


CONTENTS

102nd Annual Research Report

Rice Research Station

Crowley, Louisiana
2010

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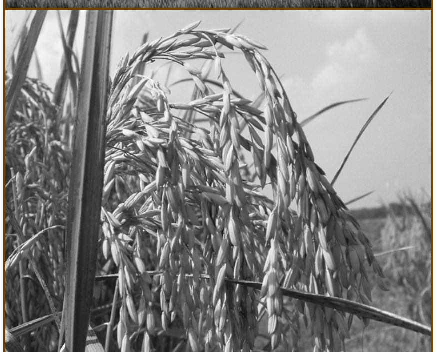
Cover Photos

Purple and gold "LSU" rice.



Rice panicles in breeding nursery.

Small-scale seed production of hybrid LAH10, alternating two rows of the male parent or pollinator (tall) and 12 rows of the female parent (short).

Crawfish exhibiting the markings from three previous releases in a mark/recapture study.

Mini-scale hybrid seed production under isolation. Seed produced from this process will be used for multi-location yield trials.

102^{nd} 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
David J. Boethel, 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

T A B L E   O F   C O N T E N T S

Page

INTRODUCTION

Research at the Rice Research Station, Crowley, Louisiana, is conducted by scientists with the LSU AgCenter's Louisiana Agricultural Experiment Station. The 2010 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 2010 are presented in this report representing the 102nd 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 2010. 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 2010.

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 2010 are listed.

MONTHLY RAINFALL DATA
RICE RESEARCH STATION - CROWLEY, LA
2010

DATE	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	YEAR TOTAL
1							1.44				.01		
2	.03	.60	.69	.07	.03		.30				1.45		
3					.01	.28					.28		
4		1.51				1.10	1.71				.05		
5		.75					.38						
6						.42	1.32	1.1					
7	.08						1.17	.17	.41				
8	.42			.13		1.98	.33					.28	
9		.58	.13										
10			.02					.30					
11							.11						
12		1.14								1.27		.06	
13									1.2				
14								.52			.05		
15		.42		.02	.71						.70		
16	.24				1.57						.27		
17	.59		.22			.51	.03	.20					
18							.03	1.76			.08		
19	.01			.16			.04	1.10					
20				.10			.65	.05					
21			.10							.45			
22							.28						
23						.27		.06	.01		.02		
24	.04	.06							.01				
25			.47									.59	
26					1.38		.10				.45	.06	
27		.86		.05	.61		.30			.01	.04		
28				.01	.16	.16	.72			.05			
29					.01			.07					
30	.20				.01	.68		.20			1.12	2.28	
31					1.05							.03	
MONTH TOTAL	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
2009	3.43	1.92	8.27	10.15	2.08	1.56	5.86	4.32	5.42	14.69	2.69	9.51	69.90

RICE BREEDING

GENETIC IMPROVEMENT OF RICE FOR LOUISIANA PRODUCTION[1]

S.D. Linscombe, X.Y. Sha, S.B. Blanche, 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.

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 2010 rice breeding nursery included more than 114,000 breeding rows, 470 F_1 transplant populations, and 470 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 five off-station locations.

The preliminary yield testing program evaluated more than 1,000 lines (mainly 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.

COOPERATIVE UNIFORM REGIONAL RICE NURSERY

The Uniform Regional Rice Nursery (URRN) 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 over multiple environments.

The 2010 URRN test included 200 experimental lines and varieties planted in six states. A randomized complete block design was applied, with three replications for Groups 1 to 4 and two replications for Groups 5 to 7. Seeding rates were 90 lb/A.

The 2010 URRN results from the Rice Research Station will be reported. All plots were drill seeded on March 13. All groups were harvested August 4-6. The URRN also was ratooned and harvested on October 28. Tests were conducted using standard agronomic practices (except that no fungicides were applied). Tables 1 to 7 show grain (main and ratoon crop) and milling yields and agronomic performance (seedling vigor, days to 50% heading, plant height, and lodging percentage) of entries in the 2010 URRN at the Rice Research Station.

Table 1. Grain and milling yields and agronomic performance of entries in the 2010 Uniform Regional Rice Nursery, Group 1, Rice Research Station, Crowley, La.

ENT	SOURCE	PEDIGREE	VIG[1]	HDT	HTE	YIELD	RATOON	TOTAL YIELD	WHOLE	TOTAL
019	PSDO	PRESIDIO	4	83	44	8,594	5,387	13,981	64.7	70.8
007	0801081	LGRU//KATY/STBN/3/LGRU	5	85	46	10,104	3,826	13,930	53.0	69.1
017	CL111	CL111	4	81	44	9,670	3,362	13,032	64.6	71.1
015	0804122	L202//TBNT/BLMT	6	87	44	8,017	4,762	12,779	57.6	67.9
002	0902088	9502008-A//AR1188/CCDR/3/…	4	84	44	9,724	2,984	12,708	63.4	71.0
010	0701124	DREW/UA99-167	4	75	41	8,832	3,710	12,542	62.2	69.8
020	CTHL	CATAHOULA	6	85	44	9,267	3,176	12,443	64.1	70.9
012	0803147	LCSN/LGRU	6	83	43	9,589	2,850	12,439	58.6	67.8
014	0804154	RSMT/KATY	6	88	41	8,288	4,145	12,433	59.5	70.1
005	0902005	9502008-A/DREW//CLR 20	5	83	42	9,612	2,799	12,411	63.6	70.3
008	0902103	FRANCIS/CLR 13	5	87	41	8,942	3,425	12,367	62.7	69.6
011	1002011	CPRS/9502008-A/3/CFX 29//AR 1142/LA 2031	4	83	45	9,752	2,563	12,315	62.7	69.8
004	0801142	KBNT/Q36194	4	90	44	8,503	3,671	12,174	56.9	70.1
013	0801102	FRNS/6/LBNT/9902/3/DAWN/9695//STBN/4/LGRU/5/DREW	5	92	42	7,977	4,154	12,131	55.0	68.1
016	1004016	RSMT//RXMT/IR36	5	88	45	8,267	3,651	11,918	59.1	70.2
001	0801133	FRNS/6/LBNT/9902/3/DAWN/9695//STBN/4/LGRU/5/DREW	5	87	42	8,433	3,238	11,671	60.0	69.2
018	CL151	CL151	5	83	44	9,382	1,847	11,229	58.1	68.2
006	0803190	CPRS/CCDR	7	87	41	8,314	2,730	11,044	60.5	67.7
009	0903141	CPRS/9901081	7	85	43	8,546	2,109	10,655	61.4	69.5
003	0803003	(LGRU/LSCN)RU9801111/(RU8803072/…	8	93	41	6,618	2,290	8,908	59.1	68.6

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

Table 2. Grain and milling yields and agronomic performance of entries in the 2010 Uniform Regional Rice Nursery, Group 2, Rice Research Station, Crowley, La.

ENT	SOURCE	PEDIGREE	VIG[1]	HDT	HTE	YIELD	RATOON	TOTAL YIELD	WHOLE	TOTAL
024	0801124	MDRK/PI 312777//JING 185-7	6	82	38	9,867	4,321	14,188	65.8	69.8
037	JPTR	JUPITER	5	85	40	10,071	3,674	13,745	65.2	69.0
038	WLLS	WELLS	4	90	44	8,530	4,383	12,913	53.2	68.9
035	1004035 952	CFX-18(CL 161)/PSCL	5	82	46	8,814	3,846	12,660	59.7	69.8
022	0802022	AC1398	4	84	41	8,970	3,619	12,589	62.5	70.4
027	0801167	FRNS/6/LBNT/9902/3/DAWN/9695//STBN/4/LGRU/5/DREW	4	89	43	8,164	4,344	12,508	58.6	70.0
025	0802140	CPRS//L-205/DLLA	5	88	44	7,973	4,406	12,379	59.8	68.7
034	1002034	CCDR/AC627	5	81	39	9,505	2,847	12,352	61.3	70.2
040	FRNS	FRANCIS	4	89	44	8,644	3,706	12,350	56.8	67.7
028	1002028	CCDR/AC1048	4	80	41	9,274	3,068	12,342	63.8	70.8
031	1002031	AC1399	4	85	42	9,207	2,871	12,078	62.0	69.9
021	0801173	RU9901127/GP-2	6	80	38	9,066	2,889	11,955	63.6	68.3
039	BWMN	BOWMAN	7	89	42	7,677	4,191	11,868	59.7	69.1
033	1004033	CFX-18(CL 161)/0004054	5	87	44	9,214	2,369	11,583	60.5	69.3
026	0803092	CCDR/LQ275a	7	92	46	7,459	4,071	11,530	50.5	64.7
029	0803153	CPRS/CCDR	7	85	43	8,412	2,918	11,330	62.2	70.0
030	0801030	CYBT/LM1	6	84	40	8,524	2,552	11,076	61.7	71.1
036	0804196	LMNT//TBNT/LA110	7	93	40	7,121	2,886	10,007	60.1	70.7
023	0803023	(LGRU/LSCN)RU9801111/(RU8803072/…	8	93	43	6,539	2,922	9,461	54.5	67.0
032	0703190	CCDR/L202	8	88	44	6,835	1,348	8,183	59.7	70.1

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

Table 3. Grain and milling yields and agronomic performance of entries in the 2010 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	0902082	BNGL/CL161	4	83	44	9,970	3,457	13,427	66.9	70.3
056	TMPL	TEMPLETON	4	90	46	8,755	4,520	13,275	64.1	71.4
057	REX	REX (RSMT//RXMT/IR36)	4	87	44	9,065	4,180	13,245	57.2	67.1
051	0802051	TACAURI/3/CPRS//82CAY21/TBNT/4/CFX-18	5	89	44	8,792	4,407	13,199	62.6	69.5
050	0801161	FRNS/6/LBNT/9902/3/DAWN/9695//STBN/4/LGRU/5/DREW	5	90	46	9,042	4,016	13,058	59.8	70.0
053	1004053	RSMT//8403113/3/KCAI/LEAH//LEAH	5	89	39	8,863	4,194	13,057	59.9	69.7
048	0702085	AR 1188/CCDR//9502008/LGRU	4	87	43	9,495	3,368	12,863	59.8	69.0
044	0901173	SPRN/STG00F5-07-007	6	90	34	7,996	4,438	12,434	59.1	68.7
058	CHNR	CHENIERE	5	86	42	9,999	2,377	12,376	63.8	71.4
055	1004055	RSMT//RXMT/IR36	5	91	42	8,087	4,147	12,234	57.2	67.6
054	1004054	CFX-18(CL 161)/PSCL	5	84	43	8,753	3,456	12,209	62.9	69.8
060	CL 181 AR	CL181 AR	5	88	38	8,996	3,100	12,096	60.3	68.7
047	0801145	CCDR/ZHE 733//WC 285	5	87	36	7,509	4,517	12,026	53.1	67.1
041	0901041	UA99-153/TOX 4136-38-2	6	82	42	9,326	2,544	11,870	49.7	66.5
059	CCDR	COCODRIE	5	84	42	8,868	2,749	11,617	63.0	71.4
052	0703181	CPRS/CCDR	6	86	46	8,323	3,231	11,554	62.0	68.7
045	0902085	9502008/3/MBLE//LMNT/20001-5/4/…	4	83	44	9,375	2,003	11,378	61.1	68.2
046	0703147	CPRS/CCDR	6	88	44	8,089	2,894	10,983	60.1	69.9
043	0803181	CPRS/CCDR	6	84	41	8,206	2,741	10,947	65.3	71.6
049	0703144	CPRS/CCDR	7	84	44	8,174	2,293	10,467	63.2	71.7

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

Table 4. Grain and milling yields and agronomic performance of entries in the 2010 Uniform Regional Rice Nursery, Group 4, Rice Research Station, Crowley, La.

ENT	SOURCE	PEDIGREE	VIG[1]	HDT	HTE	YIELD	RATOON	TOTAL YIELD	WHOLE	TOTAL
068	0902162	BNGL//MERC/RICO/3/MERC/RICO//BNGL	5	88	39	10,488	4,392	14,880	63.8	67.9
065	0702162	BNGL//MERC/RICO/3/MERC/RICO//BNGL	5	86	38	9,539	4,478	14,017	62.5	66.7
080	NPTN	NEPTUNE	5	88	38	8,980	4,424	13,404	62.7	66.3
076	0801076	LGRU//KATY/STBN/5/NWBT/KATY//RA73/LMNT/4/LBNT/…	4	93	45	8,567	4,701	13,268	57.1	69.1
071	1002071	LFTE/BNGL	4	81	41	10,258	2,912	13,170	63.2	68.4
074	1004074	CFX-18(CL 161)/0004054	5	88	41	8,897	4,002	12,898	63.3	71.0
061	0701087	GP13416/KATY//PI312777	4	85	45	8,811	3,906	12,717	56.4	68.2
064	JES	JES	5	89	43	9,678	3,006	12,684	63.6	67.8
079	CYBT	CYBONNET	5	89	44	9,072	3,601	12,673	66.9	71.8
062	0702068	9502065/3/MERC//MERC/…	5	81	39	9,562	2,819	12,381	63.3	68.2
078	0703184	L201/SABR	6	89	45	8,063	4,049	12,112	63.9	69.3
063	0903184	CPRS/CCDR	5	89	45	8,870	2,776	11,646	57.4	67.5
077	0904077	CFX-18(CL 161)/PSCL	6	88	47	8,212	3,350	11,562	56.6	67.7
075	0903190	CPRS/CCDR	6	90	46	8,379	3,015	11,394	59.2	68.5
066	0803116	SABR/CCDR	7	87	49	8,102	3,261	11,363	59.8	68.5
070	0801090	91642//KATY/NWBT/5/RU9201176/4/KATY/NWBT/3/…	5	87	44	7,970	3,248	11,218	53.8	68.1
073	1004073	CFX-18(CL161)/0004054	5	87	42	8,430	2,710	11,140	62.8	70.6
067	1001067	STG02PR-02-067/STG02AC-15-002//RU0401084	5	83	35	7,707	2,626	10,333	60.3	64.7
069	0903069	LGRU/LCSN//CF4-85	7	95	46	6,250	2,403	8,653	58.9	67.4
072	0903123	CPRS/NWBT//KATY/3/CCDR	7	85	44	7,527	927	8,454	63.2	71.1

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

Table 5. Grain and milling yields and agronomic performance of entries in the 2010 Uniform Regional Rice Nursery, Group 5, Rice Research Station, Crowley, La.

ENT	SOURCE	PEDIGREE	VIG[1]	HDT	HTE	YIELD	RATOON	TOTAL YIELD	WHOLE	TOTAL
085	1002085	9502008/3/MBLE//LMNT/20001-5/4/CFX-18//…	4	85	42	9,580	4,502	14,082	66.2	71.8
103	1002103	CPRS//82CAY21/TBNT/3/CFX 29//…	5	81	42	9,773	4,080	13,853	62.9	69.9
088	1002088	9502008-A/DREW//CLR 20	4	81	46	9,879	3,501	13,380	63.1	70.4
099	1001099	RU0401067/IRAT 13//STG03F5-04-062	6	87	40	9,460	3,912	13,372	58.3	66.3
120	CL261	CL261	4	82	43	8,949	3,922	12,871	66.2	69.2
105	1001105	FRNS/5/LBNT/9902//NWBT/3/KATY/NWBT/4/LGRU	5	91	45	8,041	4,757	12,798	52.8	67.8
093	0801093	LBNT/9902/3/DAWN/9695//STBN/4/LGRU/5/WLLS/6/RU9201179	5	92	44	7,959	4,780	12,739	57.3	71.3
097	1002097	9502008/3/MBLE//LMNT/20001-5/4/WELLS/…	5	86	42	9,152	3,575	12,727	63.2	69.5
091	1002091	CPRS/KBNT//WELLS CFX 18	6	85	42	9,173	3,542	12,715	64.8	70.6
087	1001087	RU9201176/4/LBNT/STBN//NWBT/3/MILL/5/LGRU2/5/FRANCIS	5	91	43	8,742	3,903	12,645	56.5	68.6
083	1004083	CL161/PSCL	6	88	41	8,473	4,041	12,514	62.8	70.3
112	1002112	TACAURI/3/CPRS//82CAY21/TBNT/…	5	88	45	8,190	4,160	12,350	64.9	71.2
115	1002115	CPRS/KBNT//WELLS CFX 18	5	88	41	8,694	3,638	12,332	62.4	70.8
118	CL142 AR	CL142 AR	5	87	47	7,993	4265	12,258	54.1	68.2
106	1002106	CPRS/9502008-A//CFX 26/WELLS	5	89	42	8,696	3,559	12,255	63.7	70.5
086	0903086	SABR/CCDR	5	90	45	8,528	3,708	12,236	64.0	70.4
094	1002094	TACAURI/3/CPRS//82CAY21/TBNT/4/CFX 18	5	87	42	8,679	3,554	12,233	59.2	68.7
082	1002082	KATY/CPRS//NWBT/…/3/9502008/4/CLR 6	5	86	48	8,803	3,378	12,181	60.0	69.2
090	1001090	LBNT/9902/3/DAWN/9695//STBN/4/LGRU/5/WLLS/6/19981429	5	88	41	8,408	3,461	11,869	57.9	69.0
109	1002109	CPRS/9502008-A/3/CFX 29//AR 1142/LA 2031	5	89	43	8,013	3,736	11,749	63.9	70.5
102	1001102	RU0401084/IRAT 13//STG03F5-04-062	6	86	37	8,459	3,231	11,690	62.4	67.8
081	1001081	WLLS/ZHE733//19981434	5	87	42	7,941	3,673	11,614	66.1	70.7
110	1003110	JEFF/CPRS/CPRS	7	88	47	8,254	3,292	11,546	60.2	68.8
117	CCDR	COCODRIE	5	85	42	8,781	2,558	11,339	62.5	69.3
108	0801108	KATY/NWBT//L201/7402003/3/WLLS/4/FRNS	5	90	37	7,476	3,783	11,259	57.7	69.4
101	1003101	CF4-69/CCDR	6	89	46	7,683	3,438	11,121	67.1	72.1
114	1004114	CFX-18(CL 161)/0004054	6	91	40	7,342	3,734	11,076	57.7	69.5
095	0803178	LGRU/LSCN/CF4-85	6	93	45	7,682	3,374	11,056	63.0	69.8
107	1003107	CF4-69/CCDR	6	91	45	8,060	2,789	10,849	62.7	70.5
111	1001111	RU0401084/IRAT 13//M-401	5	89	37	7,561	3,260	10,821	60.6	65.4

Continued.

Table 5. Continued.

ENT	SOURCE	PEDIGREE	VIG[1]	HDT	HTE	YIELD	RATOON	TOTAL YIELD	WHOLE	TOTAL
104	1003104	CF4-69/CCDR	6	91	46	7,643	2,772	10,415	62.6	70.6
100	0904100	CFX-18(CL 161)/PSCL	7	90	39	6,779	3,508	10,287	61.2	69.8
098	1003098	CPRS/NWBT//KATY/3/CCDR	7	86	43	8,453	1,556	10,009	66.1	71.8
089	1003089	CPRS/CCDR	7	90	45	7,188	2,762	9,950	57.0	68.2
084	1001084	RU0401064/IRAT 13//STG03F5-04-062	6	89	29	6,529	3,354	9,883	62.0	68.6
116	1003116	CPRS/CCDR	7	93	42	6,442	2,913	9,355	62.8	71.1
096	1001096	STG02PR-02-067/STG02AC-15-002//RU0401084	5	76	33	6,003	3,149	9,152	66.3	69.8
119	M206	M206	5	71	37	6,761	2,323	9,084	64.2	66.6
113	1003113	CPRS/CCDR	7	90	45	6,502	2,394	8,896	56.8	68.9
092	1003092	CCDR/L202	8	88	43	6,991	1,636	8,627	62.2	70.1

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

Table 6. Grain and milling yields and agronomic performance of entries in the 2010 Uniform Regional Rice Nursery, Group 6, Rice Research Station, Crowley, La.

ENT	SOURCE	PEDIGREE	VIG[1]	HDT	HTE	YIELD	RATOON	TOTAL YIELD	WHOLE	TOTAL
121	0901121	RU9901133/DREW//RU0101093	5	89	40	9,327	4,384	13,711	64.1	70.7
160	TGRT	TAGGART	4	93	47	8,404	5,017	13,421	54.8	70.9
128	1002128	CCDR//9502008/LGRU	5	87	42	9,786	3,192	12,978	68.4	73.5
142	1001142	NWBT/3/LBNT/9902//LBLE/4/DREW/5/FRNS	5	89	47	8,440	4,472	12,912	62.1	70.5
157	1004157	CPRS//LGRU/PI568891	6	89	43	9,031	3,755	12,786	58.8	70.3
152	1002152	CPRS/KBNT//CFX 29/CCDR	4	86	43	8,238	4,376	12,614	68.8	73.6
143	1002143	TACAURI/3/CPRS//82CAY21/TBNT/4/CL 131	5	86	41	8,114	4,375	12,489	64.5	70.8
134	1002134	AC1075	5	83	39	9,351	3,115	12,466	65.4	71.5
137	1002137	KATY/CPRS//JKSN/3/AR 1188/CCDR/4/AC627	5	81	42	9,588	2,782	12,370	64.5	71.9
131	1002131	AC1403	4	84	42	8,533	3,535	12,068	68.9	73.0
127	1001127	RNS3/RU9101001	5	91	42	7,924	4,046	11,970	58.7	68.9
140	1002140	AC1075	5	83	40	8,985	2,972	11,957	65.9	71.8
150	0903150	(JEFF//JEFF/O. RUFIPOGON)43_1-2	7	91	40	8,744	3,167	11,911	64.0	73.6
155	1002155	CPRS//82CAY21/TBNT/3/CFX 29//…	5	82	41	9,067	2,818	11,885	66.0	72.5

Continued.

Table 6. Continued.

ENT	SOURCE	PEDIGREE	VIG[1]	HDT	HTE	YIELD	RATOON	TOTAL YIELD	WHOLE	TOTAL
146	1002146	NWBT/KATY//9902207x2/3/JSMN/DLLA//…	4	79	40	8,564	3,138	11,702	67.6	72.8
139	1001139	BASMATI-370/KATY/4/VSNTLM//L201/9NRZ/3/…	6	92	41	7,227	4,418	11,645	65.1	72.2
125	1002125	CCDR/3/CPRS/KBNT//9502008-A	5	85	43	8,922	2,710	11,632	63.8	72.6
145	1001145	CCDR/ZHE 733//IRGA 417	4	83	39	8,803	2,776	11,579	63.5	70.5
148	1001148	LBNT/9902/3/DAWN/9695//STBN/4/LGRU/5/WLLS/6/19981434	5	91	40	7,716	3,846	11,562	61.5	72.9
133	1001133	19991516/19981467	6	90	44	7,807	3,721	11,528	57.5	69.0
136	1001136	STG02PR-02-067/STG02AC-15-002//RU0401084	5	82	38	7,762	3,704	11,466	66.0	69.3
122	0904122	COLUMBIA2/BNGL	7	88	40	7,272	3,726	10,998	58.5	69.2
159	SABN	SABINE	6	91	42	7,732	3,220	10,952	66.3	72.5
156	0904156	CPRS/JKSN	6	89	44	8,505	2,391	10,896	64.8	71.1
130	1001130	UA99-25/UA99-140//STG03P-03-041	7	80	39	7,754	3,119	10,873	66.6	72.3
151	1001151	UA99-25/UA99-140//STG03P-03-041	6	77	36	8,206	2,645	10,851	67.6	72.8
126	1003126	LGRU/LSCN/CF4-85	6	91	44	8,171	2,586	10,757	64.5	70.8
124	1001124	STG02F5-07-067/STG02F5-04-034//STG03P-03-041	6	76	45	7,894	2,456	10,350	67.8	72.2
149	0802149	9502008//KATY/9902207X2/3/JSMN/…	4	87	38	7,001	3,308	10,309	70.4	73.2
154	0904154	GFMT/RXMT//IR36	7	89	38	6,476	3,650	10,126	62.5	71.2
158	JZMN	JAZZMAN	5	92	45	8,051	1,789	9,840	64.0	70.9
129	1003129	SABR/CCDR	7	94	43	6,735	2,838	9,573	61.8	70.2
147	0903147	CCDR/L202	7	85	43	7,464	2,084	9,548	67.4	73.4
144	0803144	CCDR/L202	7	87	43	7,592	1,907	9,499	67.4	73.5
135	1003135	CPRS/CCDR	6	88	40	7,153	2,316	9,469	66.2	71.9
138	0903138	CCDR/L202	7	88	43	7,289	1,972	9,261	61.7	70.6
153	1003153	CPRS/CCDR	7	89	41	7,115	2,068	9,183	64.0	70.4
141	1003141	CPRS/CCDR	7	93	44	6,163	2,292	8,455	59.6	68.9
132	1003132	CPRS/9901081	8	86	44	6,669	1,384	8,053	63.8	71.3
123	1003123	CPRS/CCDR	8	94	47	5,783	2,131	7,914	60.4	71.0

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

Table 7. Grain and milling yields and agronomic performance of entries in the 2010 Uniform Regional Rice Nursery, Group 7, Rice Research Station, Crowley, La.

ENT	SOURCE	PEDIGREE	VIG[1]	HDT	HTE	YIELD	RATOON	TOTAL YIELD	WHOLE	TOTAL
189	1002189	CPRS/KBNT//9502008-A/3/TRNS	5	82	46	9,959	3,596	13,555	65.1	71.5
195	1002195	TACAURI/3/CPRS//82CAY21/TBNT/4/WELLS/CFX-18	5	85	43	8,991	4,336	13,327	64.2	72.9
167	1001167	LGRU//LMNT/RA73/3/LGRU/4/WLLS/5/CYBT	5	89	42	8,417	4,857	13,274	58.6	70.5
168	1002168	MARS//M201/MARS/5/STRN//MERC/…	4	82	42	10,030	2,890	12,920	66.4	70.7
162	1002162	BNGL//MERC/RICO/3/EARL	5	85	39	9,284	3,611	12,895	65.9	71.4
200	FRNS	FRANCIS	5	88	44	8,937	3,860	12,797	57.5	70.6
170	1001170	CYBT/PI 560247//RU0301099	4	90	43	8,824	3,570	12,394	59.4	69.7
171	1002171	ORIN/3/MERC/CAM9/MARS/4/BNGL	4	82	38	8,374	3,897	12,271	70.3	72.7
199	RNDO	RONDO	7	96	44	8,983	3,285	12,268	57.4	69.2
182	0801182	FRNS/6/LBNT/9902/3/DAWN/9695//STBN/4/LGRU/5/DREW	5	93	44	8,476	3,729	12,205	60.4	70.8
176	0801176	FRNS/6/LBNT/9902/3/DAWN/9695//STBN/4/LGRU/5/DREW	4	95	42	8,180	4,012	12,192	63.9	72.0
187	0903187	Carolina Gold/IR64//IR65610-24-3-6-3-2-3	7	94	54	8,554	3,612	12,166	56.4	69.1
183	1002183	CPRS/3/9502008-A//AR 1188/CCDR	5	90	45	8,654	3,463	12,117	62.3	70.3
180	1002180	95020083CPRS//82CAY21/TBNT/4/CPRS//…	5	86	43	9,264	2,810	12,074	64.6	71.5
192	1002192	9502008/LGRU/3/CPRS//82CAY21/TBNT	5	86	44	9,372	2,664	12,036	63.4	71.3
161	1001161	GP13416/KATY//PI312777/3/DREW	5	95	48	7,459	4,543	12,002	63.6	70.0
196	0904196	RSMT//RXMT/IR36	6	87	38	7,648	4,304	11,952	61.3	69.9
174	1002174	TACAURI/3/CPRS//82CAY21/TBNT/4/MCR03-2771	5	89	38	7,864	4,055	11,919	65.0	72.5
191	0904191	RSMT/KATY	6	90	42	7,066	4,772	11,838	60.0	70.8
177	1002177	TRNS//9502008-A/DREW	5	83	42	7,640	3,932	11,572	66.6	71.7
173	1001173	CYBT/STG00F5-06-121	6	92	40	7,733	3,832	11,565	60.3	71.6
165	1002165	LFTE/4/KATY/CPRS/3/CPRS/LMNT/6/…	4	82	40	8,331	3,099	11,430	68.3	71.9
197	1004197	GFMT//NWBT/KATY	5	87	42	8,935	2,305	11,240	66.7	73.6
193	0904193	RSMT/KATY	6	93	42	6,721	4,497	11,218	58.2	70.4
184	1003184	CPRS/NWBT//KATY/3/CCDR	6	89	43	8,135	3,059	11,194	65.7	72.2
188	1001188	CYBT/SABER	6	90	44	8,086	3,031	11,117	67.5	73.4
179	1001179	STG00F5-07-007/LM 1//CYBT	6	93	38	7,060	3,615	10,675	66.0	71.1
178	1003178	CF4-69/CCDR	6	92	44	7,499	2,858	10,357	67.3	72.1

Continued.

Table 7. Continued.

ENT	SOURCE	PEDIGREE	VIG[1]	HDT	HTE	YIELD	RATOON	TOTAL YIELD	WHOLE	TOTAL
186	0904186	CFX-18(CL 161)/PSCL	6	90	45	7035	3297	10,332	63.2	70.5
172	0803172	CPRS/CCDR	5	89	40	7462	2834	10,296	66.3	72.3
175	0903175	CCDR/L202	5	88	42	7884	2411	10,295	65.7	72.3
194	0904194	RSMT/RXMT/IR36	6	91	43	6010	4121	10,131	58.9	71.2
166	1003166	CPRS/NWBT//KATY/3/CCDR	6	93	39	7141	2782	9,923	63.9	70.1
198	1004198	PCOS/LMNT//GFMT//LMNT*2/82CAY83	6	95	37	7355	2467	9,822	65.6	73.5
181	1003181	CCDR/L202	6	88	41	7047	2682	9,729	64.2	72.1
190	1003190	CCDR/L202	6	84	40	7864	1286	9,150	65.1	72.5
163	0903163	SABR/CCDR	7	94	48	6563	2579	9,142	59.3	68.1
185	1001185	BASMATI-370/KATY/4/VSNTLM//L201/9NRZ/3/…	6	97	36	4739	3936	8,675	48.8	67.2
164	1001164	STG02F5-07-067/STG02F5-04-034//STG03P-03-041	6	77	39	6496	2007	8,503	70.5	73.3
169	1003169	CCDR/L202	7	89	43	6171	1318	7,489	62.8	72.4

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

COMMERCIAL-ADVANCED YIELD TRIALS

The Commercial-Advanced yield 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 study is to evaluate the adaptation and stability of entries for several important characteristics. Data evaluated include grain yield, whole and total milling percentages, seedling vigor, maturity, plant height, lodging resistance, ratoon crop potential, and resistance to sheath blight, bacterial panicle blight, rotten neck blast, and narrow brown leaf spot diseases. Entries include commercial varieties, hybrids, and advanced experimental lines.

Test locations in 2010 included the Rice Research Station at Crowley (RRS) and three on-farm test sites in Acadia, Evangeline and Jefferson Davis parishes. Each location represents a different environment and allows researchers to evaluate entries with different planting dates, soil types, climatic conditions, management systems, disease pressure, and numerous other variables.

Standard agronomic procedures (except that no fungicides were applied) were used at each individual location. Sixty entries were tested in a randomized complete block design with three replications at all locations and plots were 4.66 x 16 ft. Varieties were drill seeded at 90 lb/A. Dr. Don Groth and the Rice Pathology Project provided the sheath blight, rotten neck blast, bacterial panicle blight, and narrow brown leaf spot disease ratings at some locations. The Rice Research Station location was also ratooned.

Planting dates were: RRS, March 13; Acadia, April 7; Evangeline, April 7; and Jefferson Davis, April 19. Harvest dates were: RRS, August 4-6 (ratoon, October 28); Acadia, August 9; Evangeline, August 13; and Jefferson Davis, August 24. Results from these tests are shown in Tables 2 to 5.

Table 1. Entry number, pedigree, grain type, and source information for entries in the Commercial-Advanced Trial, 2010.

Entry	Pedigree	Grain Type[†]	Source[‡]
201	CL131	L	LAES
202	CL161	L	LAES
203	CL151	L	LAES
204	CL261	M	LAES
205	CL111	L	LAES
206	CL142 (AR)	L	AAES
207	CL181 (AR)	L	AAES
208	CL162	L	MAFES
209	TRENASSE	L	LAES
210	BOWMAN	L	MAFES
211	COCODRIE	L	LAES
212	CHENIERE	L	LAES
214	WELLS	L	AAES
215	JUPITER	M	LAES
216	BENGAL	M	LAES
217	JAZZMAN	L(A)	LAES
218	DELLROSE	L(A)	LAES
219	CATAHOULA	L	LAES
220	NEPTUNE	M	LAES
221	REX	L	AAES
222	TEMPLETON (AR 1182)	L	AAES
223	TAGGART (AR 1188)	L	AAES
224	CPRS/9502008-A/3/CFX 29//AR 1142/LA 2031	L	LAES
225	9502008-A/DREW//CLR 20	L	LAES

Continued.

Table 1. Continued.

Entry	Pedigree	Grain Type†	Source‡
226	KATY/CPRS//NWBT/…/3/9502008/4/CLR 6	L	LAES
227	9502008/3/MBLE//LMNT/20001-5/4/CFX-18//…	L	LAES
228	9502008-A/DREW//CLR 20	L	LAES
229	AR 1188/CCDR//9502008/LGRU	L	LAES
230	TACAURI/3/CPRS//82CAY21/TBNT/4/CFX-18	L	LAES
231	BNGL/CL161	M	LAES
232	9502008/3/MBLE//LMNT/20001-5/4/CFX-18//…	L	LAES
233	9502008-A//AR1188/CCDR/3/…	L	LAES
234	CPRS/KBNT//WELLS CFX 18	L	LAES
235	TACAURI/3/CPRS//82CAY21/TBNT/4/CFX 18	L	LAES
236	9502008/3/MBLE//LMNT/20001-5/4/WELLS/…	L	LAES
237	FRANCIS/CLR 13	L	LAES
238	CPRS//82CAY21/TBNT/3/CFX 29//…	L	LAES
239	ROY J	L	AAES
240	CPRS/9502008-A/3/CFX 29//AR 1142/LA 2031	L	LAES
241	TACAURI/3/CPRS//82CAY21/TBNT/…	L	LAES
242	CPRS/KBNT//WELLS CFX 18	L	LAES
243	TACAURI/3/CPRS//82CAY21/TBNT/4/CL 131	L	LAES
244	CPRS/KBNT//CFX 29/CCDR	L	LAES
245	AC1075	L	LAES
246	AC1398	L	LAES
247	CPRS//L-205/DLLA	L	LAES
248	CCDR/AC1048	L	LAES
249	AC1399	L	LAES
250	CCDR/AC627	L	LAES
251	CCDR/3/CPRS/KBNT//9502008-A	L	LAES
252	CCDR//9502008/LGRU	L	LAES
253	AC1403	L	LAES
254	NWBT/KATY//9902207x2/3/JSMN/DLLA//…	L	LAES
255	9502008//KATY/9902207X2/3/JSMN/…	L	LAES
256	AC1075	L	LAES
257	KATY/CPRS//JKSN/3/AR 1188/CCDR/4/AC627	L	LAES
258	9502065/3/MERC//MERC/…	M	LAES
259	BNGL//MERC/RICO/3/MERC/RICO//BNGL	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, Ark.; 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, Miss.; TAES, USDA, Texas A&M Research and Education Center, Texas Agricultural Experiment Station, U.S. Department of Agriculture, Beaumont, Texas.

Table 2. Grain and milling yields and agronomic performance of entries in the 2010 Commercial-Advanced Yield Trial. Acadia Parish, La.

