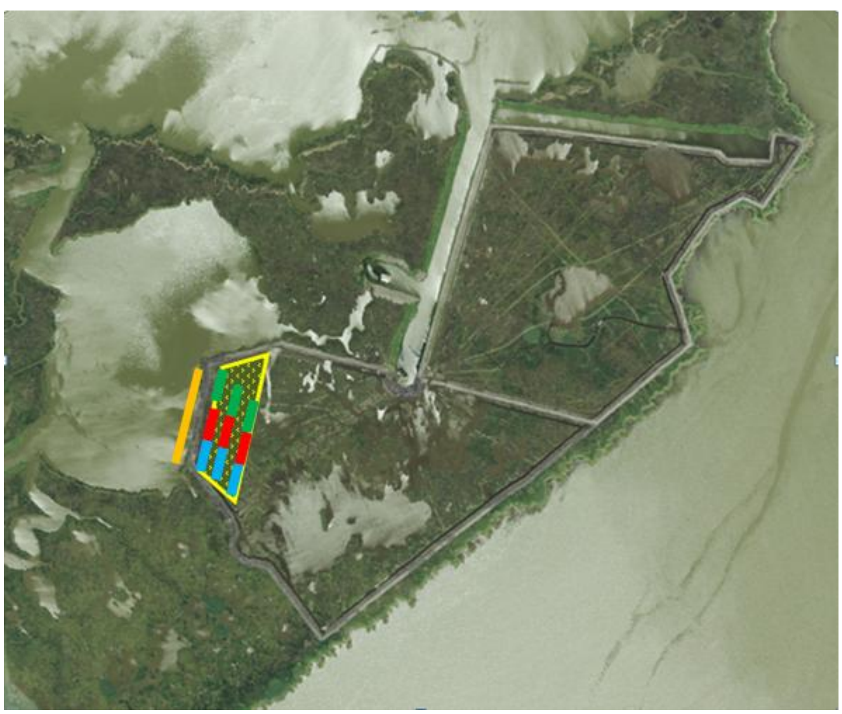


Figure 4. Aerial view of seeded plot (Aerial map was provided by NRCS).

SEED COATING TO IMPROVE PLANTING PRECISON AND INCREASE SEEDING ESTABLISMENT FOR AERIAL SEEDED SMOOTH CORDGRASS

H.S. Utomo

Smooth cordgrass has elongated seed that is chaffy, relatively light, and floats on the water. De-husked seed has specific gravity of >1 and heavier than saline water. The chaff made of dry pericarp has a low specific gravity and therefore makes the smooth cordgrass seed float. When seed falls into the water, the chaff absorbs water over time to cause seed to sink. The majority of full seeds remains afloat for 4 to 8 hours while a small portion of full seeds remains floating for18 hours. Others reported much longer floating time, from 28 days to more than one month. The floating property causes seed to drift on the water and could be part of natural mechanism to spread and colonize new areas. As a planting tool, aerial seeding must be adequately precise in producing vegetation in the target areas. The seed drift, therefore, must be minimized, and this can be done by modifying the seed physical property through coating or pelletizing to increase its specific gravity.

A maximum success of aerial applications requires that the aerial planting is conducted when weather conditions are at best. Early spring or late fall has the most suitable conditions for direct planting. Even though the best weather combination (which is very rare) may be obtained, the conditions in the coastal regions will change rapidly due to tidal movement, wind speed and direction, wave action, and rain. Most of coastal restoration projects are subject to these variables. Smooth cordgrass seed used in aerial seeding must be equipped to better adapt to the spikes of adverse micro temperatures, prolonged lack of moisture, prolonged inundation, high wind, wave energy, and other variables. One strategy that can be applied is to enhance seed versatility and capability by improving the physiological and the physical properties of the seed to respond better to less optimum growing conditions and a wide range of environmental fluctuations. In addition to adding more weight, seed coating can be designed to create a more favorable environment in the immediate vicinity of the germinating seed and to boost the seed into germination, allowing the seed to overcome less favorable conditions, especially during its critical early phase of development.

Coated seeds benefit the plant in its critical seedling stage ensuring early vigor. Seed coating has been applied extensively in legumes. In the case of legumes, the seed coating can be used to establish effective nodulation, providing some carry-over effect from this increased seedling vigor. Recently, there has been an increased use of agricultural chemicals and slow release fertilizers, and these materials can be incorporated into the seed coating offering additional benefits. Other nutritional factors can also be combined with bacterial benefits to help coated seed to function better in various restoration projects.

Important beneficial factors of seed coating for smooth cordgrass seed include:

1. Nutrient benefits
2. Protection from stress conditions
3. Improved mechanical seed properties (ballistic properties and seeding flow)
4. Safe application of agricultural chemicals
5. Protection from rodents, birds, and the harmful effects of some fertilizers

Seed priming is being evaluated to improve field seed viability and seedling synchronization. Combined effects of various priming compounds, such as ethephon (0-30 mM), fusicoccin (0-5 μM), gibberellic acid (0-5 mM), proline (0-0.5 mM), betaine (0-0.5 mM), nitrate (0-20 mM), thiourea (0-10 mM), and kinetin (0-0.05 mM), are being evaluated. The effects of GA3 and pre-germination are also incorporated into the treatments.

In addition to adding weight, various components with specific functions can be incorporated into the seed pelletizing. For example, water-attracting materials can be added to the pellets to absorb moisture and to help seed survive after landing on the higher soil elevation with less exposure to water during low tidal cycles. Tackfier can also be added to the pellet to help pelleted seed stick to the soil better. Even though smooth cordgrass seedlings can withstand more than 14 days under continuous inundation, oxygen-generating materials might further help seed to withstand prolonged inundation. Other seed enhancement materials, such as fungicide, insecticide, and micronutrient, can be placed directly on the seed pellet. Incorporation of pesticides into the seed coat has decreased disease susceptibility during its germination in the soil. Seed coating is also effective in controlling mold-induced diseases and the pests causing them, promoting seedling growth and increasing yields. Seed pellet is basically made of binder and carrier. Among other polymers, chitosan has received significant attention as an antimicrobial film-forming agent for food preservation purposes due to its biodegradability, biocompatibility, cytotoxicity, and antimicrobial activity. Chitosan is a natural nontoxic biopolymer derived by deacetylation of chitin, a major component of the shells of crustacean, such as crab, shrimp, and crawfish. Seed of smooth cordgrass from the aerial seeding that was conducted last year has attracted a large number of local birds to feed on it, causing a tremendous seed loss. The smooth cordgrass seed is not a hard-coated seed and will not survive the bird's digestive process. Protective measures, therefore, need to be taken to minimize seed palatability that could result from coating or pelletizing might reduce its palatability. Otherwise, non-toxic bird repellents can be incorporated into the seed to reduce its palatability.

Figure 1. Non-coated smooth cordgrass PolyC15 seed.

Figure 2. Different types of coating materials - Coated smooth cordgrass PolyC15 seed (left and middle) and uncoated seed (right).

BREEDING FOR HIGH SEED PRODUCING SMOOTH CORDGRASS CULTIVARS

H.S. Utomo

The main goal of the coastal plant breeding program at the Rice Research Station is to develop seed-based cultivars. The experimental seed producing lines have been researched for a number of years. The most advanced development in this effort is a PolyC15 seed production system based on a polycross method. The PolyC15 seed production employs 15 parental lines that are genetically diverse and possesses high capability to produce seed. The PolyC15 seed produces a high level of genetic diversity.

A new effort is being conducted to further improve seed production capability while maintaining growth superiority and adaptability to coastal environment. Selections were carried out from the progeny derived from PolyC15, as well as additional accessions selected from nature. In 2008, 15 of the best lines were selected from a PolyC15-derived population grown at the Rice Research Station based on two important characteristics: seed producing capability and superior growth parameters. Using the same criteria, 75 plants were selected from the PolyC15-derived population grown at the Rockefeller site. In 2010, 25 lines were selected from a PolyC15- derived population grown at the Belle Chase site. Various polycross combinations based on seed production capability and their relative genetic distance are being evaluated at the Rice Research Station. Various combinations of 2-way crosses are also being carried out among promising elite lines to produce superior parental lines. The overall goal is to produce superior lines with seed production levels higher than PolyC15 and possess high levels of genetic diversity with smaller parental numbers (four to six parental lines) to reduce the complexity in field management.

Table 1. Germination rates and fertility data of 52 selected lines from the Rockefeller site (Sorted by germination rate).

Plant Identification	Number Germinated Seed	Number of Full Non-Germinated	Number of Empty Seeds	Germination Rate (%)	Fertility (%)
R1-P22	124	0	35	98.3	75.1
R1-P21	99	5	41	95.8	75.9
R1-P122	39	2	158	95.1	20.6
R1-P25	35	2	295	94.6	11.1
R1-P69	102	8	83	92.7	57.0
R1-P107	72	6	115	92.4	42.0
R1-P68	96	10	69	90.6	60.6
R1-P129	18	2	203	90.0	9.0
R1-P74	94	12	41	89.1	67.3
R1-P99	47	4	149	89.0	26.7
R1-P87	55	8	116	88.6	36.0
R1-P14	82	13	80	87.2	51.9
R1-P24	38	6	158	86.4	21.8
R1-P100	60	11	65	84.5	55.6
R1-P130	54	10	241	84.4	21.0
R1-P39	31	6	243	83.8	13.2
R1-P28	63	13	120	82.9	38.8
R1-P58	75	11	33	82.9	69.7
R1-P36	70	14	33	79.3	72.4

Continued.

Table 1. Continued.

Plant Identification	Number Germinated Seed	Number of Full Non-Germinated	Number of Empty Seeds	Germination Rate (%)	Fertility (%)
R1-P13	54	2	172	79.1	22.5
R1-P78	52	15	81	77.6	45.3
R1-P11	77	24	149	76.2	40.4
R1-P20	72	23	40	75.8	70.4
R1-P15	62	20	72	75.6	53.2
R1-P103	13	5	185	72.2	8.9
R1-P73	33	13	139	71.7	24.9
R1-P17	56	26	181	68.3	31.2
R1-P31	61	30	85	67.0	51.7
R1-P38	36	19	245	65.5	18.3
R1-P29	71	33	122	64.7	39.5
R1-P95	29	16	239	64.4	15.8
R1-P16	52	6	119	64.4	32.0
R1-P83	47	12	160	64.0	26.4
R1-P80	63	36	87	61.6	52.0
R1-P101	32	21	106	60.4	33.3
R1-P30	51	35	275	59.3	23.8
R1-P23	45	34	138	57.0	36.4
R1-P159	25	20	115	55.6	28.1
R1-P50	45	38	170	54.2	32.8
R1-P113	39	33	179	54.2	28.7
R1-P105	28	25	144	52.8	26.9
R1-P9	33	30	131	52.4	32.5
R1-P102	14	13	213	51.9	11.3
R1-P48	16	16	166	50.0	16.2
R1-P96	21	22	200	48.8	17.7
R1-P114	36	41	252	46.8	23.4
R1-P55	40	47	121	46.0	41.8
R1-P33	27	33	207	45.0	22.5
R1-P77	30	37	126	44.8	34.7
R1-P56	19	40	317	32.2	15.7
R1-P126	10	59	247	14.5	21.8

Table 2. Panicle weight, number of full seed, and percent of seed fertility - *Spartina alterniflora* - Crowley Field (3-Corners) harvested on Dec. 1, 2011					
Panicles threshed and counted on Dec. 9, 2011 and Dec. 12, 2011					
ID	Total Wt. (g)	# Full Seed	Wt. (g)	# Empty Seed	Wt. (g)
Row 1-5 (35)					
Panicle #1	0.745	96	0.439	136	0.301
Panicle #2	1.478	169	0.73	351	0.762
Panicle #3	0.723	102	0.392	203	0.381
SYN-1 Row 3-(1) Last					
Panicle #1	1.229	178	0.688	336	0.555
Panicle #2	1	194	0.714	175	0.283
Panicle #3	1.848	239	0.885	469	0.892
Verm-1 (39)					
Panicle #1	0.372	3	0.016	182	0.355
Panicle #2	0.734	6	0.037	180	0.573
Panicle #3	0.675	8	0.045	212	0.596
Verm-2 (29)					
Panicle #1	0.761	9	0.044	327	0.718
Panicle #2	0.833	11	0.057	266	0.709
Panicle #3	0.707	5	0.025	279	0.688
Verm-3 (35)					
Panicle #1	0.608	16	0.086	241	0.52
Panicle #2	0.643	5	0.027	245	0.573
Panicle #3	0.693	11	0.064	220	0.585

Table 3. Panicle weight, number of full seed, and percent of seed fertility.

ID	Total Seed Wt (g)	Rep # (0.6g/rep)	# Full Seed	Full Seed Wt (g)	# Empty Seed	Empty Seed Wt (g)	% Full Seed	# Germ
Big Branch 11/12/2010 West Plot #2 2010 PolyC15-G1	314	Rep 1	86	0.428	71	0.152	54.8	60
		Rep 2	84	0.433	69	0.147	54.9	52
		Rep 3	84	0.433	68	0.145	55.3	56
		Rep 4	82	0.439	60	0.142	57.7	65
		Rep 5	85	0.430	71	0.147	54.5	66
Averages			**84**	**0.433**	**68**	**0.147**	**55.4**	
Big Branch 11/12/2010 Plot #2 (West) 2010 PolyC15-G2	293	Rep 1	84	0.442	67	0.146	55.6	49
		Rep 2	97	0.485	49	0.098	66.4	56
		Rep 3	89	0.449	62	0.132	58.9	49
		Rep 4	86	0.431	67	0.156	56.2	58
		Rep 5	86	0.454	59	0.134	59.3	52
Averages			**88**	**0.452**	**61**	**0.133**	**59.3**	
Big Branch 11/12/2010 Plot #2 (West) 2010 Verm	196	Rep 1	56	0.316	96	0.268	36.8	36
		Rep 2	68	0.385	73	0.198	48.2	44
		Rep 3	70	0.4	65	0.184	51.9	45
		Rep 4	73	0.416	60	0.159	54.9	43
		Rep 5	61	0.352	83	0.226	42.4	45
Averages			**66**	**0.374**	**75**	**0.207**	**46.8**	
Each rep is the full seed from the 0.6 g sample.								

Figure 1. Germination rates of PolyC15 seed stored for 2 years. 1= Germination rate 2 weeks after initiation, 2= Germination rate 3 weeks after initiation, 3 = Germination rate 4 weeks after initiation, and 5 =Total germination rate (%)

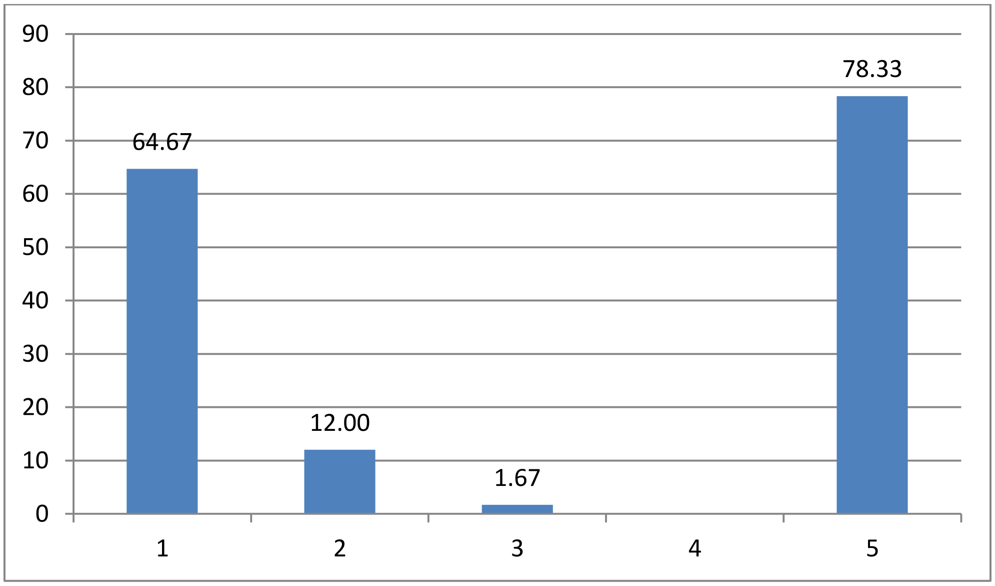


Table 4. Percent heading, plant height, and growth description of select accessions planted in the plots. Observation was conducted in mid-September 2011.

	Accession Number	% Heading	Plant Height (cm)	Descriptions
Plot 1	07C5SA02	99	195	Good Spread and Density.
Plot 2	07LASA03	99	213	Good Spread and Density. Some Lodging.
Plot 3	06B2SA02	99	139	Good Spread and Density. Some Lodging.
Plot 4	06B2SA03	99	178	Good Spread and Density.
Plot 5	06B2SA04	99	161	Good Spread and Density. Some Lodging. More Mature Plants.
Plot 6	06B2SA05	99	186	Good Spread and Density. Some Lodging. More Mature Plants. Majority of seed heads are full with no flowers.
Plot 7	07C5SA06	99	185	Good Spread and Density. Some Lodging. More Mature Plants.
Plot 8	06B2SA06	99	190	Plant Density: Sparse . Only about 60% of plot filled with plants.
Plot 9	06B2SA07	99	135	Plant Number Sparse. Only about 40% of plot filled with plants. More mature plants.
Plot 10	06B2SA08	50	196	Plant Number Sparse. Only about 80% of plot filled with plants. 50% plants have seed heads with no flowers and 50% have not headed out yet.
Plot 11	06B2SA09	99	178	Plant Number Sparse. Only about 80% of plot filled with plants.
Plot 12	06B2SA10	10	205	Plant Number Sparse. Only about 95% of plot filled with plants.
Plot 13	07C5SA011	99	186	Good Spread and Density. Some Lodging.
Plot 14	06B2SA11	99	178	Plant Number Sparse. Only about 40% of plot filled with plants. Small "bulrush-like" plants present in plot.
Plot 15	06B2SA112	99	200	Plant Number Sparse. Only about 90% of plot filled with plants. Mild Lodging.
Plot 16	06B2SA13	99	216	Good Spread and Density.
Plot 17	06B2SA14	50	187	Good Spread and Density. Some Lodging.

Table 5. Specific phenotypic appearance of smooth cordgrass elite lines.

Plot#	Panicle length (in)	Flower Color & Appearance	Flag Leaf Base (in)	Flag Leaf Length (in)	Flag Leaf width (in)	Unique Features Flag Leaf	Unique Features 2nd & 3rd Leaf	Leaf Base Chara.	Base of flower to 1st observed node	Plant Color & Appearance	Color of Stem at Base
Plot 1											
Plant 1	12.6	Orange/Brown with 50% flower coverage. Mature?	Flower 0.5 below flag leaf	8.6	0.19	Higher than seed head No petiole	Slightly Rough Edges	Fine Hairs	12 in	Purple Coloring on some leaf junctions	Green
Plant 2	10.6	Yellow/Green with 100% flower coverage	1.8	10.7	0.25	No petiole	Slightly Rough Edges	Fine Hairs	No Node Observed	Purple Coloring on some leaf junctions	Green
Plant 3	11.5	Orange/Brown with 50% flower coverage. Mature?	0	7.3	0.19	No petiole	Slightly Rough Edges	Fine Hairs	No Node Observed	Purple Coloring on some leaf junctions	Green
Plot 2											
Plant 1	8.7	Yellow/Green with 50% flower coverage	4.6	4.2	0.19	1.75 in petiole	Normal	Fine Hairs	15.25 in	Green and Normal	Green
Plant 2	12	Yellow/Green with 20% flower coverage	2.25	8.6	0.19	No petiole	Normal	Fine Hairs	3 in	Green and Normal	Green
Plant 3	14.2	Yellow/Green with 15% flower coverage	6.25	13.9	0.25	1.5 in petiole	Normal	Fine Hairs	No Node Observed	Green and Normal	Green
Plot 3											
Plant 1	12	Yellow/Green with 100% flower coverage	5.7	10.4	0.25	No petiole	Normal	Fine Hairs	No Node Observed	Purple Coloring on some leaf junctions	Green
Plant 2	10	Yellow/Green with 100% flower coverage	4.5	8	0.19	No petiole	Normal	Fine Hairs	No Node Observed	Purple Coloring on some leaf junctions	Green
Plant 3	12	Yellow/Green with 100% flower coverage	1.75	8	0.19	No petiole	Normal	Fine Hairs	No Node Observed	Purple Coloring on some leaf junctions	Green
Plot 4											
Plant 1	10.25	Orange/Brown with 60% flower coverage. Mature?	3.7	11	0.25	No petiole	Normal	Fine Hairs	No Node Observed	Light Purple Coloring on some leaf junctions	Green

Continued.