ENT	SOURCE	PEDIGREE	VIG[1]	HDT	HTE	YIELD	WHOLE	TOTAL
229	RU 0702085	AR 1188/CCDR//9502008/LGRU	5	67	38	8,253	59.1	69.9
206	CL142	CL142	3	66	45	8,027	51.7	70.2
257	RU 1002137	KATY/CPRS//JKSN/3/AR 1188/CCDR/4/AC627	3	64	39	7,885	63.2	71.0
245	RU 1002140	AC1075	4	64	36	7,849	64.1	70.7
203	CL151	CL151	4	68	41	7,774	59.7	71.7
256	RU 1002134	AC1075	5	64	36	7,655	60.8	70.2
223	TRGT	TAGGART	4	70	42	7,501	48.9	69.2
250	RU 1002034	CCDR/AC627	5	65	36	7,495	61.1	70.8
249	RU 1002031	AC1399	4	68	40	7,468	63.9	71.6
251	RU 1002125	CCDR/3/CPRS/KBNT//9502008-A	5	67	39	7,326	63.7	71.5
211	CCDR	COCODRIE	4	66	39	7,292	60.7	72.0
219	CTHL	CATAHOULA	5	69	40	7,282	57.2	71.9
252	RU 1002128	CCDR//9502008/LGRU	5	67	37	7,208	61.3	70.8
240	RU 1002109	CPRS/9502008-A/3/CFX 29//AR 1142/LA 2031	3	70	39	7,118	65.5	72.0
216	BNGL	BENGAL	4	70	37	7,115	62.9	70.0
224	RU 1002011	CPRS/9502008-A/3/CFX 29//AR 1142/LA 2031	4	69	36	7,020	61.7	72.3
228	RU 1002088	9502008-A/DREW//CLR 20	4	66	41	7,001	64.2	70.3
253	RU 1002131	AC1403	3	66	37	6,912	65.2	70.9
248	RU 1002028	CCDR/AC1048	4	64	36	6,879	61.2	70.2
231	RU 0902082	BNGL/CL161	3	74	40	6,812	64.5	70.3
258	RU 0702068	9502065/3/MERC//MERC/…	4	67	37	6,795	59.2	69.3
212	CHNR	CHENIERE	5	68	38	6,791	62.2	71.4
204	CL 261	CL261	3	68	39	6,766	63.5	68.8
221	REX	REX	6	69	40	6,755	58.6	70.1
208	CL MS	CL162	5	64	41	6,702	61.8	70.3
209	TRNS	TRENASSE	5	64	38	6,693	65.3	70.1
260	RU 0902162	BNGL//MERC/RICO/3/MERC/RICO//BNGL	4	73	31	6,680	53.0	66.5
237	RU 0902103	FRANCIS/CLR 13	4	69	36	6,646	60.4	71.2
247	RU 0802140	CPRS//L-205/DLLA	5	70	40	6,600	57.2	67.8
205	CL111	CL111	3	63	44	6,592	64.4	71.8
235	RU 1002094	TACAURI/3/CPRS//82CAY21/TBNT/4/CFX 18	5	69	37	6,559	55.7	69.0
246	RU 0802022	AC1398	4	69	39	6,481	55.6	68.1
254	RU 1002146	NWBT/KATY//9902207x2/3/JSMN/DLLA//…	4	60	36	6,426	64.1	71.0
232	RU 0902085	9502008/3/MBLE//LMNT/20001-5/4/CFX-18//…	3	66	41	6,425	61.6	71.6
233	RU 0902088	9502008-A//AR1188/CCDR/3/…	4	68	40	6,413	61.8	70.8
222	TMTL	TEMPLETON	4	73	41	6,397	60.7	72.2
242	RU 1002115	CPRS/KBNT//WELLS CFX 18	5	69	35	6,345	61.6	71.0
214	WELLS	WELLS	4	69	41	6,308	50.7	69.2

Continued.

Table 2. Continued.

ENT	SOURCE	PEDIGREE	VIG[1]	HDT	HTE	YIELD	WHOLE	TOTAL
215	JPTR	JUPITER	5	74	37	6,303	63.5	68.1
241	RU 1002112	TACAURI/3/CPRS//82CAY21/TBNT/…	4	70	38	6,302	63.3	70.9
225	RU 0902005	9502008-A/DREW//CLR 20	5	66	38	6,266	63.9	70.9
226	RU 1002082	KATY/CPRS//NWBT/…/3/9502008/4/CLR 6	4	70	39	6,243	57.1	69.2
259	RU 0702162	BNGL//MERC/RICO/3/MERC/RICO//BNGL	4	74	35	6,149	60.0	68.1
227	RU 1002085	9502008/3/MBLE//LMNT/20001-5/4/CFX-18//…	4	69	37	6,016	60.6	71.2
234	RU 1002091	CPRS/KBNT//WELLS CFX 18	4	69	35	6,003	65.6	72.7
230	RU 0802051	TACAURI/3/CPRS//82CAY21/TBNT/4/CFX-18	5	69	38	5,874	57.5	68.3
244	RU 1002152	CPRS/KBNT//CFX 29/CCDR	4	69	39	5,825	61.6	70.7
238	RU 1002103	CPRS//82CAY21/TBNT/3/CFX 29//…	5	65	37	5,753	65.0	71.3
210	BWMN	BOWMAN	5	70	39	5,543	51.2	68.1
202	CL161	CL161	4	73	41	5,531	62.5	71.9
220	NPTN	NEPTUNE	4	73	34	5,508	57.1	65.2
201	CL131	CL131	4	68	37	5,493	63.1	71.4
243	RU 1002143	TACAURI/3/CPRS//82CAY21/TBNT/4/CL 131	5	68	35	5,461	59.8	70.6
236	RU 1002097	9502008/3/MBLE//LMNT/20001-5/4/WELLS/…	5	70	38	5,415	59.1	69.1
218	DLRS	DELLROSE	6	70	36	5,314	59.6	71.1
207	CL181	CL181	5	70	33	5,251	56.2	69.7
217	JZMN	JAZZMAN	5	71	35	5,073	57.8	67.9
255	RU 0802149	9502008//KATY/9902207X2/3/JSMN/…	4	67	32	4,843	65.0	70.8
239	ROY J	ROY J	4	79	41	4,297	52.5	70.1

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

Table 3. Grain and milling yields and agronomic performance of entries in the 2010 Commercial-Advanced Yield Trial. Evangeline Parish, LA.

ENT	SOURCE	PEDIGREE	VIG[1]	HDT	HTE	YIELD
223	TRGT	TAGGART	5	84	44	8,475
239	ROY J	ROY J	5	88	41	8,374
252	RU 1002128	CCDR//9502008/LGRU	5	77	37	8,125
232	RU 0902085	9502008/3/MBLE//LMNT/20001-5/4/CFX-18//…	3	78	37	8,109
203	CL 151	CL 151	4	78	40	8,099
237	RU 0902103	FRANCIS/CLR 13	5	79	36	8,055
257	RU 1002137	KATY/CPRS//JKSN/3/AR 1188/CCDR/4/AC627	4	75	38	7,962
209	TRNS	TRENASSE	6	73	37	7,961
260	RU 0902162	BNGL//MERC/RICO/3/MERC/RICO//BNGL	5	83	32	7,811
241	RU 1002112	TACAURI/3/CPRS//82CAY21/TBNT/…	5	82	37	7,790
205	CL111	CL111	4	75	40	7,710
229	RU 0702085	AR 1188/CCDR//9502008/LGRU	6	79	37	7,684
216	BNGL	BENGAL	6	80	34	7,644
225	RU 0902005	9502008-A/DREW//CLR 20	5	77	38	7,598
236	RU 1002097	9502008/3/MBLE//LMNT/20001-5/4/WELLS/…	4	81	36	7,594
230	RU 0802051	TACAURI/3/CPRS//82CAY21/TBNT/4/CFX-18	4	82	39	7,585
231	RU 0902082	BNGL/CL 161	4	81	38	7,486
233	RU 0902088	9502008-A//AR1188/CCDR/3/…	4	78	38	7,472
224	RU 1002011	CPRS/9502008-A/3/CFX 29//AR 1142/LA 2031	4	80	39	7,442
204	CL 261	CL 261	4	77	39	7,407
228	RU 1002088	9502008-A/DREW//CLR 20	4	78	39	7,397
219	CTHL	CATAHOULA	6	78	38	7,387
221	REX	REX	6	79	38	7,374
238	RU 1002103	CPRS//82CAY21/TBNT/3/CFX 29//…	5	75	36	7,338
212	CHNR	CHENIERE	6	79	35	7,186
258	RU 0702068	9502065/3/MERC//MERC/…	6	80	34	7,171
248	RU 1002028	CCDR/AC1048	4	76	36	7,136
208	CL MS	CL162	5	79	39	7,102
235	RU 1002094	TACAURI/3/CPRS//82CAY21/TBNT/4/CFX 18	5	82	37	7,089
234	RU 1002091	CPRS/KBNT//WELLS CFX 18	4	78	36	7,071
222	TMTL	TEMPLETON	4	82	39	7,032
211	CCDR	COCODRIE	6	77	36	6,957
259	RU 0702162	BNGL//MERC/RICO/3/MERC/RICO//BNGL	6	84	35	6,951
206	CL142	CL142	4	81	44	6,945
214	WELLS	WELLS	5	85	40	6,907

Continued.

Table 3. Continued.

ENT	SOURCE	PEDIGREE	VIG[1]	HDT	HTE	YIELD
244	RU 1002152	CPRS/KBNT//CFX 29/CCDR	4	79	35	6,883
210	BWMN	BOWMAN	5	85	38	6,790
242	RU 1002115	CPRS/KBNT//WELLS CFX 18	6	79	33	6,706
215	JPTR	JUPITER	7	85	34	6,675
202	CL161	CL161	4	82	35	6,671
253	RU 1002131	AC1403	3	79	38	6,596
217	JZMN	JAZZMAN	6	87	40	6,581
245	RU 1002140	AC1075	4	77	35	6,534
201	CL131	CL131	4	80	31	6,523
249	RU 1002031	AC1399	4	78	40	6,504
256	RU 1002134	AC1075	4	77	34	6,496
226	RU 1002082	KATY/CPRS//NWBT/…/3/9502008/4/CLR 6	4	81	41	6,464
243	RU 1002143	TACAURI/3/CPRS//82CAY21/TBNT/4/CL 131	4	81	33	6,462
227	RU 1002085	9502008/3/MBLE//LMNT/20001-5/4/CFX-18//…	4	80	37	6,408
251	RU 1002125	CCDR/3/CPRS/KBNT//9502008-A	6	76	37	6,399
220	NPTN	NEPTUNE	6	87	33	6,385
207	CL181	CL181	4	85	34	6,368
240	RU 1002109	CPRS/9502008-A/3/CFX 29//AR 1142/LA 2031	5	84	36	6,055
247	RU 0802140	CPRS//L-205/DLLA	7	88	39	6,035
254	RU 1002146	NWBT/KATY//9902207x2/3/JSMN/DLLA//…	6	74	34	6,009
246	RU 0802022	AC1398	5	80	38	5,886
218	DLRS	DELLROSE	7	82	37	5,850
255	RU 0802149	9502008//KATY/9902207X2/3/JSMN/…	6	79	33	5,755
250	RU 1002034	CCDR/AC627	5	79	34	5,377

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

Table 4. Grain and milling yields and agronomic performance of entries in the 2010 Commercial-Advanced Yield Trial. Jefferson Davis Parish, La.

ENT	SOURCE	PEDIGREE	VIG[1]	HDT	HTE	YIELD	WHOLE	TOTAL
216	BNGL	BENGAL	4	80	38	6,295	54.5	65.5
223	TRGT	TAGGART	5	16	46	6,286	38.5	64.0
239	ROY J	ROY J	5	23	41	6,126	43.8	60.5
259	RU 0702162	BNGL//MERC/RICO/3/MERC/RICO//BNGL	5	79	36	5,920	48.5	64.5
220	NPTN	NEPTUNE	5	80	35	5,910	48.0	61.1
229	RU 0702085	AR 1188/CCDR//9502008/LGRU	5	78	37	5,724	51.4	65.4
252	RU 1002128	CCDR//9502008/LGRU	6	77	36	5,624	52.4	64.9
260	RU 0902162	BNGL//MERC/RICO/3/MERC/RICO//BNGL	5	79	36	5,597	46.1	59.8
204	CL 261	CL 261	3	78	37	5,368	57.4	65.3
210	BWMN	BOWMAN	5	16	38	5,347	47.5	65.8
242	RU 1002115	CPRS/KBNT//WELLS CFX 18	5	79	37	5,286	55.7	66.2
221	REX	REX	5	81	40	5,262	50.1	66.1
215	JPTR	JUPITER	5	79	36	5,044	59.2	66.7
218	DLRS	DELLROSE	6	79	40	4,993	56.3	67.5
258	RU 0702068	9502065/3/MERC//MERC/…	4	77	38	4,964	47.7	63.4
217	JZMN	JAZZMAN	5	80	40	4,916	52.1	61.0
214	WELLS	WELLS	5	81	40	4,890	34.6	58.4
219	CTHL	CATAHOULA	4	79	38	4,857	53.0	66.7
222	TMTL	TEMPLETON	5	82	40	4,783	48.1	64.3
208	CL MS	CL162	5	80	40	4,705	43.0	62.4
250	RU 1002034	CCDR/AC627	5	76	34	4,685	55.0	67.6
245	RU 1002140	AC1075	4	74	36	4,663	48.0	63.8
203	CL 151	CL 151	4	79	37	4,659	51.5	64.9
235	RU 1002094	TACAURI/3/CPRS//82CAY21/TBNT/4/CFX 18	5	81	37	4,565	45.4	64.4
251	RU 1002125	CCDR/3/CPRS/KBNT//9502008-A	6	76	37	4,543	52.0	65.2
211	CCDR	COCODRIE	5	77	36	4,528	50.9	65.1
206	CL142	CL142	4	81	44	4,527	35.8	57.8
230	RU 0802051	TACAURI/3/CPRS//82CAY21/TBNT/4/CFX-18	4	81	39	4,525	45.3	62.1
231	RU 0902082	BNGL/CL 161	3	80	39	4,455	55.8	63.7
226	RU 1002082	KATY/CPRS//NWBT/…/3/9502008/4/CLR 6	3	80	42	4,424	41.4	61.1
249	RU 1002031	AC1399	3	80	37	4,378	41.5	61.6
246	RU 0802022	AC1398	4	80	37	4,366	45.9	62.0
241	RU 1002112	TACAURI/3/CPRS//82CAY21/TBNT/…	5	81	39	4,288	47.6	63.8
244	RU 1002152	CPRS/KBNT//CFX 29/CCDR	4	80	39	4,247	45.9	62.4

Continued.

Table 4. Continued.

ENT	SOURCE	PEDIGREE	VIG[1]	HDT	HTE	YIELD	WHOLE	TOTAL
256	RU 1002134	AC1075	4	78	34	4,247	48.9	65.4
247	RU 0802140	CPRS//L-205/DLLA	5	80	39	4,244	43.2	62.0
209	TRNS	TRENASSE	5	72	36	4,233	45.2	63.2
240	RU 1002109	CPRS/9502008-A/3/CFX 29//AR 1142/LA 2031	5	79	38	4,227	48.3	61.5
237	RU 0902103	FRANCIS/CLR 13	4	78	35	4,193	43.3	64.6
253	RU 1002131	AC1403	4	79	33	4,191	57.5	67.3
224	RU 1002011	CPRS/9502008-A/3/CFX 29//AR 1142/LA 2031	3	79	37	4,168	45.3	62.8
234	RU 1002091	CPRS/KBNT//WELLS CFX 18	4	79	36	4,073	50.5	65.4
205	CL111	CL111	3	75	38	4,035	52.7	66.1
257	RU 1002137	KATY/CPRS//JKSN/3/AR 1188/CCDR/4/AC627	4	72	35	4,001	54.1	67.3
202	CL 161	CL 161	4	80	38	3,970	41.7	60.2
228	RU 1002088	9502008-A/DREW//CLR 20	3	77	38	3,904	54.7	65.6
227	RU 1002085	9502008/3/MBLE//LMNT/20001-5/4/CFX-18//…	3	80	37	3,895	43.7	62.7
243	RU 1002143	TACAURI/3/CPRS//82CAY21/TBNT/4/CL 131	4	79	37	3,785	42.8	62.3
233	RU 0902088	9502008-A//AR1188/CCDR/3/…	4	77	37	3,716	47.5	62.7
255	RU 0802149	9502008//KATY/9902207X2/3/JSMN/…	5	78	33	3,611	48.1	63.4
207	CL181	CL181	5	81	36	3,596	34.2	56.7
236	RU 1002097	9502008/3/MBLE//LMNT/20001-5/4/WELLS/…	4	81	37	3,576	39.6	57.3
212	CHNR	CHENIERE	5	79	37	3,443	48.5	68.2
201	CL 131	CL 131	4	79	33	3,435	49.0	64.2
254	RU 1002146	NWBT/KATY//9902207x2/3/JSMN/DLLA//…	5	73	32	3,408	55.0	67.9
248	RU 1002028	CCDR/AC1048	4	72	36	3,383	53.5	66.6
238	RU 1002103	CPRS//82CAY21/TBNT/3/CFX 29//…	5	76	33	3,367	41.9	59.9
225	RU 0902005	9502008-A/DREW//CLR 20	4	76	36	3,161	51.7	65.5
232	RU 0902085	9502008/3/MBLE//LMNT/20001-5/4/CFX-18//…	3	78	35	2,743	43.3	62.9

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

Table 5. Grain and milling yields and agronomic performance of entries in the 2010 Commercial-Advanced Yield Trial. Rice Research Station, Crowley, La.

ENT	SOURCE	PEDIGREE	VIG[1]	HDT	HTE	YIELD	RATOON	TOTAL YIELD	WHOLE	TOTAL
210	BWMN	BOWMAN	3	87	41	8,092	4,953	13,045	60.5	69.3
231	RU 0902082	BNGL/CL161	5	84	44	8,963	3,720	12,683	67.5	70.9
260	RU 0902162	BNGL//MERC/RICO/3/MERC/RICO//BNGL	5	88	36	8,687	3,993	12,681	64.9	68.9
220	NPTN	NEPTUNE	5	89	36	7,970	4,469	12,440	63.0	65.9
239	ROY J	ROY J	5	97	46	7,295	5,129	12,424	50.6	65.8
219	CTHL	CATAHOULA	5	89	43	9,394	2,959	12,353	61.1	70.1
224	RU 1002011	CPRS/9502008-A/3/CFX 29//AR 1142/LA 2031	4	86	44	8,873	3,390	12,263	61.0	69.0
221	REX	REX	5	91	43	7,815	4,443	12,258	56.2	66.3
238	RU 1002103	CPRS//82CAY21/TBNT/3/CFX 29//…	6	83	41	8,854	3,328	12,182	62.4	69.6
225	RU 0902005	9502008-A/DREW//CLR 20	5	85	42	8,761	3,387	12,147	60.9	69.4
257	RU 1002137	KATY/CPRS//JKSN/3/AR 1188/CCDR/4/AC627	4	80	41	9,583	2,545	12,128	61.0	70.4
240	RU 1002109	CPRS/9502008-A/3/CFX 29//AR 1142/LA 2031	5	90	42	8,415	3,705	12,119	64.6	71.5
241	RU 1002112	TACAURI/3/CPRS//82CAY21/TBNT/…	5	86	42	8,531	3,562	12,092	60.4	68.4
235	RU 1002094	TACAURI/3/CPRS//82CAY21/TBNT/4/CFX 18	5	87	42	8,614	3,478	12,092	58.2	68.5
215	JPTR	JUPITER	5	87	39	8,487	3,596	12,083	59.4	63.4
223	TRGT	TAGGART	4	93	49	7,716	4,352	12,068	51.3	67.9
206	CL142	CL142	4	89	48	6,977	5,027	12,005	52.7	66.8
227	RU 1002085	9502008/3/MBLE//LMNT/20001-5/4/CFX-18//…	5	88	42	7,955	3,968	11,923	62.4	69.9
259	RU 0702162	BNGL//MERC/RICO/3/MERC/RICO//BNGL	5	88	37	7,865	4,058	11,923	63.2	68.2
236	RU 1002097	9502008/3/MBLE//LMNT/20001-5/4/WELLS/…	5	89	42	8,452	3,344	11,796	60.7	68.4
256	RU 1002134	AC1075	5	83	39	8,696	3,069	11,766	61.5	69.8
233	RU 0902088	9502008-A//AR1188/CCDR/3/…	5	85	45	9,246	2,485	11,731	60.4	68.9
214	WELLS	WELLS	4	95	44	7,151	4,562	11,713	44.5	64.5
205	CL111	CL111	4	82	44	8,768	2,931	11,699	62.9	70.6
228	RU 1002088	9502008-A/DREW//CLR 20	5	85	46	8,572	3,049	11,621	62.3	69.8
237	RU 0902103	FRANCIS/CLR 13	6	87	41	8,249	3,309	11,558	60.4	69.6
245	RU 1002140	AC1075	5	83	40	8,369	3,172	11,542	63.7	70.5
250	RU 1002034	CCDR/AC627	5	83	38	8,710	2,734	11,444	60.2	69.8
222	TMTL	TEMPLETON	4	93	46	6,928	4,430	11,358	60.2	69.0
226	RU 1002082	KATY/CPRS//NWBT/…/3/9502008/4/CLR 6	5	88	47	8,576	2,769	11,345	61.9	71.0

Continued.

Table 5. Continued.

ENT	SOURCE	PEDIGREE	VIG[1]	HDT	HTE	YIELD	RATOON	TOTAL YIELD	WHOLE	TOTAL
203	CL151	CL151	5	85	46	8,907	2,432	11,339	58.6	68.0
218	DLRS	DELLROSE	5	86	43	7,552	3,743	11,295	62.5	70.3
234	RU 1002091	CPRS/KBNT//WELLS CFX 18	6	85	42	8,278	3,012	11,291	64.6	70.6
249	RU 1002031	AC1399	5	86	44	8,335	2,935	11,270	59.3	69.3
212	CHNR	CHENIERE	5	88	42	8,871	2,227	11,098	61.9	70.2
243	RU 1002143	TACAURI/3/CPRS//82CAY21/TBNT/4/CL131	5	88	40	7,238	3,820	11,059	64.9	70.8
232	RU 0902085	9502008/3/MBLE//LMNT/20001-5/4/CFX-18//…	5	85	44	8,682	2,359	11,041	60.8	68.9
242	RU 1002115	CPRS/KBNT//WELLS CFX 18	6	85	41	7,855	3,120	10,976	58.7	69.6
252	RU 1002128	CCDR//9502008/LGRU	5	89	42	8,485	2,480	10,965	62.5	69.8
209	TRNS	TRENASSE	5	83	42	7,541	3,413	10,954	57.4	67.0
204	CL261	CL261	4	82	44	7,076	3,749	10,825	62.6	70.2
246	RU 0802022	AC1398	5	59	42	7,655	3,167	10,822	61.5	68.7
251	RU 1002125	CCDR/3/CPRS/KBNT//9502008-A	5	87	44	8,494	2,285	10,779	59.3	68.9
258	RU 0702068	9502065/3/MERC//MERC/…	5	83	40	8,189	2,583	10,772	64.2	68.7
247	RU 0802140	CPRS//L-205/DLLA	5	90	42	6,670	4,038	10,708	57.0	67.0
208	CL MS	CL162	6	85	47	7,128	3,552	10,680	58.0	69.1
216	BNGL	BENGAL	5	87	37	7,472	3,123	10,595	65.4	69.5
244	RU 1002152	CPRS/KBNT//CFX 29/CCDR	5	88	40	6,755	3,668	10,423	61.2	69.0
230	RU 0802051	TACAURI/3/CPRS//82CAY21/TBNT/4/CFX-18	5	92	43	6,693	3,703	10,397	60.5	69.6
211	CCDR	COCODRIE	5	86	41	8,045	2,332	10,377	59.4	69.2
201	CL131	CL131	5	85	39	7,559	2,801	10,360	63.9	70.1
248	RU 1002028	CCDR/AC1048	5	82	43	7,507	2,853	10,360	61.7	70.0
229	RU 0702085	AR 1188/CCDR//9502008/LGRU	5	88	43	7,712	2,607	10,319	57.7	67.7
202	CL161	CL161	5	90	43	7,373	2,890	10,263	60.6	68.0
253	RU 1002131	AC1403	5	85	44	7,194	2,790	9,984	65.3	70.7
254	RU 1002146	NWBT/KATY//9902207x2/3/JSMN/DLLA//…	4	82	41	7,365	2,531	9,896	65.3	71.3
207	CL181	CL181	5	91	39	6,612	3,065	9,677	57.4	66.8
217	JZMN	JAZZMAN	4	93	44	7,488	1,770	9,258	61.5	69.8
255	RU 0802149	9502008//KATY/9902207X2/3/JSMN/…	5	87	38	6,531	2,701	9,232	66.3	69.5

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

PRELIMINARY YIELD TRIALS

The preliminary yield trials consist primarily of promising breeding nursery material that is ready to be tested in replicated (PY) or non-replicated (SP) 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 and ratoon crops, whole and total milling percentages, and disease resistance.

These tests were conducted using standard agronomic practices (except that no fungicide was applied) at the Rice Research Station in Crowley, La. A randomized complete block design was used for the replicated PY trials, and a completely randomized design was used for the non-replicated SP trials to arrange the test entries. Plots were 4.66 x 16 ft, and two replications were used in the PY trials only. Varieties were drill seeded at 90 lb/A on March 10 and harvested August 9-11. These tests were also ratooned and harvested on October 29. These data are presented in Tables 1 to 6.

Table 1. Grain and milling yields and agronomic performance of entries in the 2010 Preliminary Yield Trial, Group 1. Crowley, La.

ENT	PEDIGREE	VIG[1]	HDT	HTE	YIELD	RATOON	TOTAL YIELD	WHOLE	TOTAL
505	TRNS//CCDR/JEFF	5	85	42	10,070	3,321	13,391	58.8	69.0
522	9502008-A//AR 1188/CCDR/4/TACAURI/3/…	5	89	44	8,648	3,942	12,590	54.9	65.4
515	CHNR/3/9502008-A//AR 1188/CCDR	5	87	43	9,369	3,184	12,553	58.5	69.4
501	AR 1121/3/CPRS//82CAY21/TBNT/4/TACAURI//…	5	86	38	8,756	3,558	12,314	60.7	69.5
520	9502008-A//AR 1188/CCDR/3/CCDR/JEFF	5	85	45	9,573	2,367	11,940	58.2	67.0
504	MBLE/3/CPRS/KBNT//9502008-A	5	87	50	8,642	3,296	11,938	58.9	67.7
519	9502008-A/DREW//9502008-A/DREW	5	86	46	9,504	2,406	11,910	61.1	69.9
508	CPRS/4/TACAURI/3/CPRS//82CAY21/TBNT	5	87	45	8,329	3,531	11,860	61.6	70.1
507	CCDR//CCDR/9770532 DH2	5	84	46	9,364	2,229	11,593	63.1	70.6
514	CCDR/JEFF//9502008-A/DREW	5	85	44	9,182	2,400	11,582	58.7	70.2
502	TACAURI//CPRS/82CAY21/TBNT/3/MBLE//TQNG/…	6	88	43	7,478	3,917	11,395	61.3	67.1
518	9502008-A/DREW//9502008-A/DREW	5	87	43	8,049	3,202	11,251	61.1	69.0
503	SABER/KBNT	5	85	40	8,251	2,946	11,197	57.0	66.7
513	CCDR/4/CPRS/3/MBLE//LMNT/…/5/CCDR	5	85	47	8,985	2,120	11,105	60.4	69.6
509	CPRS//CCDR/JEFF	5	87	44	8,408	2,570	10,978	60.9	68.6
521	9502008-A//AR 1188/CCDR/3/CCDR/JEFF	5	85	44	8,796	2,163	10,959	57.1	66.7
511	CPRS//9502008-A/DREW	5	84	46	8,349	2,509	10,858	56.3	65.6
517	CHNR/3/9502008-A//AR 1142/MBLE	5	91	43	7,572	3,145	10,717	60.3	68.5
506	TRNS//CCDR/JEFF	6	87	42	7,638	3,024	10,662	54.7	65.9
512	CPRS/3/9502008-A//AR 1188/CCDR	4	87	47	7,863	2,614	10,477	58.5	66.7
523	9502008-A//AR 1188/CCDR/4/TACAURI/3/…	5	88	43	6,968	3,274	10,242	59.1	68.0
510	CPRS//9502008-A/DREW	5	87	47	8,533	1,583	10,116	56.8	66.7
525	CL151	5	85	46	8,157	1,412	9,569	60.0	68.8
524	9502008//KATY/902207x2/3/CCDR	5	86	45	7,309	2,186	9,495	57.1	66.1
516	CHNR/9302065	6	88	42	6,677	2,460	9,137	61.3	69.5

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

Table 2. Grain and milling yields and agronomic performance of entries in the 2010 Preliminary Yield Trial, Group 2. Crowley, La.

ENT	PEDIGREE	VIG[1]	HDT	HTE	YIELD	RATOON	TOTAL YIELD	WHOLE	TOTAL
549	TRNS//CCDR/9502008-A	5	82	46	9,549	4,304	13,853	60.9	69.9
540	AC110DH2/AC108DH2//9502008-A/DREW	5	88	45	9,087	3,848	12,935	59.8	69.6
538	AC110DH2/AC108DH2//CCDR/JEFF	5	89	44	8,988	3,804	12,792	57.9	70.3
529	9502008-A/DREW/4/TACAURI/3/CPRS//…	6	90	45	8,627	3,408	12,035	52.9	64.4
541	AC110DH2/AC108DH2/4/KATY/CPRS//JKSN/3/…	5	88	43	9,146	2,835	11,981	57.4	67.0
528	9502008-A/DREW//LMNT	5	90	44	8,351	3,377	11,728	51.9	63.3
532	9502008-A//AR 1142/MBLE/3/CCDR/JEFF	5	87	41	8,986	2,717	11,703	57.5	67.3
533	9502008-A//AR 1142/MBLE/3/CCDR/JEFF	5	86	41	8,823	2,716	11,539	55.0	66.4
531	9502008-A/DREW/3/9502008-A//AR 1188/CCDR	5	88	44	8,752	2,753	11,505	57.6	67.6
530	9502008-A/DREW/4/TACAURI/3/CPRS//…	5	87	41	7,805	3,680	11,485	60.8	69.9
542	9502008-A//AR 1188/CCDR/3/9502008-A//...	5	87	44	8,971	2,484	11,455	57.7	67.3
545	9502008-A//AR 1188/CCDR/3/CCDR	5	88	44	8,995	2,359	11,354	57.2	66.5
543	9502008-A//AR 1188/CCDR/3/9502008-A//...	6	88	45	8,853	2,364	11,217	58.3	69.3
539	AC110DH2/AC108DH2//CHNR	6	92	44	8,720	2,453	11,173	53.5	66.3
527	9502008//KATY/902207x2/3/MBLE//TQNG/MBLE	5	88	42	8,904	2,208	11,112	57.1	66.8
547	CCDR/JEFF//9502008-A/DREW	5	88	44	8,656	2,451	11,107	56.8	67.4
546	CCDR/JEFF//CHNR	5	91	41	8,323	2,649	10,972	57.9	66.8
534	DREW/CCDR//CCDR	5	87	44	8,950	1,981	10,931	58.1	67.1
536	DREW/CCDR//9502008-A/DREW	6	90	45	7,885	3,005	10,890	60.0	67.3
526	9502008//KATY/902207x2/3/9502008-A/DREW	6	91	45	8,118	2,747	10,865	58.2	66.7
535	DREW/CCDR//CCDR/JEFF	6	94	41	7,300	3,463	10,763	57.1	66.8
548	CCDR/JEFF//CCDR	5	88	45	8,363	2,388	10,751	56.6	64.8
550	CL111	5	86	47	7,499	3,169	10,668	56.8	65.8
544	9502008-A//AR 1188/CCDR/4/KATY/CPRS//…	6	87	44	8,114	2,038	10,152	54.0	65.1
537	DREW/CCDR/3/9502008-A//AR 1188/CCDR	7	93	42	6,869	2,135	9,004	52.2	63.6

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

Table 3. Grain and milling yields and agronomic performance of entries in the 2010 Preliminary Yield Trial, Group 3. Crowley, La.

ENT	PEDIGREE	VIG[1]	HDT	HTE	YIELD	RATOON	TOTAL YIELD	WHOLE	TOTAL
561	CPRS/KBNT//9502008-A/3/CCDR/JEFF	5	87	46	8,861	4,425	13,286	60.2	70.5
566	CCDR/9502008-A/3/CPRS/KBNT//9502008-A	5	87	43	9,085	3,779	12,864	58.0	69.6
558	CPRS/KBNT//9502008-A/3/9502008-A//AR 1188/CCDR	5	88	45	9,354	3,432	12,786	57.3	67.9
560	CPRS/KBNT//9502008-A/3/CCDR/JEFF	5	87	43	8,803	3,956	12,759	57.3	68.3
552	TRNS//CCDR/9502008-A	5	83	45	8,652	4,088	12,740	59.9	70.5
551	TRNS//CCDR/9502008-A	5	82	46	8,777	3,832	12,609	58.8	67.0
553	TRNS//CCDR/9502008-A	5	84	45	8,326	3,877	12,203	57.0	68.9
574	9502008-A/DREW/3/9502008-A//AR 1188/CCDR	5	87	45	8,377	3,666	12,043	57.6	68.9
568	CCDR/9502008-A/3/9502008-A//AR 1188/CCDR	5	85	46	9,183	2,742	11,925	57.2	68.6
555	CCDR/3/CPRS/KBNT//9502008-A	5	86	46	8,914	2,761	11,675	59.9	69.8
570	9502008-A//AR 1188/CCDR/3/CCDR/JEFF	5	87	45	8,783	2,847	11,630	56.6	67.7
565	CCDR/9502008-A//TRNS	5	85	42	7,290	4,305	11,595	64.1	71.1
571	9502008-A//AR 1188/CCDR/3/9502008-A/AR 1188/…	5	84	45	8,756	2,581	11,337	59.0	68.9
554	CCDR/CHENIERE	5	86	46	8,463	2,827	11,290	57.6	68.0
573	9502008-A//AR 1188/CCDR/3/CCDR/9502008-A	5	86	44	8,889	2,401	11,290	56.8	69.8
567	CCDR/9502008-A/3/CPRS/KBNT//9502008-A	6	82	47	8,525	2,696	11,221	56.5	66.7
557	CPRS/KBNT//9502008-A/3/9502008-A//AR 1188/CCDR	6	89	44	8,015	3,192	11,207	59.4	67.5
575	CHENIERE	5	91	44	8,323	2,766	11,089	61.4	70.5
572	9502008-A//AR 1188/CCDR/3/CCDR/9502008-A	5	87	47	8,548	2,497	11,045	57.6	68.7
564	CCDR/9502008-A/3/950208-A//ARLL88/CCDR	6	84	44	7,353	3,629	10,982	60.2	69.2
569	9502008-A//AR 1188/CCDR/3/CCDR/9502008-A	5	85	48	8,499	2,480	10,979	59.3	69.1
559	CPRS/KBNT//9502008-A/3/CCDR/LGRU	6	87	45	8,024	2,884	10,908	58.5	68.5
562	CCDR/JEFF/5/DREW/3/KBNT//KATY/CPRS/4/WELLS	5	87	44	8,522	2,325	10,847	54.4	67.6
556	CCDR//CCDR/JEFF	5	88	44	8,711	1,962	10,673	56.3	67.2
563	CCDR/JEFF/5/DREW/3/KBNT//KATY/CPRS/4/WELLS	6	87	45	8,218	2,166	10,384	54.4	67.6

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

Table 4. Grain and milling yields and agronomic performance of entries in the 2010 Preliminary Yield Trial, Group 4. Crowley, La.

ENT	PEDIGREE	VIG[1]	HDT	HTE	YIELD	RATOON	TOTAL YIELD	WHOLE	TOTAL
600	CATAHOULA	5	86	44	8,904	3,376	12,280	59.8	70.4
576	9502008-A//AR 1188/CCDR/3/CCDR/JEFF	4	84	47	9,647	2,315	11,962	57.3	69.1
588	KATY/CPRS//JKSN/3/AR 1188/CCDR/4/CCDR/JEFF	5	86	46	8,748	2,721	11,469	57.3	68.5
577	9502008-A//AR 1188/CCDR/3/CCDR/9502008-A	5	86	43	8,946	2,405	11,351	58.6	69.4
596	CPRS/NWBT//KATY/3/CCDR/4/9502008-A/DREW	5	88	43	8,043	3,266	11,309	59.8	69.8
579	9502008-A//AR 1188/CCDR/3/9502008-A/AR 1188/…	5	86	46	8,708	2,593	11,301	58.0	67.8
583	CCDR/LGRU//CCDR	6	87	46	8,415	2,873	11,288	59.0	69.8
589	KATY/CPRS//JKSN/3/AR 1188/CCDR/4/95020088-A/…	5	86	43	8,669	2,526	11,195	59.9	69.5
585	CCDR/LGRU/4/KATY/CPRS//JKSN/3/AR 1188/CCDR	5	86	48	8,464	2,729	11,193	58.6	69.2
597	CPRS/NWBT//KATY/3/CCDR/4/9502008-A/DREW	5	86	43	8,226	2,940	11,166	59.5	70.2
599	CCDR/JEFF/3/9502008-A//AR 1188/CCDR	5	85	44	8,819	2,332	11,151	57.4	69.1
584	CCDR/LGRU/4/KATY/CPRS//JKSN/3/AR 1188/CCDR	5	87	46	8,534	2,506	11,040	60.0	69.3
590	KATY/CPRS//JKSN/3/AR 1188/CCDR/4/CCDR/LGRU	6	88	45	8,681	2,323	11,004	56.2	67.5
595	KATY/CPRS//JKSN/3/AR 1188/CCDR/4/9502008-A//…	6	87	45	8,685	2,294	10,979	58.8	69.1
593	KATY/CPRS//JKSN/3/AR 1188/CCDR/4/9502008-A//…	5	85	45	9,017	1,879	10,896	58.4	69.8
592	KATY/CPRS//JKSN/3/AR 1188/CCDR/4/9502008-A//…	5	87	46	9,009	1,806	10,815	57.5	70.4
578	9502008-A//AR 1188/CCDR/3/CCDR/9502008-A	5	85	44	8,988	1,760	10,748	55.4	67.9
581	9502008-A//AR 1188/CCDR/3/9502008-A/AR 1188/…	5	85	44	8,499	2,230	10,729	58.5	68.8
586	CCDR/LGRU/5/CCDR/4/NWBT/KATY/3/82CAY21/…	6	91	45	7,687	3,038	10,725	57.9	67.7
582	CCDR/LGRU//CCDR	5	86	46	8,173	2,520	10,693	58.2	68.6
594	KATY/CPRS//JKSN/3/AR 1188/CCDR/4/9502008-A//…	6	86	46	8,838	1,812	10,650	60.2	70.5
591	KATY/CPRS//JKSN/3/AR 1188/CCDR/3/LEAH	6	86	46	8,685	1,799	10,484	53.9	65.1
580	9502008-A//AR 1188/CCDR/3/9502008-A/AR 1188/…	5	86	44	8,506	1,860	10,366	58.1	67.7
598	CCDR/JEFF/3/9502008-A//AR 1188/CCDR	5	87	45	7,698	2,069	9,767	58.8	70.4
587	CCDR/LGRU/5/CCDR/4/NWBT/KATY/3/82CAY21/…	6	90	45	7,246	2,497	9,743	59.0	69.5

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

Table 5. Grain and milling yields and agronomic performance of entries in the 2010 Preliminary Yield Trial, Group 5. Crowley, La.

ENT	PEDIGREE	VIG[1]	HDT	HTE	YIELD	RATOON	TOTAL YIELD	WHOLE	TOTAL
604	BNGL/9502065//EARL	5	83	42	10,439	2,827	13,266	63.7	68.7
608	ORIN/3/MERC/CAM9/MARS/4/BNGL	5	86	40	9,415	3,336	12,751	57.5	63.6
601	BNGL/SHORT RICO/4/9502065/3/…	4	83	40	8,726	3,310	12,036	60.5	67.2
624	BNGL//MERC/RICO/3/MERC/RICO//BNGL/4/MDRK	5	84	41	7,936	3,768	11,704	61.5	66.9
602	ORIN/3/MERC/CAM9/MARS/4/BNGL	6	86	42	7,969	3,700	11,669	61.0	66.5
616	9902028/3/BNGL//MERC/RICO	5	85	40	8,344	3,307	11,651	61.3	68.0
625	JPTR	5	85	40	7,418	4,152	11,570	58.8	64.4
603	BNGL//MERC/RICO/3/EARL	6	93	38	6,982	4,484	11,466	58.8	65.6
621	JPTR/4/MERC/RICO//MERC/3/MERC/…	5	82	40	6,981	4,072	11,053	60.5	65.5
609	BNGL/SHORT RICO/4/9502065/3/…	5	85	39	8,372	2,513	10,885	62.6	67.0
613	LFTE/4/KATY/CPRS/3/CPRS/LMNT/5/…	6	80	43	7,603	3,219	10,822	61.3	67.1
618	JPTR/4/SMARS/MARS//…/3/MERC/RICO//BNGL	6	87	40	6,969	3,843	10,812	63.9	67.3
605	ORIN/3/MERC/CAM9/MARS/4/BNGL	6	85	42	8,073	2,727	10,800	57.9	65.5
622	JPTR/4/MERC/RICO//MERC/3/MERC/…	6	84	41	6,603	4,150	10,753	58.2	63.6
610	BNGL/SHORT RICO/4/9502065/3/…	6	86	38	7,712	2,997	10,709	62.4	66.8
606	BNGL//MERC/RICO/3/EARL	5	86	40	7,451	3,149	10,600	54.6	64.2
607	BNGL//MERC/RICO/3/EARL	5	85	41	7,258	3,197	10,455	51.8	63.7
614	ORIN/3/MERC/CAM9/MARS/4/BNGL	6	86	43	6,993	3,302	10,295	54.3	66.5
612	RICO/BNGL	5	91	43	6,062	3,472	9,534	50.6	60.6
623	JPTR/4/MERC/RICO//MERC/3/MERC/…	6	86	43	6,304	3,068	9,372	59.4	65.2
620	JPTR/4/BNGL//MERC/RICO/3/MERC/RICO//BNGL	7	91	38	6007	3,315	9,322	62.9	66.5
617	JPTR/4/MERC/RICO//BNGL/3/SMARS/SMARS/…	7	89	37	6,849	2,412	9,261	60.5	66.3
615	LFTE/4/KATY/CPRS/3/CPRS/LMNT/5/…	5	82	41	6,837	2,418	9,255	65.2	70.5
619	JPTR/4/SMARS/MARS//…/3/MERC/RICO//BNGL	7	86	37	5,308	3,007	8,315	64.0	69.1
611	BNGL/SHORT RICO//LFTE	5	82	43	5,920	1,548	7,468	56.4	65.8

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

Table 6. Grain and milling yields and agronomic performance of entries in the 2010 Preliminary Yield Trial, Group 6. Crowley, La.

ENT	PEDIGREE	VIG[1]	HDT	HTE	YIELD	RATOON	TOTAL YIELD	WHOLE	TOTAL
646	EARL/4/BNGL/3/SMARS/MARS//MARS	5	86	39	9,428	3,828	13,256	59.1	66.3
650	NPTN	5	88	35	8,155	5,056	13,211	60.4	67.5
632	EARL/RICO	6	83	45	8,967	4,019	12,986	60.7	66.9
636	LFTE/4/KATY/CPRS/3/CPRS/LMNT/6/…	5	83	40	8,674	3,972	12,646	58.8	66.2
635	LFTE/4/KATY/CPRS/3/CPRS/LMNT/6/…	5	83	41	8,896	3,394	12,290	57.8	66.6
627	BNGL//MERC/RICO/3/EARL	4	84	43	8,410	3,810	12,220	59.9	67.4
649	JPTR/4/BNGL//MERC/RICO/3/MERC/RICO//BNGL	5	87	41	8,478	3,574	12,052	61.3	67.2
629	ORIN/3/MERC/CAM9/MARS/4/BNGL	6	86	42	8,744	3,086	11,830	59.8	66.1
631	BNGL/SHORT RICO/4/9502065/3/…	5	85	39	8,661	2,534	11,195	62.9	67.1
630	BNGL/SHORT RICO/4/9502065/3/…	5	84	39	9,037	2,047	11,084	63.8	68.0
641	MEDARK/3/EARL/GP-2/LFTE	5	84	43	7,402	3,653	11,055	59.2	65.5
626	MDRK/4/MERC/RICO//BNGL/3/SMARS/MARS/…	5	83	42	7,918	3,046	10,964	60.2	80.6
633	BNGL/SHORT RICO//MERC	6	82	36	9,538	1,106	10,644	58.5	66.3
638	BNGL/4/ORIN//MERC/RICO/3/9502065	5	82	39	7,993	2,645	10,638	60.4	66.6
648	JPTR/4/BNGL//MERC/RICO/3/MERC/RICO//BNGL	6	91	41	7,368	3,152	10,520	63.2	67.3
639	EARL/4/BNGL/3S/SMARS/MARS//MARS	5	85	37	6,999	3,335	10,334	57.6	68.2
637	BNGL/4/ORIN//MERC/RICO/3/9502065	6	90	39	7,306	2,911	10,217	58.0	65.4
643	BNGL/3/MERC/RICO//MERC/3/MERC/…	5	84	39	6,255	3,941	10,196	57.5	67.1
634	BNGL/SHORT RICO//MERC	6	82	38	5,934	3,923	9,857	51.0	63.7
642	BNGL/3/MERC/RICO//MERC/3/MERC/…	5	84	37	6,605	3,224	9,829	65.2	69.7
644	BNGL/4/9502065/3/MERC/RICO//BNGL	6	87	38	6,824	2,986	9,810	60.1	67.8
645	BNGL/4/9502065/3/MERC/RICO//BNGL	6	85	37	6,831	2,848	9,679	57.3	66.9
647	BNGL//MERC/RICO/3/MERC/…/4/MERC/RICO//MERC/3/MERC/…	6	86	41	6,347	3,308	9,655	63.3	69.4
628	ORIN/3/MERC/CAM9/MARS/4/BNGL	6	84	42	8,194	1,362	9,556	56.9	66.8
640	MEDARK/LFTE	5	83	39	6,634	2,716	9,350	61.9	67.8

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

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

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

This state project is aimed 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. The second objective is to develop specialty rice varieties adapted to Louisiana and southern U.S. environmental conditions with superior cooking, agronomic, milling, and specific qualities, such as aroma and kernel elongation. The emphasis is being placed on breeding for Jasmine-, Basmati-, and Della-type long-grain rice. The last newly added objective is the development of a comprehensive and competitive hybrid rice breeding program for Louisiana and the southern United States.

The 2010 field tests included 250 transplanted F_1s (198 long-grain and 52 specialty), 5 transplanted backcrosses or 3-way crosses with 230 total plants for the development of Clearfield Jazzman rice, 234 space-planted F_2 populations (175 long-grain and 59 specialty), and 33,700 progeny rows (28,000 long-grain and 5,700 specialty) ranging from F_3 to F_8. Out of these rows, 802 rows (720 long-grain and 82 specialty) were bulk-harvested for the further evaluation, and 2,920 rows were selected for re-selection in 2011. A total of 266 new crosses were made in 2010, which included 184 long-grain, 50 specialty, and 32 hybrid rice. In addition, 32 backcrosses or 3-way crosses with a total of 2,456 seeds were made for developing Clearfield Jazzman rice. The preliminary yield test included 489 breeding lines (192 replicated and 216 single-plot).Yield, milling, and agronomic performance of those lines are listed in Tables 1 to 8. Ten advanced long-grain (entries 022, 028, 031, 034, 125, 128, 131 134, 137, and 140,) and three specialty (entries 025, 146, and 149) 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 9. A separate advanced yield (AY) trial consists of 24 long-grain (tested at both Rice Research Station and Fenton, Jeff Davis Parish) and 12 specialty experimental lines (tested only at Fenton, Jefferson Davis Parish). Test results of the AY trial were listed in Tables 10 and 11. DNA marker-assisted selection was continuously conducted on BC_1F_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.

The 2010 Puerto Rico winter nursery included 4,200 progeny rows of both long-grain and specialty types. Most of these were F_3s for the generation advancement purpose.

The new early-maturing semidwarf Jasmine-type line LA0802149 continuously showed good grain and milling yields and also possesses typical Jasmine specialty attributes and very strong aroma. It was approved for release with the name of Jazzman-2 by LSU AgCenter for 2011. LA0802140, a Della-type aromatic long-grain line, continued exhibiting great yield potential, milling and superior grain quality, as well as the strong aroma similar to Della. The conventional long-grain line LA1002128 also displayed the outstanding yields and good milling quality in 2010. These two promising lines will be further evaluated for potential varietal releases.

Table 1. Agronomic and milling performance of 2010 Preliminary Yield Test (replicated), Group 7†, long-grain 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
651	AC1076	4.0	85	105	8,052	2,074	10,126	60.8	69.5
652	AC1365	4.5	87	100	7,042	2,726	9,768	59.1	67.9
653	AC1336	4.0	88	102	9,081	2,320	11,402	54.9	66.4
654	AC1336	4.0	88	105	8,368	2,470	10,838	62.4	69.9
655	CCDR/AC1048	4.5	85	112	8,562	2,446	11,008	62.5	69.7
656	CPRS/KBNT//9502008-A/3/AC627	4.5	86	103	8,885	3,226	12,111	58.7	68.4
657	CCDR/JEFF//0402128	4.0	88	110	9,267	2,008	11,275	56.3	67.1
658	9502008//AR 1188/CCDR/3/0302005	4.0	87	112	8,531	3,443	11,974	65.6	72.1
659	9502008//KATY/902207x2/3/0402082	3.5	87	109	8,297	1,970	10,267	62.8	69.8
660	WELLS/CCDR	4.0	89	107	8,101	3,112	11,213	62.7	69.8
661	9502008-A//AR 1188/CCDR/3/CCDR/JEFF	4.0	87	107	8,915	1,935	10,850	63.6	71.0
662	AC1075	3.5	87	102	8,238	3,523	11,761	58.0	67.0
663	AC1381	4.0	88	106	8,298	2,683	10,981	61.5	69.7
664	AC110/AC638	4.0	90	103	6,573	3,440	10,013	64.4	71.9
665	DREW/CCDR//9502008/DREW	4.0	88	108	8,715	2,152	10,867	62.3	71.0
666	CCDR//CPRS//82CAY21//TBNT/3/MBLE	5.0	90	108	6,879	2,056	8,935	59.1	68.7
667	FRANCIS/4/TACAURI/3/CPRS//82CAY21/TBNT	4.5	92	103	5,671	4,646	10,318	49.9	65.0
668	CPRS//9502008-A/DREW	4.0	88	106	7,594	2,619	10,213	61.9	69.7
669	TACAURI//CPRS/82CAY21/TBNT/3/CCDR	4.0	86	102	7,203	3,057	10,260	60.3	68.2
670	9502008//KATY/9902207x2/3/9502008/CPRS	4.0	88	113	9,060	2,474	11,534	61.4	69.2
671	CPRS/4/9502008/3/MBLE//LMNT/20001-5	4.0	92	112	6,547	2,210	8,757	56.7	66.5
672	9502008/AR1121//CPRS/KBNT	3.5	88	115	7,084	2,709	9,793	58.7	70.1
673	9502008/AR1121//CPRS/KBNT	4.0	87	108	8,596	2,994	11,591	56.1	66.8
674	CPRS/KBNT//CCDR	4.0	88	107	7,916	3,258	11,174	57.9	68.6
625	Cocodrie§	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
c.v.%		8.9	1.0	2.1	8.6	14.0	5.3	3.6	1.6
$LSD_{0.05}$		0.7	1.8	4.6	1,422	792	1182	4.4	2.3

† Entries of Groups 1 to 6 are from Dr. Steve Linscombe's program and results are listed in the early part of this chapter.
‡ Subjective rating 1 to 7, where 1 = excellent, 7 = no stand.
§ Data not available due to no stand.

Table 2. Agronomic and milling performance of 2010 Preliminary Yield Test (replicated), Group 8, long-grain entries. Rice Research Station, Crowley, LA.

					Yield (lb/A)			Milling (%)	
Entry	Pedigree	Vigor*	Days to 50% Heading	Plant Height (cm)	Main	2^{nd}	Total	Head	Total
676	CPRS/KBNT//MBLE	5.0	92	100	6,996	3,181	10,177	58.2	67.8
677	CPRS//82CAY21/TBNT/3/AR1179/4/LGRU	4.5	96	92	5,055	5,037	10,092	55.1	66.6
678	KATY/NWBT/3/LBNT/…/4/SABER	4.0	92	103	7,605	4,135	11,740	59.4	68.2
679	CCDR//CCDR/JEFF	4.0	91	109	9,016	2,292	11,308	62.5	70.0
680	0402022/3/CPRS/KBNT//9502008	4.0	90	110	8,980	2,389	11,370	60.9	70.4
681	0402022/3/9502008//AR1188/CCDR	4.0	91	113	9,115	2,108	11,224	60.9	69.9
682	WELLS/0302082	5.0	97	105	6,570	3,919	10,489	63.5	71.1
683	WELLS/0302082	4.5	91	110	8,849	4,448	13,297	62.7	70.8
684	RU0402042/RU0302005	5.0	91	103	8,553	3,271	11,823	59.7	70.3
685	CCDR//CCDR/JEFF	4.5	92	113	8,723	2,186	10,909	60.0	70.0
686	CCDR//CCDR/JEFF	3.5	89	116	8,883	3,748	12,631	61.2	69.8
687	CCDR//CCDR/JEFF	4.0	90	112	9,298	2,223	11,521	61.1	71.1
688	CCDR/3/9502008-A//AR 1188/CCDR	4.5	91	115	9,720	2,112	11,832	56.8	68.9
689	CCDR/3/CPRS/KBNT//9502008-A	4.5	92	115	8,287	2,535	10,822	59.6	70.4
690	CCDR/3/9502008-A//AR 1188/CCDR	4.0	91	115	9,377	1,779	11,156	60.9	70.2
691	CCDR/3/9502008-A//AR 1188/CCDR	4.5	92	114	8,568	2,329	10,897	59.2	69.7
692	CCDR/RU0602128	4.5	93	111	8,211	2,116	10,327	59.7	69.9
693	CCDR/RU0601004	4.0	90	110	9,104	2,604	11,708	61.1	69.6
694	CPRS/KBNT//9502008-A	4.0	91	114	9,403	3,389	12,793	60.8	69.3
695	CCDR/JEFF//JAF4DH3	4.5	93	108	8,574	2,911	11,485	58.6	68.3
696	CCDR/4/9502008/3/MBLE//LMNT/LSBR-5	4.5	91	118	8,480	2,573	11,053	60.4	69.3
697	CCDR//CCDR/JEFF	5.0	90	111	8,330	1,812	10,141	57.2	68.5
698	CCDR//CCDR/JEFF	4.0	90	109	9,028	2,471	11,499	59.7	69.0
699	CCDR//9502008//AR1188/CCDR	4.5	89	113	9,093	2,643	11,736	65.6	72.7
700	CL151	4.0	89	123	6,779	464	7,243	61.1	70.1
c.v.%		12.4	1.3	2.7	7.8	15.6	6.7	2.7	1.4
$LSD_{0.05}$		1.1	6.2	2.4	1,350	885	1,555	3.4	1.9

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

Table 3. Agronomic and milling performance of 2010 Preliminary Yield Test (replicated), Group 9, long-grain entries. Rice Research Station, Crowley, LA.

			Days to	Plant	Yield (lb/A)			Milling (%)	
Entry	Pedigree	Vigor*	50% Heading	Height (cm)	Main	2^{nd}	Total	Head	Total
701	CCDR//9502008//AR1188/CCDR	5.0	91	123	9,237	1,957	11,194	61.3	70.4
702	CCDR/0502085	5.0	93	111	8,677	1,941	10,617	59.4	69.6
703	CCDR/0502094	4.5	91	113	8,704	2,205	10,908	62.6	70.8
704	CPRS/KBNT//9502008/3/0402088	4.5	91	116	9,571	3,258	12,829	59.5	69.3
705	CPRS/3/CPRS/KBNT//9502008	4.5	91	111	9,168	2,766	11,935	58.0	68.5
706	CPRS/4/TACAURI/3/CPRS//L202/TBNT	4.5	94	109	7,469	3,324	10,794	61.0	69.9
707	CPRS/4/TACAURI/3/CPRS//L202/TBNT	4.5	93	108	8,933	3,309	12,242	58.5	69.1
708	CPRS//CCDR/JEFF	4.5	93	111	8,193	2,768	10,961	62.4	70.2
709	CPRS//CCDR/JEFF	4.5	92	105	8,754	2,521	11,275	62.8	71.3
710	CPRS//CCDR/JEFF	4.0	92	110	8,259	2,916	11,176	62.4	70.8
711	CPRS//CCDR/JEFF	5.0	91	114	8,320	3,033	11,354	61.7	70.2
712	CPRS/3/NWBT/KATY//9902207X2	5.5	92	103	7,452	2,159	9,611	60.4	69.6
713	CPRS/3/NWBT/KATY//9902207X2	5.0	90	112	8,384	2,520	10,904	59.9	68.5
714	CPRS/3/9502008//AR1188/CCDR	4.5	94	112	8,431	2,230	10,660	56.9	67.0
715	CPRS//9502008/DREW	5.0	93	107	8,485	2,783	11,268	60.3	68.8
716	0402022/3/9502008//AR1142/MBLE	4.5	93	110	8,633	2,553	11,186	60.2	69.6
717	CCDR/JEFF/3/9502008//AR1142/MBLE	5.0	93	115	8,405	2,342	10,747	60.7	69.0
718	CCDR/JEFF//0402128	4.5	92	116	8,975	1,973	10,948	62.8	70.7
719	9502008//AR 1188/CCDR/3/0502165	5.0	93	109	7,846	2,825	10,671	54.7	67.6
720	9502008//KATY/902207x2/3/0402068	5.0	93	113	8,282	2,099	10,382	59.4	67.7
721	9502008//KATY/902207x2/3/0402082	5.0	92	111	7,490	4,095	11,585	63.7	70.5
722	9502008/DREW/3/0402097	5.0	92	114	8,073	2,231	10,304	60.7	70.2
723	9502008/DREW/3/0402097	5.0	90	111	8,079	3,055	11,133	58.9	68.8
724	9502008//AR 1142/MBLE/3/0502091	4.5	93	99	7,198	3,066	10,264	61.7	71.2
725	Francis	4.5	95	119	8,048	3,774	11,822	54.4	68.4
c.v.%		13.6	0.9	2.1	5.8	16.8	5.7	3.4	2.0
$LSD_{0.05}$		1.3	1.7	4.9	1,006	937	1,296	4.2	2.9

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

Table 4. Agronomic and milling performance of 2010 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) Main	Yield (lb/A) 2nd	Yield (lb/A) Total	Milling (%) Head	Milling (%) Total
726	9502008//AR 1142/MBLE/3/0502091	5.0	94	110	8,332	3,249	11,581	58.0	68.9
727	CCDR/RU0602152	4.0	93	106	6,852	3,914	10,766	58.1	68.7
728	CCDR/RU0602152	4.5	89	111	7,985	3,392	11,377	59.7	70.1
729	9502008-A//AR1188/CCDR/3/RU0602048	4.5	91	110	7,846	2,403	10,249	59.7	68.9
730	9502008-A//AR1188/CCDR/3/LGRU/LCSN	4.5	91	117	8,214	2,470	10,683	60.9	69.7
731	KATY/CPRS//JKSN/3/AR1188/CCDR/4/CCDR/JEFF	4.5	91	117	8,884	2,250	11,135	59.9	69.9
732	CPRS/KBNT//9502008-A/3/RU0602180	5.0	91	114	9,283	1,775	11,058	59.2	68.6
733	9502008-A//AR1188/CCDR/3/CPRS/KBNT//9502008-A	4.5	92	112	9,161	2,903	12,063	61.3	69.2
734	CPRS/NWBT//KATY/3/CCDR/4/RU0602128	5.0	91	107	7,215	2,890	10,105	59.7	68.4
735	DREW/CCDR//9502008/DREW	5.0	92	112	8,026	3,326	11,352	58.5	68.5
736	AC627/3/CPRS/KBNT//9502008-A	5.0	89	105	8,311	2,481	10,792	59.7	69.9
737	9502008//AR1142/MBLE/3/0502165	5.5	92	106	6,793	2,738	9,531	53.3	67.0
738	9502008//AR1142/MBLE/3/0502165	5.0	90	106	7,818	2,412	10,230	59.0	69.5
739	9502008//AR1142/MBLE/3/0502165	5.0	93	106	8,159	3,465	11,624	54.5	66.9
740	DREW/CCDR//CCDR/JEFF	5.5	93	114	7,772	2,005	9,778	57.7	68.4
741	CCDR/JEFF//CCDR	4.5	91	113	8,416	2,610	11,026	58.4	69.2
742	CCDR/RU0402085	4.5	92	112	7,770	2,334	10,104	61.7	70.0
743	CPRS/LGRU//RU0602128	5.0	91	112	8,634	2,072	10,706	59.0	69.5
744	CPRS/NWBT//KATY/3/CCDR/4/AC1048	5.0	89	114	7,028	2,115	9,144	60.8	69.7
745	JAF4DH3/3/CPRS/KBNT//9502008-A	5.0	91	107	7,700	2,237	9,937	57.0	67.4
746	CCDR/4/9502008/3/MBLE//LMNT/LSBR-5	4.0	93	116	8,215	2,975	11,189	61.5	69.2
747	CPRS/4/TACAURI/3/CPRS//L202/TBNT	5.0	92	120	7,490	1,743	9,233	54.6	66.0
748	CCDR/JEFF/3/9502008//AR1142/MBLE	5.0	91	113	8,411	1,999	10,409	60.0	69.1
749	9502008//KATY/902207x2/3/0402068	4.5	93	115	8,334	2,484	10,818	62.9	70.3
750	RU0802022	5.0	91	110	7,545	2,993	10,538	59.1	68.0
c.v.%		8.2	1.1	2.0	5.6	15.8	5.1	3.9	1.7
$LSD_{0.05}$		0.8	2.0	4.6	927	849	1,115	4.7	2.5

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

Table 5. Agronomic and milling performance of 2010 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 (%)	
					Main	2nd	Total	Head	Total
751	9502008/DREW/3/0502103	5.0	92	117	7,180	2,734	9,913	51.9	66.6
752	CCDR/3/9502008-A//AR1188/CCDR	4.5	93	115	7,661	2,432	10,092	59.9	69.5
753	CCDR/AC1094	5.0	90	115	7,820	1,824	9,643	59.5	69.3
754	CPRS/KBNT//9502008-A/3/9901081/CCDR	4.5	93	111	7,245	4,361	11,605	58.3	68.4
755	CPRS/KBNT//9502008-A	4.5	93	115	9,629	2,982	12,611	60.7	69.9
756	CCDR/JEFF/3/9502008-A//AR1188/CCDR	5.0	92	110	8,735	1,836	10,571	57.5	67.7
757	9502008-A//AR1188/CCDR/3/WELLS/ZHE733	4.0	90	110	8,805	2,142	10,946	62.2	70.4
758	9502008-A/DREW//AC627	5.0	89	111	8,898	2,265	11,162	60.9	68.4
759	9502008-A/DREW/3/9502008-A//AR1188/CCDR	4.0	91	113	9,310	2,835	12,146	57.8	69.3
760	KATY/CPRS//JKSN/3/AR1188/CCDR/4/CCDR/JEFF	4.5	91	115	8,206	2,465	10,670	58.4	69.4
761	KATY/CPRS//JKSN/3/AR1188/CCDR/4/AC427	4.5	91	116	8,585	2,176	10,761	61.1	69.4
762	CCDR/LGRU//AC919	5.0	93	119	8,347	2,828	11,175	58.4	68.9
763	L201//TBNT/BLMT/3/CPRS/4/RU0602094	5.0	90	112	8,480	2,938	11,419	57.4	68.6
764	L201//TBNT/BLMT/3/CPRS/4/RU0602094	4.5	90	115	7,541	2,773	10,314	63.0	70.4
765	DREW/CCDR//AC1012	4.0	93	110	6,258	3,459	9,716	58.8	68.1
766	DREW/CCDR//AC1012	5.0	91	110	7,619	2,945	10,564	63.6	71.1
767	KATY/CPRS//JKSN/3/AR1188/CCDR/4/AC1021	4.5	93	107	7,422	1,895	9,317	59.0	68.7
768	CCDR/AC919	4.5	93	104	7,522	2,000	9,521	57.8	67.6
769	CCDR/0502094	4.5	90	112	8,703	2,226	10,929	61.1	70.5
770	CPRS/LGRU//PI 584720/ZHE 733	5.0	93	108	7,538	2,330	9,868	57.4	68.8
771	CPRS/3/L201//TBNT/BLMT/4/RU0602025	5.5	91	111	7,382	2,151	9,533	60.8	70.0
772	RU0702106/RU0301041	4.5	91	108	7,090	3,081	10,171	56.9	68.6
773	RU0602103/3/9502008-A//AR1188/CCDR	5.0	90	117	9,256	2,089	11,346	61.9	70.1
774	9502008-A//AR1188/CCDR/3/AC627	5.0	90	117	7,971	2,913	10,884	61.7	69.6
775	Cheniere	4.0	93	109	7,850	2,793	10,642	63.9	71.5
c.v.%		8.6	0.9	1.7	3.9	16.8	4.9	3.6	1.6
$LSD_{0.05}$		0.8	1.7	3.8	644	893	1,078	4.5	2.3

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

Table 6. Agronomic and milling performance of 2010 Preliminary Yield Test (replicated), Group 12, 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
776	DLMT/CALMATI	5.5	90	104	60.5	69.9	7,094	2,816	9,910
777	KATY/CPRS//NWBT/…/3/9502008/4/KBNT//KLMT/…	5.0	91	114	56.8	68.9	6,811	3,567	10,378
778	CPRS//L201/7402003/3/BASMATI SUF AID PAK/4/…	5.5	90	109	55.9	67.2	6,633	2,644	9,277
779	NCHS/A-201	4.5	90	94	58.8	66.9	6,134	2,661	8,795
780	NWBT/KATY//9902207x2/3/JSMN/DLLA//LEAH/DLLA	4.5	88	111	58.3	69.5	6,991	1,892	8,884
781	9502008/AR 1121/3/KBNT//DLMT/B8462T3-710	4.0	91	116	57.3	67.6	7,460	3,643	11,103
782	DLMT/5/DLMT 8462…/4/DMSI	5.0	90	103	66.1	71.4	5,771	3,904	9,675
783	A-301/KATY//01SP 283	4.0	88	114	55.8	68.3	7,898	3,719	11,617
784	NWBT/KATY//9902207x2/3/JSMN/DLLA//LEAH/DLLA	5.0	91	105	60.3	69.5	6,177	2,611	8,788
785	JSMN/DLLA//96SP287/3/FRANCIS	6.0	87	102	40.8	67.3	6,660	4,738	11,398
786	A-301/KATY//01SP283	5.0	91	113	48.4	63.3	2,891	2,747	5,638
787	A-301/KATY/3/JSMN/DLLA//LEAH/DLLA	4.5	96	113	42.1	62.1	3,623	4,262	7,885
788	9502008/CPRS/3/JSMN/DLLA//LEAH/DLLA	5.0	92	110	61.2	70.3	6,820	3,416	10,236
789	9502008//KATY/9902207x2/3/JSMN/DLLA//LEAH/DLLA	4.0	88	113	64.3	69.4	6,574	2,834	9,408
790	JZMN/DLRS	5.0	94	100	57.8	67.5	5,560	2,532	8,093
791	JZMN/4/CPRS//L201/7402003/3/…	5.5	92	101	56.8	66.4	6,105	3,087	9,193
792	JSMN/DLLA//DLLA/3/RU0302125	4.0	90	107	58.7	68.7	5,450	2,648	8,098
793	JSMN/DLLA//DLLA/3/RU0302125	5.0	90	112	48.3	66.2	4,621	2,451	7,072
794	JSMN/DLLA//DLLA/3/RU0302125	4.5	90	109	59.5	69.1	6,450	3,123	9,573
795	DLRS//AR1142/LA 2031/3/RU0402085	5.0	93	110	60.1	68.3	7,331	2,421	9,752
796	JSMN/DLLA/LLEAH/DLLA/3/JSMN/DLLA//DLLA	4.5	93	115	57.2	67.3	5,790	2,966	8,756
797	RU0302088/3/JSMN/DLLA/96SP287	5.0	90	106	58.1	67.8	5,561	2,993	8,554
798	L202/Leah//Toro/3/IR67016/4/DLMT/B8462T3-710/…	5.0	93	97	64.4	70.9	6,348	3,964	10,312
799	CCDR/3/KBNT//DLMT/B8462T3-710	4.5	90	113	57.7	69.6	6,837	3,497	10,334
800	RU0802140	4.0	94	112	59.0	68.1	6,600	4,458	11,057
c.v.%		9.0	1.1	2.4	8.6	9.3	6.6	4.3	1.3
$LSD_{0.05}$		0.9	2.1	5.4	1089	611	1,269	5.1	1.9

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

Table 7. Agronomic and milling performance of 2010 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	Milling (%) Total
10P3116	CCDR/JEFF//CCDR/9502008-A	4.0	64	97	6,394	55.4	68.3
10P3123	CCDR/JEFF//CCDR/9502008-A	3.5	64	95	6,051	54.3	68.0
10P3129	CCDR/JEFF//CCDR/9502008-A	3.5	65	95	6,319	55.0	66.9
10P3148	CCDR/JEFF//CCDR/9502008-A	3.5	64	96	6,507	52.1	65.7
10P3245	9502008-A//AR 1188/CCDR/3/AC627	3.0	63	98	6,729	54.4	65.9
10P3263	CTHL/4/NWBT/KATY//9902207x2/3/CCDR	4.0	65	99	6,549	54.8	68.2
10P3265	CTHL/4/NWBT/KATY//9902207x2/3/CCDR	3.5	65	103	6,319	54.4	67.2
10P3279	CTHL/4/NWBT/KATY//9902207x2/3/CCDR	3.5	66	100	7,033	55.6	69.1
10P3282	CTHL/4/NWBT/KATY//9902207x2/3/CCDR	4.0	65	96	6,042	54.3	68.2
10P3306	CTHL/AC1073	3.5	63	92	4,987	56.1	69.1
10P3317	CTHL/AC1073	3.5	64	94	5,702	53.6	67.8
10P3327	CTHL/AC1073	3.0	65	96	6,095	57.0	67.7
10P3330	CTHL/AC1073	3.5	65	90	5,642	57.8	68.6
10P3356	CTHL/AC623	4.0	64	97	6,606	52.9	66.5
10P3371	CTHL/AC623	3.5	62	95	6,979	55.9	69.1
10P3384	CTHL/AC623	3.5	64	99	6,892	55.7	68.5
10P3390	CTHL/AC623	4.0	67	99	6,952	54.6	68.4
10P3409	CCDR/3/KATY/CPRS//JKSN/4/CCDR/JEFF	4.0	65	98	6,914	54.0	65.9
10P3430	CCDR/3/KATY/CPRS//JKSN/4/CCDR/JEFF	3.0	64	99	6,595	58.0	69.9
10P3441	CCDR/3/KATY/CPRS//JKSN/4/CCDR/JEFF	4.0	66	100	6,722	57.0	69.7
10P3473	CCDR/3/KATY/CPRS//JKSN/4/MILL//9502008/LGRU	3.5	65	96	5,134	56.1	69.5
10P3483	CCDR/3/KATY/CPRS//JKSN/4/MILL//9502008/LGRU	3.0	65	101	6,034	57.1	70.3
10P3490	CCDR/3/KATY/CPRS//JKSN/4/MILL//9502008/LGRU	4.0	64	95	5,705	56.9	67.1
10P3527	9502008/CPRS/4/CPRS//82CAY21/TBNT/3/AR1121/5/…	4.0	66	97	5,846	50.8	65.3
10P3569	9502008/CPRS/4/CPRS//82CAY21/TBNT/3/AR1121/5/…	4.0	58	91	5,887	55.9	66.9
10P3575	9502008/CPRS/4/CPRS//82CAY21/TBNT/3/AR1121/5/…	3.5	61	97	6,613	54.0	67.6
10P3578	9502008/CPRS/4/CPRS//82CAY21/TBNT/3/AR1121/5/…	3.5	58	95	5,893	49.5	64.9
10P3632	LGRU/WELLS//AC1055	3.5	69	93	6,286	54.0	68.2
10P3654	9502008/CPRS/4/NWBT/KATY//9902207x2/3/CCDR	3.0	66	96	6,654	58.6	68.7
10P3659	9502008/CPRS/4/NWBT/KATY//9902207x2/3/CCDR	3.5	66	95	6,168	54.4	68.1
10P3667	9502008/CPRS/4/NWBT/KATY//9902207x2/3/CCDR	3.5	67	99	6,872	59.5	69.8
10P3672	9502008/CPRS/4/NWBT/KATY//9902207x2/3/CCDR	3.5	68	96	5,743	56.7	68.2
10P3707	AC1398/3/CPRS/KBNT//9502008-A	3.5	66	94	6,163	56.8	69.9
10P3712	AC1398/3/CPRS/KBNT//9502008-A	4.0	71	101	6,816	54.2	67.5
10P3742	AC1398/3/CPRS/KBNT//9502008-A	3.5	71	96	5,966	57.3	68.6
10P3770	AC1398/3/CCDR//9502008//AR1188/CCDR	4.0	67	100	6,049	52.3	66.2
10P3815	CCDR/0502085//CCDR/9502008-A	4.0	64	95	6,263	52.1	64.9
10P3842	CCDR/0502085//CCDR/9502008-A	3.0	64	97	6,635	57.2	68.1
10P3854	CCDR/0502085/3/MILL//9502008/LGRU	3.5	65	91	6,250	50.9	66.9
10P3872	CCDR/0502085/3/MILL//9502008/LGRU	3.0	65	93	5,927	58.3	67.4
10P3890	CCDR/0502085/3/MILL//9502008/LGRU	3.5	66	96	4,983	57.2	69.3
10P4031	AC1073/3/MILL//9502008/LGRU	4.0	64	96	5,347	57.8	67.4
10P4058	CCDR//CCDR/JEFF/3/AC1398	4.0	66	104	6,627	53.9	67.0
10P4082	CCDR//CCDR/JEFF/3/AC1398	3.5	66	101	5,993	57.4	68.0
10P4158	CCDR//CCDR/JEFF/3/AC623	3.5	64	96	6,842	53.5	66.5
10P4224	AC630/3/9502008-A//AR1188/CCDR	3.5	64	97	6,954	57.7	68.2
10P4306	DREW/CCDR//AC625	3.5	68	98	5,921	60.0	69.7
10P4368	AC628/CTHL	3.0	66	98	6,863	56.5	68.7
CL151	CL151	4.0	67	100	6,075	55.1	69.4
CTHL	CATAHOULA	4.0	68	97	6,583	58.5	71.5
c.v.%		14.0	1.8	3.4	5.1	3.7	2.2
$LSD_{0.05}$		1.0	2.3	6.6	636	4.1	3.0

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

Table 8. Agronomic and milling performance of 2010 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) Main	Yield (lb/A) 2nd	Yield (lb/A) Total	Milling (%) Head	Milling (%) Total
10SP176	CCDR//CCDR/JEFF	4	88	111	7,554	1,268	8,823	62.7	70.5
10SP177	CCDR//CCDR/JEFF	4	88	108	9,199	2,710	11,909	62.4	69.9
10SP178	CCDR//9502008//AR1188/CCDR	4	88	110	8,882	2,366	11,248	61.7	72.3
10SP179	0402022/0502094	4	86	107	8,879	2,591	11,470	60.8	69.9
10SP180	0402022/3/9502008//AR1142/MBLE	4	91	118	8,259	1,769	10,027	58.0	68.7
10SP181	9502008//AR1188/CCDR/3/0502165	4	88	114	7,363	2,454	9,817	62.3	70.6
10SP182	9502008//KATY/902207x2/3/0402082	4	89	114	9,090	1,639	10,729	63.1	71.2
10SP183	9502008//AR 1142/MBLE/3/0502165	4	91	101	8,014	3,435	11,449	58.2	69.1
10SP184	0502174/0402128	4	89	116	9,465	1,397	10,862	61.2	70.7
10SP185	FRANCIS/4/TACAURI/3/CPRS//82CAY21/TBNT	5	88	105	9,278	3,213	12,491	52.7	68.3
10SP186	FRANCIS/4/CPRS/3/KBNT//AR1188	5	89	110	7,685	2,753	10,438	55.3	68.9
10SP187	CPRS//9502008-A/DREW	4	92	102	7,599	3,624	11,222	59.3	70.0
10SP188	NWBT/KATY//9902207x2/3/CPRS	3	93	107	7,557	3,466	11,022	57.8	68.3
10SP189	AR1121/3/CPRS//82CAY21/TBNT/4/CCDR	4	89	108	5,867	3,098	8,965	63.1	72.0
10SP190	AR1121/3/CPRS//82CAY21/TBNT/4/NWBT/KATY//9902207x2	4	88	106	8,263	2,338	10,601	57.7	68.9
10SP191	TACAURI//CPRS/82CAY21/TBNT/3/CPRS//82CAY21/TBNT	5	90	89	5,136	4,080	9,216	63.6	70.4
10SP192	TACAURI//CPRS/82CAY21/TBNT/3/CPRS//82CAY21/TBNT	5	87	106	8,030	3,458	11,488	49.2	67.2
10SP193	TACAURI//CPRS/82CAY21/TBNT/3/CPRS//82CAY21/TBNT	5	91	103	7,442	4,631	12,073	53.5	67.0
10SP194	CPRS/3/KBNT//AR1188/4/CPAR//82CAY21//TBNT/3/MBLE	4	88	105	8,737	1,580	10,318	57.1	67.8
10SP195	9502008//KATY/9902207x2/4/TACAURI/3/CPRS//82CAY21/TBNT	4	88	109	8,417	1,364	9,781	58.7	69.8
10SP196	9502008//KATY/9902207x2/3/9502008/CPRS	4	91	110	8,264	1,319	9,583	55.9	67.9
10SP197	CPRS//9502008-A/DREW	4	91	104	9,188	2,808	11,997	57.4	68.7
10SP198	CPRS/4/9502008/3/CPRS//82CYA21/TBNT	4	88	108	10,460	2,647	13,106	62.9	71.3
10SP199	9502008//KATY/902207X2/3/CPRS/KBNT	4	91	109	8,877	2,138	11,016	61.6	68.6
10SP200	RU0902146	4	85	102	6,640	438	7,078	63.9	71.9
10SP201	LGRU/WELLS//CPRS//82CAY21/TBNT/3/AR1179	4	92	109	8,681	2,462	11,143	60.5	69.6
10SP202	LGRU/WELLS//CPRS//82CAY21/TBNT/3/AR1179	5	92	101	8,333	2,405	10,738	58.1	70.2
10SP203	9502008/AR1121//AHRENT	4	91	104	7,571	2,140	9,711	60.6	69.8
10SP204	CPRS/KBNT//AHRENT	4	92	110	8,380	2,762	11,142	59.5	69.1
10SP205	9502008/AR1121//CPRS//82CAY21/TBNT	4	90	108	9,413	3,029	12,441	63.4	70.1
10SP206	9502008/AR1121//CPRS//82CAY21/TBNT	4	86	108	8,753	3,486	12,239	58.3	67.9
10SP207	9502008/AR1121//CPRS/KBNT	4	93	109	8,584	3,740	12,324	65.3	71.8
10SP208	9502008/AR1121//CPRS//82CAY21/TBNT/3/AR1179	4	87	109	8,616	2,607	11,223	61.4	69.9

Continued.