Table 5. Continued.

Plot#	Panicle length (in)	Flower Color & Appearance	Flag Leaf Base (in)	Flag Leaf Length (in)	Flag Leaf width (in)	Unique Features Flag Leaf	Unique Features 2nd & 3rd Leaf	Leaf Base Chara.	Base of flower to 1st observed node	Plant Color & Appearance	Color of Stem at Base
Plant 2	10.5	Orange/Brown with 60% flower coverage. Mature?	9.8	13.5	0.31	No petiole	Normal	Fine Hairs	No Node Observed	Light Purple Coloring on some leaf junctions	Green
Plant 3	10.5	Yellow/Green with 100% flower coverage	5.9	9.25	0.25	No petiole	Normal	Fine Hairs	No Node Observed	Light Purple Coloring on some leaf junctions	Green
Plot 5											
Plant 1	11.5	Yellow/Green with 50% flower coverage	0	8.5	0.19	No petiole	Rough Edges	Fine Hairs	16 in	Purple Coloring on some leaf junctions	Green
Plant 2	11.2	Yellow/Green with 50% flower coverage	1.8	6.6	0.13	No petiole	Rough Edges	Fine Hairs	15 in	Purple Coloring on some leaf junctions	Green
Plant 3	11	Yellow/Green with 50% flower coverage	1.6	8.6	0.13	No petiole	Rough Edges	Fine Hairs	16 in	Purple Coloring on some leaf junctions	Green
Plot 6											
Plant 1	9.25	Young/Green No Flowers	0	6.1	0.13	No petiole	Slightly Rough Edges	Fine Hairs	12.5 in	Green and Normal	Green
Plant 2	9.4	Young/Green No Flowers	1.25	5.7	0.13	No petiole	Slightly Rough Edges	Fine Hairs	12 in	Green and Normal	Green
Plant 3	7.5	Young/Green No Flowers	0	4.1	0.13	No petiole	Slightly Rough Edges	Fine Hairs	11.5 in	Green and Normal	Green
Plot 7											
Plant 1	10.6	Yellow/Green with 70% flower coverage	6	8.5	0.25	No petiole	Normal	Fine Hairs	No Node Observed	Purple Coloring on some leaf junctions	Green
Plant 2	10	Yellow/Green with 100% flower coverage	3.1	6.9	0.19	No petiole	Normal	Fine Hairs	No Node Observed	Purple Coloring on some leaf junctions	Green
Plant 3	9.7	Yellow/Green with 100% flower coverage	7.5	10.1	0.25	No petiole	Normal	Fine Hairs	No Node Observed	Purple Coloring on some leaf junctions	Green

Continued.

Table 5. Continued.

Plot#	Panicle length (in)	Flower Color & Appearance	Flag Leaf Base (in)	Flag Leaf Length (in)	Flag Leaf width (in)	Unique Features Flag Leaf	Unique Features 2nd & 3rd Leaf	Leaf Base Chara.	Base of flower to 1st observed node	Plant Color & Appearance	Color of Stem at Base
Plot 8											
Plant 1	12.3	Yellow/Green with 10% flower coverage (Mature?)	4.5	8	0.25	No petiole	Normal	Fine Hairs	No Node Observed	Light Purple Coloring on some leaf junctions	Green
Plant 2	13	Yellow/Green with 100% flower coverage	5	20	0.38	No petiole	Normal	Fine Hairs	No Node Observed	Light Purple Coloring on some leaf junctions	Green
Plant 3	12	Yellow/Green with 100% flower coverage Thick and still emerging.	flower 3 in below flag leaf	20	0.44	No petiole	Normal	Fine Hairs	16 in	Light Purple Coloring on some leaf junctions	Green
Plot 9											
Plant 1	9.5	Orange/Brown with 50% flower coverage. Mature?	0	9.2	0.19	No petiole	Rough Edges	Fine Hairs	No Node Observed	Purple Coloring on some leaf junctions	Green
Plant 2	10.6	Orange/Brown with 50% flower coverage. Mature?	0	7	0.13	No petiole	Rough Edges	Fine Hairs	14.5 in	Purple Coloring on some leaf junctions	Green
Plant 3	10	Yellow/Green with 10% flower coverage	0.9	10	0.19	No petiole	Rough Edges	Fine Hairs	No Node Observed	Purple Coloring on some leaf junctions	Green
Plot 10											
Plant 1	9.5	Light Green with no flowers	3	7.5	0.19	No petiole	Slightly Rough Edges	Fine Hairs	16 in	Green and Normal	Green
Plant 2	9	Light Green with no flowers	2.9	7	0.19	No petiole	Slightly Rough Edges	Fine Hairs	15.5 in	Green and Normal	Green
Plant 3	10	Light Green with immature flowers	6.5	10.5	0.25	No petiole	Slightly Rough Edges	Fine Hairs	20.5 in	Green and Normal	Green

Continued.

Table 5. Continued.

Plot#	Panicle length (in)	Flower Color & Appearance	Flag Leaf Base (in)	Flag Leaf Length (in)	Flag Leaf width (in)	Unique Features Flag Leaf	Unique Features 2nd & 3rd Leaf	Leaf Base Chara.	Base of flower to 1st observed node	Plant Color & Appearance	Color of Stem at Base
Plot 11											
Plant 1	9.4	Yellow/Green with 50% flower coverage	2	8.3	0.19	No petiole	Normal	Fine Hairs	No Node Observed	Green and Normal	Green
Plant 2	9.25	Yellow/Green with 80% flower coverage	1.5	6.6	0.19	No petiole	Normal	Fine Hairs	13 in	Green and Normal	Green
Plant 3	10.5	Orange/Brown with 10% flower coverage. Mature?	1	4.5	0.06	No petiole	Normal	Fine Hairs	13.5 in	Green and Normal	Green
Plot 12											
Plant 1	No Flower	No Flower	No Flower	8.5	0.19	No petiole	Slightly Rough Edges	Fine Hairs	No Node Observed	Green and Normal	Green
Plant 2	No Flower	No Flower	No Flower	1.6	0.06	No petiole	Slightly Rough Edges	Fine Hairs	No Node Observed	Green and Normal	Green
Plant 3	No Flower	No Flower	No Flower	10.5	0.25	No petiole	Slightly Rough Edges	Fine Hairs	No Node Observed	Green and Normal	Green
Plot 13											
Plant 1	9.7	Yellow/Green with 10% flower coverage	3.3	5	0.19	No petiole	Rough Edges	Fine Hairs	15.5 in	Green and Normal	Green
Plant 2	10.8	Orange/Brown with 30% flower coverage. Mature?	2.5	6	0.13	2.5 in petiole	Slightly Rough Edges	Fine Hairs	13 in	Green and Normal	Green
Plant 3	11.5	Orange/Brown with 40% flower coverage. Mature?	2.3	6	0.13	No petiole	Slightly Rough Edges	Fine Hairs	16.5 in	Green and Normal	Green
Plot 14											
Plant 1	8.5	Yellow/Green with 100% flower coverage	0	2.75	0.13	No petiole	Slightly Rough Edges	Fine Hairs	12.5 in	Green and Normal	Green
Plant 2	9.5	Yellow/Green with 80% flower coverage	2	5.5	0.19	No petiole	Slightly Rough Edges	Fine Hairs	15.5 in	Green and Normal	Green

Continued.

Table 5. Continued.

Plot#	Panicle length (in)	Flower Color & Appearance	Flag Leaf Base (in)	Flag Leaf Length (in)	Flag Leaf width (in)	Unique Features Flag Leaf	Unique Features 2nd & 3rd Leaf	Leaf Base Chara.	Base of flower to 1st observed node	Plant Color & Appearance	Color of Stem at Base
Plant 3	10	Yellow/Green with 50% flower coverage	2.25	3.1	0.13	No petiole	Slightly Rough Edges	Fine Hairs	16 in	Green and Normal	Green
Plot 15											
Plant 1	9.1	Orange/Brown with 50% flower coverage. Mature?	0	15.5	0.31	No petiole	Slightly Rough Edges	Fine Hairs	No Node Observed	Purple Coloring on some leaf junctions	Green
Plant 2	9.1	Still Emerging. Orange/Brown with 80% flower coverage. Mature?	flower 2 in below flag leaf	12	0.25	No petiole	Slightly Rough Edges	Fine Hairs	13 in	Purple Coloring on some leaf junctions	Green
Plant 3	10	Still Emerging. Orange/Brown with 50% flower coverage. Mature?	flower 0.9 in below flag leaf	8.6	0.19	No petiole	Slightly Rough Edges	Fine Hairs	No Node Observed	Purple Coloring on some leaf junctions	Green
Plot 16											
Plant 1	8.4	Yellow/Green with 20% flower coverage	5.4	7.1	0.25	No petiole	Normal	Fine Hairs	No Node Observed	Light Purple Coloring on some leaf junctions	Green
Plant 2	9	Yellow/Green with no mature flowers (?)	2	5.6	0.19	No petiole	Normal	Fine Hairs	16.5 in	Light Purple Coloring on some leaf junctions	Green
Plant 3	10	Yellow/Green with 90% flower coverage	6.8	5.5	0.19	0.5 in petiole	Normal	Fine Hairs	22 in	Light Purple Coloring on some leaf junctions	Green
Plot 17											
Plant 1	10	Yellow/Green with no mature flowers (?)	flower 0.5 in below flag leaf	11	0.25	No petiole	Slightly Rough Edges	Fine Hairs	No Node Observed	Very Light Purple Coloring on some leaf junctions	Green
Plant 2	11.1	Yellow/Green with 10% flower coverage	1	15.3	0.25	No petiole	Slightly Rough Edges	Fine Hairs	No Node Observed	Very Light Purple Coloring on some leaf junctions	Green
Plant 3	12.3	Orange/Brown with 40% flower coverage. Mature?	4.5	14	0.25	No petiole	Slightly Rough Edges	Fine Hairs	No Node Observed	Light Purple Coloring on some leaf junctions	Green

LOUISIANA RICE RESEARCH VERIFICATION PROGRAM - 2011[1]

J.K. Saichuk

Introduction

The Louisiana Rice Research Verification Program (LRRVP) began in 1997 in three parishes: Allen, Calcasieu, and Jefferson Davis. In 1998, the program was funded and expanded to 10 parishes: Acadia, Avoyelles, Calcasieu, East Carroll, Evangeline, Jefferson Davis, Madison, Morehouse, St. Landry, and Vermilion. From 1999 to 2009, 108 fields had been included in the verification program. In 2011, the program included five fields (Figure 1).