Table 8. Continued.

Entry	Pedigree	Vigor*	Days to 50% Heading	Plant Height (cm)	Yield (lb/A)			Milling (%)	
					Main	2nd	Total	Head	Total
10SP209	9502008/AR1121//DREW/3/CPRS//82CAY21/TBNT	4	92	109	8,351	1,913	10,263	64.6	71.2
10SP210	CH1/3/CPRS//82CAY21/TBNT/4/CCDR	4	88	110	8,682	2,580	11,263	60.0	69.9
10SP211	CPRS/KBNT//CCDR	4	91	109	7,900	850	8,750	58.4	69.2
10SP212	CPRS/KBNT//CCDR	3	88	115	8,705	1,966	10,671	61.4	69.9
10SP213	CCDR/9770532DH2/3/LGRU//KATY/STBN	4	93	104	7,057	1,989	9,046	60.1	71.1
10SP214	CCDR/FRAN	4	87	111	8,990	3,682	12,673	58.6	71.3
10SP215	CCDR/FRAN	5	90	102	6,307	3,328	9,635	59.6	70.1
10SP216	FRAN/CCDR	4	89	104	7,931	3,077	11,008	63.4	69.7
10SP217	FRAN//9502008/KBNT	5	92	108	6,830	3,121	9,951	65.4	72.3
10SP218	CCDR/4/9502008/3/MBLE//LMNT/LSBR-5	4	92	110	7,580	3,276	10,856	61.6	70.4
10SP219	CPRS/KBNT//9502008/3/0402088	5	88	113	8,588	2,270	10,858	59.2	70.0
10SP220	CPRS/3/CPRS/KBNT//9502008	4	92	110	7,574	3,409	10,984	59.7	69.4
10SP221	CPRS/4/TACAURI/3/CPRS//L202/TBNT	4	90	108	8,062	1,934	9,997	59.1	69.4
10SP222	CPRS/3/NWBT/KATY//9902207X2	4	89	109	8,696	2,754	11,451	60.1	70.7
10SP223	CPRS//9502008/DREW	3	92	115	5,998	2,128	8,126	60.5	69.5
10SP224	CPRS/3/9502008//AR1188/CCDR	4	88	110	9,345	2,785	12,129	60.7	69.1
10SP225	CL151	4	88	115	6,973	1,145	8,119	58.7	70.5
10SP226	CPRS//9502008/DREW	3	89	110	7,387	2,197	9,584	59.9	69.9
10SP227	CPRS//9502008/DREW	4	87	106	8,753	2,635	11,389	62.1	71.9
10SP228	0402022/3/CPRS/KBNT//9502008	4	90	111	8,743	2,709	11,452	61.0	69.9
10SP229	0402022/3/9502008//AR1142/MBLE	5	88	102	8,281	2,136	10,416	59.4	70.7
10SP230	CCDR/JEFF/3/9502008//AR1142/MBLE	5	88	112	8,928	1,768	10,696	58.9	68.8
10SP231	NWBT/KATY//9902207x2/3/0302005	6	86	109	7,138	3,274	10,412	61.4	70.6
10SP232	9502008//AR 1142/MBLE/3/0502091	5	89	109	8,600	2,768	11,369	60.7	70.2
10SP233	DREW/CCDR//CCDR/JEFF	7	88	107	7,723	1,872	9,595	61.8	71.8
10SP234	0402042//9502008/DREW	5	91	109	8,149	2,556	10,706	63.1	70.7
10SP235	9502008//AR1188/CCDR/3/CCDR	4	89	110	8,725	1,941	10,666	57.2	68.4
10SP236	CCDR//9502008/LGRU	6	87	113	7,980	2,499	10,478	62.7	72.5
10SP237	FRANCIS/9302065	5	91	91	6,697	1,858	8,555	64.8	72.6
10SP238	CCDR//CCDR/JEFF	5	89	114	8,762	2,007	10,769	63.0	71.2
10SP239	CCDR//CCDR/JEFF	4	88	114	9,235	1,635	10,870	56.1	68.7
10SP240	CCDR/3/9502008-A//AR1188/CCDR	4	90	109	8,577	2,214	10,792	62.7	71.7
10SP241	CCDR/RU0602128	5	90	109	8,101	1,857	9,958	59.2	69.7
10SP242	CCDR/JEFF/3/9502008-A//AR1188/CCDR	5	89	113	8,524	711	9,235	58.1	68.7

Continued.

Table 8. Continued.

Entry	Pedigree	Vigor*	Days to 50% Heading	Plant Height (cm)	Yield (lb/A) Main	Yield (lb/A) 2nd	Yield (lb/A) Total	Milling (%) Head	Milling (%) Total
10SP243	CCDR/JEFF/3/9502008-A//AR1188/CCDR	5	88	113	9,140	1,178	10,318	61.0	70.5
10SP244	CCDR/JEFF/3/9502008-A//AR1188/CCDR	5	90	114	9,017	1,010	10,028	58.6	69.3
10SP245	9502008-A//AR1188/CCDR/3/AC746	5	86	113	8,196	674	8,870	50.5	68.2
10SP246	9502008-A/DREW//AC101/DREW	5	89	116	9,284	787	10,071	61.4	71.3
10SP247	9502008-A/DREW//AC101/DREW	5	91	110	9,088	2,398	11,486	58.4	70.6
10SP248	CPRS/KBNT//9502008-A/3/RU0602180	5	90	109	8,312	1,014	9,326	63.0	73.2
10SP249	CPRS/KBNT//9502008-A/3/RU0602180	4	87	110	9,391	1,245	10,636	54.1	68.1
10SP250	RU0902034	4	88	107	8,038	3,645	11,683	59.1	70.5
10SP251	CCDR//LGRU/LCSN	4	89	113	9,749	1,805	11,554	61.9	71.4
10SP252	CCDR/AC919	3	88	113	9,561	1,651	11,212	62.4	72.1
10SP253	CCDR/JEFF//JAF4DH3	4	91	107	8,018	1,170	9,189	60.0	70.3
10SP254	9502008-A//AR1188/CCDR/3/LGRU/LCSN	4	89	113	9,645	1,542	11,187	58.6	68.6
10SP255	9502008-A//AR1188/CCDR/3/LGRU/LCSN	4	89	112	9,608	944	10,552	60.5	69.3
10SP256	CCDR/LGRU//AC101/DREW	5	89	113	8,514	613	9,127	61.5	70.8
10SP257	CCDR/LGRU//AC101/DREW	4	89	109	9,329	1,224	10,553	59.6	69.9
10SP258	CPRS/RU0602128	5	91	106	8,670	1,764	10,434	59.3	68.7
10SP259	AC1012/AC919	4	89	107	7,398	2,200	9,598	62.7	70.4
10SP260	AC1012/AC110	4	91	111	6,987	2,754	9,742	59.3	69.2
10SP261	AC919/PRESIDO	4	93	112	6,204	4,440	10,644	62.7	70.5
10SP262	AC110/AC919	4	92	120	8,558	2,255	10,813	61.5	71.0
10SP263	AC1021/AC954	4	90	104	6,617	2,822	9,440	62.9	71.8
10SP264	AC101/DREW//AC866	6	89	104	5,644	4,187	9,831	60.6	72.1
10SP265	CCDR/4/9502008/3/MBLE//LMNT/LSBR-5	4	87	114	9,190	2,368	11,558	63.2	73.2
10SP266	CCDR/4/9502008/3/MBLE//LMNT/LSBR-5	4	88	111	8,985	2,786	11,771	60.7	71.8
10SP267	CCDR/4/9502008/3/MBLE//LMNT/LSBR-5	5	88	116	7,448	1,457	8,905	61.9	71.3
10SP268	CCDR//CCDR/JEFF	4	88	109	8,777	2,013	10,791	58.9	70.2
10SP269	CCDR//9502008//AR1188/CCDR	5	89	116	8,270	1,831	10,102	58.6	70.3
10SP270	CCDR//9502008//AR1188/CCDR	4	92	108	7,536	2,541	10,077	59.9	70.2
10SP271	CCDR/0502085	4	88	109	8,517	2,298	10,815	58.4	70.9
10SP272	CPRS/KBNT//9502008/3/0402088	4	87	111	8,950	2,501	11,451	59.9	70.7
10SP273	CPRS//9502008/DREW	3	92	106	7,350	3,412	10,762	61.0	69.9
10SP274	CPRS//9502008/DREW	4	88	110	8,210	1,745	9,955	59.2	69.6
10SP275	Cheniere	4	90	110	7,641	2,134	9,775	60.2	71.5

Continued.

Table 8. Continued.

Entry	Pedigree	Vigor*	Days to 50% Heading	Plant Height (cm)	Yield (lb/A)			Milling (%)	
					Main	2nd	Total	Head	Total
10SP276	CPRS//9502008/DREW	4	87	120	7,183	2,448	9631	60.5	72.1
10SP277	CPRS/3/9502008//AR1188/CCDR	5	86	112	9,093	1,790	10,883	60.6	70.6
10SP278	CPRS/3/9502008//AR1188/CCDR	4	88	113	7,684	1,350	9,034	58.6	70.1
10SP279	CPRS//9502008/DREW	5	90	109	8,292	2,791	11,083	57.1	68.8
10SP280	CPRS/3/TACAURI//KBNT/LCSN	5	90	113	7,384	2,180	9,565	60.4	70.2
10SP281	CPRS/3/TACAURI//KBNT/LCSN	5	94	114	6,869	3,882	10,751	57.9	69.6
10SP282	CPRS//CCDR/JEFF	6	90	107	6,526	1,997	8,523	57.1	69.2
10SP283	CPRS/WELLS	5	95	106	6,559	2,983	9,542	48.8	66.4
10SP284	0402022/3/CPRS/KBNT//9502008	6	89	113	8,012	1,668	9,680	59.2	69.0
10SP285	0402022/3/CPRS/KBNT//9502008	5	89	106	8,527	1,658	10,185	59.5	69.2
10SP286	0402022/3/9502008//AR1188/CCDR	4	92	109	8,404	2,860	11,264	62.5	70.3
10SP287	0402022/3/9502008//AR1142/MBLE	6	88	106	8,492	2,116	10,607	61.7	70.6
10SP288	0402022/3/9502008//AR1142/MBLE	5	91	110	8,355	2,008	10,363	56.7	67.8
10SP289	0402022/3/9502008//AR1142/MBLE	5	92	108	8,121	1,558	9,679	55.1	67.9
10SP290	CCDR/JEFF/3/9502008//AR1142/MBLE	4	90	110	8,193	1,085	9,278	61.9	71.8
10SP291	CCDR/JEFF/3/9502008//AR1142/MBLE	5	91	112	8,296	1,866	10,162	58.2	69.6
10SP292	CCDR/JEFF/3/9502008//AR1142/MBLE	6	89	113	9,173	1,246	10,419	60.4	70.8
10SP293	NWBT/KATY//9902207x2/3/0302005	6	93	100	7,893	3,147	11,040	51.0	63.6
10SP294	9502008//KATY/902207x2/3/MBLE	5	84	102	7,998	2,403	10,401	63.2	69.1
10SP295	9502008//KATY/902207x2/3/MBLE	5	91	100	7,911	2,208	10,119	59.2	66.7
10SP296	9502008//KATY/902207x2/3/0402082	5	90	114	8,944	1,490	10,434	58.5	67.9
10SP297	9502008//KATY/902207x2/3/0402082	5	91	111	8,869	1,396	10,265	58.1	69.6
10SP298	9502008//KATY/902207x2/3/0402082	4	92	115	8,999	1,539	10,538	62.9	70.5
10SP299	9502008//KATY/902207x2/3/0402088	4	88	114	8,729	511	9,240	62.5	70.6
10SP300	RU0902125	3	87	113	9,764	1,523	11,287	59.2	70.5
10SP301	9502008/DREW/3/0402097	4	88	112	8,763	1,514	10,277	59.3	68.9
10SP302	9502008/DREW/3/0402097	4	87	114	8,972	1,322	10,294	62.3	70.7
10SP303	9502008/DREW/3/0502103	4	89	111	7,493	2,349	9,843	59.9	69.2
10SP304	CCDR/3/CPRS/KBNT//9502008-A	4	88	111	10,332	2,436	12,768	57.0	68.3
10SP305	CCDR/3/9502008-A//AR1188/CCDR	4	88	109	8,861	3,795	12,656	58.5	69.9
10SP306	CCDR/RU0602131	4	91	111	9,802	2,921	12,723	61.6	70.8
10SP307	CCDR/AC622	4	87	116	9,982	3,258	13,240	62.3	70.0
10SP308	CCDR/AC627	5	86	109	9,647	2,796	12,443	60.9	70.3

Continued.

Table 8. Continued.

Entry	Pedigree	Vigor*	Days to 50% Heading	Plant Height (cm)	Yield (lb/A)			Milling (%)	
					Main	2nd	Total	Head	Total
10SP309	CCDR/AC627	5	87	110	8,274	2,314	10,587	61.3	71.5
10SP310	9502008-A/DREW/3/9502008-A//AR1188/CCDR	4	89	110	8,820	2,930	11,750	53.6	68.2
10SP311	9502008-A//AR1188/CCDR/3/LGRU/LCSN	4	89	111	8,441	2,805	11,246	60.7	69.7
10SP312	9502008-A//AR1188/CCDR/3/LGRU/LCSN	4	91	113	8,903	2,545	11,448	61.5	70.5
10SP313	KATY/CPRS//JKSN/3/AR1188/CCDR/4/CCDR/JEFF	5	87	114	7,070	1,897	8,967	56.9	67.5
10SP314	KATY/CPRS//JKSN/3/AR1188/CCDR/4/AC427	5	86	116	9,169	2,368	11,536	62.3	70.2
10SP315	KATY/CPRS//JKSN/3/AR1188/CCDR/4/AC627	4	88	106	7,569	2,588	10,157	59.4	69.1
10SP316	CCDR/LGRU/3/CPRS/KBNT//9502008-A	4	88	110	8,233	1,887	10,120	58.8	69.4
10SP317	CCDR/LGRU/3/9502008-A//AR1188/CCDR	4	86	115	8,216	2,091	10,307	59.3	68.7
10SP318	CCDR/LGRU//AC919	5	87	115	7,509	2,180	9,689	57.7	68.8
10SP319	CPRS/KBNT//9502008-A/3/RU0602180	4	86	111	7,800	1,670	9,470	55.8	68.4
10SP320	CPRS/KBNT//9502008-A/3/JAF4DH3	4	89	108	8,192	2,642	10,833	63.0	70.7
10SP321	CPRS/LGRU//LGRU/3/AC627	5	85	106	8,651	3,066	11,717	60.3	70.2
10SP322	CPRS/LGRU/3/9502008-A//AR1188/CCDR	4	87	113	8,780	2,176	10,956	60.1	71.0
10SP323	CPRS/LGRU//RU0602128	4	87	112	8,119	2,145	10,265	57.7	70.8
10SP324	CPRS/NWBT//KATY/3/CCDR/4/RU0602128	4	86	108	7,819	2,268	10,087	62.0	71.4
10SP325	RU0902134	3	88	114	7,773	2,298	10,071	58.0	70.0
10SP326	CPRS/NWBT//KATY/3/CCDR/4/RU0602128	4	89	108	7,082	2,084	9,165	57.1	69.4
10SP327	CPRS/NWBT//KATY/3/CCDR/4/AC622	4	88	109	7,337	3,955	11,291	56.0	67.1
10SP328	CPRS/NWBT//KATY/3/CCDR/4/AC622	4	89	108	7,894	3,789	11,683	57.8	68.2
10SP329	CPRS/NWBT//KATY/3/CCDR/4/AC622	5	89	109	8,597	4,438	13,035	57.1	69.5
10SP330	JAF4DH3/3/9502008-A//AR1188/CCDR	4	90	110	7,306	2,879	10,185	60.4	69.9
10SP331	JAF4DH3//CPRS/LGRU	4	88	111	7,787	2,997	10,784	61.6	70.0
10SP332	RU0402022/3/9502008//KATY/902207x2	4	86	113	8,259	2,226	10,485	55.4	67.3
10SP333	RU0402022/RU0502171	4	87	107	7,750	2,671	10,421	58.7	69.0
10SP334	RU0402022/RU0502171	5	89	112	7,874	2,573	10,447	62.1	71.3
10SP335	DREW/CCDR//AC1012	5	90	111	7,614	1,714	9,328	59.7	68.5
10SP336	TACAURI//KBNT/LCSN/3/0402097	4	92	108	7,759	3,366	11,125	59.7	70.5
10SP337	DREW/CCDR//9502008/DREW	6	89	109	8,820	2,429	11,249	61.1	69.8
10SP338	0502174/0402128	6	91	109	7,169	1,461	8,630	59.6	69.7
10SP339	9502008//AR1188/CCDR/3/CCDR	4	90	112	8,387	2,531	10,918	58.5	69.2
10SP340	CCDR/JEFF//CCDR	5	89	108	7,818	1,748	9,566	60.8	69.7
10SP341	CCDR/JEFF//CCDR	4	91	109	8,052	2,024	10,076	59.6	69.0

Continued.

Table 8. Continued.

Entry	Pedigree	Vigor*	Days to 50% Heading	Plant Height (cm)	Yield (lb/A)			Milling (%)	
					Main	2^{nd}	Total	Head	Total
10SP342	CCDR/JEFF//0402022	4	90	112	8,656	2,355	11,011	60.1	70.0
10SP343	CCDR/JEFF//0402022	5	92	107	8,943	2,285	11,228	59.2	69.0
10SP344	9502008-A//AR1188/CCDR/3/AC1048	5	85	115	7,874	2,410	10,285	58.1	71.6
10SP345	CPRS/LGRU/3/9502008-A//AR1188/CCDR	6	90	107	8,349	1,108	9,457	54.1	67.8
10SP346	CPRS/NWBT//KATY/3/CCDR/4/AC1048	4	89	105	8,780	3,645	12,425	62.7	70.7
10SP347	CPRS/NWBT//KATY/3/CCDR/4/AC1048	5	84	112	9,055	2,348	11,403	64.6	71.0
10SP348	CPRS/NWBT//KATY/3/CCDR/4/AC1048	5	85	109	8,176	2,466	10,642	62.2	72.1
10SP349	JAF4DH3//9502008-A/DREW	4	89	110	8,457	1,821	10,278	58.7	68.6
10SP350	RU0902137	4	87	119	9,532	1,754	11,286	56.9	68.9
10SP351	CPRS/4/TACAURI/3/CPRS//L202/TBNT	4	88	107	8,705	1,674	10,378	55.8	64.6
10SP352	CPRS/3/NWBT/KATY//9902207X2	4	91	106	8,238	2,292	10,530	56.4	67.3
10SP353	CPRS//9502008/DREW	4	92	114	8,798	2,375	11,174	58.6	69.0
10SP354	CPRS//9502008/DREW	4	90	112	9,000	3,550	12,550	60.9	69.9
10SP355	CPRS//CCDR/JEFF	4	94	107	7,645	2,156	9,801	57.5	68.3
10SP356	0402022/3/CPRS/KBNT//9502008	4	91	111	8,949	2,489	11,437	54.4	66.4
10SP357	0402022/0502094	4	171	109	9,790	2,056	11,847	60.4	69.9
10SP358	CCDR/JEFF/3/9502008//AR1142/MBLE	4	89	112	10,046	2,299	12,345	63.2	71.3
10SP359	CCDR/JEFF//0402128	5	91	112	8,298	1,739	10,037	59.5	70.0
10SP360	9502008//KATY/902207x2/3/0402068	4	90	107	7,734	2,050	9,784	60.2	69.2
10SP361	CCDR//CCDR/JEFF	4	88	111	8,183	1,521	9,704	59.9	71.2
10SP362	CCDR//9901081/CCDR	4	88	99	7,527	3,996	11,522	53.5	68.3
10SP363	CCDR/3/9502008-A//AR1188/CCDR	4	91	110	8,276	2,559	10,835	59.4	69.2
10SP364	CCDR/RU0602137	4	89	111	9,081	2,406	11,487	61.8	71.2
10SP365	CCDR/RU0601004	4	90	111	8,385	2,586	10,971	56.3	69.5
10SP366	CPRS/KBNT//9502008-A	4	89	110	9,914	2,892	12,806	59.7	69.4
10SP367	CPRS/KBNT//9502008-A/3/AC1021	4	87	112	9,450	2,657	12,107	60.8	69.7
10SP368	9502008-A//AR1188/CCDR/3/CCDR/JEFF	4	87	111	9,397	2,228	11,626	60.7	70.5
10SP369	9502008-A//AR1188/CCDR/3/AC919	3	90	111	8,428	2,643	11,071	63.7	73.0
10SP370	KATY/CPRS//JKSN/3/AR1188/CCDR/4/AC427	3	87	116	8,808	2,213	11,021	64.2	72.0
10SP371	KATY/CPRS//JKSN/3/AR1188/CCDR/4/AC1094	4	85	112	6,816	2,267	9,083	61.7	70.7
10SP372	CCDR/LGRU//AC1048	4	85	110	8,963	2,397	11,361	61.1	70.7
10SP373	CCDR/LGRU//AC919	3	88	113	8,602	2,447	11,049	59.5	69.8

Continued.

Table 8. Continued.

Entry	Pedigree	Vigor*	Days to 50% Heading	Plant Height (cm)	Yield (lb/A) Main	Yield (lb/A) 2nd	Yield (lb/A) Total	Milling (%) Head	Milling (%) Total
10SP374	L201//TBNT/BLMT/3/CPRS/4/RU0602094	4	85	112	6,843	1,554	8,396	63.5	70.8
10SP375	RU0902028	4	85	117	8,292	2,945	11,237	59.4	70.1
10SP376	RU0402022/3/9502008//KATY/902207x2	3	90	110	7,340	1,971	9,310	56.2	68.4
10SP377	RU0402022/3/9502008//KATY/902207x2	5	88	106	7,130	1,766	8,896	59.6	69.4
10SP378	DREW/CCDR//AC919	5	93	110	6,945	3,516	10,460	60.6	70.1
10SP379	DREW/CCDR//AC919	5	89	111	8,066	2,299	10,365	61.4	69.8
10SP380	CPRS/3/NWBT/KATY//9902207X2	4	89	120	6,547	2,002	8,548	60.5	70.3
10SP381	CPRS//9502008/DREW	4	91	114	8,885	2,655	11,540	59.9	69.2
10SP382	CPRS//9502008/DREW	4	88	111	5,545	1,705	7,249	60.6	69.7
10SP383	CPRS//CCDR/JEFF	5	88	110	8,329	1,856	10,185	62.7	71.2
10SP384	0402022/3/CPRS/KBNT//9502008	5	90	108	8,176	3,004	11,180	57.9	68.3
10SP385	0402022/3/9502008//AR1188/CCDR	5	92	108	7,776	2,490	10,265	55.4	66.6
10SP386	0402022/3/9502008//AR1188/CCDR	5	92	112	7,641	2,767	10,408	57.2	68.9
10SP387	0402022/3/9502008//AR1188/CCDR	6	90	109	7,369	2,434	9,802	57.1	68.0
10SP388	0402022/3/9502008//AR1142/MBLE	6	91	107	7,203	2,035	9,238	55.8	67.2
10SP389	RU0602128/3/9502008-A//AR1188/CCDR	5	89	112	8,085	2,447	10,532	59.2	68.2
10SP390	9502008//KATY/902207x2/3/CCDR	5	90	111	7,779	1,785	9,564	61.7	70.5
10SP391	JZMN/4/JSMN/DLLA/3/L202/Leah//Toro	7	90	91	4,521	2,056	6,577	58.4	69.7
10SP392	DLLAx2/LMNT*2/3/DMSI/DLLAx2//…/4/JSMN/DLLA//…	6	89	103	5,586	2,786	8,372	47.8	65.1
10SP393	JZMN/DLRS	6	92	97	6,904	2,274	9,178	60.1	68.6
10SP394	9502008//KATY/9902207x2/3/JSMN/DLLA//LEAH/DLLA	4	88	105	6,901	2,947	9,847	64.1	71.6
10SP395	9502008//KATY/9902207x2/3/JSMN/DLLA//LEAH/DLLA	5	90	101	6,621	3,088	9,709	60.6	70.3
10SP396	JZMN/DLRS	6	84	105	6,356	4,203	10,559	55.2	67.3
10SP397	JSMN/DLLA//DLLA/3/RU0302125	5	89	101	7,965	2,394	10,359	58.7	68.9
10SP398	JSMN/DLLA/LLEAH/DLLA/3/JSMN/DLLA//DLLA	7	88	117	6,191	2,165	8,356	54.4	67.5
10SP399	RU0402085/5/DLMT 8462…/4/DMSI	5	91	106	6,876	2,336	9,212	58.3	68.5
10SP400	Jazzman	4	95	109	7,781	1,838	9,619	59.8	67.9

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

Table 9. Average yield, milling, and agronomic performance of 8 experimental long-grain, 3 specialty lines, and 5 check varieties in the Uniform Regional Rice Nursery (URN) and Commercial Advanced (CA) trials at four Louisiana locations (Crowley, Fenton, Mamou, and Mowata), 2010.

							Yield (lb/A)			Milling (%)	
Entry	Entry	Pedigree	Grain Type	Vigor*	Days to 50% Heading	Plant Height (inch)	Main	2nd	Total	Head	Total
245	RU1002140	AC1075	Long	4.2	76	37	7,280	3,072	11,750	64.5	71.0
246	RU0802022	AC1398	Long	4.3	74	39	6,672	3,393	11,706	59.9	69.1
247	RU0802140	CPRS//L-205/DLLA	Della	5.2	83	41	6,304	4,222	11,544	58.0	67.8
248	RU1002028	CCDR/AC1048	Long	4.1	75	39	6,836	2,960	11,351	62.2	70.3
249	RU1002031	AC1399	Long	4.1	79	41	7,178	2,903	11,674	61.7	70.3
250	RU1002034	CCDR/AC627	Long	4.9	77	36	7,154	2,791	11,898	60.8	70.3
251	RU1002125	CCDR/3/CPRS/KBNT//9502008-A	Long	5.3	78	40	7,137	2,497	11,205	62.3	71.0
252	RU1002128	CCDR//9502008/LGRU	Long	5.2	79	39	7,845	2,836	11,971	64.1	71.3
253	RU1002131	AC1403	Long	3.8	79	39	6,685	3,163	11,027	66.5	71.5
254	RU1002146	NWBT/KATY//9902207x2/3/JSMN/DLLA//…	Jasmine	4.8	74	37	6,354	2,834	10,799	65.7	71.7
255	RU0802149	9502008//KATY/9902207X2/3/JSMN/…	Jasmine	4.9	80	35	5,548	3,004	9,770	67.2	71.2
256	RU1002134	AC1075	Long	4.7	77	36	7,289	3,092	12,116	62.6	70.5
257	RU1002137	KATY/CPRS//JKSN/3/AR1188/CCDR/4/AC627	Long	4.1	74	39	7,804	2,664	12,249	62.9	71.1
203	CL151		Long	4.4	78	42	7,764	2,139	11,284	58.8	69.3
217	Jazzman		Jasmine	5.0	85	41	6,422	1,779	9,549	61.1	69.5
218	Dellrose		Della	6.1	79	39	5,927	3,743	11,295	61.1	70.7
219	Catahoula		Long	5.1	80	40	7,637	3,067	12,398	60.8	71.0

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

Table 10. Yield, milling, and agronomic performance of long-grain and specialty entries of the Advanced Yield trial (AY) tested at Rice Research Station, Crowley, LA. 2010.

			Days to	Plant Height	Yield (lb/A)			Milling (%)	
Entry	Pedigree	Vigor*	50% Heading	(cm)	Main	2nd	Total	Head	Total
001	AC1094	4.0	94	106	7,034	3,039	10,073	61.5	68.7
002	CCDR/3/JSMN/DLLA//LEAH/DLLA	4.7	91	111	5,419	1,986	7,405	57.1	67.7
003	JSMN/DLLA//96SP287/3/CPRS/DREW	4.7	91	110	5,540	2,710	8,250	59.4	71.0
004	NCHS//JSMN/DLLA	5.3	90	107	4,224	2,291	6,514	56.7	68.6
005	CCDR/3/JSMN/DLLA//LEAH/DLLA	4.0	90	109	6,187	1,515	7,701	61.6	70.3
006	9502008/CPRS/3/JSMN/DLLA//LEAH/DLLA	4.3	89	115	5,625	2,236	7,861	60.4	68.7
007	JSMN/DLLA//96SP287/3/CPRS/DREW	4.3	91	112	6,106	2,567	8,674	56.3	69.4
008	JSMN/DLLA//96SP287/4/KATY/CPRS//NWBT/…	4.3	87	113	5,715	3,287	9,002	55.6	67.9
009	DLLAx2/LMNT*2/3/DMSI/DLLAx2//…/4/JSMN/DLLA//…	3.7	87	108	4,794	2,961	7,755	59.0	69.7
010	DLLAx2/LMNT*2/3/DMSI/DLLAx2//…/4/JSMN/DLLA//…	5.7	91	97	3,279	2,947	6,226	38.6	60.8
011	A-301/KATY/3/JSMN/DLLA//LEAH/DLLA	3.7	93	113	4,012	3,058	7,071	53.4	66.8
012	AC1073	4.7	88	100	6,271	2,151	8,422	55.1	66.7
013	AC1081	4.3	86	102	7,687	2,174	9,861	60.3	69.6
014	AC1415	4.3	88	102	8,285	2,321	10,606	62.0	69.7
015	CCDR//CCDR/JEFF	4.3	88	109	8,182	2,622	10,804	58.2	70.0
016	CPRS//CCDR/JEFF	4.0	88	108	7,719	1,652	9,371	59.8	71.4
017	CPRS/3/9502008//AR1188/CCDR	3.7	89	108	6,702	2,357	9,058	59.4	68.7
018	AC1073	5.0	87	102	6,320	2,274	8,595	56.8	68.6
019	AC1072	4.7	86	99	7,436	2,570	10,006	59.9	70.4
020	AC1406	4.3	90	106	7,524	2,687	10,210	59.5	70.0
021	DREW/CCDR//CCDR	4.0	87	116	6,767	2,857	9,624	58.7	70.1
022	AC110/AC638	3.3	89	103	6,372	3,027	9,399	62.1	71.7
023	0402022/3/9502008//AR1142/MBLE	4.3	92	112	7,414	3,265	10,679	56.1	67.2
024	CCDR/JEFF/3/9502008//AR1142/MBLE	4.0	89	114	8,118	2,434	10,552	60.8	69.7
025	9502008//AR 1188/CCDR/3/CCDR	4.0	89	113	8,451	2,078	10,529	61.5	70.3
026	9502008//AR 1188/CCDR/3/CCDR	3.7	89	118	8,251	1,746	9,998	59.8	69.7
027	9502008//AR 1188/CCDR/3/CCDR	3.7	89	111	8,494	2,051	10,545	61.2	71.4
028	AC1401	4.3	87	101	7,422	2,272	9,693	62.0	70.3
029	AC1075	4.7	88	104	6,828	3,837	10,665	58.7	68.4
030	AC1399	3.7	88	97	7,100	2,281	9,381	53.3	68.1
031	AC1398	4.0	89	99	8,866	2,807	11,673	58.1	69.7
032	CCDR/JEFF/3/9502008//AR1142/MBLE	3.0	88	113	8,475	2,386	10,861	63.0	71.5
033	0402022/0502094	3.7	87	113	7,544	2,508	10,052	61.1	70.6
034	CPRS/KBNT//9502008-A	3.3	88	113	8,355	2,890	11,245	57.5	68.6
035	RU0802131	4.3	84	112	8,176	1,991	10,167	61.4	71.9
036	CL151	4.3	89	115	6,843	2,497	9,340	59.0	69.0
c.v.%		13.3	1.2	2.5	9.8	12.7	7.4	5.7	2.1
$LSD_{0.05}$		0.9	1.7	4.4	1100	601	1177	6.7	2.9

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

Table 11. Yield, milling, and agronomic performance of specialty entries of the Advanced Yield trial (AY) tested at Fenton, Jefferson Davis Parish, LA. 2010.