The fields were visited on at least a weekly basis by a Specialist, County Agent, or the Extension Associate. Production practice recommendations were made by the Specialist or Agent. These recommendations included, but were not limited to, fertilization, weed control, disease control, insect control, and water management to a limited degree. The fields were followed from planting to harvest.

Yield data were collected for each of the fields (Table 1). Yields of the first crop averaged 7,854 lb/A (174.5 bu/A or 48.48 bbl/A) at 12% moisture. The second crop was harvested in Cameron Parish, adding another 151 lb/A to the total, for a final average of 8,005 lb/A (174.7 bu/A or 48.53 bbl/A). This yield exceeded that of the parishes participating in the program by 1,830 lb/A.

Economic data continue to reveal large production cost differences between growers. It also is clear that more needs to be done to help farmers reduce production costs (Table 2).

The program continues to provide an accurate evaluation of current recommendations and provide insight into other areas of research. The educational value of the program to all concerned (farmers, researchers, and extension personnel) increases each year.

Budget reductions have reduced the number of experienced rice county agents and the scope of the verification program. In 2012, it is anticipated that the program will include five or six fields.

[1] This project is supported in part by funding provided by rice producers through their check-off contributions to the Louisiana Rice Research Board.

Figure 1. Rice Research Verification Parishes for 2011

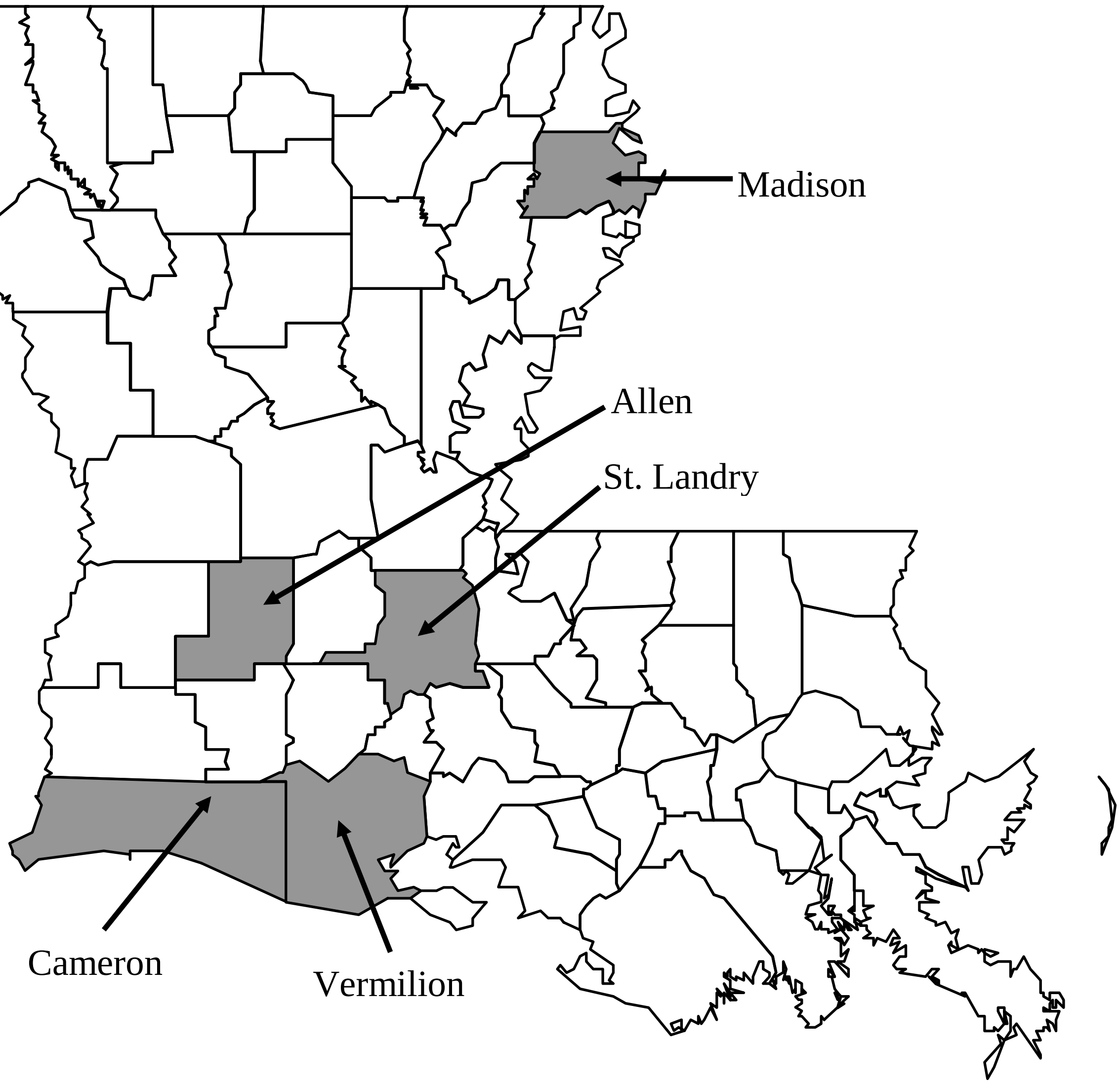


Table 1. 2011 Louisiana Rice Research Verification Program Yield Summary.

Parish	Acres in Verification Program	Verification Yield @ 12% Moisture (cwt/A)		Verification Program			Average Parish Yield[1]	Parish Acreage	Total Parish Production
		1st Crop Alone	Second Crop	Total Yield/A	1st Crop Production	Total Production			
Allen	23.2	77.99	0.0	77.99	1,809.94	1,809.94	66.00	14,936	985,766
Cameron	17.6	82.90	10.42	93.32	1,459.04	1,565.70	55.00	15,382	846,010
Madison	10.5[2]	93.82	0.0	93.82	985.11	985.11	74.25	6,200	460,350
St. Landry	45.7	68.90	0.0	68.90	3,148.73	3,148.73	68.00	22,277	1,514,836
Vermilion	24.0	87.54	0.0	87.54	2,100.96	2,100.96	58.32	51,441	3,000,022
TOTAL	**121.0**	**78.54**	**10.42**	**80.05**				**110,236**	**6,807,011**
						Verif. Avg.	**Parish Avg.**		**Difference**
Average yield (cwt/A)						**80.05**	**61.75**		**18.30**

[1]Average Parish Yield (1st and 2nd Crop): cwt/A.

[2]Yield calculated on 10.5 acres, total field acres 73.4.

Table 2. 2011 Louisiana Rice Research Verification Program Yield, Milling and Economic Summary.

Parish	Variety	Yield @ 12% Moisture (cwt/A)[1]	Milling (% Whole / % Total)	Variable Costs ($/A)[2]	Cost of Production ($/cwt)[2]	Return on Variable Costs ($/A)[2,3]
Allen	Jupiter	77.99	60.21/70.76	496.85	6.37	712.00
Cameron	Jupiter	93.32	60.51/68.94	578.48	6.20	867.98
Madison	Cheniere	93.82	65.47/72.74	513.67	5.48	752.90
St. Landry	Cheniere	68.90	48.46/72.61	413.66	6.00	516.49
Vermilion	CL151	87.54	60.72/72.30	416.07	4.75	765.72

1 - Figure includes ratoon crop yield.

2 - Costs captured are from land preparation to getting the crop to the truck. They do not include land rent, transporting, drying, storing, or fixed costs.

3 - This value was obtained using a selling price of $13.50 per cwt for long grain and $15.50 for medium grain.

ALLEN PARISH

The field in Allen Parish was one of two planted to the medium-grain variety Jupiter. The soils in that area are known to be of low fertility, which was confirmed by a soil test. Areas of the field had been cut in the process of land leveling and should have received additional fertilizer as the farmer had suggested. Fertilizer was applied uniformly based on soil test recommendations. We chose not to add fertilizer to the weaker areas because we did not have an accurate grid sample report and did not want to risk the effects of over-fertilizing this variety. That decision probably caused lower yields than could have been achieved.

Planting was achieved with a no-till drill into a very smooth clean field. Weed problems following planting and emergence were unremarkable. The field had been sprayed with glyphosate and Valor in the fall then with glyphosate alone prior to planting. Just ahead of permanent flood establishment, a mixture of propanil and Permit and two thirds of the nitrogen were applied.

The seed had been treated with Dermacor to prevent rice water weevil problems.

Around internode elongation (green ring) we discovered leaf blast, especially along the tree line on the south border of the field. Stratego fungicide was applied to suppress blast and prevent Cercospora and smuts.

Rice stink bugs never reached economic treatment levels.

So much of the farmer’s rice was ripening at the same time that harvest of the verification was delayed somewhat. High temperatures and very dry conditions resulted in harvesting at 14.9% moisture, much lower than recommended or desired. Consequently, there was little difference between green weight and dry weight when adjusted to 12% moisture. Yield was 7,799 lb/A (48.1 bbl/A or 173.3 bu/A). Milling was 60.21/70.76.

ALLEN PARISH

Cooperator: Ben Leonards
Agent: Barrett Courville and Randy Bellon
Field Size: 23.2 Acres

Cultural Practices

Variety: Jupiter
Method of Planting: Drill
Water Management: Delayed Flood

Seeding Rate: 80 lb/A
Date of Planting: 3/25/11
Date of Emergence: 4/4/11

Growth and Development

Stage	Observation Date	DD50 Date
Green Ring	5/24	
PD	6/8	
50% Heading	7/2	
Drain for Harvest	7/29	
Harvest	8/16	

Yield, Milling, and Economic Data

	Yield @ 12% Moisture (cwt/A)	Milling Yield (% whole / % total)	Variable Costs ($/A)[1]	Cost of Production ($/cwt)[1]	Return on Variable Costs ($/A)[1,2]
1st Crop	77.99	60/71	496.85	6.37	712.00
2nd Crop	--	--	--	--	--

[1]Costs captured are from land preparation to getting the crop to the truck. They do not include land rent, transportation, drying, storage, or fixed costs.
[2]This value was obtained using a selling price of $15.50/cwt.

Fertilization

Date	Source	Rate (lb/A)	N (lb/A)	P (lb/A)	K (lb/A)
4/10	9-23-11	300	27	69	33
4/21	46-0-0	200	92	0	0
5/23	46-0-0	100	46	0	0
Total		600	165	69	33

Weed Management

Weeds Present	Date of Treatment Decision	Recommendation
Various	3/22	Glyphosate
Broadleaf Signalgrass, Panicum	4/5	Propanil + pendimethalin
Broadleaf Signalgrass, sedges	4/19	4 qts Propanil + .75 oz. Permit

Disease Management

Diseases Present	Date of Treatment Decision	Recommendation
Sheath blight, blast	6/14	17 oz. Stratego

Insect Management

Insects Present	Date of Treatment Decision	Recommendation
Rice water weevil	At planting	Dermacor seed treatment

CAMERON PARISH

The Cameron Parish field was located just south of the Jefferson Davis/Cameron Parish line so it could be considered a Jefferson Davis or Cameron field. Technically, the field was in Cameron Parish so all references will be to the Cameron field. It was the second of two verification fields planted to the medium-grain variety Jupiter. Unlike the Allen Parish field, this one was water seeded with dry seed with the intention of using pin-point flood water management as a means of controlling red rice.

This field offered a number of challenging weed problems, including creeping rivergrass, barnyardgrass, water Paspalum, rattlebox, red stem, alligatorweed, and sedges. During the brief drain period between planting and permanent flood establishment, a mixture of propanil and Permit Plus was applied to the field. This was the first instance of the use of Permit Plus in a commercial rice field in Louisiana.

An application of Karate was made to control rice water weevils. At the same time, Clincher herbicide was applied to aid in suppression of creeping rivergrass and pick up any other grasses that had escaped the earlier herbicide application.

About a week before internode elongation, nitrogen deficiency symptoms were observed and the recommendation to apply the midseason nitrogen was made.

Like the field in Allen Parish, leaf blast was discovered on Jupiter in this field. Stratego fungicide was applied to suppress blast and prevent smuts and Cercospora. The area has a history of Cercospora problems every year.

The most significant problem in Cameron Parish was a limited supply of fresh water for irrigation. The continuation of the drought from west Texas through Louisiana was clearly affecting water supplies along the coast, both in surface water and wells. Salt concentrations had reached 3,000 parts per million (ppm) at the time of the last pumping. This level of salt had negative effects on the crop that were not clearly evident but certainly reduced yields.

A recently labeled formulation of gibberellic acid reported to increase second crop yields was provided by the company and applied to 12 acres of the field.

The first crop was harvested on August 6, resulting in a yield of 8,290 lb/A (51.2 bbl/A or 188.3 bu/A). Milling of the first crop was 60.51/68.94. The ratoon or second crop required much longer than expected to mature, probably a consequence of the exceptionally high temperatures experienced during September. Finally, on November 14, the second crop was harvested, producing a very disappointing 1,042 lb/A (6.4 bbl/A or 23.1 bu/A) for a total yield of 9,332 lb/A (57.6 bbl/A or 207.3 bu/A). We were unable to determine if there was any benefit to the gibberellic acid treatment because there was too much variation in the field.

CAMERON PARISH

Cooperator: Paul Johnson
Agent: Barrett Courville
Field Size: 17.6 acres

Cultural Practices

Variety: Jupiter
Method of Planting: Water seeded dry seed
Water Management: Pinpoint flood

Seeding Rate: 130 lb/A
Date of Planting: 3/11
Date of Emergence: 3/24

Growth and Development

Stage	Observation Date	DD50 Date
Green Ring	5/5	
PD	5/26	
50% Heading	6/14	
Drain for Harvest	7/17	
Harvest	8/6	

Yield, Milling, and Economic Data

	Yield @ 12% Moisture (cwt/A)	Milling Yield (% whole / % total)	Variable Costs ($/A)[1]	Cost of Production ($/cwt)[1]	Return on Variable Costs ($/A)[1,2]
1st Crop	82.90	60.51/68.94	518.38	6.25	766.57
2nd Crop	10.42		60.10	5.77	101.41

[1] Costs captured are from land preparation to getting the crop to the truck. They do not include land rent, transportation, drying, storage, or fixed costs.
[2] This value was obtained using a selling price of $15.50/cwt.

Fertilization

Date	Source	Rate (lb/A)	N (lb/A)	P (lb/A)	K (lb/A)
3/31	20-10-10	388	80	60	60
5/3	46-0-0	100	46	0	0
Total		488	126	60	60

*This N was not considered in the total N.

Weed Management

Weeds Present	Date of Treatment Decision	Recommendation
Barnyardgrass, rattlebox, creeping rivergrass, sedges, redstem, alligatorweed, water Paspalum	3/29	Propanil 4 qt/A + Permit Plus .75 oz/A
Creeping rivergrass	4/15	Clincher 17 oz/A

Disease Management

Diseases Present	Date of Treatment Decision	Recommendation
Blast, sheath blight	6/9	Stratego 19 oz/A

Insect Management

Insects Present	Date of Treatment Decision	Recommendation
Rice water weevil	4/15	Karate 2 oz/A

MADISON PARISH

More rainfall occurred between planting and emergence (4.5 inches) than in any other similar period the remainder of the growing season in Madison Parish. Because Cheniere seed had been drilled into the heavy clay soil prior to levee construction, this rainfall delayed establishment of permanent flood and compromised the integrity of the levees. Throughout the growing season, levees continued to leak causing excessing water use for this crop.

Nearby corn and cotton crops affected both herbicide selection and application timing. Command herbicide was being applied following planting when rain interrupted the process. Only 26 of the 73.4 acres received this herbicide application. In an effort to suppress weeds until permanent flood could be established, propanil was applied to most of the field. Wind prevented its application near the corn field. Command was applied at that time to the remainder of the field. Later quinclorac was applied to that portion of the field not treated with propanil. Inability to maintain a constant flood level caused some weed break through, but for the most part, weed control was adequate to good.

No treatment for rice water weevil was required because the seed was treated with insecticide. Later in the season, Tenchu insecticide was recommended for stink bug control, however, the product was not available through his supplier so Karate was used in its place. Tenchu had been recommended in anticipation of a long exposure time and the expected residual benefits it offered. Stink bugs did not build up to treatable levels later probably because of the exceptionally high temperatures that followed thereby reducing insect reproduction and inadvertently reducing insecticide cost.

Thorough scouting revealed no disease. A recommendation of propiconazole as a smut preventative was made. Because propiconazole alone was not available through his supplier, the grower used Quilt fungicide.

Harvest was begun on September 1, but at the end of the day, only 10.5 acres had been harvested. The calculated yields used in the economic computations utilized the yield determined from this harvest. The farmer confirmed a very similar yield from the remainder of the field. Moisture at harvest averaged 13.4%, much below the recommended harvest moisture level. Yield was the best of any of the verification fields, 9,382 lb/A (61.9 bbl/A or 222.9 bu/A) adjusted to 12% moisture. Milling was a surprising 65.47/72.74.

MADISON PARISH

Cooperator: Garret Marsh
Agent: Donna Lee
Field Size: 73.4 Acres

Cultural Practices

Variety: Cheniere
Method of Planting: Till Drill
Water Management: Delayed Flood

Seeding Rate: 93 lb/A
Date of Planting: 4/26
Date of Emergence: 5/1

Growth and Development

Stage	Observation Date	DD50 Date
Green Ring	6/9	
PD	6/24	
50% Heading	7/10	
Drain for Harvest	8/10	
Harvest	9/1	

Yield, Milling, and Economic Data

	Yield @ 12% Moisture (cwt/A)	Milling Yield (% whole / % total)	Variable Costs ($/A)[1]	Cost of Production ($/cwt)[1]	Return on Variable Costs ($/A)[1,2]
1st Crop	93.82	65.47/72.74	513.67	5.50	752.90
2nd Crop					

[1] Costs captured are from land preparation to getting the crop to the truck. They do not include land rent, transportation, drying, storage, or fixed costs.
[2] This value was obtained using a selling price of $13.50/cwt.

Fertilization

Date	Source	Rate (lb/A)	N (lb/A)	P (lb/A)	K (lb/A)
5/13	46-0-0	230	106	0	0
6/13	46-0-0	115	53	0	0
Total		345	159	0	0

*Not counted in total nitrogen.

Weed Management

Weeds Present	Date of Treatment Decision	Recommendation
Various	5/4	Command 1.33 pt/A + Propanil 4 qt/A on part of field
Broadleaf signalgrass, nutsedge, morningglory	5/11	Quinstar on the rest of the field

Disease Management

Diseases Present	Date of Treatment Decision	Recommendation
None, preventative for smuts	7/6	Recommended propiconazole, but could not obtain, used QuiltXL 17 oz/A

Insect Management

Insects Present	Date of Treatment Decision	Recommendation
Rice stink bug	7/20	Karate 2 oz/A

ST. LANDRY PARISH

The field in St. Landry Parish was the second of two that was water seeded and the second one planted with Cheniere. The seedbed had been undisturbed following the previous crop, but the field had been flooded throughout the winter for waterfowl hunting. Verification advisors had been assured the seedbed was weed free. Seed of Cheniere was flown in, and the next day the field was drained. Upon draining, it was clear weeds were present. The size of the field and resulting drain time caused germination and emergence in the upper paddy to be ahead of that at the bottom of the field.

Weed control issues were problematic from the beginning. This was further complicated when a portion of the field was damaged by poule d'eau (coots) and over seeded. Two ages of seedlings in the upper paddy warranted the use of herbicides less likely to cause injury to young seedlings than herbicides used in the lower paddy where larger seedlings were present. The upper paddy was treated with a mixture of propanil and Basagran while the lower paddy was treated with Rebel EX. Weeds present included heavy duck salad populations, red stem, alligatorweed, and sprangletop. Poor control in a portion of the lower paddy resulted in a midseason application of Clincher to about 10 acres of the field.