Entry	Pedigree	Vigor*	Days to 50% Heading	Plant Height (cm)	Yield (lb/A)	Milling (%) Head	Milling (%) Total
001	AC1094	3.7	80	37	4,948	49.8	64.6
002	CCDR/3/JSMN/DLLA//LEAH/DLLA	4.3	80	37	5,000	49.8	65.2
003	JSMN/DLLA//96SP287/3/CPRS/DREW	4.0	74	38	4,608	48.6	67.7
012	AC1073	3.3	79	34	4,725	48.2	64.7
013	AC1081	3.7	79	34	4,964	52.4	67.7
014	AC1415	4.0	79	35	5,653	49.4	65.8
015	CCDR//CCDR/JEFF	4.0	76	37	6,087	50.8	66.9
018	AC1073	3.7	79	33	3,497	48.3	63.8
023	0402022/3/9502008//AR1142/MBLE	4.0	80	37	6,173	49.7	65.0
024	CCDR/JEFF/3/9502008//AR1142/MBLE	4.0	78	37	5,758	51.8	66.7
027	9502008//AR 1188/CCDR/3/CCDR	4.0	75	37	5,525	53.0	67.2
035	RU0802131	3.0	72	36	3,594	52.0	68.6
c.v.%		9.1	2.0	4.0	6.1	3.4	1.6
$LSD_{0.05}$		0.6	2.7	6.2	517	3.8	2.4

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

DEVELOPMENT OF HYBRID RICE FOR LOUISIANA

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

Introduction

Rice is one of the three most important cereal crops and the world's No. 1 food crop. It is planted on 147 million hectares worldwide or about 11% of the world's arable land. Rice is also one of the most important commodity crops in Louisiana. Hybrid rice is the commercial rice crop grown out of F_1 seeds of crosses between two genetically different inbred parents. Because of its hybrid vigor (heterosis), hybrid rice has a 15% or more yield advantage over the best inbred variety grown under similar conditions. It can promote farmers' productivity and competitiveness, open new seed industries, and attain food security. Research goals of the newly established Hybrid Rice program at LSU AgCenter's Rice Research Station (RRS) 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.

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.

Materials and Methods

Critical hybrid rice germplasm was introduced from the Rice Research Institute, Guangxi Academy of Agricultural Sciences, China. A total of 212 test-crosses, candidate hybrids, and about 200 Louisiana pure lines also were included as experimental material. All material was planted between late March and early May, and common cultural practices were applied. Data on pollen sterility, yield, maturity, plant height, spikelets per panicle, seed setting rate, and rice quality were collected and analyzed.

Results

The re-evaluated results confirmed again the complete abortive-type sterility and genetic stability in Chinese male sterile lines and restorer lines under the field conditions near Crowley, Louisiana. Some of the introduced hybrid rice germplasm appeared to be compatible with elite Louisiana long-grain genotypes. They may become the foundation for hybrid rice development and production in Louisiana. From a transplanted observation trial, we identified several 3-line and 2-line test crosses that had good yield potential, good resistance, good plant type, and suitable maturity (Tables 1-2). Further advanced evaluation on those entries is necessary to determine their potential. From the direct-seeded observational trial of 212 test crosses, a number of potential parental lines were identified, which include 13 potential restorer lines, 14 potential maintainer lines, and about 20 potential pollinator lines for 2-line hybrids. A direct-seeded replicated yield trial with three candidate Chinese hybrids and two commercial checks was conducted. Results from this trial are listed in Table 3. Concept hybrid seed production and multiplication were also conducted. Seed yield is between 2,300-2,500 lb/A, which is very encouraging. Nonetheless, challenges still exist, which include lack of locally adapted germplasm that could be directly utilized in hybrid rice development and production, poor grain quality, late maturity of current candidate hybrids, and the development of a completely new seed production system.

Table 1. Yield, milling, and agronomic characteristics of five selected test crosses in a transplanted observational yield trial. Crowley, LA. 2010.

Entry	Grain type	50% Heading (days)	Plant height (cm)	Yield (lb/A)	Milling yield (%)		Seed-setting rate (%)	Grain weight (mg)	Gel temp	Amylose (%)
					Head rice	Total rice				
L10-007	L	73	105	12,746	60	70	90	25	4.5	22.0
L10-008	L	69	85	10,224	58	70	92	25	4.0	23.0
L10-015	L	71	85	10,666	61	71	92	24	4.0	22.0
L10-102	L	87	120	14,352	56	69	92	25	4.0	21.0

Table 2. Yield, milling, and agronomic characteristics of four candidate hybrids re-tested in a transplanted observational yield trial. Crowley, LA. 2010.

Entry	Grain type	50% Heading (days)	Plant height (cm)	Yield (lb/A)	Milling yield (%)		Seed-setting rate (%)	Grain weight (mg)	Gel temp	Amylose (%)
					Head rice	Total rice				
LAH10	M	90	120	15,500	63	71	92	25	6.0	14.0
L10-176	L	73	105	12,800	60	72	86	24	4.0	22.0
08S/R53	L	80	115	13,392	56	68	87	24	4.5	21.0

Table 3. Yield, milling, and agronomic characteristics of three Chinese hybrids and two check varieties in drill-seeded and replicated yield trial. Crowley, LA. 2010.

Entry	Grain type	50% heading (days)	Plant height (cm)	Yield (lb/A)	Milling yield (%)		Seed-setting rate (%)	Grain weight (mg)	Gel temp	Amylose (%)
					Head rice	Total rice				
LAH10	M	75	122	7,965	68	73	90.6	24.8	6.0	14.2
LAH12	L	75	120	7,663	67	75	86.5	22.0	7.0	10.0
LAH20	M	75	125	8,502	68	73	91.6	26.4	6.5	17.0
Neptune	M	85	96	6,970	66	72	82.9			
CL151	L	73	110	6,287	65	72	80.1			

RICE GENETICS AND GERMPLASM DEVELOPMENT

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

Summary

Objectives for this project: 1) Hybrid rice germplasm adapted to Louisiana conditions was developed from crosses between Philippine, Chinese and Louisiana lines; 2) Candidate DNA markers and genes for sheath blight resistance were identified from the DNA sequences of 13 rice varieties. Future research will focus on validation with different varieties, lines and populations; and 3) Several sheath blight-tolerant lines with good agronomic traits were developed and will be made available to the Breeding Project at the Rice Research Station.

Development of Adapted Inbred Lines for Hybrid Rice in Louisiana

During the fourth year of hybrid rice germplasm development for Louisiana, a total of 20 selected hybridizations were made using different cytoplasmic male sterile, maintainer, and restorer lines from the Philippines and China that were crossed to four Louisiana varieties. In addition, 520 inbred lines were screened in the field with the final selection of two potential restorer lines that were crossed to a two-line Chinese male sterile. Hybridizations were carried out by Dr. Sha. A total of four test crosses were made that will be evaluated in a common test cross nursery at the Rice Station in 2011.

High stigma exsertion rates are required for commercial hybrid seed production. In cooperation with Dr. Sha and Prof. Li, a large F_2 population derived from a cross between CL161 and a Chinese male sterile line were screened for high stigma exsertion rates. Three individual F_2 plants were identified with good plant type and exsertion rates that ranged from 20 to 44% compared with the original male sterile line (34%) and CL161 (15%). A subset of F_3 lines were grown in the greenhouse that produced sigma exsertion rates that ranged from 23 to 92% compared with CL161 (19%). These results suggest that good plant type and high stigma exsertion rates can be combined in adapted Louisiana germplasm. Both F_3 and F_4 stigma exsertion lines will be further evaluated at the Rice Station in 2011 field plots.

Development of new hybrids for Louisiana involves field evaluation of numerous testcross progeny that require extensive inputs in labor, time, money, and field plot space. In addition, we observed that a majority of testcrosses in 2011 showed late maturity and tall stature compared with conventional inbred varieties. We are using DNA technology from seven known genes involved in maturity and height to assist in identification of testcrosses with desirable flowering time and height. In addition, we have identified three DNA markers that show genetic differences (polymorphism) between a two-line male sterile and various restorer lines. Additional testing is needed in 2011 to confirm all results that could help reduce input costs and facilitate rapid development of new inbred lines used to create elite Louisiana hybrids.

Identification of Candidate DNA Markers and Genes for Sheath Blight Resistance

The RiceCAP Project determined the DNA sequence of 13 rice varieties with the goal to identify markers and genes that will assist in rapid varietal improvement. Three Louisiana varieties (Cypress, Bengal, and Cocodrie) and one sheath blight line (MCR010277) were included for analysis. Results to date show extensive DNA variation at ~700,000 loci among the sheath blight-resistant (Teqing, Jasmine 85, MCR010277, and Shu-Feng 121-1655) and susceptible varieties (Bengal**,** Bowman, Cocodrie, Cypress, Francis, L-201, LaGrue, Lemont, and Wells). More than 200 candidate genes (alleles) were identified that were present in the resistant varieties and absent in the susceptible material. The majority of the selected candidates belonged to gene families reported in the literature to be associated with disease resistance in rice and other crop plants. Nevertheless, we identified several genes that have not been reported and therefore may be considered as new candidates for sheath blight resistance. In addition to the 13 varieties, candidate genes were also found in two Louisiana sheath blight lines and in one accession of the related wild species, *Oryza nivara*. These results suggest that one or more of the candidate genes may be associated with sheath blight resistance. Research in 2011 will focus on validation of the selected markers by additional screening of different varieties, lines, and 35 populations segregating for sheath blight resistance.

Development of Sheath Blight-Resistant Germplasm by Traditional Genetic Approaches

During 2010, a total of 140 F_1 crosses from multiple resistance sources were completed. More than 35 F_2 to F_6 families were screened in inoculated plots. A total of 79 lines with sheath blight ratings $\leq$5 and good agronomic traits was identified. All selected material will be grown and crossed with adapted Louisiana varieties and lines in 2011. Certain selected lines will also be screened for presence of sheath blight DNA markers described above.

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

H.S. Utomo and S.D. Linscombe

During the 2010 growing season, the marker-assisted breeding project have evaluated 2,000 advanced lines carrying multiple blast-resistant alleles (verified using DNA markers), 2,000 rows of F_2 and F_3 lines containing multiple allele combinations of two to three quality traits (cold and salt tolerance; cold and drought tolerance; and cold, drought, and salt tolerance) from two- to four-way crosses, and 1,000 progeny rows for accumulation target traits from multi donor lines through specific multiple backcross schemes. In all cases, marker screening was imposed in the early generations to obtain its efficiency in cost and labor involved. For 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 that may potentially be released. From the 2,000 advanced lines evaluated, 350 were selected. Performance of a subset of these 350 selected lines, i.e. 50 Pi-ta^2/Pi-b lines (Table 1) and 50 Pi-ta^2/Pi-kh lines (Table 2), is presented. A total of 450 lines were selected from 2,000 rows of F_2 and F_3 progeny lines and will be advanced in the next growing season. From 1,000 progeny rows developed through backcross to incorporate traits from multi donors, 400 lines were selected and will subsequently be advanced.

Twenty-two advanced lines from the marker-assisted selection were put in the preliminary yield (PY) tests to evaluate their yield potential, milling performance, and other agronomic traits in the standard plot size of 4 x 16 ft. The test plots, however, suffered from herbicide drift. While some plots were not affected, the drift caused considerable damage to 2/3 of the plots, with causing injury to various degrees from low (5% injury) to severe (100% injury with no surviving plants). Based on data collected from the plots not affected by herbicide drift, it appears that some advanced lines from marker-assisted selection have excellent yield potential, milling quality, and other agronomic traits (Table 3). Tests will be repeated in the coming seasons and several lines will be advanced to multi-location trials.

Marker-assisted backcrossing (MABC) were used to develop a model for rapid introgression of specific traits. Two MABC models of rapid introgression using Louisiana breeding lines were used. To facilitate rapid 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. In addition to selfing, BC_1 lines that carry the pyramided genes were 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. Agronomic performance of these lines is presented in Tables 4 and 5. Various introgression methods that are being evaluated in the marker-assisted breeding project will be used to develop a strategy to streamline the introgression of various traits that have potential applications and economical values to the rice industry.

Rice accessions from the U.S.D.A. mini-core collection that represents rice in the world are being evaluated for their potential use to improve Louisiana breeding lines. The first year agronomic data were collected. Further evaluation will be conducted to collect a second year of data. While evaluating the lines, efforts will be focused on identifying novel traits that can be used to improve Louisiana rice germplasm.

Improving selection gain using markers as a selection index while lines from specific crosses are advanced is being used in the marker-assisted breeding program. The marker-based selection index for important traits, such as grain yield, panicle number, grain weight, plant height, and heading date, is being developed and continuously refined through the progression breeding lines. Unlike the QTL approach, molecular markers are used for predicting performance without QTL mapping. Genetic improvement of qualitative traits is conducted by fitting all markers used in the analysis as random effects in a linear model and the trait values can be predicted from a weighted index.

Table 1. 2010 Field performance of some select lines carrying Pi-ta[2]/Pi-b lines.

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	77	86	24.8	6.8	545
2	08F39733	Pi-ta[2],Pi-b	L	3	76	87	27.1	7.1	601
3	08F39734	Pi-ta[2],Pi-b	L	3	74	83	25.6	7.3	567
4	08F37225	Pi-ta[2],Pi-b	L	5	75	83	22.3	6.7	440
5	08F37226	Pi-ta[2],Pi-b	L	4	75	84	24.8	7.0	480
6	08F47911	Pi-ta[2],Pi-b	L	4	78	82	30.2	5.0	509
7	08F47913	Pi-ta[2],Pi-b	L	3	80	85	27.4	5.3	532
8	08F47914	Pi-ta[2],Pi-b	L	3	81	88	29.1	4.3	545
9	08F47916	Pi-ta[2],Pi-b	L	5	79	83	29.8	6.1	577
10	08F49122	Pi-ta[2],Pi-b	L	3	78	85	22.6	7.6	579
11	08F49123	Pi-ta[2],Pi-b	L	3	78	85	23.6	7.7	599
12	08F49125	Pi-ta[2],Pi-b	L	3	79	87	23.1	7.4	576
13	08F49126	Pi-ta[2],Pi-b	L	2	81	86	24.5	6.7	607
14	08F51342	Pi-ta[2],Pi-b	L	3	83	84	27.4	7.5	589
15	08F51343	Pi-ta[2],Pi-b	L	3	86	83	30.2	6.5	578
16	08F54032	Pi-ta[2],Pi-b	L	4	81	82	27.2	6.5	478
17	08F54034	Pi-ta[2],Pi-b	L	5	87	79	25.1	7.1	499
18	08F54036	Pi-ta[2],Pi-b	L	3	86	80	25.3	5.5	509
19	08F47544	Pi-ta[2],Pi-b	L	3	85	81	32.1	6.2	570
20	08F47545	Pi-ta[2],Pi-b	L	3	81	76	34.3	5.9	515
21	08F43761	Pi-ta[2],Pi-b	L	4	79	80	28.3	7.5	557
22	08F43765	Pi-ta[2],Pi-b	L	4	77	81	29.8	7.7	512
23	08F43766	Pi-ta[2],Pi-b	L	3	82	78	22.1	6.5	535
24	08F43769	Pi-ta[2],Pi-b	L	4	83	79	29.3	7.2	555
25	08F34552	Pi-ta[2],Pi-b	L	5	75	88	33.4	6.1	579
26	08F34553	Pi-ta[2],Pi-b	L	4	74	87	33.1	5.0	601
27	08F44111	Pi-ta[2],Pi-b	L	3	87	76	29.3	8.3	504
28	08F44112	Pi-ta[2],Pi-b	L	3	88	77	27.1	7.5	532
29	08F44114	Pi-ta[2],Pi-b	L	4	86	74	29.4	7.4	541
30	08F76222	Pi-ta[2],Pi-b	L	2	83	81	29.2	4.3	607
31	08F76223	Pi-ta[2],Pi-b	L	3	79	88	31.3	4.2	567
32	08F57115	Pi-ta[2],Pi-b	L	2	88	86	29.5	5	590
33	08F77223	Pi-ta[2],Pi-b	L	2	76	78	26.3	5.2	450
34	08F77224	Pi-ta[2],Pi-b	L	3	74	75	25.4	4.4	508
35	08F77225	Pi-ta[2],Pi-b	L	3	73	74	27.1	6.2	565
36	08F46721	Pi-ta[2],Pi-b	L	5	77	85	26.6	6.5	490
37	08F46724	Pi-ta[2],Pi-b	L	3	77	88	28.6	6.4	506
38	08F53842	Pi-ta[2],Pi-b	L	2	83	81	30.9	4.6	589
39	08F53849	Pi-ta[2],Pi-b	L	2	85	85	27.1	6.5	557
40	08F71751	Pi-ta[2],Pi-b	L	3	86	80	21.5	6.3	567
41	08F71756	Pi-ta2,Pi-b	L	2	87	80	22.1	7.1	428

Continued.

Table 1. Continued.

No.	Plant ID	Blast genes	Grain type§	Vigor¶	Plant height (cm)	Heading date	Panicle length (cm)	Panicle weight (g)	Row yield (g)
42	08F71757	Pi-ta^2,Pi-b	L	1	84	86	20.3	7.3	569
43	08F71759	Pi-ta^2,Pi-b	L	2	84	86	29.1	6.5	589
44	08F58251	Pi-ta^2,Pi-b	L	1	88	88	13.6	6.1	580
45	08F58258	Pi-ta^2,Pi-b	L	3	88	80	24.0	6.4	578
46	08F12455	Pi-ta^2,Pi-b	L	4	81	83	22.7	6.3	495
47	08F77541	Pi-ta^2,Pi-b	L	3	81	88	30.2	5.2	479
48	08F77544	Pi-ta^2,Pi-b	L	2	86	85	23.5	7.1	455
49	08F77548	Pi-ta^2,Pi-b	L	2	87	81	23.8	4.3	587
50	08F77549	Pi-ta^2,Pi-b	L	2	85	79	27.3	6.6	498
51	CCDR		L	3	94	85	31.2	6.3	587

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

Table 2. 2010 Field performance of some select lines carrying Pi-ta^2/Pi-kh lines.

No.	Plant ID	Blast genes	Grain type§	Vigor¶	Plant height (cm)	Heading date	Panicle length (cm)	Panicle weight (g)	Row yield (g)
1	08F51123	Pi-ta^2, Pi-kh	L	2	99	88	28.3	5.8	506
2	08F51124	Pi-ta^2, Pi-kh	L	3	97	80	30.2	6.0	555
3	08F51127	Pi-ta^2, Pi-kh	L	2	81	89	27.8	5.6	567
4	08F51129	Pi-ta^2, Pi-kh	L	3	87	87	34.3	4.8	487
5	08F51511	Pi-ta^2, Pi-kh	L	3	88	86	27.5	4.7	601
6	08F51512	Pi-ta^2, Pi-kh	L	3	78	84	30.1	5.2	453
7	08F51514	Pi-ta^2, Pi-kh	L	3	90	87	34.2	6.0	570
8	08F51518	Pi-ta^2, Pi-kh	L	3	89	81	33.1	5.3	540
9	08F53331	Pi-ta^2, Pi-kh	L	3	87	85	27.3	4.2	562
10	08F53335	Pi-ta^2, Pi-kh	L	4	78	88	25.9	4.1	545
11	08F53337	Pi-ta^2, Pi-kh	L	3	79	90	26.1	4.9	574
12	08F53338	Pi-ta^2, Pi-kh	L	3	80	95	26.0	6.2	537
13	08F53339	Pi-ta^2, Pi-kh	L	2	80	100	25.9	5.1	476
14	08F28222	Pi-ta^2, Pi-kh	L	4	99	86	33.1	4.8	504
15	08F28223	Pi-ta^2, Pi-kh	L	1	91	82	29.0	6.1	556
16	08F28229	Pi-ta^2, Pi-kh	L	3	94	87	27.1	5.4	602
17	08F38511	Pi-ta^2, Pi-kh	L	4	88	88	23.9	5.8	561
18	08F38515	Pi-ta^2, Pi-kh	L	3	87	87	30.5	5.7	542
19	08F38516	Pi-ta^2, Pi-kh	L	3	87	83	27.5	5.8	574
20	08F54835	Pi-ta^2, Pi-kh	L	3	91	89	25.1	6.1	535
21	08F54836	Pi-ta^2, Pi-kh	L	3	89	95	22.9	6.5	454
22	08F54837	Pi-ta^2, Pi-kh	L	3	89	87	32.1	6.4	604

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)
23	08F54838	Pi-ta^2, Pi-kh	L	2	79	97	34.1	3.9	609
24	08F54839	Pi-ta^2, Pi-kh	L	2	88	89	28.5	5.8	577
25	08F54843	Pi-ta^2, Pi-kh	L	3	98	91	27.1	5.7	590
26	08F58421	Pi-ta^2, Pi-kh	L	3	91	87	26.9	5.4	598
27	08F58425	Pi-ta^2, Pi-kh	L	2	91	88	29.6	5.5	567
28	08F58426	Pi-ta^2, Pi-kh	L	3	92	86	25.9	5.5	609
29	08F58427	Pi-ta^2, Pi-kh	L	4	89	85	28.9	5.9	379
30	08F58429	Pi-ta^2, Pi-kh	L	1	99	89	26.6	4.9	678
31	08F58429	Pi-ta^2, Pi-kh	L	2	92	84	27.8	5.2	454
32	08F48121	Pi-ta^2, Pi-kh	L	3	93	83	23.1	6.3	477
33	08F48122	Pi-ta^2, Pi-kh	L	1	95	87	27.1	5.8	478
34	08F48124	Pi-ta^2, Pi-kh	L	2	89	91	26.5	6.1	468
35	08F48128	Pi-ta^2, Pi-kh	L	4	88	87	22.4	6.5	545
36	08F36721	Pi-ta^2, Pi-kh	L	3	96	93	40.5	5.3	515
37	08F36723	Pi-ta^2, Pi-kh	L	2	97	79	33.2	5.4	489
38	08F36724	Pi-ta^2, Pi-kh	L	3	90	88	32.5	4.8	604
39	08F48031	Pi-ta^2, Pi-kh	L	5	89	87	30.5	5.9	477
40	08F48032	Pi-ta^2, Pi-kh	L	3	91	87	24.8	6.0	509
41	08F48037	Pi-ta^2, Pi-kh	L	5	87	90	26.8	5.3	503
42	08F48039	Pi-ta^2, Pi-kh	L	1	87	89	30.4	5.9	566
43	08F53925	Pi-ta^2, Pi-kh	L	2	88	90	26.4	5.6	598
44	08F53927	Pi-ta^2, Pi-kh	L	2	86	98	30.6	5.4	565
45	08F53928	Pi-ta^2, Pi-kh	L	4	86	99	36.1	6.0	600
46	08F53929	Pi-ta^2, Pi-kh	L	3	90	102	33.1	6.4	456
47	08F47831	Pi-ta^2, Pi-kh	L	3	93	87	29.1	5.7	567
48	08F47837	Pi-ta^2, Pi-kh	L	3	90	82	30.3	5.4	554
49	08F47838	Pi-ta^2, Pi-kh	L	2	99	83	27.5	5.3	564
50	08F47839	Pi-ta^2, Pi-kh	L	3	89	85	26.7	5.5	476
51	CCDR	Pi-ta^2, Pi-kh	L	3	98	86	29.6	5.2	509

Table 3. Agronomic and milling performance of marker-assisted-derived lines in preliminary yield trials in Crowley, LA. Herbicide drift affected a significant portion of this test (expressed as % injury). Seed of Jupiter as one of the checks failed to germinate because of a bad seed source.

No.	Line	Rep	% Injury	Plant height (in)	Yield (lb/A @12%)	Milling (%) Whole	Milling (%) Total
1	09H1016 Ent016	1	30	34.4	2125	57	71
2	09H1016 Ent016	2	10	33.6	4325	-	-
3	09H1016 Ent016	3	80	33.2	2898	-	-
4	09H1029 Ent029	1	0	38.8	6547	49	72
5	09H1029 Ent029	2	50	36.4	4734	-	-
6	09H1029 Ent029	3	60	37.2	4741	-	-
7	09H1030 Ent030	1	60	34.8	3782	57	71
8	09H1030 Ent030	2	80	30.8	3760	-	-
9	09H1041 Ent030	1	0	37.6	6688	59	72
10	09H1041 Ent030	2	0	36.4	6814	-	-
11	09H1041 Ent030	3	0	36	6294	-	-
12	09H1048 Ent029	1	0	38.4	5336	48	72
13	09H1048 Ent029	2	0	37.6	6837	-	-
14	09H1048 Ent029	3	10	38	6547	-	-
15	09H1056 Ent017	1	5	36.8	3716	54	70
16	09H1056 Ent017	2	100	-	-	-	-
17	09H1056 Ent017	3	95	31.2	-	-	-
18	09HU002	1	0	38.8	5945	60	72
19	09R-B-1200	1	10	34.4	6101	60	72
20	09R-B-1200	2	95	-	-	-	-
21	09R-B-1200	3	0	36.4	5477	57	71
22	09R-B-1201	1	90	-	-	-	-
23	09R-B-1201	2	90	-	-	-	-
24	09R-B-1201	3	0	36	4734	58	71
25	09R-B-1578	1	0	40	6071	56	71
26	09R-B-1578	2	0	37.6	4132	57	71
27	09R-B-1619	1	20	36	3611	52	71
28	09R-B-1619	2	0	39.6	4897	-	-
29	09R-B-1619	3	20	39.2	4912	-	-
30	09R-B-1621	1	5	39.6	6666	55	70
31	09R-B-1621	2	5	39.2	3938	57	71
32	09R-B-1621	3	0	39.2	7349		
33	09R-B-1623	1	10	36.4	3723	54	71
34	09R-B-1623	2	60	35.6	3842		
35	09R-B-1623	3	0	38	4102	51	69
36	09R-B-1638	1	0	35.2	3597	58	71
37	09R-B-1638	2	90	32	2638	-	-
38	09R-B-1638	3	90	-	4013	-	-
39	09R-B-1646	1	5	33.2	3909	61	71
40	09R-B-1646	2	0	34.8	4533		
41	09R-B-1646	3	10	32	4407	58	71
42	09R-B-1678	1	20	37.6	7944	-	-
43	09R-B-1989	1	100	-	-	-	-
44	09R-B-1989	2	40	36.4	3886	-	-

Continued.

Table 3. Continued.

No.	Line	Rep	% Injury	Plant height (in)	Yield (lb/A @12%)	Milling (%) Whole	Total
45	09R-B-1989	3	0	38	5499	56	71
46	09R-B-2072	1	50	34.8	-	-	-
47	09R-B-2072	2	0	37.6	5224	-	-
48	09R-B-2072	3	0	38.8	6688	53	70
49	09R-B-413	1	5	38.4	4095	59	72
50	09R-B-413	2	0	38	8219	-	-
51	09R-B-413	3	0	38.8	5009	-	-
52	09R-B-549	1	60	37.6	3069	-	-
53	09R-B-549	2	0	42.8	4369	47	67
54	09R-B-549	3	80	38.4	3344		
55	09R-B-858	1	0	36.4	5336	56	72
56	09R-B-858	2	30	32	2541	53	69
57	09R-B-858	3	20	36	4845		
58	09R-B-891	1	0	38	7268	59	73
59	09R-B-891	2	0	38	6710	-	-
60	09R-B-891	3	90	36	3589	-	-
61	CHENIERE	1	100	-		-	-
62	CHENIERE	2	20	35.2	3782	61	73
63	CHENIERE	3	70	36	4800		
64	CL151	1	0	38.4	7520	56	70
65	CL151	2	95	-		-	-
66	CL151	3	7.5	38.8	7654	-	-
67	CL161	1	10	36	1813	-	-
68	CL161	2	0	34.8	7914	59	71
69	CL161	3	80	28.8	4741	-	-
70	COCODRIE	1	70	33.2	2244	-	-
71	COCODRIE	2	10	36.4	3381	-	-
72	COCODRIE	3	5	35.2	4013	57	71
73	JUPITER	1	No germ	-	-	-	-
74	JUPITER	2	No germ	-	-	-	-
75	JUPITER	3	No germ	-	-	-	-

Table 4. Field performance in 2010 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.

	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	3	81	99	443
mbCL151-16	73(CL);11(L);11(S);5(K)	L	2	84	98	431
TRNS ck		L	2	76	101	420
CL151 ck		L	2	85	96	455
C.V. (%)			4.3	6.2	4.9	22.4
LSD (0.05)			0.7	5.1	4.6	26.8

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

Table 5. Field performance in 2010 of double haploid lines carrying Pi-ta^2, Pi-b, and Pi-kh genes.

	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	3	89	98	401
mbCL151dh	34(CL);23(L);11(S);32(K)	L	4	85	94	398
TRNS ck		L	3	75	103	431
CL151 ck		L	3	87	97	435
C.V. (%)			4.5	2.1	6.7	19.5
LSD (0.05)			0.8	4.3	3.3	15.7

[†]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

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Introduction and Methodologies

Field tests of elite high protein lines:

Elite rice lines that were selected from 2009 with protein content of more than 9.5% were advanced in the 2010 field tests. They were evaluated in a randomized complete block design with five replications. The field was fertilized using 110 lb/A urea in a split application. The plots were maintained flooded, but occasionally drained for weed control purposes. 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:

Five selected high protein lines were evaluated for their yield potential in preliminary yield (PY) trials. The PY test was conducted in a randomized complete block design with three replications using a plot size of 4 x 16 ft. The same field fertilization and cultural practices were used as described above. In addition to yield potential, data of important agronomic characteristics, including vigor, plant height, heading date, maturity, lodging, and milling quality, 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 plot was used to determine their protein content.

Field and greenhouse evaluation of new lines:

A total of 612 new lines were developed from Louisiana cultivars and breeding germplasm in 2010. There were 164 Cocodrie-derived new putative high protein lines evaluated in the field, while 423 breeding germplasm lines were evaluated in the greenhouse.

Field tests: 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.

Greenhouse tests: A total of 431 newly developed lines were planted in 4-inch peat-pots and evaluated in the greenhouse in 2010. Fertilization using urea equivalent to 150 lb/A was applied three different times; one third for each pot incorporated preplanting, and 4 and 8 weeks after planting. Insecticides were used as needed. 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.

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:

Among the Cocodrie-derived elite lines tested, the overall average of crude protein content was slightly less (0.16 g/kg or 1.5% reduction) compared with their protein content in 2009. The highest reduction was 10% and was found in four lines (Table 1). However, eight lines CCDR 0915281, CCDR 09157254, CCDR 09157219, CCDR 09157256, CCDR 09157244, CCDR 09157217, CCDR 09157252, and CCDR 09157258, showed protein content increase of more than 10% compared with data in 2009; i.e. 15.9, 20.8, 19.0, 17.4, 17.4 15.3, 14.7, and 13.3%, respectively.

Among Cypress-derived elite lines tested, the overall average of crude protein content was reduced as much as 0.64g/kg or 6.4% from their protein content observed in 2009 (Table 2). The highest reduction was 27.6%. Seventy-eight lines showed a reduction between 10 and 27.6% compared with data in 2009. However, 38 lines showed an increase in their protein content, and among these, 11 lines (CPRS09RP353, CPRS09RP251, CPRS09RP362, CPRS09RP269, CPRS09RP384, CPRS09RP278, CPRS09RP374, CPRS09RP347, CPRS09RP241, CPRS09RP344, and CPRS09RP366) showed protein content increases of more than 10% compared with data in 2009.

Preliminary yield trials:

Although 23% of high protein lines have poor milling quality due to chalkiness and 25% have a sterility problem, more than half of these have excellent milling quality and fertility (Table 4). Days to 50% heading among high protein lines ranged from 82 to 89, while it was 81 for Cocodrie, 86 for Cypress, and 88 for Wells (Table 3). The majority of high protein lines showed good lodging resistance. Line 07PCC201570, a Cocodrie-derived line, has yield potential (7,332 lb/A) comparable with the Cocodrie check (7,022 lb/A) and Cypress check (7,325 lb/A); with total protein content of 12.0, 9.06, and 9.13% for 07PCC201570, Cocodrie and Cypress, respectively. It has a favorable milling quality similar to Cocodrie.

Field and greenhouse evaluation of new lines:

A total of 164 lines developed from Cocodrie that were evaluated in the headrow tests showed protein contents ranging from 8.56 to 13.93% (Table 5). Ninety-Seven lines have crude protein contents between 12 to 13.93%, and 54 lines have protein content between 10 and 11.99%. These lines will be advanced in 2011.

Of the 423 high protein lines developed from experimental line 08HU002 that were evaluated in the greenhouse, 68 lines had a total crude protein content ranging from 14 to 15.94%. There were 114 lines that showed a total crude protein content of 12 to 13.94%, 181 lines of 10 to 11.94%, and 60 lines below 10% (Table 6). Together with selected lines from the field tests, new lines with protein content of more than 10% will be advanced in 2011.

Results

Table 1. Crude protein content comparison of selected elite lines in 2009 and 2010 field trials. Values are based on three replications.

Cocodrie-derived Lines	Field 2009	Field 2010
CCDR 09157048	13.06	12.06
CCDR 09157019	12.38	11.75
CCDR 09157045	11.95	11.69
CCDR 09157047	11.86	11.44
CCDR 09157025	11.82	11.25
CCDR 0915705	11.65	11.13
CCDR 091570p43	11.61	11.13
CCDR 09157055	11.61	11.06
CCDR 0915701	11.59	10.94
CCDR 09157012	11.55	10.88
CCDR 09157033	11.26	10.88
CCDR 09157018	10.85	10.50
CCDR 09157051	10.81	10.31
CCDR 09157042	10.61	10.25
CCDR 09157057	10.58	10.19
CCDR 09157015	10.55	10.13
CCDR 09157154	13.34	12.25
CCDR 09157122	12.76	12.25
CCDR 09157144	12.74	11.75
CCDR 09157141	12.45	11.63
CCDR 09157155	12.23	11.00
CCDR 09157125	11.98	10.69
CCDR 09157123	11.91	10.69
CCDR 09157115	11.9	10.69
CCDR 09157132	11.58	10.69
CCDR 0915715	11.52	10.63
CCDR 09157142	11.41	10.56
CCDR 09157149	11.37	10.50
CCDR 09157124	11.27	10.44
CCDR 09157136	11.06	10.44
CCDR 09157133	10.98	10.44
CCDR 09157156	10.96	10.31
CCDR 09157145	10.96	10.19
CCDR 09157129	10.95	10.19
CCDR 09157146	10.91	10.19

Cocodrie-derived Lines	Field 2009	Field 2010
CCDR 09157150	10.88	10.13
CCDR 09157257	13.52	12.19
CCDR 09157243	12.69	12.00
CCDR 09157250	12.3	11.75
CCDR 09157255	11.88	11.69
CCDR 09157248	11.86	11.56
CCDR 0915723	11.53	11.38
CCDR 09157240	11.39	11.25
CCDR 09157241	11.12	11.25
CCDR 09157215	10.85	11.19
CCDR 09157253	10.67	11.00
CCDR 09157245	10.58	10.94
CCDR 0915721	10.47	10.94
CCDR 09157249	10.45	10.94
CCDR 09157218	10.19	10.94
CCDR 09157216	10.08	10.81
CCDR 0915725	9.99	10.69
CCDR 0915724	9.97	10.63
CCDR 0915722	9.72	10.63
CCDR 09157251	9.66	10.50
CCDR 09157258	9.1	10.31
CCDR 09157252	8.99	10.31
CCDR 09157217	8.94	10.31
CCDR 09157244	8.78	10.31
CCDR 09157256	8.68	10.19
CCDR 09157219	8.51	10.13
CCDR 09157254	8.38	10.13
CCDR 0915651	10.99	10.75
CCDR 0915561	9.92	9.25
CCDR 0915551	9.72	9.63
CCDR 0915541	9.78	9.56
CCDR 0915341	9.1	9.56
CCDR 0915321	9.11	9.31
CCDR 0915281	9.32	10.81

Table 2. Crude protein content comparison of selected elite lines in 2009 and 2010 field trials. Values are based on three replications.