On the day following herbicide application, 2/3 of the total nitrogen to be used was applied and the field flooded. Within 10 days, rice water weevils were noted and insecticide recommended. Karate was not applied until 7 days later. Karate was also applied during heading to control rice stink bugs. Around this time, damage from feral hogs also was noted.

In spite of no disease detected with thorough scouting, the farmer applied Stratego fungicide to the field. In light of no intention of second crop production being planned and no presence of disease at the time of application, it is very likely an economic return was unlikely.

We recommended draining on July 26, which was a week or more later than the farmer wanted to drain. This turned out to be a good recommendation because harvest was delayed until August 23, almost a month later. Grain moisture at harvest averaged 15.1 percent. The low harvest moisture likely contributed to the poor milling of 48.46/72.61. Yield was also a disappointing 6,890 lb/A (42.5 bbl/A or 158.7 bu/A).

ST. LANDRY PARISH

Cooperator: Jake McCauley and Thomas St. Cyr
Agent: Vince Deshotel
Field Size: 45.7 Acres

Cultural Practices

Variety: Cheniere
Method of Planting: Water Seeded
Water Management: Delayed Flood

Seeding Rate: 140 lb/A
Date of Planting: 4/7
Date of Emergence: 4/15

Growth and Development

Stage	Observation Date	DD50 Date
Green Ring	5/29	
PD	6/8	
50% Heading	6/27	
Drain for Harvest	7/26	
Harvest	8/23	

Yield, Milling, and Economic Data

	Yield @ 12% Moisture (cwt/A)	Milling Yield (% whole / % total)	Variable Costs ($/A)[1]	Cost of Production ($/cwt)[1]	Return on Variable Costs ($/A)[1,2]
1st Crop	68.90	48.46/72.61	413.66	6.00	516.49
2nd Crop					

[1] Costs captured are from land preparation to getting the crop to the truck. They do not include land rent, transportation, drying, storage, or fixed costs.
[2] This value was obtained using a selling price of $13.50/cwt.

Fertilization

Date	Source	Rate (lb/A)	N (lb/A)	P (lb/A)	K (lb/A)
5/2	38-0-0	265	101	0	0
6/13	46-0-0	100	46	0	0
Total		365	147	0	0

*Not counted in total nitrogen.

Weed Management

Weeds Present	Date of Treatment Decision	Recommendation
Red Stem, ducksalad, sprangletop	4/26	Top paddy – Propanil 4 qt/A + Basagran 2 pt/A
		Bottom paddy – RebelEX 20 oz/A + 2 pt COC/A
Sprangletop	6/6	Clincher 20 oz/A spot treatment to 10 acres

Disease Management

Diseases Present	Date of Treatment Decision	Recommendation
Not recommended but used	6/20	Stratego 16 oz/A

Insect Management

Insects Present	Date of Treatment Decision	Recommendation
Rice stink bug	7/10	Karate 2 oz/A

VERMILION PARISH

The seedbed for the field in Vermilion Parish had been prepared in the fall and the field left drained throughout the winter of 2010. A soil sample taken by the county agent and sent into our lab indicated very little need for phosphorus or potassium fertilizer. Because another sample from a commercial lab recommended higher amounts and because both the county agent and the rice specialist knew the history of the area, the LSU recommendation seemed suspect. A second sample was obtained. Weather conditions prompted planting before results from the second analysis were available so the higher recommendation was used to err on the side of caution. Later, the second sample confirmed this as the right decision.

CL151 was drilled into an extremely dry seedbed. A 1-inch rain within a few days of planting eliminated the need to flush and provided just the right amount of moisture to obtain a good stand. Dermacor seed treatment provided excellent rice water weevil control.

Observations of an adjacent field planted to the same variety resulted in increasing the rate of Command herbicide from 8 to 10 oz/A. This rate appeared to be the maximum for this soil type and provided excellent grass control. Glyphosate had been applied with Command to remove existing weeds. Shortly after emergence, the first of two applications of Newpath herbicide was made. The primary surviving weeds were jointvetch, dayflower, and scattered narrow leaf aster. Permit was included with the second application of Newpath.

Two thirds of the total nitrogen was applied to dry soil and the field was flooded. The remaining one third of the nitrogen fertilizer was applied at midseason.

Sheath blight was detected and a fungicide recommended. Quilt XL was applied in mid- to late boot.

Rice stink bugs reached treatment levels and Karate insecticide was applied. The farmer noted that he traditionally has not treated for stink bugs and did not treat his other fields. The same gibberellic acid product used in Cameron Parish was applied to half of this field because a ratoon crop was intended.

The field was harvested on August 15. Yield was 8,754 lb/A (54.0 bbl/A or 208.8 bu/A), which is a very good yield for that part of the state. Insufficient water supply caused the farmer to abandon any attempt at second cropping the field.

VERMILION PARISH

Cooperator: Josh and Angel Newman
Agent: Stuart Gauthier
Field Size: 24.0 Acres

Cultural Practices

Variety: CL151
Method of Planting: Drill, Stale Seedbed
Water Management: Delayed Flood
Seeding Rate: 55 lb/A
Date of Planting: 3/24
Date of Emergence: 4/7

Growth and Development

Stage	Observation Date	DD50 Date
Green Ring	5/30	
PD	6/9	
50% Heading	7/1	
Drain for Harvest	7/26	
Harvest	8/15	

Yield, Milling, and Economic Data

	Yield @ 12% Moisture (cwt/A)	Milling Yield (% whole / % total)	Variable Costs ($/A)[1]	Cost of Production ($/cwt)[1]	Return on Variable Costs ($/A)[1,2]
1st Crop	87.54	60.72/72.3	416.07	4.75	765.72
2nd Crop					

[1] Costs captured are from land preparation to getting the crop to the truck. They do not include land rent, transportation, drying, storage, or fixed costs.
[2] This value was obtained using a selling price of $13.50/cwt.

Fertilization

Date	Source	Rate (lb/A)	N (lb/A)	P (lb/A)	K (lb/A)
3/28	0-26-26	230	0	60	60
4/19	46-0-0	190	87	0	0
6/6	46-0-0	90	41	0	0
Total		510	128	60	60

*Not counted in total nitrogen.

Weed Management

Weeds Present	Date of Treatment Decision	Recommendation
Burndown and preventative	3/29	Command 10 oz/A + glyphosate 3 pt/A
Jointvetch, nutsedge	4/7	Newpath 4 oz/A + COC
Jointvetch, dayflower, narrow leaf aster	5/7	Newpath 4 oz/A + COC + Permit 1 oz/A

Disease Management

Diseases Present	Date of Treatment Decision	Recommendation
Sheath blight	6/27	Quilt XL 17.5 oz/A

Insect Management

Insects Present	Date of Treatment Decision	Recommendation
Rice stink bug	7/19	Karate 2 oz/A

Table 3. Fourteen-Year Louisiana Rice Research Verification Summary.

1998 Verification Acres and Yields				
		Yield @ 12% Moisture		
Parish	**Acres**	**Barrels/A**	**Bushels/A**	**Pounds/A**
Acadia*	53.0	32.8	118.1	5,314
Avoyelles	32.5	42.9	154.4	6,950
Calcasieu*	60.0	34.1	122.8	5,524
East Carroll	33.9	41.1	148.0	6,658
Evangeline	33.0	42.9	154.4	6,950
Jefferson Davis*	61.8	37.3	134.3	6,043
Madison	36.6	39.0	140.4	6,318
Morehouse	63.0	33.8	121.7	5,476
St. Landry	37.1	38.2	137.5	6,188
Vermilion	16.7	29.4	105.8	4,763
TOTALS	**427.6**	**37.2**	**133.7**	**6,018.4**

* Yields include second crop.

1999 Verification Acres and Yields				
		Yield @ 12% Moisture		
Parish	**Acres**	**Barrels/A**	**Bushels/A**	**Pounds/A**
Acadia*	31.1	37.4	134.6	6,059
Avoyelles	32.5	46.6	167.8	7,549
Calcasieu	49.3	34.6	124.6	5,605
Catahoula	30.4	33.4	120.2	5,411
East Carroll	36.1	47.0	169.2	7,614
Evangeline	22.3	43.1	155.2	6,982
Jefferson Davis*	26.6	30.8	110.9	4,990
Madison	38.1	39.0	140.4	6,318
St. Landry	30.1	38.8	139.7	6,286
Vermilion	23.8	36.5	131.4	5,913
TOTALS	**320.3**	**38.7**	**139.4**	**6,272.7**

* Yields include second crop.

2000 Verification Acres and Yields				
		Yield @ 12% Moisture		
Parish	**Acres**	**Barrels/A**	**Bushels/A**	**Pounds/A**
Acadia	53.3	39.4	141.8	6,383
Avoyelles	63.2	36.7	132.1	5,945
Calcasieu	22.1	25.1	90.4	4,066
Catahoula	39.6	36.4	131.0	5,897
East Carroll	45.1	49.1	176.8	7,956
Evangeline	19.9	38.2	137.5	6,188
Jefferson Davis	30.6	26.7	96.1	4,325
Morehouse	27.7	28.3	101.9	4,585
St. Landry	70.7	39.2	141.1	6,350
Vermilion*	21.6	37.7	135.7	6,107
TOTALS	**393.8**	**35.7**	**128.4**	**5,780.2**

* Yields include second crop.

Table 3. Continued.

2001 Verification Acres and Yields				
		Yield @ 12% Moisture		
Parish	**Acres**	**Barrels/A**	**Bushels/A**	**Pounds/A**
Acadia*	60.6	50.8	182.9	8,230
Allen	41.6	35.1	126.4	5,686
Avoyelles	63.2	38.1	137.2	6,172
Calcasieu*	61.9	39.4	142.0	6,388
Concordia	79.6	36.1	130.1	5,853
Evangeline*	20.8	52.7	189.7	8,538
Jefferson Davis*	21.6	57.3	206.4	9,289
Richland	65.9	46.0	165.5	7,447
St. Landry*	40.6	51.1	184.0	8,282
Vermilion*	33.3	52.4	188.7	8,493
TOTALS	**489.1**	**45.9**	**165.3**	**7,437.8**

* Yields include second crop.