Cypress-derived Lines	Field 2009	Field 2010	Cypress-derived Lines	Field 2009	Field 2010
CPRS09RP1105	10.15	9.94	CPRS09RP2112	10.42	11.41
CPRS09RP1211	11.48	10.50	CPRS09RP2113	10.99	10.94
CPRS09RP12110	11.89	10.56	CPRS09RP2114	11.21	10.25
CPRS09RP12111	11.85	11.44	CPRS09RP2115	10.51	10.56
CPRS09RP1212	11.53	11.81	CPRS09RP2117	11.43	11.31
CPRS09RP1213	11.48	11.38	CPRS09RP2118	12.13	9.25
CPRS09RP1213	12.08	10.55	CPRS09RP2119	11.28	8.69
CPRS09RP1214	11.20	11.00	CPRS09RP212	12.13	9.90
CPRS09RP1214	11.81	10.88	CPRS09RP2120	11.01	10.88
CPRS09RP1215	11.46	11.81	CPRS09RP2123	11.17	10.34
CPRS09RP1215	11.36	11.05	CPRS09RP2124	11.33	11.00
CPRS09RP1216	11.65	11.81	CPRS09RP2125	10.32	11.04
CPRS09RP1216	12.04	11.38	CPRS09RP213	12.07	11.13
CPRS09RP1217	11.70	10.55	CPRS09RP214	12.20	10.81
CPRS09RP1218	11.45	11.00	CPRS09RP215	12.26	9.31
CPRS09RP1218	11.45	10.79	CPRS09RP216	12.15	11.50
CPRS09RP1219	11.46	10.99	CPRS09RP217	12.07	11.19
CPRS09RP178	11.06	11.19	CPRS09RP2171	12.40	10.81
CPRS09RP183	11.77	11.38	CPRS09RP21710	13.39	11.06
CPRS09RP185	9.89	10.38	CPRS09RP21711	12.41	9.25
CPRS09RP195	10.98	10.69	CPRS09RP21712	12.79	10.19
CPRS09RP197	11.88	10.56	CPRS09RP2172	12.61	9.13
CPRS09RP2100	11.27	10.81	CPRS09RP2173	12.33	11.19
CPRS09RP2101	11.09	10.25	CPRS09RP2174	12.70	10.39
CPRS09RP2102	10.91	10.63	CPRS09RP2175	12.21	9.38
CPRS09RP2103	11.86	10.56	CPRS09RP2176	12.63	10.00
CPRS09RP2104	12.41	10.88	CPRS09RP2177	12.36	11.08
CPRS09RP2105	12.00	9.94	CPRS09RP2178	12.93	11.37
CPRS09RP2106	10.91	10.81	CPRS09RP2179	12.05	9.99
CPRS09RP2107	10.88	9.69	CPRS09RP218	12.06	9.44
CPRS09RP2108	10.85	10.00	CPRS09RP219	11.68	9.94
CPRS09RP2109	11.53	11.81	CPRS09RP231	12.07	12.00
CPRS09RP211	12.06	11.13	CPRS09RP238	12.01	10.56
CPRS09RP2110	12.31	10.06	CPRS09RP239	12.13	10.56
CPRS09RP2110	11.97	10.06	CPRS09RP240	12.27	9.75
CPRS09RP2111	12.42	11.94	CPRS09RP241	10.97	14.44
CPRS09RP2111	11.27	10.56	CPRS09RP242	11.01	9.44

Continued.

Table 2. Continued.

Cypress-derived Lines	Field 2009	Field 2010
CPRS09RP244	11.35	10.13
CPRS09RP245	11.19	11.44
CPRS09RP246	11.28	9.38
CPRS09RP247	11.80	12.25
CPRS09RP250	10.83	10.81
CPRS09RP251	11.04	12.19
CPRS09RP253	11.35	9.63
CPRS09RP254	11.80	9.13
CPRS09RP255	11.40	10.75
CPRS09RP257	12.23	11.75
CPRS09RP258	11.69	11.38
CPRS09RP259	11.88	10.13
CPRS09RP260	10.90	10.94
CPRS09RP262	11.07	10.81
CPRS09RP265	10.82	10.38
CPRS09RP267	11.49	11.00
CPRS09RP268	10.43	9.06
CPRS09RP269	11.26	12.50
CPRS09RP270	11.06	10.13
CPRS09RP271	12.78	11.38
CPRS09RP2711	11.84	10.19
CPRS09RP27110	12.16	11.25
CPRS09RP27111	12.47	10.75
CPRS09RP272	12.15	9.81
CPRS09RP273	11.39	12.25
CPRS09RP274	11.42	10.19
CPRS09RP276	12.24	11.13
CPRS09RP277	12.31	10.69
CPRS09RP278	11.54	13.50
CPRS09RP279	11.79	9.94
CPRS09RP280	11.57	10.06
CPRS09RP282	12.53	10.38
CPRS09RP283	11.74	10.38
CPRS09RP284	11.21	12.13
CPRS09RP285	11.24	12.00
CPRS09RP286	10.95	9.31
CPRS09RP288	11.81	9.31
CPRS09RP289	11.33	10.63

Cypress-derived Lines	Field 2009	Field 2010
CPRS09RP290	11.31	11.13
CPRS09RP291	11.85	9.69
CPRS09RP293	11.35	10.50
CPRS09RP295	11.04	10.63
CPRS09RP296	11.43	10.06
CPRS09RP297	11.65	10.38
CPRS09RP2991	11.21	10.13
CPRS09RP2992	12.35	10.38
CPRS09RP2993	12.01	10.13
CPRS09RP2994	12.22	10.38
CPRS09RP2995	11.87	11.25
CPRS09RP2996	12.37	10.31
CPRS09RP310	11.24	11.13
CPRS09RP3101	10.47	10.13
CPRS09RP3102	10.42	11.13
CPRS09RP3103	10.87	10.25
CPRS09RP311	11.23	10.56
CPRS09RP312	11.87	11.19
CPRS09RP3121	10.87	10.50
CPRS09RP3122	11.42	9.63
CPRS09RP313	10.98	9.81
CPRS09RP314	11.38	10.38
CPRS09RP315	10.99	10.56
CPRS09RP316	11.13	10.44
CPRS09RP317	11.22	10.06
CPRS09RP318	10.41	10.25
CPRS09RP320	11.07	9.94
CPRS09RP321	10.45	11.38
CPRS09RP326	11.19	10.63
CPRS09RP327	11.79	10.06
CPRS09RP328	13.27	10.63
CPRS09RP333	13.12	10.81
CPRS09RP334	11.33	11.75
CPRS09RP335	11.58	11.81
CPRS09RP340	12.27	12.25
CPRS09RP341	10.79	10.00
CPRS09RP342	12.70	13.13
CPRS09RP343	12.43	11.94

Continued.

Table 2. Continued.

Cypress-derived Lines	Field 2009	Field 2010
CPRS09RP344	11.00	14.81
CPRS09RP346	11.43	12.56
CPRS09RP347	11.02	13.50
CPRS09RP349	11.48	10.25
CPRS09RP350	11.48	11.56
CPRS09RP351	13.09	14.31
CPRS09RP352	12.22	13.00
CPRS09RP353	12.36	13.63
CPRS09RP36	11.45	11.38
CPRS09RP360	12.02	11.44
CPRS09RP361	11.18	11.75
CPRS09RP362	11.62	12.88
CPRS09RP366	10.54	14.81
CPRS09RP367	12.53	12.63
CPRS09RP368	11.93	9.88
CPRS09RP369	12.17	11.56
CPRS09RP37	11.00	10.94
CPRS09RP370	11.13	12.13
CPRS09RP371	11.16	11.19
CPRS09RP372	10.91	10.94
CPRS09RP373	11.06	11.38
CPRS09RP374	11.38	13.63
CPRS09RP377	10.78	8.69
CPRS09RP378	12.60	10.81
CPRS09RP379	12.12	12.94
CPRS09RP380	11.62	12.38
CPRS09RP3811	12.22	10.25
CPRS09RP38110	12.11	12.69
CPRS09RP38111	12.08	10.00
CPRS09RP3812	12.50	10.00
CPRS09RP3813	12.03	10.14
CPRS09RP3814	12.32	11.06
CPRS09RP3815	13.17	10.13
CPRS09RP3816	12.70	10.25
CPRS09RP3817	12.77	10.44
CPRS09RP3818	12.83	12.38
CPRS09RP3819	12.58	10.25
CPRS09RP384	10.93	12.69
CPRS09RP385	11.97	10.00
CPRS09RP386	11.26	10.00
CPRS09RP387	10.75	9.31
CPRS09RP39	10.42	10.13

Table 3. Performance of elite high protein lines in 2010 PY tests.

Phenotypic performance of 5 high protein lines and their cultivar checks in PY tests

ID	HDT¶	height (cm) ¶	Vigor¶	% lodging¶	Crude protein content (% W/W) ¶
06PCY120024	193	84.00	4	40	13.6
06PCY120025	195	85.00	5	55	13.1
06PCY122425	194	87.00	5	38	12.6
06PFR200828	195	97.00	6	0	14.3
07PCC201570	189	93.00	4	13	12.0
CPRS	188	94.00	4	15	9.06
CCDR	193	89.00	4	33	9.13
CTHL	194	94.00	4	63	9.38
CHNR	191	97.00	4	3	9.09
FRNS	194	99.00	6	0	9.24

¶Values averaged of three replicates.

Figure 1. Snap shot of elite line 07PCC201570 and Cocodrie in 2010 preliminary yield (PY) tests.

Table 4. Milling quality, yield, and total crude protein content of five high protein lines and cultivar checks.

Milling Quality, Yield, and Total Protein Content of 5 High Protein Lines and Their Checks

ID	WHOLE¶	TOTAL¶	Yield (lbs/A) §	Crude protein content§
06PCY120024	55.7	70.1	4695.17	13.6
06PCY120025	51.0	68.6	4383.40	13.1
06PCY122425	51.8	68.4	4494.78	12.6
06PFR200828	41.1	69.0	4022.63	14.3
07PCC201570	58.1	70.1	7331.61	12.0
CPRS	58.5	70.3	7324.96	9.06
CCDR	61.3	71.8	7021.72	9.13
CTHL	56.1	70.3	6389.90	9.38
CHNR	61.7	72.4	8345.83	9.09
FRNS	48.3	69.9	5692.74	9.24

¶Values averaged of three replicates.

Table 5. Total crude protein content (PC) of 164 newly developed lines evaluated in the field in 2010.

CCDR-derived Lines	PC%	CCDR-derived Lines	PC%	CCDR-derived Lines	PC%
06-PCCD1	13.3	06-PCCD-146	12.31	06-PCCD-212	11.88
06-PCCD-100	12	06PCCD148	12.6	06-PCCD-212	11.88
06-PCCD-102	12.44	06-PCCD-149	12.6	06PCCD213	12.2
06-PCCD-103	11.38	06PCCD150	12.6	06-PCCD-214	12.2
06-PCCD-104	12.94	06PCCD153	12.5	06PCCD216	12.2
06-PCCD-108	11.31	06-PCCD-155	12.5	06-PCCD-218	12.75
06-PCCD-109	13.2	06-PCCD-157	12.5	06PCCD219	12.2
06-PCCD-109	12.13	06PCCD158	12.5	06-PCCD-220	12.2
06PCCD112	13.2	06-PCCD-159	12.06	06PCCD221	12.2
06-PCCD-114	12.19	06PCCD161	12.5	06-PCCD-222	11.55
06-PCCD-116	11.69	06-PCCD-163	11.88	06-PCCD-223	12.2
06-PCCD-117	10.94	06-PCCD-164	12.4	06-PCCD-223	11.04
06-PCCD-118	11.63	06-PCCD-169	12.4	06-PCCD-224	12.2
06PCCD120	13.1	06PCCD170	12.4	06-PCCD-226	12.2
06PCCD122	13.1	06-PCCD-175	12.4	06-PCCD-227	12.5
06-PCCD-123	13.1	06PCCD178	12.4	06PCCD228	12.1
06-PCCD-124	13.1	06-PCCD-180	12.4	06-PCCD-228	12.1
06-PCCD-125	12.44	06-PCCD-181	12.4	06-PCCD-228	11.56
06-PCCD-126	13	06-PCCD-184	9.38	06PCCD229	12.1
06-PCCD-126	12.38	06-PCCD-187	9.19	06PCCD23	12.1
06-PCCD-127	12.19	06-PCCD-189	8.88	06-PCCD-230	10.21
06-PCCD-128	13	06-PCCD-191	9.31	06-PCCD-231	12.1
06-PCCD-128	12.25	06-PCCD-192	8.56	06-PCCD-232	10.24
06-PCCD-129	11.5	06-PCCD-194	9.88	06-PCCD-233	12.1
06-PCCD-130	12.19	06-PCCD-195	9.38	06-PCCD-237	12.1
06-PCCD-130	12.19	06-PCCD-199	12.3	06-PCCD-238	12.38
06-PCCD-131	11.75	06-PCCD-199	9.69	06-PCCD-240	12.31
06-PCCD-132	11.69	06PCCD2	12.3	06-PCCD-241	12.19
06-PCCD-135	12.8	06-PCCD-200	10	06-PCCD-243	12
06PCCD137	12.8	06-PCCD-202	12.38	06-PCCD-244	12
06-PCCD-140	12.56	06-PCCD-203	12.13	06-PCCD-249	12.38
06-PCCD-141	11.5	06-PCCD-205	11.19	06-PCCD-250	13.97
06-PCCD-142	12.7	06-PCCD-208	12.2	06-PCCD-252	13.13
06-PCCD-143	12.7	06-PCCD-210	11.5	06-PCCD-253	12.69
06PCCD145	12.7	06-PCCD-211	12.2	06-PCCD-254	10.06
06-PCCD-146	12.6	06-PCCD-211	10.46	06-PCCD-259	12.18

Continued.

Table 5. Continued.

CCDR-derived Lines	PC%	CCDR-derived Lines	PC%	CCDR-derived Lines	PC%
06-PCCD-26	12.75	06PCCD3	11.8	06PCCD64	11.6
06-PCCD-261	12.45	06-PCCD-31	13.38	06-PCCD-65	11.6
06PCCD27	12	06PCCD33	12	06-PCCD-66	9.44
06PCCD270	12	06-PCCD-34	13.19	06-PCCD-68	9.63
06PCCD272	12	06PCCD36	11.8	06-PCCD-70	11.6
06PCCD274	12	06PCCD369	11.7	06-PCCD-71	11.56
06PCCD275	12	06-PCCD-37	12.75	06-PCCD-72	11.5
06PCCD276	11.9	06-PCCD-38	12.38	06-PCCD-75	9.31
06PCCD277	11.9	06PCCD4	11.7	06-PCCD-77	9.88
06PCCD278	11.9	06-PCCD-41	13	06PCCD78	11.5
06PCCD279	11.9	06-PCCD-45	11.7	06PCCD8	11.5
06PCCD280	11.9	06PCCD46	11.7	06-PCCD-80	10.38
06PCCD282	11.9	06PCCD54	11.7	06PCCD807	11.5
06PCCD283	11.9	06-PCCD-55	11.88	06-PCCD-85	13.06
06PCCD284	11.9	06PCCD565	11.6	06-PCCD-86	12.63
06PCCD285	11.8	06PCCD57	11.6	06-PCCD-96	13.69
06PCCD286	11.8	06-PCCD-61	12.25	06-PCCD-97	13.38
06-PCCD-29	13.63	06PCCD62	11.6	06-PCCD-99	10.25
06PCCD291	11.8	06-PCCD-63	9.5		

Table 6. Total crude protein content (PC) of 423 newly developed lines evaluated in the greenhouse in 2010.

Breeding germplasm-derived lines	PC (%)	Breeding germplasm-derived lines	PC (%)
08HU002-M5-P10 I1	11.00	08HU002-M5-P10-G6	10.81
08HU002-M5-P10 I2	10.63	08HU002-M5-P11 I1	10.13
08HU002-M5-P10-B1	12.63	08HU002-M5-P11 I2	9.44
08HU002-M5-P10-B2	12.63	08HU002-M5-P11 I3	10.81
08HU002-M5-P10-B2	12.63	08HU002-M5-P11-B1	12.94
08HU002-M5-P10-B3	14.56	08HU002-M5-P11-B2	13.19
08HU002-M5-P10-B4	13.88	08HU002-M5-P11-B3	12.63
08HU002-M5-P10-G1	9.88	08HU002-M5-P11-B3	12.63
08HU002-M5-P10-G2	10.31	08HU002-M5-P11-B4	14.81
08HU002-M5-P10-G3	11.31	08HU002-M5-P11-B5	15.44
08HU002-M5-P10-G4	10.19	08HU002-M5-P11-B5	15.44
08HU002-M5-P10-G5	11.44	08HU002-M5-P121-G2	11.19

Continued.

Table 6. Continued.

Breeding germplasm-derived lines	PC (%)	Breeding germplasm-derived lines	PC (%)
08HU002-M5-P12-B1	14.75	08HU002-M5-P20-G1	10.25
08HU002-M5-P13 I1	12.13	08HU002-M5-P20-G2	11.13
08HU002-M5-P13 I4	10.06	08HU002-M5-P20-G3	10.31
08HU002-M5-P13-B2	11.81	08HU002-M5-P20-G4	9.81
08HU002-M5-P13-B3	12.69	08HU002-M5-P21	15.25
08HU002-M5-P13-C1	14.56	08HU002-M5-P21-B1	10.25
08HU002-M5-P13-G1	11.69	08HU002-M5-P21-B3	13.50
08HU002-M5-P13-G2	11.38	08HU002-M5-P21-G1	12.88
08HU002-M5-P13-G3	8.38	08HU002-M5-P21-G3	11.25
08HU002-M5-P13-G4	9.38	08HU002-M5-P21-G4	12.50
08HU002-M5-P13-G5	12.31	08HU002-M5-P21-G6	11.56
08HU002-M5-P14-B1	14.38	08HU002-M5-P21-G7	12.25
08HU002-M5-P15-B1	13.00	08HU002-M5-P22-B1	13.25
08HU002-M5-P15-B2	11.88	08HU002-M5-P23-B1	13.63
08HU002-M5-P15-B3	12.00	08HU002-M5-P23-B2	13.69
08HU002-M5-P15-B3	12.00	08HU002-M5-P23-B3	13.06
08HU002-M5-P15-B4	11.00	08HU002-M5-P23-B5	12.44
08HU002-M5-P16 I2	11.94	08HU002-M5-P23-C1	15.63
08HU002-M5-P16-C2	14.00	08HU002-M5-P23-G1	8.88
08HU002-M5-P17 I1	14.69	08HU002-M5-P23-G10	10.06
08HU002-M5-P17-B1	13.50	08HU002-M5-P23-G11	11.94
08HU002-M5-P18-B1	15.00	08HU002-M5-P23-G12	9.69
08HU002-M5-P18-B2	11.75	08HU002-M5-P23-G13	11.00
08HU002-M5-P18-B2	11.75	08HU002-M5-P23-G14	10.06
08HU002-M5-P18-B3	11.56	08HU002-M5-P23-G15	11.44
08HU002-M5-P19 I3	14.56	08HU002-M5-P23-G2	9.81
08HU002-M5-P19 I4	14.56	08HU002-M5-P23-G3	11.19
08HU002-M5-P19-C1	15.63	08HU002-M5-P23-G4	10.63
08HU002-M5-P1-B1	13.00	08HU002-M5-P23-G5	9.56
08HU002-M5-P1-B2	14.38	08HU002-M5-P23-G6	9.69
08HU002-M5-P1-G1	10.81	08HU002-M5-P23-G7	11.38
08HU002-M5-P1-G2	12.38	08HU002-M5-P23-G8	11.75
08HU002-M5-P20 I1	14.38	08HU002-M5-P23-G9	9.38
08HU002-M5-P20-B1	13.25	08HU002-M5-P25 I1	9.13
08HU002-M5-P20-B2	12.88	08HU002-M5-P25 I2	12.94

Continued.

Table 6. Continued.

Breeding germplasm-derived lines	PC (%)
08HU002-M5-P25-B1	15.50
08HU002-M5-P25-B2	10.69
08HU002-M5-P25-G2	11.19
08HU002-M5-P26 I1	14.38
08HU002-M5-P26 I2	12.31
08HU002-M5-P26 I3	12.75
08HU002-M5-P26-B1	14.50
08HU002-M5-P26-C1	14.44
08HU002-M5-P26-C2	15.56
08HU002-M5-P27 I1	9.94
08HU002-M5-P27 I2	10.31
08HU002-M5-P27-B1	13.88
08HU002-M5-P27-G1	8.75
08HU002-M5-P28 I1	10.69
08HU002-M5-P28 I2	13.75
08HU002-M5-P28 I4	15.50
08HU002-M5-P28-B1	10.75
08HU002-M5-P29 I1	11.88
08HU002-M5-P29-B1	12.19
08HU002-M5-P29-B2	12.44
08HU002-M5-P29-B3	12.69
08HU002-M5-P29-G1	8.31
08HU002-M5-P29-G2	10.69
08HU002-M5-P3 I1	12.38
08HU002-M5-P30 I1	10.50
08HU002-M5-P30 I2	8.94
08HU002-M5-P30 I3	9.44
08HU002-M5-P30 I5	8.94
08HU002-M5-P30-G4	9.56
08HU002-M5-P31	14.38
08HU002-M5-P31-B1	15.56
08HU002-M5-P32 I1	12.81
08HU002-M5-P32-B1	13.81
08HU002-M5-P32-B2	14.88
08HU002-M5-P32-B3	14.94

Breeding germplasm-derived lines	PC (%)
08HU002-M5-P32-G1	12.31
08HU002-M5-P32-G2	10.75
08HU002-M5-P32-G3	12.06
08HU002-M5-P32-G4	11.44
08HU002-M5-P34-B1	15.88
08HU002-M5-P34-G3	13.81
08HU002-M5-P34-G4	12.63
08HU002-M5-P34-G5	10.38
08HU002-M5-P35-B1	13.38
08HU002-M5-P35-B2	10.00
08HU002-M5-P35-B3	10.88
08HU002-M5-P35-B4	12.50
08HU002-M5-P35-B5	12.50
08HU002-M5-P35-C1	14.25
08HU002-M5-P35-G1	14.44
08HU002-M5-P35-G2	9.06
08HU002-M5-P35-G3	11.75
08HU002-M5-P35-G4	10.25
08HU002-M5-P35-G5	11.19
08HU002-M5-P36-B1	11.19
08HU002-M5-P36-B2	9.94
08HU002-M5-P36-B2	9.94
08HU002-M5-P36-B3	11.00
08HU002-M5-P36-B4	14.31
08HU002-M5-P36-B4	14.31
08HU002-M5-P36-B5	12.31
08HU002-M5-P36-B6	12.31
08HU002-M5-P36-C1	13.75
08HU002-M5-P36-G1	12.50
08HU002-M5-P36-G2	13.94
08HU002-M5-P36-G3	11.75
08HU002-M5-P36-G4	12.75
08HU002-M5-P36-G5	10.81
08HU002-M5-P36-G6	12.25
08HU002-M5-P36-G7	10.88

Continued.

Table 6. Continued.

Breeding germplasm-derived lines	PC (%)
08HU002-M5-P36-G8	11.50
08HU002-M5-P38-B1	13.13
08HU002-M5-P38-B2	14.19
08HU002-M5-P38-B3	14.13
08HU002-M5-P38-G1	11.94
08HU002-M5-P38-G2	11.56
08HU002-M5-P38-G3	12.88
08HU002-M5-P38-G4	10.38
08HU002-M5-P38-G6	9.31
08HU002-M5-P38-G7	8.81
08HU002-M5-P38-G8	14.56
08HU002-M5-P3-B1	11.63
08HU002-M5-P3-B2	13.31
08HU002-M5-P3-B3	14.06
08HU002-M5-P3-C1	15.94
08HU002-M5-P3-G1	13.25
08HU002-M5-P3-G2	13.31
08HU002-M5-P3-G3	12.81
08HU002-M5-P3-G4	10.31
08HU002-M5-P3-G5	12.88
08HU002-M5-P40 I1	9.44
08HU002-M5-P40-B2	15.19
08HU002-M5-P40-G1	10.19
08HU002-M5-P40-G2	10.81
08HU002-M5-P40-G3	11.00
08HU002-M5-P40-G4	10.31
08HU002-M5-P40-G5	9.31
08HU002-M5-P40-G6	10.81
08HU002-M5-P40-G7	11.25
08HU002-M5-P42-B1	13.50
08HU002-M5-P45 I1	11.56
08HU002-M5-P45 I4	10.38
08HU002-M5-P45 I5	12.13
08HU002-M5-P45-B1	13.25
08HU002-M5-P45-B2	15.19
08HU002-M5-P45-B3	10.88
08HU002-M5-P45-B4	12.13
08HU002-M5-P45-B5	13.25
08HU002-M5-P45-G1	10.50
08HU002-M5-P45-G2	9.88
08HU002-M5-P45-G3	9.25
08HU002-M5-P45-G4	8.94
08HU002-M5-P45-G7	11.94
08HU002-M5-P45-G9	9.56
08HU002-M5-P46 I2	11.25
08HU002-M5-P46 I3	10.06
08HU002-M5-P46 I4	12.94
08HU002-M5-P46 I6	14.25
08HU002-M5-P46-B1	12.63
08HU002-M5-P46-G1	9.81
08HU002-M5-P46-G2	13.00
08HU002-M5-P46-G2	9.94
08HU002-M5-P49 I3	10.81
08HU002-M5-P49 I4	12.63
08HU002-M5-P49 I6	10.94
08HU002-M5-P49-B1	11.25
08HU002-M5-P49-B2	12.25
08HU002-M5-P49-B3	12.69
08HU002-M5-P49-C1	14.06
08HU002-M5-P49-C2	14.56
08HU002-M5-P5	15.38
08HU002-M5-P5	15.38
08HU002-M5-P52-B1	11.88
08HU002-M5-P52-B2	12.19
08HU002-M5-P52-G1	10.13
08HU002-M5-P52-G2	11.06
08HU002-M5-P52-G3	11.25
08HU002-M5-P53-B1	14.88
08HU002-M5-P53-B2	13.13
08HU002-M5-P53-G2	9.81

Continued.

Table 6. Continued.

Breeding germplasm-derived lines	PC (%)
08HU002-M5-P53-G3	9.25
08HU002-M5-P56 I2	12.13
08HU002-M5-P56-B1	12.63
08HU002-M5-P56-B2	12.56
08HU002-M5-P56-B3	12.50
08HU002-M5-P56-B4	14.13
08HU002-M5-P56-C1	12.75
08HU002-M5-P56-C2	14.44
08HU002-M5-P57	12.63
08HU002-M5-P57 I1	10.69
08HU002-M5-P57 I3	11.44
08HU002-M5-P57 I4	10.88
08HU002-M5-P57 I5	11.19
08HU002-M5-P57-B2	12.88
08HU002-M5-P57-B3	14.06
08HU002-M5-P57-B4	12.06
08HU002-M5-P57-B5	12.56
08HU002-M5-P57-B6	13.38
08HU002-M5-P58-B7	13.69
08HU002-M5-P59 I1	15.13
08HU002-M5-P59 I3	14.63
08HU002-M5-P5-C2	15.81
08HU002-M5-P5-C2	15.81
08HU002-M5-P6 I1	8.63
08HU002-M5-P6 I10	11.69
08HU002-M5-P6 I12	10.56
08HU002-M5-P6 I13	9.69
08HU002-M5-P6 I14	11.88
08HU002-M5-P6 I2	9.50
08HU002-M5-P6 I3	9.00
08HU002-M5-P6 I5	11.44
08HU002-M5-P6 I6	12.50
08HU002-M5-P6 I9	9.75
08HU002-M5-P63 I1	15.94
08HU002-M5-P63 I3	15.69

Breeding germplasm-derived lines	PC (%)
08HU002-M5-P63 I5	13.00
08HU002-M5-P63-C1	14.31
08HU002-M5-P66	12.13
08HU002-M5-P66-B1	12.81
08HU002-M5-P66-B2	14.75
08HU002-M5-P66-G1	12.75
08HU002-M5-P66-G3	10.63
08HU002-M5-P66-G4	13.81
08HU002-M5-P66-G5	11.31
08HU002-M5-P6-B1	13.25
08HU002-M5-P6-B2	12.44
08HU002-M5-P6-B3	12.25
08HU002-M5-P6-B4	11.19
08HU002-M5-P6-B6	11.94
08HU002-M5-P6-B7	12.06
08HU002-M5-P6-B8	12.56
08HU002-M5-P6-B9	13.13
08HU002-M5-P7 I2	12.25
08HU002-M5-P7 I3	13.69
08HU002-M5-P7 I4	10.69
08HU002-M5-P7-B1	14.38
08HU002-M5-P8 I1	13.06
08HU002-M5-P8 I2	11.38
08HU002-M5-P8 I5	12.63
08HU002-M5-P8-B1	13.81
08HU002-M5-P8-B2	12.25
08HU002-M5-P8-B3	15.38
08HU002-M5-P8-B4	12.25
08HU002-M5-P8-B5	11.63
08HU002-M5-P8-B6	13.13
08HU002-M5-P8-G1	11.94
08HU002-M5-P8-G2	10.00
08HU002-M5-P8-G3	10.94
08HU002-M5-P8-G4	9.38
08HU002-M5-P8-G5	11.13

Continued.

Table 6. Continued.

Breeding germplasm-derived lines	PC (%)
08HU002-M5-P8-G6	10.94
08HU002-M5-P9 I1	10.50
08HU002-M5-P9-B1	15.81
08HU002-M5-P9-B1	15.81
08HU002-MS-G9-G1	11.63
08HU002-MS-P14-H1	11.19
08HU002-MS-P14-H1	10.00
08HU002-MS-P15-H1	9.81
08HU002-MS-P15-H2	11.38
08HU002-MS-P15-H3	14.19
08HU002-MS-P15-H3	10.25
08HU002-MS-P18-H1	11.06
08HU002-MS-P18-H4	11.50
08HU002-MS-P19-H1	15.63
08HU002-MS-P21-H1	10.75
08HU002-MS-P21-H2	11.63
08HU002-MS-P21-H3	11.94
08HU002-MS-P21-H4	11.94
08HU002-MS-P21-H5	11.81
08HU002-MS-P21-H6	10.25
08HU002-MS-P23-H1	13.00
08HU002-MS-P23-H1	12.06
08HU002-MS-P23-H2	9.75
08HU002-MS-P23-H3	10.63
08HU002-MS-P23-H3	9.69
08HU002-MS-P25-G1	9.81
08HU002-MS-P25-G3	11.38
08HU002-MS-P25-H3	11.06
08HU002-MS-P26-H3	14.19
08HU002-MS-P26-H3	10.63
08HU002-MS-P26-H4	13.50
08HU002-MS-P27-H1	9.56
08HU002-MS-P28-H2	12.88
08HU002-MS-P29-H1	10.75
08HU002-MS-P29-H4	9.56

Breeding germplasm-derived lines	PC (%)
08HU002-MS-P29-H5	10.63
08HU002-MS-P31-H1	12.56
08HU002-MS-P32	9.81
08HU002-MS-P32-H1	10.94
08HU002-MS-P35-H4	10.19
08HU002-MS-P35-H5	10.31
08HU002-MS-P36-H1	10.25
08HU002-MS-P38-G5	10.25
08HU002-MS-P3-H1	11.63
08HU002-MS-P3-H3	11.69
08HU002-MS-P3-H3	10.75
08HU002-MS-P45-H1	10.38
08HU002-MS-P45-H2	11.06
08HU002-MS-P45-H2	8.56
08HU002-MS-P45-H3	11.63
08HU002-MS-P45-H3	8.50
08HU002-MS-P45-H4	10.81
08HU002-MS-P49-G1	11.63
08HU002-MS-P49-G2	11.63
08HU002-MS-P49-G3	9.63
08HU002-MS-P49-H1	11.13
08HU002-MS-P49-H2	10.50
08HU002-MS-P53-G1	10.63
08HU002-MS-P53-G2	10.50
08HU002-MS-P53-G3	11.50
08HU002-MS-P53-G4	10.38
08HU002-MS-P53-G5	9.63
08HU002-MS-P53-H1	12.94
08HU002-MS-P56-G1	9.00
08HU002-MS-P56-G2	9.31
08HU002-MS-P56-G3	11.44
08HU002-MS-P56-G5	9.63
08HU002-MS-P56-G6	9.63
08HU002-MS-P56-G7	10.56
08HU002-MS-P56-G8	9.31

Continued.

Table 6. Continued.

Breeding germplasm-derived lines	PC (%)
08HU002-MS-P56-G9	10.44
08HU002-MS-P56-H1	11.50
08HU002-MS-P56-H1	10.69
08HU002-MS-P57-G1	10.31
08HU002-MS-P57-G2	11.69
08HU002-MS-P57-G3	11.75
08HU002-MS-P57-G4	13.56
08HU002-MS-P57-G5	11.88
08HU002-MS-P57-G6	11.56
08HU002-MS-P57-H4	13.06
08HU002-MS-P57-H5	10.56
08HU002-MS-P57-H7	11.50
08HU002-MS-P57-H8	10.81
08HU002-MS-P57-H9	10.81
08HU002-MS-P57-H9	9.50
08HU002-MS-P5-G1	10.25
08HU002-MS-P5-G2	11.19
08HU002-MS-P5-G3	11.63
08HU002-MS-P5-G4	10.63
08HU002-MS-P5-G5	9.88
08HU002-MS-P5-G6	15.81
08HU002-MS-P6-G1	10.75
08HU002-MS-P6-G2	10.81
08HU002-MS-P6-G3	10.63
08HU002-MS-P6-G5	10.63

Breeding germplasm-derived lines	PC (%)
08HU002-MS-P6-G6	9.81
08HU002-MS-P6-G7	10.38
08HU002-MS-P7-H3	9.50
08HU002-MS-P87-H3	11.19
08HU002-MS-P8-H6	10.75
08HU002-MS-P9-G2	10.38
08HU002-MS-P9-G3	10.69
08HU002-MS-P9-G4	10.75
08HU002-MS-P9-G6	12.06
08HU002-MS-P9-G7	11.63
08HU002-MS-P9-G8	9.69
08HU002-MS-P9-H1	11.94
08HU002-MS-P9-H2	10.44
08HU002-MS-P9-H3	10.94
08HU002-MS-P9-H4	10.75
08HU002-P13-H2	8.88
08HU002-P13-H3	10.63
08HU002-P17-H1	14.38
08HU002-P52-H2	10.31
08HU002-P56-G4	10.81
08HU002-P5-H2	10.56
08HU008-M5-P13-B1	12.31
08HUU002-M5-P6-B5	11.25
08HUU-M5-P16-C4	14.00

MOLECULAR CHARACTERIZATIONS OF HIGH PROTEIN RICE LINES

H. Utomo and I. Wenefrida

Mapping high protein grain content

Genomic characterization of high protein in rice will provide applied utility of genomic information to enhance the trait during cultivar development more effectively. Research efforts to obtain basic genomic information utilizing various types of mapping populations, such as bi-parental and wide-base populations, to reveal the underlying trait coding and expression are on-going. In addition, efforts are also being focused on direct mapping utilizing a subset of closely related sister lines found within a high protein population. This subset of sister lines uniquely shares a great deal of similarity in various agronomic characteristics but exhibit discretely different total grain protein contents. These lines provide a rare opportunity to allow for tagging genes through direct fine mapping to determine genomic association with high protein content in the grain. This small subset of high protein lines composed of nine closely related sister lines has a range of crude protein contents from 9.5% (12.2% increase from the original check line) to 13.5% (59.1% increase; Table 1).

Both well established rice markers (i.e. microsatellite markers of known positions; 240 markers) and a robust molecular marker system (AFLP; 1,078 markers) were screened for their potential applications to saturate genomic regions associated with high protein content using bulked segregant analyses of two pooled genotypes (i.e. control/reference checks and high protein group). This screening yielded 10 highly informative AFLP polymorphic markers and two SSR markers that could be associated with genetic differences between the two pooled genotypes. To improve the consistency of AFLP markers identified, nine AFLP markers were converted into SCAR markers. Together with the SSR markers, the developed SCAR markers were used to genotype the nine sister lines individually. Marker profiling analyses identified potential genomic regions corresponding to 49% of the total percentage of protein content increase in the grain. The tagged region was further fine mapped by populating the region with more markers.

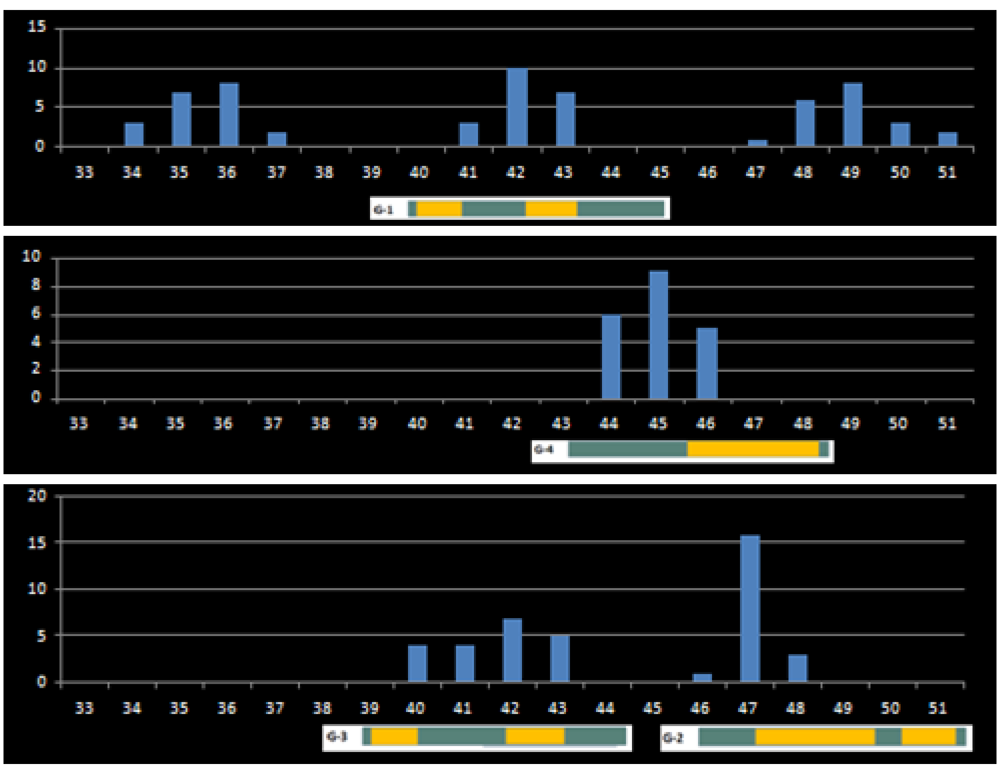
To facilitate fine mapping, directed introgression to break up the genomic segment around the identified marker was carried out using a genomic donor from indica cultivar. High protein line HP157257 was used as a recipient line. Fast-tract introgression through marker guided back-crossings using 97 selected markers was used to recover the non-target region quicker. The introgression has resulted in a unique combination of fragmented regions in the target area and to allow more markers to be placed within the target region. Individual unique introgressed lines carrying specific disrupted fragments helped fine map the target genomic region and provided quantification of the relative importance of the disrupted portion of the region associated with grain protein increase.

The introgressed lines (G-1, G-2, G-3, and G-4) were evaluated in the field together with cultivar Cocodrie, HP157012, and HP157257. Each line was planted in the field in replicated tests, arranged in a randomized complete block design with five replications. Standard soil fertilization using 110 lb/A urea in split applications was used. The test plots were maintained flooded but occasionally drained for weed control purposes. At maturity, seed was hand harvested, threshed, dried to 12% moisture content, and stored at -20^{o}C. A total crude protein content was determined using a finely ground sample of seed weighing approximately 200 mg subjected to high temperature digestion of samples at 850° to 1200°C using the N Combustion Analyzer. Figure 1 shows the performance of introgressed lines (G-1, G-2, G-3, and G-4 lines) expressed as relative increase (%) of crude grain protein content compared with HP157012 (upper graph, left) and HP157257 lines (upper graph, right).

Table 1. Crude protein content (mg/g) and percent increase (relative to the parental line) for nine sister lines of high protein germplasm that were used in genetic mapping.

Line	Content (mg/g)	Increase (%)
HP157257	13.52	59.1
HP157144	12.74	49.8
HP157019	12.38	45.7
HP157250	12.30	44.7
HP157155	12.23	43.9
HP157125	11.98	41.0
HP157012	11.55	35.8
HP157022	9.72	14.4
HP158006	9.53	12.2

Figure 2. Distribution frequency of introgressed lines (G-1, G-2, G-3, and G-4 lines) compared with HP157012 (upper graph, left) and HP157257 lines (upper graph, right) in crude grain protein content (% increase; X-axis).



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 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, Avoyelles, 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
Dennis and Bubba Leonards – Acadia Parish
John Earles– Avoyelles Parish

Throughout the following sections, multiple abbreviations are used to represent common units of measure and agricultural chemicals. These abbreviations are explained 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 measured 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
v/v	Percent on a volume by volume basis
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 Weathermax	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 RESEARCH

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. Theses 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), Avoyelles (AP), and Richland (RP) parishes. The soils at RRS, VP, AP, and RP are classified as Crowley silt loam, Kaplan silt loam, Latanier clay, and Perry clay, respectively. Eight single preflood N rates (0, 60, 90, 120, 150, 180, 210, and 270 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 2011, LAES publication number 2270. Electronic copies of this publication can be accessed from the LSU AgCenter Website:
http://www.lsuagcenter.com/en/crops_livestock/crops/rice/Publications/Rice+Varieties+and+Management+Tips.htm

Complete results for each variety by N trial at each location are presented in Tables 1 – 36. At the RRS, all variety by N trials were drill seeded into a conventionally tilled seedbed on March 14. Harvest date varied by variety. Statistically optimum grain yields were obtained after applying 90 lb N/A for ‘LA2022’ and ‘Taggart’; 120 lb N/A for ‘CL151,’ ‘LA2149,’ ‘CL111,’ ‘Rex,’ ‘Bowman,’ and ‘CL181’; 150 lb N/A ‘LA2140,’ ‘Catahoula,’ and ‘Templeton’; and 180 lb N/A for ‘Jazzman,’ ‘Neptune,’ ‘CL261,’ and ‘CL142.’

Nitrogen trials at RP only contained Clearfield varieties. The trials at the RP location were drill seeded to a conventionally tilled seedbed on April 15 and were harvested on September 1. Optimal yields at RP were obtained at 60 lb N/A for CL151, 90 lb N/A for CL181, 120 lb N/A for CL142, 180 lb N/A for CL111, and 210 lb N/A for CL261.

Variety by N trials at VP were drill seeded to a conventional seedbed on March 15 and were harvested on August 2. The N rates needed to achieve optimum yields at VP were much lower compared with the other sites and ranged from 0 to 120 lb N/A, depending on variety. Specifically, optimum yields were obtained at 120 lb N/A for Catahoula, and 60 lb N/A for CL151, 2140, 2149, CL111, Taggart, Rex, Bowman, Neptune, and CL261. Optimum yields were obtained for 2022, Jazzman, CL142, and CL181 without supplemental N fertilization.

Variety by N trials at the AP location were compromised due to herbicide drift and were not harvested.

Other Fertility Experiments

A season-long N uptake trial was established in 2009 and continued in 2010. The trial evaluated Catahoula, Neptune, and XL723; however, in 2010, only Catahoula and Neptune were evaluated. Nitrogen fertilizer was applied at a rate of 150 lb/A using a single preflood application or split using 100 lb/A preflood and 50 lb/A at the panicle differation stage of growth. In addition, a check plot was also included to evaluate N uptake when inorganic N fertilization is not used. Plant tissue samples were taken 1 day prior to permanent flood establishment and continued twice a week until 50% heading was reached. A final assessment was taken at harvest. Preliminary data are included in this report (Table 47); however, a complete summary and analysis of the data will be conducted at a later date.

Zinc (Zn) fertility trials were conducted at the Leonards Farm in Acadia Parish. Initial soil test results indicated a Zn concentration of 0.7 ppm (Mehlich3) at the location. Average pH was 7.7. The rice variety Jupiter was used in the trial. This trial consisted of five Zn rates (0, 5, 10, 15, and 20 lb/A) and two N sources (urea vs. ammonium sulfate). The Zn source was Zn sulfate, which was surface broadcast at planting. Ammonium sulfate (AS; 21-0-0-24) fertilizer was surface broadcast at planting to all plots at a rate of 100 lb/A. The AS provided 21 lb N per acre as a starter N fertilizer and also provided 24 lb of SO_4-S. Leaf samples then were taken at the 4- to 5-leaf stage and again 2 weeks after flooding near mid-tillering stage of development. A yield response to N source or Zn rate was not observed. Mean rice tissue Zn concentration at the 4- to 5-leaf stage increased (*P*=0.016; data not shown) from 36 – 56 ppm from the no Zn to 20 lb/A Zn rate when the data were pooled over N source. Similarly, the mean rice tissue Zn concentration at mid-tillering was increased (*P*=0.00.022; data not shown) from a low of 18 ppm at the 0 Zn application rate to 33 ppm at the 20 lb/A Zn application rate when the data were pooled over N sources.

An identical Zn fertility trial was conducted at the Fontenot Farm location in St. Landry Parish. Soil test results indicated a Zn concentration of 1.6 ppm (Mehlich3) and a pH of 6.4. The CL151 rice variety was used in the trial. The main effect of Zn rate did not alter rice grain yield; however, the mean grain yield was increased (*P*=0.009) from 9,799 lb/A when ammonium sulfate was used to 10,037 lb/A when urea was used as the N source. Severe lodging did occur across all treatments. Mean rice tissue Zn concentration for aboveground samples taken at mid-tillering, when pooled over N sources, increased (*P*=0.013; data not shown) from a low 36 ppm when no Zn was applied to a high of 44 ppm when 15 lb Zn/A was applied.

A study focusing on the varietal response of rice to Zn fertilization was conducted at the Leonards Farm. Ten rice varieties (CL151, CL111, Catahoula, Cocodrie, Cheniere, Wells, Jazzman, Jupiter, Neptune, and CL261) were evaluated. Two Zn fertilizer rates (0 or 15 lb Zn/A) as Zn sulfate were used. All rice seed received a Zn seed treatment at a rate of 1 lb/A. A significant response to Zn fertilization was not observed for any variety.

A study was established at the Fontenot Farm to evaluate the effects of rate and time of application of potassium (K) fertilizer on rice main crop and ratoon yields. A factorial arrangement of five K rates (0, 20, 40, 60, and 80 lb/A) in the main crop applied at planting and two ratoon K fertilization rates (0 or 20 lb/A) were used. Ratoon K was applied at one of three timings, at 50% heading of the main crop, just after main crop harvest, or 14 days post-harvest. The rice variety CL151 was used in the trial. A response to K fertilization was not observed in the main crop. Severe lodging occurred across all treatments. Due to the poor ratoon growth and the amount of germinating seed shattered from the lodging of the main crop, the ratoon yield was not taken.

A trial was established to evaluate the humic acid product Organolize. Four rates of P alone (0, 20, 40, and 60 lb/A) and four rates of Organolize (50, 100, 200, and 1,000 lb/A) with either 20 or 40 lb P/A were evaluated. A significant yield response to P fertilization or Organolize application was not observed.

A trial was established at the Rice Research Station to evaluate the effectiveness of starter N applications and potential differences between starter fertilizer N sources. Fertilizer N was applied at a rates of 0, 10, and 20 lb/A. Fertilizer N sources evaluated included urea, ammonium sulfate, Agrotain-treated urea, and SuperU. Preflood N was applied at a rate of 150 lb/A. The variety Cheniere was used for the trial. A significant response to starter N rate or source was not observed for seedling plant height, mature plant height, or grain yield.

A trial was conducted at the Rice Research Station to evaluate the effect of time of application of five different N sources on rice grain yield. Fertilizer N sources included urea, Agrotain-treated urea, ammonium sulfate, a 50-50 blend of urea plus ammonium sulfate (33% N), and SuperU. Fertilizer N was applied 10, 7, 4, or 1 day prior to permanent flood establishment (DPF). Grain yield increased linearly from the 10 to 1 DPF timing for urea, ammonium sulfate and the 50-50 blend of ammonium sulfate and urea. Yields remained stable across all timings for both Agrotain-treated urea and SuperU. A significant yield advantage was observed for Agrotain and SuperU compared with urea at the 10 DPF application timing.

Ratoon Rice Fertility Experiments

A trial was conducted to evaluate the response of CL111 and CL151 ratoon yields to various N sources and rates. Nitrogen sources 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. 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 1,704, 2,079, and 2,482 lb/A, respectively (LSD = 235 lb/A). Yields were optimized at an N rate of 135 lb/A. A significant variety response also was observed ($P < 0.02$). Overall mean yields across N rates for CL111 and CL151 were 2,182 and 1,995, respectively (LSD = 137 lb/A). A ratoon yield response was not observed for N source.

A trial was initiated in 2010 to evaluate the ratoon yield response of CL111 and CL151 to various rates of N. Six postharvest 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 (2.319 lb/A) were statistically similar to CL151 (2.156 lb/A; data not shown). A significant ratoon yield response was observed for N rate (P<0.001, data not shown). Mean ratoon yield was 1,204, 1,667, 2,287, 2,651, 2,857, and 2,760 lb/A for the 0, 30, 60, 90, 120, and 150 lb/A N fertilization rates, respectively. Nitrogen was optimized at the 90 lb/A N fertilization rate.

A trial was initiated to evaluate the effectiveness of Agrotain-treated urea compared with 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 ratoon yield response to N source was not observed. A significant ratoon yield response was observed for N rate (P<0.001). Ratoon yield was 1,320, 1,993, 2,440, 2,666, 3,128, and 3,094 for the 0, 30, 60, 90, 120 and 150 ratoon N fertilization rates, respectively (LSD = 163 lb/A). Optimal ratoon N fertilization rate was 120 lb/A.

Rice Variety by Nitrogen Experiments at the Rice Research Station

Experiment number	10-CM-01 to 10-CM-09
Site and design	
Location/Cooperator	Rice Research Station (Crowley Main)
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	Crowley silt loam
% organic matter	1.157
pH	7.1
Extractable nutrients ppm	Ca-1,044; Cu-1.47; Mg-237; P-4.24; K-52.2; Na-86.9; S-6.96; Zn-3.37
Crop/Variety	Rice / See Data Sheet
Planting method/date	Drill seeded / March 14
Seeding rate/depth	40 seeds/ft^2 / 1 inch
Emergence date	April 1
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, March 16 90 lb N/A 46-0-0, August 9
Water management	
Flush	April 8
Flood	April 29
Drain	July 21
Ratoon flood	August 10
Ratoon drain	October 18
Pest management	
Herbicides	1 gal/A Propanil + 1 oz/A Londax + ¾ oz/A Permit, April 15 1 gal/A Rice Beaux + 1 oz/A Londax + ½ oz/A Permit, April 28 1 qt/A 2,4-D, August 9
Insecticides	0.137 lb ai/cwt Dermacor seed treatment
Fungicides	19 oz/A Stratego, June 24

Table 1. Determine the agronomic response of drill-seeded LA2022 to nitrogen fertilizer rate and time of application (1.1). Rice Research Station.

Crop Name					Rice	Rice	Rice	Rice	Rice	Rice
Rating Date						7/27/2010	8/5/2010		11/4/2010	
Rating Type					50% HD	Height	Yield	50% HD	Yield	Yield
Rating Unit					days	in	lb/A	days	lb/A	lb/A
Crop Stage Majority					Main	Main	Main	Ratoon	Ratoon	Total
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage						
1	UREA	0	lb ai/A	4-5 leaf	100 ab	27 b	3,096 d	45	2,575 ab	5,671 d
2	UREA	60	lb ai/A	4-5 leaf	99 ab	33 ab	6,504 bc	39	2,345 b	8,849 bc
3	UREA	90	lb ai/A	4-5 leaf	99 ab	35 a	7,685 abc	39	2,634 ab	10,319 ab
4	UREA	120	lb ai/A	4-5 leaf	101 ab	38 a	8,513 a	39	2,791 ab	11,304 a
5	UREA	150	lb ai/A	4-5 leaf	101 ab	34 ab	7,761 abc	38	2,638 ab	10,398 ab
6	UREA	180	lb ai/A	4-5 leaf	100 ab	38 a	8,732 a	38	3,046 a	11,778 a
7	UREA	210	lb ai/A	4-5 leaf	101 ab	37 a	8,516 a	43	2,824 ab	11,341 a
8	UREA	270	lb ai/A	4-5 leaf	102 a	37 a	8,009 ab	45	2,467 ab	10,475 ab
9	UREA	45	lb ai/A	4-5 leaf	98 b	29 ab	6,143 c	33	2,157 b	8,300 c
	UREA	45	lb ai/A	PD						
10	UREA	75	lb ai/A	4-5 leaf	99 b	32 ab	7,399 abc	35	2,709 ab	10,109 ab
	UREA	45	lb ai/A	PD						
11	UREA	105	lb ai/A	4-5 leaf	100 ab	37 a	8,354 a	39	2,806 ab	11,160 a
	UREA	45	lb ai/A	PD						
12	UREA	135	lb ai/A	4-5 leaf	101 ab	36 a	8,510 a	41	2,832 ab	11,342 a
	UREA	45	lb ai/A	PD						
LSD (P=.05)					2	5	1230	.	408	1323
Standard Deviation					1	3	852	.	282	917
CV					1	9	11	.	11	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 2. Determine the agronomic response of drill-seeded LA2140 to nitrogen fertilizer rate and time of application (1.1). Rice Research Station.

Crop Name					Rice	Rice	Rice	Rice	Rice	Rice
Rating Date						7/27/2010	8/5/2010		11/4/2010	
Rating Type					50% HD	Height	Yield	50% HD	Yield	Yield
Rating Unit					days	in	lb/A	days	lb/A	lb/A
Crop Stage Majority					Main	Main	Main	Ratoon	Ratoon	Total
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage						
1	UREA	0	lb ai/A	4-5 leaf	107 abc	34 c	3,394 e	39	2,899 bc	6,294 d
2	UREA	60	lb ai/A	4-5 leaf	104 def	37 abc	6,804 d	39	3,087 abc	9,890 c
3	UREA	90	lb ai/A	4-5 leaf	105 c-f	38 abc	7,771 c	39	3,359 ab	11,130 b
4	UREA	120	lb ai/A	4-5 leaf	106 abc	39 ab	8,121 bc	45	3,347 ab	11,468 ab
5	UREA	150	lb ai/A	4-5 leaf	107 ab	40 ab	8,641 ab	47	3,281 ab	11,922 ab
6	UREA	180	lb ai/A	4-5 leaf	107 abc	43 a	9,056 a	47	3,225 ab	12,281 a
7	UREA	210	lb ai/A	4-5 leaf	107 ab	41 a	9,006 a	47	2,997 abc	12,003 ab
8	UREA	270	lb ai/A	4-5 leaf	109 a	42 a	8,666 ab	47	2,645 c	11,312 ab
9	UREA	45	lb ai/A	4-5 leaf	103 f	35 bc	7,065 d	41	3,156 ab	10,221 c
	UREA	45	lb ai/A	PD						
10	UREA	75	lb ai/A	4-5 leaf	104 ef	38 abc	8,083 bc	41	3,542 a	11,625 ab
	UREA	45	lb ai/A	PD						
11	UREA	105	lb ai/A	4-5 leaf	105 b-e	41 a	8,534 ab	47	3,382 ab	11,916 ab
	UREA	45	lb ai/A	PD						
12	UREA	135	lb ai/A	4-5 leaf	106 bcd	41 a	8,745 ab	47	3,250 ab	11,995 ab
	UREA	45	lb ai/A	PD						
LSD (P=.05)					2	4	493	.	335	616
Standard Deviation					1	2	341	.	232	427
CV					1	5	4	.	7	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 3. Determine the agronomic response of drill-seeded Jazzman-2 (LA2149) to nitrogen fertilizer rate and time of application. (1.1). Rice Research Station.

Crop Name					Rice	Rice	Rice	Rice	Rice	Rice
Rating Date						7/27/2010	8/5/2010		11/4/2010	
Rating Type					50% HD	Height	Yield	50% HD	Yield	Yield
Rating Unit					days	in	lb/A	days	lb/A	lb/A
Crop Stage Majority					Main	Main	Main	Ratoon	Ratoon	Total
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage						
1	UREA	0	lb ai/A	4-5 leaf	103 c	31 e	2,634 d	38	2,640 a	5,274 c
2	UREA	60	lb ai/A	4-5 leaf	104 bc	34 de	6,114 c	38	2,486 a	8,600 b
3	UREA	90	lb ai/A	4-5 leaf	104 bc	36 bcd	7,095 b	40	2,845 a	9,939 a
4	UREA	120	lb ai/A	4-5 leaf	106 ab	37 a-d	7,816 a	42	2,839 a	10,655 a
5	UREA	150	lb ai/A	4-5 leaf	105 abc	39 ab	8,287 a	46	2,815 a	11,102 a
6	UREA	180	lb ai/A	4-5 leaf	106 ab	38 abc	8,260 a	46	2,676 a	10,936 a
7	UREA	210	lb ai/A	4-5 leaf	107 ab	40 ab	8,180 a	42	2,326 a	10,506 a
8	UREA	270	lb ai/A	4-5 leaf	107 a	40 a	8,186 a	42	2,133 a	10,319 a
9	UREA	45	lb ai/A	4-5 leaf	102 c	31 e	6,318 c	32	2,693 a	9,011 b
	UREA	45	lb ai/A	PD						
10	UREA	75	lb ai/A	4-5 leaf	103 c	34 cde	7,640 ab	34	2,693 a	10,333 a
	UREA	45	lb ai/A	PD						
11	UREA	105	lb ai/A	4-5 leaf	104 bc	36 bcd	7,979 a	38	2,694 a	10,673 a
	UREA	45	lb ai/A	PD						
12	UREA	135	lb ai/A	4-5 leaf	105 abc	37 a-d	8,315 a	42	2,617 a	10,932 a
	UREA	45	lb ai/A	PD						
LSD (P=.05)					2	3	566	.	415	779
Standard Deviation					1	2	392	.	288	540
CV					1	4	5	.	11	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 4. Determine the agronomic response of drill-seeded Jazzman to nitrogen fertilizer rate and time of application (3.1). Rice Research Station.

Crop Name					Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice
Rating Date						7/27/2010			8/6/2010		11/4/2010	
Rating Type					50% HD	Height	Lodge	Lodge	Yield	50% HD	Yield	Yield
Rating Unit					days	in	% plot	rate	lb/A	days	lb/A	lb/A
Crop Stage Majority					Main	Main	Main	Main	Main	Ratoon	Ratoon	Total
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage								
1	UREA	0	lb ai/A	4-5 leaf	111 a	30 e	.	.	3,633 e	56	2,574 bcd	6,206 e
2	UREA	60	lb ai/A	4-5 leaf	107 bc	38 cd	.	.	6,707 d	52	3,270 ab	9,977 bcd
3	UREA	90	lb ai/A	4-5 leaf	106 c	40 bc	.	.	7,318 c	52	3,763 a	11,081 a
4	UREA	120	lb ai/A	4-5 leaf	109 ab	41 abc	.	.	8,242 b	60	3,076 b	11,317 a
5	UREA	150	lb ai/A	4-5 leaf	111 a	42 ab	.	.	8,373 ab	66	2,533 bcd	10,907 abc
6	UREA	180	lb ai/A	4-5 leaf	111 a	44 a	.	.	8,996 a	66	1,961 d	10,957 ab
7	UREA	210	lb ai/A	4-5 leaf	112 a	44 a	10	1	8,967 a	66	950 e	9,917 bcd
8	UREA	270	lb ai/A	4-5 leaf	112 a	43 a	65	2	8,833 ab	66	535 e	9,368 d
9	UREA	45	lb ai/A	4-5 leaf	106 c	37 d	.	.	6,830 d	53	3,027 b	9,857 cd
	UREA	45	lb ai/A	PD								
10	UREA	75	lb ai/A	4-5 leaf	107 bc	39 cd	.	.	7,651 c	54	3,221 ab	10,872 abc
	UREA	45	lb ai/A	PD								
11	UREA	105	lb ai/A	4-5 leaf	109 ab	40 bc	.	.	8,251 b	66	2,842 bc	11,093 a
	UREA	45	lb ai/A	PD								
12	UREA	135	lb ai/A	4-5 leaf	110 ab	41 abc	.	.	8,355 ab	66	2,282 cd	10,636 abc
	UREA	45	lb ai/A	PD								
LSD (P=.05)					2	2	.	.	464	.	508	708
Standard Deviation					1	1	.	.	321	.	352	491
CV					1	3	.	.	4	.	14	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 5. Determine the agronomic response of drill-seeded Catahoula to nitrogen fertilizer rate and time of application (4.1). Evaluate green seeker technology. Evaluate N soil test. Rice Research Station.

Crop Name					Rice		Rice		Rice	Rice	Rice		Rice	Rice	
Rating Date							7/27/2010				8/6/2010			11/4/2010	
Rating Type					50% HD		Height		Lodge	Lodge	Yield		50% HD	Yield	
Rating Unit					days		in		% plot	rate	lb/A		days	lb/A	
Crop Stage Majority					Main		Main		Main	Main	Main		Ratoon	Ratoon	
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage											
1	UREA	0	lb ai/A	4-5 leaf	98	g	32	f	.	.	3,910	g	24	2,223	abc
2	UREA	30	lb ai/A	4-5 leaf	98	g	36	e	.	.	6,107	f	26	2,486	ab
3	UREA	60	lb ai/A	4-5 leaf	100	ef	38	cde	.	.	7,144	e	31	2,554	ab
4	UREA	90	lb ai/A	4-5 leaf	102	b-e	39	b-e	.	.	9,172	c	38	2,723	a
5	UREA	120	lb ai/A	4-5 leaf	103	a-d	41	abc	.	.	9,487	bc	38	2,683	a
6	UREA	150	lb ai/A	4-5 leaf	104	ab	42	abc	.	.	10,626	a	42	2,140	abc
7	UREA	180	lb ai/A	4-5 leaf	103	abc	44	a	.	.	10,703	a	47	1,666	c
8	UREA	210	lb ai/A	4-5 leaf	104	a	40	abc	.	.	10,412	a	47	957	d
9	UREA	270	lb ai/A	4-5 leaf	104	ab	42	ab	20	2	10,739	a	47	725	d
10	UREA	45	lb ai/A	4-5 leaf	99	fg	37	de	.	.	7,822	d	31	2,397	ab
	UREA	45	lb ai/A	PD											
11	UREA	75	lb ai/A	4-5 leaf	102	b-e	40	a-d	.	.	9,314	bc	38	2,773	a
	UREA	45	lb ai/A	PD											
12	UREA	105	lb ai/A	4-5 leaf	102	b-e	41	abc	.	.	10,509	a	41	2,257	abc
	UREA	45	lb ai/A	PD											
13	UREA	135	lb ai/A	4-5 leaf	103	a-d	42	ab	.	.	10,764	a	42	1,949	bc
	UREA	45	lb ai/A	PD											
14	UREA	75	lb ai/A	4-5 leaf	101	de	39	b-e	.	.	9,140	c	38	2,820	a
	SBNR†	†	lb ai/A	PD											
15	UREA	105	lb ai/A	4-5 leaf	103	abc	42	ab	.	.	10,039	ab	38	2,150	abc
	SBNR‡	‡	lb ai/A	PD											
16	90% NSTAR	80	lb ai/A	4-5 leaf	101	cde	39	b-e	.	.	9,447	bc	38	2,491	ab
		45	lb ai/A	PD											
17	95% NSTAR	105	lb ai/A	4-5 leaf	102	a-d	42	abc	.	.	10,250	a	38	2,464	ab
		45	lb ai/A	PD											
18	100% NSTAR	135	lb ai/A	4-5 leaf	103	abc	42	ab	.	.	10,477	a	38	2,171	abc
		45	lb ai/A	PD											
LSD (P=.05)					1		2		.	.	566		.	424	
Standard Deviation					1		1		.	.	400		.	300	
CV					1		3		.	.	4		.	14	

Table 5. Continued.

Crop Name					Rice	Rice		Rice		Rice
Description						Tissue Sample		Tissue Sample		Grain Sample
Rating Date						6/1/2010		6/25/2010		
Rating Type					Yield	Biomass	Total N	Biomass	Total N	Total N
Rating Unit					lb/A	DryWt(g)	%	DryWt(g)	%	%
Sample Size, Unit						3 ft		3 ft		
Collection Basis, Unit						1 row		1 row		
Crop Stage Majority					Total	PD	PD	50%head	50%head	Maturity
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage						
1	UREA	0	lb ai/A	4-5 leaf	6,133 e	26 b	1.4 g	90 c	1.0 de	1.2 b
2	UREA	30	lb ai/A	4-5 leaf	8,593 d	47 ab	1.6 fg	139 bc	1.0 e	1.2 b
3	UREA	60	lb ai/A	4-5 leaf	9,698 c	60 ab	2.0 ef	188 ab	1.0 de	1.3 b
4	UREA	90	lb ai/A	4-5 leaf	11,895 ab	42 ab	2.6 bcd	182 ab	1.3 cde	1.3 b
5	UREA	120	lb ai/A	4-5 leaf	12,170 ab	58 ab	2.8 bc	221 ab	1.3 cde	1.3 b
6	UREA	150	lb ai/A	4-5 leaf	12,766 a	64 ab	3.0 ab	206 ab	1.8 b	1.3 b
7	UREA	180	lb ai/A	4-5 leaf	12,369 ab	56 ab	3.1 ab	220 ab	1.8 b	1.4 b
8	UREA	210	lb ai/A	4-5 leaf	11,369 b	43 ab	3.3 ab	181 ab	2.1 a	1.4 b
9	UREA	270	lb ai/A	4-5 leaf	11,464 ab	43 ab	3.4 a	150 bc	2.3 a	1.6 a
10	UREA	45	lb ai/A	4-5 leaf	10,219 c	60 ab	1.7 fg	173 ab	1.0 e	1.2 b
	UREA	45	lb ai/A	PD						
11	UREA	75	lb ai/A	4-5 leaf	12,087 ab	71 a	2.1 def	189 ab	1.3 cde	1.3 b
	UREA	45	lb ai/A	PD						
12	UREA	105	lb ai/A	4-5 leaf	12,766 a	65 ab	2.7 bcd	213 ab	1.4 cde	1.3 b
	UREA	45	lb ai/A	PD						
13	UREA	135	lb ai/A	4-5 leaf	12,713 a	55 ab	3.0 ab	191 ab	1.5 bc	1.2 b
	UREA	45	lb ai/A	PD						
14	UREA	75	lb ai/A	4-5 leaf	11,960 ab	58 ab	2.3 cde	259 a	1.3 cde	1.3 b
	SBNR†	†	lb ai/A	PD						
15	UREA	105	lb ai/A	4-5 leaf	12,189 ab	68 a	2.7 bcd	168 ab	1.4 bcd	1.3 b
	SBNR‡	‡	lb ai/A	PD						
16	90% NSTAR	80	lb ai/A	4-5 leaf	11,938 ab	65 ab	2.3 cde	228 ab	1.2 cde	1.3 b
		45	lb ai/A	PD						
17	95% NSTAR	105	lb ai/A	4-5 leaf	12,714 a	64 ab	2.7 bcd	235 ab	1.5 bc	1.3 b
		45	lb ai/A	PD						
18	100% NSTAR	135	lb ai/A	4-5 leaf	12,648 a	67 a	2.6 bcd	211 ab	1.4 bcd	1.3 b
		45	lb ai/A	PD						
LSD (P=.05)					765	23	0.4	56	0.2	0.2
Standard Deviation					541	16	0.3	40	0.2	0.1
CV					5	28	11.0	21	12.3	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.

† Sensor Based N Rate (SBNR) applications were 22, 41, 64, and 29 lb/A for plots 114, 211, 312, and 410, respectively.

‡ Sensor Based N Rate (SBNR) applications were 27, 35, 28, and 35 lb/A for plots 115, 216, 316, and 413, respectively.

Table 6. Determine the agronomic response of drill-seeded CL111 (XC011) to nitrogen fertilizer rate and time of application (2.1). Rice Research Station.

Crop Name					Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice
Rating Date						7/27/2010			8/6/2010		11/4/2010	
Rating Type					50% HD	Height	Lodge	Lodge	Yield	50% HD	Yield	Yield
Rating Unit					days	in	% plot	rate	lb/A	days	lb/A	lb/A
Crop Stage Majority					Main	Main	Main	Main	Main	Ratoon	Ratoon	Total
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage								
1	UREA	0	lb ai/A	4-5 leaf	95 g	30 c	.	.	3,846 d	24	2,844 a	6,689 d
2	UREA	60	lb ai/A	4-5 leaf	97 ef	37 b	.	.	8,108 c	30	3,037 a	11,145 bc
3	UREA	90	lb ai/A	4-5 leaf	99 cd	40 ab	.	.	9,017 b	38	3,257 a	12,275 a
4	UREA	120	lb ai/A	4-5 leaf	101 ab	42 ab	.	.	10,050 a	42	3,276 a	13,326 a
5	UREA	150	lb ai/A	4-5 leaf	100 abc	42 ab	.	.	10,470 a	42	2,996 a	13,466 a
6	UREA	180	lb ai/A	4-5 leaf	100 abc	42 ab	10	2	10,327 a	44	2,631 a	12,959 a
7	UREA	210	lb ai/A	4-5 leaf	102 a	44 a	18	1	10,392 a	52	2,660 a	13,052 a
8	UREA	270	lb ai/A	4-5 leaf	102 a	44 a	80	4	9,157 b	52	1,933 b	11,091 bc
9	UREA	45	lb ai/A	4-5 leaf	96 fg	37 b	.	.	8,198 c	32	2,745 a	10,943 c
	UREA	45	lb ai/A	PD								
10	UREA	75	lb ai/A	4-5 leaf	98 de	41 ab	70	3	9,130 b	38	3,002 a	12,132 ab
	UREA	45	lb ai/A	PD								
11	UREA	105	lb ai/A	4-5 leaf	99 bcd	42 ab	.	.	9,982 a	42	3,047 a	13,028 a
	UREA	45	lb ai/A	PD								
12	UREA	135	lb ai/A	4-5 leaf	101 a	41 ab	.	.	10,404 a	42	3,002 a	13,406 a
	UREA	45	lb ai/A	PD								
LSD (P=.05)					1	3	.	.	690	.	449	871
Standard Deviation					1	2	.	.	478	.	311	603
CV					1	5	.	.	5	.	11	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 7. Determine the agronomic response of drill-seeded CL151 to nitrogen fertilizer rate and time of application (4.1). Green Seeker technology. Rice Research Station.

Trt No.	Trt Name	Rate	Rate Unit	Growth Stage								
Crop Name					Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice
Description												
Rating Date						7/27/2010			8/6/2010		11/4/2010	
Rating Type					50% HD	Height	Lodge	Lodge	Yield	50% HD	Yield	Yield
Rating Unit					days	in	% plot	rate	lb/A	days	lb/A	lb/A
Sample Size, Unit												
Collection Basis, Unit												
Crop Stage Majority					Main	Main	Main	Main	Main	Ratoon	Ratoon	Total
1	UREA	0	lb ai/A	4-5 leaf	98 f	33 c	.	.	4,979 d	32	3,046 ab	8,024 d
2	UREA	60	lb ai/A	4-5 leaf	100 ef	37 b	.	.	9,498 bc	40	3,198 ab	12,695 abc
3	UREA	90	lb ai/A	4-5 leaf	101 de	41 a	.	.	10,509 ab	44	3,286 a	13,795 ab
4	UREA	120	lb ai/A	4-5 leaf	102 bcd	41 a	.	.	11,170 a	46	2,817 abc	13,987 a
5	UREA	150	lb ai/A	4-5 leaf	102 bcd	42 a	27 bc	1 b	11,180 a	46	2,465 bc	13,645 ab
6	UREA	180	lb ai/A	4-5 leaf	104 abc	42 a	63 ab	3 a	10,642 ab	52	1,205 d	11,846 c
7	UREA	210	lb ai/A	4-5 leaf	104 ab	44 a	65 ab	3 a	10,862 a	55	1,028 d	11,890 c
8	UREA	270	lb ai/A	4-5 leaf	105 a	43 a	85 A	3 a	10,487 ab	55	851 d	11,337 c
9	UREA	45	lb ai/A	4-5 leaf	99 f	37 b	.	.	9,266 c	38	3,033 ab	12,299 bc
	UREA	45	lb ai/A	PD								
10	UREA	75	lb ai/A	4-5 leaf	100 ef	41 a	.	.	10,582 ab	44	2,872 abc	13,455 ab
	UREA	45	lb ai/A	PD								
11	UREA	105	lb ai/A	4-5 leaf	102 cd	41 a	.		11,572 a	44	2,657 abc	14,229 a
	UREA	45	lb ai/A	PD				.				
12	UREA	135	lb ai/A	4-5 leaf	102 bcd	42 a	10.0 C	1.0 b	11,253 a	46	2,230 c	13,483 ab
	UREA	45	lb ai/A	PD								
LSD (P=.05)					1	3	35	1	814	.	478	1,079
Standard Deviation					1	2	21	1	564	.	331	747
CV					1	4	43	30	6	.	14	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 7. Continued.