2002 Verification Acres and Yields				
		Yield @ 12% Moisture		
Parish	**Acres**	**Barrels/A**	**Bushels/A**	**Pounds/A**
Acadia*	38.4	49.8	179.3	8,068
Allen*	25.1	46.0	165.6	7,452
Avoyelles	37.4	49.9	179.6	8,084
Beauregard*	49.5	53.1	191.2	8,602
Calcasieu*	41.4	42.4	152.6	6,869
Concordia	67.6	48.2	173.5	7,808
Evangeline	42.0	37.6	135.4	6,091
Jefferson Davis*	31.7	45.0	162.0	7,290
Richland	35.8	42.1	151.5	6,819
St. Landry	32.7	48.8	175.7	7,906
Vermilion*	32.0	49.8	179.4	8,072
TOTALS	**433.6**	**46.6**	**167.8**	**7,551.0**

* Yields include second crop.

2003 Verification Acres and Yields				
		Yield @ 12% Moisture		
Parish	**Acres**	**Barrels/A**	**Bushels/A**	**Pounds/A**
Acadia	57.2	44.0	158.4	7,128
Allen*	35.7	46.1	166.0	7,469
Avoyelles	37.4	50.1	180.4	8,116
Beauregard*	45.7	48.7	175.2	7,884
Concordia	79.5	49.2	177.1	7,970
Evangeline*	48.4	44.5	160.2	7,209
Jefferson Davis*	52.9	28.7	103.3	4,649
Richland	40.2	44.7	160.8	7,234
St. Landry*	32.7	61.1	220.0	9,898
Vermilion*	33.0	40.0	144.0	6,480
TOTALS	**462.7**	**45.7**	**164.5**	**7,403.7**

* Yields include second crop.

Table 3. Continued.

2004 Verification Acres and Yields				
		Yield @ 12% Moisture		
Parish	**Acres**	**Barrels/A**	**Bushels/A**	**Pounds/A**
Allen*	53.2	40.9	147.1	6,620
Avoyelles	33.3	32.8	118.0	5,307
Beauregard*	21.8	42.5	153.3	6,899
Concordia	82.3	36.0	130.0	5,843
East Carroll	54.8	45.8	165.0	7,427
Evangeline	30.7	34.8	125.2	5,638
Jefferson Davis*	42.3	38.5	138.6	6,237
Natchitoches	47.2	44.1	158.8	7,144
St. Landry*	60.1	65.1	234.3	10,543
Vermilion*	30.0	42.1	151.6	6,824
TOTALS	**455.7**	**42.3**	**152.2**	**6,848.2**

*Yields include second crop.

2005 Verification Acres and Yields

		Yield @ 12% Moisture		
Parish	**Acres**	**Barrels/A**	**Bushels/A**	**Pounds/A**
Acadia	28.9	39.6	143.8	6,427
Allen	76.7	25.6	92.0	4,140
Avoyelles	32.1	35.9	129.3	5,819
Calcasieu	49.0	51.0	184.0	8,282
Concordia	60.5	43.0	156.0	7,003
East Carroll	30.4	47.9	172.7	7,771
Evangeline	30.0	37.1	133.6	6,014
Jefferson Davis	39.2	32.5	117.0	5,264
Natchitoches	30.0	43.3	156.0	7,022
Richland	47.4	49.2	177.2	7,974
St. Landry	61.7	47.5	170.9	7,689
Vermilion	52.8	40.9	147.3	6,631
TOTALS	**538.7**	**41.1**	**148.3**	**6,669.7**

*Yields include second crop.

2006 Verification Acres and Yields

		Yield @ 12% Moisture		
Parish	**Acres**	**Barrels/A**	**Bushels/A**	**Pounds/A**
Avoyelles	41.8	43.0	155.0	6,972
Concordia	54.7	50.8	183.0	8,237
East Carroll	60.4	44.5	150.0	7,210
Evangeline	29.4	32.3	116.0	5,227
Jefferson Davis	21.5	43.8	157.8	6,000
St. Landry	40.9	36.8	132.5	5,962
Vermilion	29.6	37.0	133.3	7,100
West Carroll	50.1	53.1	191.2	8,603
TOTALS	**328.4**	**43.4**	**156.4**	**7,040**

*Yields include second crop.

Table 3. Continued.

2007 Verification Acres and Yields				
		Yield @ 12% Moisture		
Parish	**Acres**	**Barrels/A**	**Bushels/A**	**Pounds/A**
Avoyelles	40.9	56.7	204	9,187
Concordia	53.8	53.6	193	8,680
East Carroll	23.0	49.0	176	7,917
Evangeline – St. Landry	33.9	50.1	180	8,122
Jefferson Davis*	38.9	55.8	201	9,046
Vermilion*	36.6	46.0	166	7,451
West Carroll	40.2	45.4	164	7,356
TOTALS	**267.3**	**51.2**	**184**	**8,293**

*Yields include second crop

2008 Verification Acres and Yields				
		Yield @ 12% Moisture		
Parish	**Acres**	**Barrels/A**	**Bushels/A**	**Pounds/A**
Avoyelles	40.9	47	170	7,657
Calcasieu*	55.1	51	183	8,247
Concordia	54.7	44	160	7,178
Evangeline	46.4	42	152	6,840
Madison	41.5	51	182	8,208
Jefferson Davis*	37.7	52	189	8,481
St. Landry	60.2	48	173	7,801
Vermilion*	51.1	70	252	11,359
TOTALS	**387.6**	**51**	**183**	**8,228**

*Yields include second crop

2009 Verification Acres and Yields				
		Yield @ 12% Moisture		
Parish	**Acres**	**Barrels/A**	**Bushels/A**	**Pounds/A**
Acadia*	56.6	70.9	255.3	11,489
Avoyelles	28.6	50.7	182.5	8,214
Calcasieu*	41.7	58.1	209.3	9,418
Concordia	57.0	49.6	178.6	8,035
East Carroll	33.6	41.3	148.7	6,692
Evangeline*	22.5	61.7	222.2	9,999
Madison	29.0	50.4	181.5	8,168
St. Landry	49.4	49.3	177.5	7,987
Vermilion*	41.5	66.9	241.0	10,843
TOTALS	**359.9**	**56.0**	**201.7**	**9,078**

*Yields include second crop

Table 3. Continued.

2010 Verification Acres and Yields				
		Yield @ 12% Moisture		
Parish	**Acres**	**Barrels/A**	**Bushels/A**	**Pounds/A**
Avoyelles	41.8	49.7	179.0	8,057
Jefferson Davis*	35.8	67.5	243.1	10,941
St. Landry	31.3	44.3	159.4	7,171
TOTALS	**108.9**	**54.0**	**194.4**	**8,750**

*Yields include second crop.

2011 Verification Acres and Yields				
		Yield @ 12% Moisture		
Parish	**Acres**	**Barrels/A**	**Bushels/A**	**Pounds/A**
Allen	23.2	48.1	173.3	7,799
Cameron	17.6	57.6	207.4	9,332[1]
Madison	10.5[2]	57.9	208.5	9,382
St. Landry	45.7	42.5	153.1	6,890
Vermilion	24.0	54.0	194.5	8,754
TOTALS	**121.0**	**49.4**	**177.9**	**8,005**

[1]Yields include second crop.
[2]Yield calculated on 10.5 acres, total field acres 73.4.

Verification Totals			**Verification Parish Totals**		
Year	**Acres**	**Pounds/A**	**Acres**	**Pounds/A**	**Difference**
1998	427.6	6,018	475,103	5,052	966
1999	320.3	6,273	444,015	5,502	771
2000	393.8	5,780	385,824	5,620	160
2001	489.1	7,438	412,286	5,794	1,644
2002	433.6	7,551	412,630	5,764	1,787
2003	462.7	7,404	327,843	5,843	1,561
2004	455.7	6,848	311,606	5,582	1,266
2005	538.7	6,670	402,759	6,165	505
2006	328.4	7,040	185,249	5,644	1,396
2007	267.3	8,293	183,357	6,501	1,792
2008	387.6	8,228	258,845	6,047	2,181
2009	359.9	9,078	246,793	6,715	2,363
2010	108.9	8,750	125,856	6,488	2,262
2011	121.0	8,005	110,236	6,175	1,830
Totals	**5,094.6**	**7,191**	**4,282,402**	**5,808**	**1,418**

Rice Weed Management

Weed Management in Herbicide Resistant/Tolerant and Conventional Rice

Eric P. Webster, J. Caleb Fish, Nathanael D. Fickett, and Emily L. Thevis
School of Plant, Environmental, and Soil Sciences

Introduction and Justification

Weed management studies were conducted at the Rice Research Station and producer fields in south Louisiana in 2011. A total of 61 studies were established with a total of 2,510 research plots. These studies indicate that weed control in rice will continue to be more effective as new technologies and new herbicides become available to the producers. Many of these studies have been conducted over two to three years. However, several of these studies have one year of data and need to be repeated in order to verify the results over time. The weed management project continues to work on different application methods for products in drill- and water-seeded rice. The project continues to supply data for herbicide development, herbicide label support, and label expansion.

Newpath or Beyond Plus Propanil or RiceBeaux Synergism

This project has evaluated mixtures of Newpath and propanil for several years. Four studies were established in Louisiana and replicated in Mississippi by Dr. Jason Bond to evaluate the potential for increased weed control with the addition of propanil or RiceBeaux. Red rice control increased by approximately 10% with Newpath and Beyond when mixed with propanil at 3 to 4 qt/A or RiceBeaux at 4 pt/A. Similar results were observed for barnyardgrass control with Newpath. Beyond applied alone controlled barnyardgrass similar to Beyond mixed with propanil or RiceBeaux. This can be attributed to increased activity of Beyond on barnyardgrass. This research indicates that the addition of a mixture herbicide can be beneficial when broad spectrum weed control is needed.

Competitiveness of Hemp Sesbania and Indian Jointvetch

A multiple year study was established in 2011 to evaluate the competitiveness of hemp sesbania and Indian jointvetch with rice. Densities of 0.25 to 8 plants/m^2 were established. The low density represents 2 plants per plot and the high density is approximately 32 plants. This study was challenging from the onset but some valuable data were obtained. Data indicate that 2 to 8 plants/m^2 may be impacting yield with both species. It is apparent our densities need to be adjusted for 2012. Visual observations indicate disease pressure to be higher with increased weed densities. This higher incidence of disease may be due to the dense canopy produced by the weeds, which prevented the fungicide from contacting the rice plants. This research will continue in 2012 and 2013.

Impact of Herbicide Timing on Hemp Sesbania and Indian Jointvetch

Four studies were established in 2011 to evaluate control of hemp sesbania and Indian jointvetch at various timings during the growing season. The four timings were early postemergence, mid-postemergence, late postemergence, and salvage treatments. Halomax and Permit Plus provided the most consistent control and yields for the early postemergence timing. Halomax, Permit Plus, Regiment, Strada, and Grasp were the most effective at the mid-postemergence timing, and the same herbicides plus League for the late-postemergence timing. All of the herbicides provided adequate control of hemp sesbania and Indian jointvetch and improved rice yield when applied at the salvage timing. Yields decreased as initial timing was delayed, and control measures should be initiated as early as possible.

Managing Hybrid Rice Volunteers

A study was established in 2010 to better understand the problems that have been observed with hybrid rice dormancy. Two and a half acres of CL151 and 2.5 acres of CLXL745 were planted at the Rice Research Station South Farm and maintained weed free throughout the growing season. The rice was harvested with a production combine to better simulate actual rice production. Following harvest in 2010, Dr. Mark Cohn tested the seed for dormancy, and a small level of seed dormancy was found in the samples. In 2011, each 2.5-acre block was planted to a rotation, 1.25 acres of soybean and a non-rotation of 1.25 acres of CL131 and CLXL745. Observations indicated a small level of infestation occurred from the dormant hybrid but it was limited; approximately five plants were observed in the hybrid area. No dormancy issues were observed in the CL151/CL131 area. A study was also established 3 years ago on a grower location, and results indicate a 1-year rotation is not enough to eliminate a dormancy issue. In 2012, the entire area at the grower location will be planted in Clearfield rice to determine if a 1- or 3-year rotation is required to eliminate dormant rice seed.

Ducksalad Control

A study was established to evaluate several broadleaf herbicides for control of ducksalad. The area was conventionally tilled and a seeding flood was established in order to simulate a water-seeded system. Rice was not seeded in order to eliminate any competition from rice. The seeding flood was removed 48 hours after flooding, and herbicides with residual activity were applied 24 hours later as a preemergence application prior to ducksalad emergence. Two postemergence timings were evaluated. The first postemergence timing was applied to ducksalad in the cotyledon stage, and the second application timing was applied when ducksalad reached the spoon stage. At each application timing, the flood was removed to guarantee herbicide coverage. Control with preemergence herbicide lasted for approximately 2 weeks; however, this allows rice to become more competitive with the weed and therefore reduces competition. Ducksalad control with Grasp applied preemergence was 63% at 35 days after treatment and was the only herbicide applied preemergence that controlled ducksalad above 60% at the late rating. Newpath, Beyond, and Grasp were the most consistent when applied postemergence to cotyledon and spooning ducksalad.

Evaluation of Experimental Herbicides

In 2011, seven experimental herbicides and numerous adjuvants were evaluated for potential use in rice. Several of the new products are pre-package mixtures of currently labeled rice herbicides. These projects are often supported by the company that has the product under development. However, the weed management project often expands research to gain a better understanding of the herbicide and how it fits in Louisiana rice production. Two of the herbicides evaluated in 2010, Permit Plus and League, received labels for 2011. Two to three of the current experimental herbicides will likely make it to the market. Rice continues to be the leader in experimental herbicide development. This trend will not change in the next few years.

Extension Activities

This project is continuing to extend the findings from the weed management research programs in Louisiana to producers, agents, and consultants. Approximately 8,000 Weed Identification publications and approximately 3,000 drift publications have been distributed. The Weed Identification handout continues to be popular. This project continues to aid producers, agents, and consultants by making on-farm visits, providing herbicide recommendations, aid in the identification of weeds, consult on herbicide failures, and identify herbicide injury and drift.

This is a summary of the research that was conducted in 2011. To see the complete weed management annual report, please go to:

http://www.lsuagcenter.com/MCMS/RelatedFiles/%7B9CF8B5B7-6472-4816-A2E6-B5F272939C94%7D/2011-Annual-Report-%28Eric-Webster%29.pdf

STATION PERSONNEL

Steve Linscombe, Professor --	**Resident Coordinator**
Jodie R. Gautreaux[1]	Administrative Coordinator II
Kimberly G. Guidry	Accounting Specialist I
Carol D. LeDoux	Administrative Program Specialist-A
Darlene M. Regan	Administrative Coordinator IV
Donna L. Sonnier	Custodian I
Glenn J. Schexnayder, Research Farm Maintenance Manager -----------------------	**Maintenance Department**
Ted R. Trahan	Maintenance Repairer I
Donald E. Groth, Professor/Research Coordinator---	**Rice Pathology**
Carl W. Dischler	Research Associate/Specialist
Marty J. Frey (25%)	Research Associate/Specialist
Laura L. Monte	Research Farm Assistant I
Dustin Harrell, Associate Professor ---	**Rice Agronomy/Rotational Crops**
Jacob S. Fluitt	Research Associate/Specialist
James P. Leonards	Research Associate/Specialist
Ronald P. Regan	Research Associate/Specialist
William J. Leonards, Jr., Research Associate/Coordinator/Manager -----------------------------	**Farm Management**
Nathan Breaux[2]	Research Farm Assistant II
Brian D. Broussard	Research Farm Supervisor
Paul A. Miller	Research Farm Assistant II
Timothy C. Miller[3]	Research Farm Supervisor
Jimmy D. Pellerin	Research Farm Specialist II
Ronald J. Pellerin	Research Farm Manager I
Thomas J. Reed	Research Farm Specialist II
Steven D. Linscombe, Professor--	**Rice Breeding**
Karen F. Bearb	Research Associate/Coordinator
Raymond R. Dilly, Jr.	Research Associate/Specialist
Herman L. Hoffpauir	Research Farm Specialist II
Brent W. Theunissen	Research Associate/Specialist
Richard E. Zaunbrecher	Research Associate/Specialist
Mona M. Meche, Research Associate/Coordinator ----------------------	**Rice Anther Culture/Tissue Culture**
Jennifer P. Dartez	Research Farm Assistant II
Xue Jin	Research Farm Specialist I

[1] Separated 01/03/2011.
[2] Appointed 12/19/2011.
[3] Deceased 08/20/2011.

STATION PERSONNEL
(Continued)

W. Ray McClain, Professor-- Aquaculture

John J. Sonnier	Research Farm Specialist II

John K. Saichuk, Professor ---Rice Agronomy/Extension

Xueyan Sha, Associate Professor --- Rice Breeding

Blake J. Henry	Research Farm Specialist II
Shane J. Theunissen	Research Associate/Specialist

Herry Utomo, Associate Professor-------------------------------- Marker-Assisted Selection Breeding/Biotechnology

Anna L. McClain	Research Farm Specialist II
Gretchen M. Zaunbrecher	Research Associate/Specialist

Ida Wenefrida, Assistant Professor/Research-- Biotechnology

Lawrence M. White, III, Research Associate/Coordinator-------------------------------------- Foundation Seed Rice

LSU AGCENTER CAMPUS PERSONNEL

LSU AgCenter personnel conducting research at the Rice Research Station include the following:

Jong Hyun Ham -- Rice Diseases
Department of Plant Pathology and Crop Physiology

Clayton A. Hollier-- Rice and Soybean Diseases
Department of Plant Pathology and Crop Physiology

Natalie Hummel---Rice Insect Control
Department of Entomology

Anna Meszaros	Extension Associate

James H. Oard ---Rice Genetics
School of Plant, Environmental and Soil Sciences

Michael E. Salassi ---Economics
Department of Agricultural Economics and Agribusiness

Michael J. Stout ---Rice Insect Control
Department of Entomology

Marty J. Frey (75%) (Rice Research Station)	Research Associate/Specialist
Jason C. Hamm	Research Associate/Specialist

Eric Webster---Weed Control
School of Plant, Environmental and Soil Sciences

COOPERATING PERSONNEL

Cooperating personnel on research projects at the Rice Research Station include the following:

Lucas Aviles -- Rice Breeding
University of Puerto Rico Research & Extension Center
Lajas, Puerto Rico

Niranjan Baisakh-- Coastal Erosion Control
School of Plant, Environmental and Soil Sciences
Louisiana State University Agricultural Center

Ronald J. Levy -- Soybeans
Dean Lee Research and Extension Center
Louisiana State University Agricultural Center

Daniel Breaux --- Coastal Erosion Control
Louisiana Department of Wildlife and Fisheries
Southeast Louisiana Refuge, Lacombe, Louisiana

Steve A. Harrison-- Wheat, Oats, and Coastal Erosion Control
School of Plant, Environmental and Soil Sciences
Louisiana State University Agricultural Center

Carrie Knott-- Coastal Erosion Control
School of Plant, Environmental and Soil Sciences
Louisiana State University Agricultural Center

Rick Mascagni -- Grain Sorghum
Northeast Research Station
Louisiana State University Agricultural Center

Mike Materne --- Coastal Erosion Control
School of Plant, Environmental and Soil Sciences
Louisiana State University Agricultural Center

Anthony Rivera --- Rice Breeding
University of Puerto Rico Research & Extension Center
Lajas, Puerto Rico

Robert Romaire-- Aquaculture
Aquaculture Research Station
Louisiana State University Agricultural Center

Cindy S. Steyer-- Coastal Erosion Control
USDA-NRCS, Water Resources
Baton Rouge, Louisiana

Prasanta Subudhi--- Coastal Erosion Control
School of Plant, Environmental and Soil Sciences
Louisiana State University Agricultural Center

COOPERATING PERSONNEL
(Continued)

Brenda Tubaña -- Rice Fertilization
School of Plant, Environmental and Soil Sciences
Louisiana State University Agricultural Center

Sonny Viator --- Sweet Sorghum
Iberia Research Station
Louisiana State University Agricultural Center

Bill Williams-- Weed Control/Rice Breeding
Northeast Research Station
Louisiana State University Agricultural Center

E. Allen Wilson---Bird Control
USDA Animal Damage Control
Crowley, Louisiana