Crop Name					Rice		Rice		Rice
Description					Tissue Sample		Tissue Sample		Grain
Rating Date					6/1/2010		6/24/2010		
Rating Type					Biomass	Total N	Biomass	Total N	Total N
Rating Unit					DryWt(g)	%	DryWt(g)	%	%
Sample Size, Unit					3 ft		3 ft		
Collection Basis, Unit					1 row		1 row		
Crop Stage Majority					PD		50%head		Maturity
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage					
1	UREA	0	lb ai/A	4-5 leaf	20 b	1.3 c	77 c	1.1 e	1.1 cd
2	UREA	60	lb ai/A	4-5 leaf	74 a	1.6 c	183 ab	1.1 e	1.0 d
3	UREA	90	lb ai/A	4-5 leaf	78 a	1.7 c	168 b	1.1 e	1.1 cd
4	UREA	120	lb ai/A	4-5 leaf	74 a	2.2 b	203 ab	1.3 cde	1.1 c
5	UREA	150	lb ai/A	4-5 leaf	78 a	2.5 b	228 a	1.4 cde	1.2 c
6	UREA	180	lb ai/A	4-5 leaf	71 a	3.1 a	183 ab	1.6 c	1.2 b
7	UREA	210	lb ai/A	4-5 leaf	70 a	3.3 a	170 b	1.9 b	1.3 a
8	UREA	270	lb ai/A	4-5 leaf	69 a	3.4 a	198 ab	2.1 a	1.4 a
9	UREA	45	lb ai/A	4-5 leaf	62 a	1.3 c	159 b	1.1 e	1.0 d
	UREA	45	lb ai/A	PD					
10	UREA	75	lb ai/A	4-5 leaf	61 a	1.6 c	196 ab	1.3 cde	1.1 cd
	UREA	45	lb ai/A	PD					
11	UREA	105	lb ai/A	4-5 leaf	75 a	2.2 b	180 ab	1.2 de	1.1 cd
	UREA	45	lb ai/A	PD					
12	UREA	135	lb ai/A	4-5 leaf	72 a	2.4 b	196 ab	1.5 cd	1.1 cd
	UREA	45	lb ai/A	PD					
LSD (P=.05)					14	0.3	35	0.2	0.1
Standard Deviation					10	0.2	24	0.2	0.0
CV					15	8.9	13	11.8	4.3

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 8. Determine the agronomic response of drill-seeded CL142 to nitrogen fertilizer rate and time of application (1.1). Rice Research Station.

Crop Name					Rice	Rice	Rice	Rice	Rice	Rice
Rating Date						7/27/2010	8/6/2010		11/4/2010	
Rating Type					50% HD	Height	Yield	50% HD	Yield	Yield
Rating Unit					days	in	lb/A	days	lb/A	lb/A
Crop Stage Majority					Main	Main	Main	Ratoon	Ratoon	Total
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage						
1	UREA	0	lb ai/A	4-5 leaf	102 cd	32 c	4,133 g	46	3,119 ab	7,252 d
2	UREA	60	lb ai/A	4-5 leaf	101 d	40 b	8,178 f	46	3,083 ab	1,1262 c
3	UREA	90	lb ai/A	4-5 leaf	101 d	44 ab	9,157 d	47	3,252 a	12,409 ab
4	UREA	120	lb ai/A	4-5 leaf	103 bcd	46 a	10,110 c	48	2,908 ab	13,017 a
5	UREA	150	lb ai/A	4-5 leaf	104 b	47 a	10,450 bc	48	2,544 bc	12,994 a
6	UREA	180	lb ai/A	4-5 leaf	105 a	46 a	10,891 ab	52	2,290 c	13,181 a
7	UREA	210	lb ai/A	4-5 leaf	106 a	47 a	10,737 abc	52	2,281 c	13,018 a
8	UREA	270	lb ai/A	4-5 leaf	106 a	48 a	11,098 a	52	2,083 c	13,182 a
9	UREA	45	lb ai/A	4-5 leaf	101 d	43 ab	8,652 e	46	3,098 ab	11,750 bc
	UREA	45	lb ai/A	PD						
10	UREA	75	lb ai/A	4-5 leaf	101 d	43 ab	9,489 d	48	2,948 ab	12,438 ab
	UREA	45	lb ai/A	PD						
11	UREA	105	lb ai/A	4-5 leaf	102 bcd	44 ab	10,301 bc	48	3,029 ab	13,330 a
	UREA	45	lb ai/A	PD						
12	UREA	135	lb ai/A	4-5 leaf	103 bc	46 a	10,412 bc	48	2,894 ab	13,306 a
	UREA	45	lb ai/A	PD						
LSD (P=.05)					1	3	471	.	380	668
Standard Deviation					1	2	326	.	263	463
CV					1	5	3	.	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 9. Determine the agronomic response of drill-seeded CL181 to nitrogen fertilizer rate and time of application (1.1). Rice Research Station.

Crop Name					Rice		Rice		Rice		Rice	Rice		Rice	
Rating Date							7/27/2010		8/8/2010			11/4/2010			
Rating Type					50% HD		Height		Yield		50% HD	Yield		Yield	
Rating Unit					days		in		lb/A		days	lb/A		lb/A	
Crop Stage Majority					Main		Main		Main		Ratoon	Ratoon		Total	
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage											
1	UREA	0	lb ai/A	4-5 leaf	101	ef	26	c	3,953	f	38	2,182	ab	6,135	e
2	UREA	60	lb ai/A	4-5 leaf	100	ef	32	b	7,882	e	42	2,230	a	10,112	cd
3	UREA	90	lb ai/A	4-5 leaf	102	cde	35	ab	8,601	d	46	2,072	abc	10,672	bc
4	UREA	120	lb ai/A	4-5 leaf	103	bcd	37	ab	9,865	abc	48	1,858	a-e	11,723	a
5	UREA	150	lb ai/A	4-5 leaf	103	bc	38	a	9,489	bc	52	1,626	c-f	11,115	ab
6	UREA	180	lb ai/A	4-5 leaf	105	ab	37	ab	10,356	a	52	1,476	def	11,833	a
7	UREA	210	lb ai/A	4-5 leaf	106	a	37	ab	9,712	abc	52	1,294	fg	11,006	ab
8	UREA	270	lb ai/A	4-5 leaf	105	a	37	ab	9,892	abc	52	977	g	10,869	ab
9	UREA	45	lb ai/A	4-5 leaf	99	f	36	ab	7,971	e	46	1,904	a-d	9,875	d
	UREA	45	lb ai/A	PD											
10	UREA	75	lb ai/A	4-5 leaf	101	de	34	ab	9,152	cd	48	2,124	ab	11,276	ab
	UREA	45	lb ai/A	PD											
11	UREA	105	lb ai/A	4-5 leaf	103	cd	35	ab	9,979	abc	48	1,702	b-f	11,681	a
	UREA	45	lb ai/A	PD											
12	UREA	135	lb ai/A	4-5 leaf	104	bc	36	ab	10,080	ab	48	1,409	ef	11,489	ab
	UREA	45	lb ai/A	PD											
LSD (P=.05)					1		4		561		.	329		613	
Standard Deviation					1		2		388		.	228		424	
CV					1		6		4		.	13		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.

Rice Variety by Nitrogen Experiments at the Rice Research Station

Experiment number	10-CM-10 to 10-CM-13
Site and design	
Location/Cooperator	Rice Research Station (Crowley Main)
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	Crowley silt loam
% organic matter	1.211
pH	7.6
Extractable nutrients ppm	Ca-1,079; Cu-1.50; Mg-225; P-4.86; K-52.7; Na-85.3; S-6.45; Zn-4.42
Crop/Variety	Rice / See Data Sheet
Planting method/date	Drill seeded / March 14
Seeding rate/depth	40 seeds/ft^2 / 1 inch
Emergence date	April 1
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, March 16 90 lb N/A 46-0-0, August 9
Water management	
Flush	April 8
Flood	April 29
Drain	July 21
Ratoon flood	August 10
Ratoon drain	October 18
Pest management	
Herbicides	1 gal/A Propanil + 1 oz/A Londax + ¾ oz/A Permit, April 15 1 gal/A Rice Beaux + 1 oz/A Londax + ½ oz/A Permit, April 28 1 qt/A 2,4-D, August 9
Insecticides	0.137 lb ai/cwt Dermacor seed treatment
Fungicides	19 oz/A Stratego, June 24

Table 10. Determine the agronomic response of drill-seeded CL261 to nitrogen fertilizer rate and time of application (1.1). Rice Research Station.

Crop Name					Rice	Rice	Rice	Rice	Rice	Rice
Rating Date						7/27/2010	8/8/2010		11/4/2010	
Rating Type					50% HD	Height	Yield	50% HD	Yield	Yield
Rating Unit					days	in	lb/A	days	lb/A	lb/A
Crop Stage Majority					Main	Main	Main	Ratoon	Ratoon	Total
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage						
1	UREA	0	lb ai/A	4-5 leaf	103 ab	31 d	3,472 f	29	2,816 a	6,289 d
2	UREA	60	lb ai/A	4-5 leaf	99 d	37 bc	6,957 e	29	2,756 a	9,714 c
3	UREA	90	lb ai/A	4-5 leaf	99 d	38 bc	7,936 d	35	3,129 a	11,065 b
4	UREA	120	lb ai/A	4-5 leaf	101 bc	40 ab	9,057 c	37	3,087 a	12,145 a
5	UREA	150	lb ai/A	4-5 leaf	101 bc	43 a	9,451 bc	39	3,004 a	12,454 a
6	UREA	180	lb ai/A	4-5 leaf	102 ab	41 ab	9,902 ab	39	2,596 a	12,498 a
7	UREA	210	lb ai/A	4-5 leaf	103 ab	40 ab	10,157 a	40	2,638 a	12,795 a
8	UREA	270	lb ai/A	4-5 leaf	103 a	41 ab	9,984 ab	41	2,217 b	12,201 a
9	UREA	45	lb ai/A	4-5 leaf	99 d	36 c	6,861 e	29	2,769 a	9,630 c
	UREA	45	lb ai/A	PD						
10	UREA	75	lb ai/A	4-5 leaf	99 d	39 abc	8,061 d	29	3,021 a	11,082 b
	UREA	45	lb ai/A	PD						
11	UREA	105	lb ai/A	4-5 leaf	100 cd	39 abc	9,492 bc	35	3,017 a	12,509 a
	UREA	45	lb ai/A	PD						
12	UREA	135	lb ai/A	4-5 leaf	101 bc	41 ab	9,890 ab	38	2,791 a	12,681 a
	UREA	45	lb ai/A	PD						
LSD (P=.05)					1	3	425	.	317	625
Standard Deviation					1	1	294	.	219	433
CV					1	4	3	.	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.

Table 11. Determine the agronomic response of drill-seeded Neptune to nitrogen fertilizer rate and time of application (5.1). Evaluate Green Seeker technology. Rice Research Station.

Crop Name				Rice		Rice		Rice		Rice	Rice		Rice	
Rating Date						7/27/2010		8/8/2010			11/4/2010			
Rating Type				50% HD		Height		Yield		50% HD	Yield		Yield	
Rating Unit				days		in		lb/A		days	lb/A		lb/A	
Crop Stage Majority				Main		Main		Main		Ratoon	Ratoon		Total	
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage										
1	UREA	0	lb ai/A	4-5 leaf	109	a	28	c	3,975	f	35	3,943	ab	7,918	d
2	UREA	60	lb ai/A	4-5 leaf	108	a	33	ab	7,107	e	35	4,211	a	11,318	c
3	UREA	90	lb ai/A	4-5 leaf	107	a	35	ab	8,533	d	37	4,272	a	12,806	b
4	UREA	120	lb ai/A	4-5 leaf	108	a	35	ab	9,802	c	39	4,255	a	14,056	a
5	UREA	150	lb ai/A	4-5 leaf	108	a	34	ab	10,479	bc	39	3,885	ab	14,364	a
6	UREA	180	lb ai/A	4-5 leaf	109	a	36	ab	11,131	ab	39	3,550	b	14,681	a
7	UREA	210	lb ai/A	4-5 leaf	108	a	37	a	11,669	a	41	2,986	c	14,655	a
8	UREA	270	lb ai/A	4-5 leaf	109	a	34	ab	11,381	a	41	2,411	d	13,791	a
9	UREA	45	lb ai/A	4-5 leaf	107	a	32	b	7,399	e	35	4,149	ab	11,548	c
	UREA	45	lb ai/A	PD											
10	UREA	75	lb ai/A	4-5 leaf	107	a	34	ab	8,500	d	37	4,404	a	12,904	b
	UREA	45	lb ai/A	PD											
11	UREA	105	lb ai/A	4-5 leaf	108	a	35	ab	9,840	c	39	4,364	a	14,204	a
	UREA	45	lb ai/A	PD											
12	UREA	135	lb ai/A	4-5 leaf	108	a	34	ab	10,568	bc	39	3,907	ab	14,475	a
	UREA	45	lb ai/A	PD											
LSD (P=.05)					1		3		604		.	439		725	
Standard Deviation					1		2		418		.	304		502	
CV					1		5		5		.	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.

Table 11. Continued.

Crop Name					Rice				Rice				Rice	
Description					Tissue Sample				Tissue Sample				Grain	
Rating Date					6/1/2010				6/30/2010					
Rating Type					Biomass		Total N		Biomass		Total N		Total N	
Rating Unit					DryWt(g)		%		DryWt(g)		%		%	
Sample Size, Unit					3 ft				3 ft					
Collection Basis, Unit					1 row				1 row					
Crop Stage Majority					PD				50%Head				Maturity	
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage										
1	UREA	0	lb ai/A	4-5 leaf	14	b	1.5	d	103	a	1.0	fg	1.2	ab
2	UREA	60	lb ai/A	4-5 leaf	51	a	2.1	c	173	a	0.9	g	1.1	b
3	UREA	90	lb ai/A	4-5 leaf	56	a	2.3	c	217	a	1.1	efg	1.2	ab
4	UREA	120	lb ai/A	4-5 leaf	50	a	3.0	b	191	a	1.3	d-g	1.2	ab
5	UREA	150	lb ai/A	4-5 leaf	41	ab	3.1	b	191	a	1.6	cd	1.2	ab
6	UREA	180	lb ai/A	4-5 leaf	38	ab	3.3	b	241	a	1.7	c	1.2	ab
7	UREA	210	lb ai/A	4-5 leaf	43	ab	3.7	a	191	a	1.9	b	1.3	ab
8	UREA	270	lb ai/A	4-5 leaf	28	ab	3.8	a	182	a	2.3	a	1.4	a
9	UREA	45	lb ai/A	4-5 leaf	49	a	1.7	d	186	a	1.1	efg	1.1	b
	UREA	45	lb ai/A	PD										
10	UREA	75	lb ai/A	4-5 leaf	58	a	2.2	c	208	a	1.2	efg	1.1	b
	UREA	45	lb ai/A	PD										
11	UREA	105	lb ai/A	4-5 leaf	58	a	2.5	c	209	a	1.3	c-f	1.2	ab
	UREA	45	lb ai/A	PD										
12	UREA	135	lb ai/A	4-5 leaf	42	ab	3.1	b	178	a	1.5	cde	1.1	b
	UREA	45	lb ai/A	PD										
LSD (P=.05)					20		0.3		72		0.3		0.1	
Standard Deviation					14		0.2		50		0.2		0.1	
CV					31		8.5		26		13.0		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 12. Determine the agronomic response of drill-seeded Bowman to nitrogen fertilizer rate and time of application (3.1). Rice Research Station.

Crop Name					Rice	Rice	Rice	Rice	Rice	Rice
Rating Date						7/27/2010	8/9/2010		11/4/2010	
Rating Type					50% HD	Height	Yield	50% HD	Yield	Yield
Rating Unit					days	in	lb/A	days	lb/A	lb/A
Crop Stage Majority					Main	Main	Main	Ratoon	Ratoon	Total
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage						
1	UREA	0	lb ai/A	4-5 leaf	111 bc	30 b	3,302 c	35	3,179 a	6,481 e
2	UREA	60	lb ai/A	4-5 leaf	107 d	36 a	7,582 b	39	3,390 a	10,972 cd
3	UREA	90	lb ai/A	4-5 leaf	110 cd	38 a	8,390 a	43	3,248 a	11,638 abc
4	UREA	120	lb ai/A	4-5 leaf	111 abc	38 a	8,963 a	45	3,531 a	12,494 a
5	UREA	150	lb ai/A	4-5 leaf	112 abc	39 a	8,833 a	46	2,939 a	11,772 abc
6	UREA	180	lb ai/A	4-5 leaf	112 abc	36 a	9,285 a	46	2,538 b	11,824 abc
7	UREA	210	lb ai/A	4-5 leaf	114 a	39 a	8,872 a	46	2,273 b	11,145 bcd
8	UREA	270	lb ai/A	4-5 leaf	113 ab	37 a	8,792 a	46	2,220 b	11,012 cd
9	UREA	45	lb ai/A	4-5 leaf	107 d	35 a	7,197 b	43	3,065 a	10,262 d
	UREA	45	lb ai/A	PD						
10	UREA	75	lb ai/A	4-5 leaf	109 cd	38 a	8,473 a	43	3,399 a	11,873 abc
	UREA	45	lb ai/A	PD						
11	UREA	105	lb ai/A	4-5 leaf	109 cd	38 a	9,099 a	43	3,471 a	12,570 a
	UREA	45	lb ai/A	PD						
12	UREA	135	lb ai/A	4-5 leaf	111 abc	39 a	9,097 a	43	3,082 a	12,179 ab
	UREA	45	lb ai/A	PD						
LSD (P=.05)					2	3	613	.	387	714
Standard Deviation					1	2	425	.	268	494
CV					1	5	5	.	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 13. Determine the agronomic response of drill-seeded Templeton to nitrogen fertilizer rate and time of application (3.1). Rice Research Station.

Crop Name					Rice		Rice		Rice	Rice	Rice		Rice	Rice		Rice	
Rating Date							7/27/2010		8/9/2010	8/9/2010	8/9/2010			11/4/2010			
Rating Type					50% HD		Height		Lodge	Lodge	Yield		50% HD	Yield		Yield	
Rating Unit					days		in		% plot	rate	lb/A		days	lb/A		lb/A	
Crop Stage Majority					Main		Main		Main	Main	Main		Ratoon	Ratoon		Total	
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage													
1	UREA	0	lb ai/A	4-5 leaf	104	d	30	c	.	.	3,105	d	33	3,438	cd	6,543	e
2	UREA	60	lb ai/A	4-5 leaf	104	d	41	ab	.	.	7,329	c	35	4,152	a	11,482	c
3	UREA	90	lb ai/A	4-5 leaf	106	a-d	42	ab	.	.	8,096	b	43	4,009	ab	12,105	bc
4	UREA	120	lb ai/A	4-5 leaf	107	a-d	43	ab	.	.	8,959	a	45	3,762	a-d	12,721	ab
5	UREA	150	lb ai/A	4-5 leaf	108	abc	44	a	.	.	9,634	a	49	3,542	bcd	13,176	a
6	UREA	180	lb ai/A	4-5 leaf	107	abc	44	a	.	.	9,838	a	49	3,251	d	13,089	a
7	UREA	210	lb ai/A	4-5 leaf	108	ab	44	a	.	.	9,698	a	49	2,646	e	12,344	abc
8	UREA	270	lb ai/A	4-5 leaf	109	a	44	a	80	4	9,852	a	49	2,484	e	12,336	abc
9	UREA	45	lb ai/A	4-5 leaf	105	cd	39	b	.	.	6,976	c	43	3,826	abc	10,803	d
	UREA	45	lb ai/A	PD													
10	UREA	75	lb ai/A	4-5 leaf	106	a-d	41	ab	.	.	8,336	b	45	3,726	a-d	12,062	bc
	UREA	45	lb ai/A	PD													
11	UREA	105	lb ai/A	4-5 leaf	106	bcd	41	ab	.	.	9,352	a	47	3,774	a-d	13,126	a
	UREA	45	lb ai/A	PD													
12	UREA	135	lb ai/A	4-5 leaf	107	abc	41	ab	.	.	9,618	a	47	3,316	cd	12,934	ab
	UREA	45	lb ai/A	PD													
LSD (P=.05)					2		3		.	.	618		.	362		658	
Standard Deviation					1		2		.	.	428		.	251		455	
CV					1		4		.	.	5		.	7		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.

Rice Variety by Nitrogen Experiments at the Rice Research Station

Experiment number	10-CM-14 to 10-CM-15
Site and design	
Location/Cooperator	Rice Research Station (Crowley Main)
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	Crowley silt loam
% organic matter	1.021
pH	7.6
Extractable nutrients ppm	Ca-1,214; Cu-1.62; Mg-218; P-4.13; K-48.7; Na-85.3; S-6.48; Zn-4.66
Crop/Variety	Rice / See Data Sheet
Planting method/date	Drill seeded / March 14
Seeding rate/depth	40 seeds/ft^2 / 1 inch
Emergence date	April 1
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, March 16 90 lb N/A 46-0-0, August 9
Water management	
Flush	April 8
Flood	April 29
Drain	July 22
Ratoon flood	August 10
Ratoon drain	October 22
Pest management	
Herbicides	1 gal/A Propanil + 1 oz/A Londax + ¾ oz/A Permit, April 15 1 gal/A Rice Beaux + 1 oz/A Londax + ½ oz/A Permit, April 28 1 qt/A 2,4-D, August 9
Insecticides	0.137 lb ai/cwt Dermacor seed treatment
Fungicides	19 oz/A Stratego, June 24

Table 14. Determine the agronomic response of drill-seeded Taggart to nitrogen fertilizer rate and time of application (2.1). Rice Research Station.

Crop Name					Rice	Rice	Rice	Rice	Rice	Rice
Rating Date						7/28/2010	8/4/2010		11/5/2010	
Rating Type					50% HD	Height	Yield	50% HD	Yield	Yield
Rating Unit					days	in	lb/A	days	lb/A	lb/A
Crop Stage Majority					Main	Main	Main	Ratoon	Ratoon	Total
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage						
1	UREA	0	lb ai/A	4-5 leaf	111 abc	30 c	2,367 c	50	3,380 b	5,747 d
2	UREA	60	lb ai/A	4-5 leaf	111 bc	39 ab	5,836 b	50	3,881 ab	9,717 c
3	UREA	90	lb ai/A	4-5 leaf	112 abc	41 ab	6,822 ab	48	3,972 ab	10,794 abc
4	UREA	120	lb ai/A	4-5 leaf	113 abc	41 ab	6,850 ab	48	4,251 a	11,100 abc
5	UREA	150	lb ai/A	4-5 leaf	114 ab	44 a	6,937 ab	48	4,183 a	11,120 abc
6	UREA	180	lb ai/A	4-5 leaf	113 ab	45 a	7,452 a	48	4,025 ab	11,477 ab
7	UREA	210	lb ai/A	4-5 leaf	114 ab	42 ab	6,748 ab	48	3,967 ab	10,715 abc
8	UREA	270	lb ai/A	4-5 leaf	114 a	44 a	6,683 ab	48	3,798 ab	10,481 abc
9	UREA	45	lb ai/A	4-5 leaf	110 c	37 b	6,318 ab	50	3,896 ab	10,214 bc
	UREA	45	lb ai/A	PD						
10	UREA	75	lb ai/A	4-5 leaf	111 bc	41 ab	7,387 a	50	4,112 a	11,499 ab
	UREA	45	lb ai/A	PD						
11	UREA	105	lb ai/A	4-5 leaf	111 abc	41 ab	7,799 a	50	4,238 a	12,036 a
	UREA	45	lb ai/A	PD						
12	UREA	135	lb ai/A	4-5 leaf	111 abc	43 a	7,804 a	50	3,994 ab	11,798 ab
	UREA	45	lb ai/A	PD						
LSD (P=.05)					2	3	973	.	418	1,061
Standard Deviation					1	2	674	.	289	735
CV					1	5	10	.	7	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 15. Determine the agronomic response of drill-seeded Rex to nitrogen fertilizer rate and time of application (1.1). Rice Research Station.

Crop Name					Rice	Rice	Rice	Rice	Rice	Rice
Rating Date						7/28/2010	8/4/2010		11/5/2010	
Rating Type					50% HD	Height	Yield	50% HD	Yield	Yield
Rating Unit					days	in	lb/A	days	lb/A	lb/A
Crop Stage Majority					Main	Main	Main	Ratoon	Ratoon	Total
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage						
1	UREA	0	lb ai/A	4-5 leaf	112 a	32 b	2,386 d	50	3,613 bc	5,998 b
2	UREA	60	lb ai/A	4-5 leaf	111 a	38 a	6,077 bc	50	4,063 ab	10,140 a
3	UREA	90	lb ai/A	4-5 leaf	112 a	38 a	6,660 abc	50	3,474 c	10,134 a
4	UREA	120	lb ai/A	4-5 leaf	112 a	39 a	7,313 abc	50	3,818 abc	11,131 a
5	UREA	150	lb ai/A	4-5 leaf	112 a	40 a	8,052 a	50	3,658 bc	11,710 a
6	UREA	180	lb ai/A	4-5 leaf	113 a	39 a	7,751 ab	50	3,342 cd	11,094 a
7	UREA	210	lb ai/A	4-5 leaf	113 a	37 a	7,020 abc	50	3,084 d	10,104 a
8	UREA	270	lb ai/A	4-5 leaf	114 a	40 a	7,615 abc	50	2,526 e	10,140 a
9	UREA	45	lb ai/A	4-5 leaf	112 a	38 a	5,924 c	50	4,149 a	10,073 a
	UREA	45	lb ai/A	PD						
10	UREA	75	lb ai/A	4-5 leaf	112 a	38 a	7,046 abc	50	3,805 abc	10,851 a
	UREA	45	lb ai/A	PD						
11	UREA	105	lb ai/A	4-5 leaf	112 a	38 a	7,832 ab	50	3,677 bc	11,509 a
	UREA	45	lb ai/A	PD						
12	UREA	135	lb ai/A	4-5 leaf	113 a	39 a	7,885 ab	50	3,625 bc	11,509 a
	UREA	45	lb ai/A	PD						
LSD (P=.05)					2	3	1,115	.	321	1,236
Standard Deviation					1	2	772	.	223	856
CV					1	4	11	.	6	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.

Rice Variety by Nitrogen Experiments at the Rice Research Station

Experiment number	10-CM-19
Site and design	
Location/Cooperator	Rice Research Station (Crowley Main)
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	Crowley silt loam
% organic matter	0.966
pH	7.7
Extractable nutrients ppm	Ca-1,303; Cu-1.54; Mg-231; P-4.24; K-53.8; Na-77.2; S-5.20; Zn-3.89
Crop/Variety	Rice / URN048
Planting method/date	Drill seeded / March 19
Seeding rate/depth	40 seeds/ft^2 / 1 inch
Emergence date	April 4
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, March 16
Water management	
Flush	April 8
Flood	April 30
Drain	July 28
Pest management	
Herbicides	1 gal/A Propanil + 1 oz/A Londax + ¾ oz/A Permit, April 15 1 gal/A Rice Beaux +1 oz/A Londax + ½ oz/A Permit, April 28
Insecticides	0.137 lb ai/cwt Dermacor seed treatment
Fungicides	19 oz/A Stratego, June 24

Table 16. Determine the agronomic response of drill-seeded URN048 to nitrogen fertilizer rate and time of application (1.1). Rice Research Station.

Crop Name					Rice		Rice		Rice	
Rating Date							8/3/2010			
Rating Type					50% HD		Height		Yield	
Rating Unit					days		in		lb/A	
Crop Stage Majority					Main		Main		Main	
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage						
1	UREA	0	lb ai/A	4-5 leaf	83	d	30	a	2,645	d
2	UREA	60	lb ai/A	4-5 leaf	84	cd	36	a	6,268	bc
3	UREA	90	lb ai/A	4-5 leaf	86	bc	35	a	7,164	a
4	UREA	120	lb ai/A	4-5 leaf	89	a	37	a	6,909	ab
5	UREA	150	lb ai/A	4-5 leaf	88	ab	36	a	7,342	a
6	UREA	180	lb ai/A	4-5 leaf	89	a	35	a	7,316	a
7	UREA	210	lb ai/A	4-5 leaf	89	a	37	a	6,725	abc
8	UREA	270	lb ai/A	4-5 leaf	89	a	36	a	6,009	c
9	UREA	45	lb ai/A	4-5 leaf	83	d	33	a	6,280	bc
	UREA	45	lb ai/A	PD						
10	UREA	75	lb ai/A	4-5 leaf	85	cd	35	a	7,226	a
	UREA	45	lb ai/A	PD						
11	UREA	105	lb ai/A	4-5 leaf	87	ab	38	a	7,347	a
	UREA	45	lb ai/A	PD						
12	UREA	135	lb ai/A	4-5 leaf	89	a	36	a	7,345	a
	UREA	45	lb ai/A	PD						
LSD (P=.05)					2		5		576	
Standard Deviation					1		3		399	
CV					1		8		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.

Rice Variety by Nitrogen Experiments at Vermilion Parish

Experiment number	10-VP-01to 10-VP-15
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	1.075
pH	4.5
Extractable nutrients ppm	Ca-631; Cu-1.1; Mg-144; P-18.6; K-115; Na-69.3; S-22.3; Zn- 1.69
Crop/Variety	Rice / See data sheet
Planting method/date	Drill seeded / March 15
Seeding rate/depth	40 seeds/ft^2 / ½ inch
Emergence date	March 30
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	250 lb/A 6-24-24, February 15 75 lb N/A 46-0-0, August 5
Water management	
Flush	March 28, April 22
Flood	April 30
Drain	July 20
Ratoon flood	August 6
Ratoon drain	October 14
Pest management	
Herbicides	1 gal/A Propanil + .5 oz/A Permit + .5 oz/A Londax, April 16 1 gal/A Rice Beaux + 1 oz/A Londax + .5 oz/A Permit, April 29 1 qt/A 2,4-D, August 4
Insecticides	None
Fungicides	19 oz/A Stratego, June 24

Table 17. Determine the agronomic response of drill-seeded LA2022 to nitrogen fertilizer rate and time of application (1.2). Vermilion Parish.

Crop Name				Rice		Rice		Rice		Rice		Rice	
Rating Date						7/29/2010		8/2/2010		10/26/2010			
Rating Type				50% HD		Height		Yield		Yield		Yield	
Rating Unit				days		in		lb/A		lb/A		lb/A	
Crop Stage Majority				Main		Main		Main		Ratoon		Total	
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage									
1	UREA	0	lb ai/A	4-5 leaf	95 e		37 b		7,312 ab		2,963 a		10,276 ab
2	UREA	60	lb ai/A	4-5 leaf	96 de		39 ab		7,642 a		2,797 ab		10,438 a
3	UREA	90	lb ai/A	4-5 leaf	98 d		40 ab		7,059 ab		2,619 ab		9,679 bcd
4	UREA	120	lb ai/A	4-5 leaf	101 c		39 ab		6,956 abc		2,799 ab		9,755 abc
5	UREA	150	lb ai/A	4-5 leaf	103 bc		41 a		6,723 bc		2,757 ab		9,480 cd
6	UREA	180	lb ai/A	4-5 leaf	105 ab		41 a		6,639 bc		2,817 ab		9,456 cd
7	UREA	210	lb ai/A	4-5 leaf	104 ab		42 a		6,310 c		2,462 bc		8,772 e
8	UREA	270	lb ai/A	4-5 leaf	106 a		41 a		6,782 bc		2,255 c		9,037 de
9	UREA	45	lb ai/A	4-5 leaf	97 de		38 ab		6,947 abc		2,914 ab		9,861 abc
	UREA	45	lb ai/A	PD									
10	UREA	75	lb ai/A	4-5 leaf	98 d		38 ab		7,096 ab		2,811 ab		9,907 abc
	UREA	45	lb ai/A	PD									
11	UREA	105	lb ai/A	4-5 leaf	101 c		40 ab		6,768 bc		2,777 ab		9,546 bcd
	UREA	45	lb ai/A	PD									
12	UREA	135	lb ai/A	4-5 leaf	103 bc		40 ab		7,069 ab		2,957 a		10,026 abc
	UREA	45	lb ai/A	PD									
LSD (P=.05)				2		2		457		293		483	
Standard Deviation				1		1		317		203		334	
CV				1		3		5		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 18. Determine the agronomic response of drill-seeded LA2140 to nitrogen fertilizer rate and time of application (1.2). Vermilion Parish.

Crop Name					Rice		Rice		Rice		Rice		Rice	
Rating Date							7/29/2010		8/2/2010		10/26/2010			
Rating Type					50% HD		Height		Yield		Yield		Yield	
Rating Unit					days		in		lb/A		lb/A		lb/A	
Crop Stage Majority					Main		Main		Main		Ratoon		Total	
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage										
1	UREA	0	lb ai/A	4-5 leaf	107	a	35	a	4,571	a	3,355	a	7,926	a
2	UREA	60	lb ai/A	4-5 leaf	109	a	37	a	5,287	a	3,362	a	8,649	a
3	UREA	90	lb ai/A	4-5 leaf	109	a	38	a	5,615	a	3,452	a	9,067	a
4	UREA	120	lb ai/A	4-5 leaf	110	a	39	a	5,287	a	3,385	a	8,671	a
5	UREA	150	lb ai/A	4-5 leaf	113	a	41	a	4,982	a	3,763	a	8,745	a
6	UREA	180	lb ai/A	4-5 leaf	112	a	40	a	5,512	a	3,695	a	9,207	a
7	UREA	210	lb ai/A	4-5 leaf	112	a	40	a	5,095	a	3,720	a	8,815	a
8	UREA	270	lb ai/A	4-5 leaf	113	a	39	a	4,649	a	3,614	a	8,263	a
9	UREA	45	lb ai/A	4-5 leaf	111	a	37	a	4,652	a	3,530	a	8,182	a
	UREA	45	lb ai/A	PD										
10	UREA	75	lb ai/A	4-5 leaf	110	a	36	a	5,014	a	3,637	a	8,652	a
	UREA	45	lb ai/A	PD										
11	UREA	105	lb ai/A	4-5 leaf	111	a	36	a	5,312	a	3,489	a	8,801	a
	UREA	45	lb ai/A	PD										
12	UREA	135	lb ai/A	4-5 leaf	113	a	39	a	5,305	a	3,500	a	8,805	a
	UREA	45	lb ai/A	PD										
LSD (P=.05)					4		3		700		405		733	
Standard Deviation					2		2		485		281		508	
CV					2		5		10		8		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 Jazzman-2 (LA2149) to nitrogen fertilizer rate and time of application (1.2). Vermilion Parish.

Crop Name					Rice		Rice		Rice		Rice		Rice	
Rating Date							7/29/2010		8/2/2010		10/26/2010			
Rating Type					50% HD		Height		Yield		Yield		Yield	
Rating Unit					days		in		lb/A		lb/A		lb/A	
Crop Stage Majority					Main		Main		Main		Ratoon		Total	
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage										
1	UREA	0	lb ai/A	4-5 leaf	101	b	31	b	3,469	b	2,420	a	5,890	d
2	UREA	60	lb ai/A	4-5 leaf	104	a	34	ab	4,100	ab	2,305	a	6,405	a-d
3	UREA	90	lb ai/A	4-5 leaf	105	a	35	ab	4,208	ab	2,420	a	6,628	a-d
4	UREA	120	lb ai/A	4-5 leaf	106	a	34	ab	3,935	ab	2,611	a	6,546	a-d
5	UREA	150	lb ai/A	4-5 leaf	106	a	35	ab	4,439	ab	2,546	a	6,985	abc
6	UREA	180	lb ai/A	4-5 leaf	107	a	37	a	3,914	ab	2,659	a	6,573	a-d
7	UREA	210	lb ai/A	4-5 leaf	107	a	36	ab	4,548	a	2,751	a	7,299	a
8	UREA	270	lb ai/A	4-5 leaf	108	a	35	ab	4,591	a	2,608	a	7,200	ab
9	UREA	45	lb ai/A	4-5 leaf	107	a	33	ab	3,822	ab	2,542	a	6,364	bcd
	UREA	45	lb ai/A	PD										
10	UREA	75	lb ai/A	4-5 leaf	106	a	32	ab	3,620	ab	2,579	a	6,199	cd
	UREA	45	lb ai/A	PD										
11	UREA	105	lb ai/A	4-5 leaf	107	a	33	ab	4,115	ab	2,507	a	6,622	a-d
	UREA	45	lb ai/A	PD										
12	UREA	135	lb ai/A	4-5 leaf	107	a	36	ab	4,381	ab	2,595	a	6,976	abc
	UREA	45	lb ai/A	PD										
LSD (P=.05)					3		3		594		288		560	
Standard Deviation					2		2		411		199		388	
CV					2		5		10		8		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 20. Determine the agronomic response of drill-seeded Jazzman to nitrogen fertilizer rate and time of application (3.2). Vermilion Parish.

Crop Name					Rice	Rice	Rice	Rice	Rice	Rice	Rice
Rating Date						7/29/2010	8/2/2010	8/2/2010	8/2/2010	10/26/2010	
Rating Type					50% HD	Height	Lodge	Lodge	Yield	Yield	Yield
Rating Unit					days	in	% plot	rate	lb/A	lb/A	lb/A
Crop Stage Majority					Main	Main	Main	Main	Main	Ratoon	Total
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage							
1	UREA	0	lb ai/A	4-5 leaf	108 c	32 e	.	.	4,237 a	2,232 ab	6,469 ab
2	UREA	60	lb ai/A	4-5 leaf	111 bc	34 de	.	.	4,662 a	2,195 ab	6,857 a
3	UREA	90	lb ai/A	4-5 leaf	112 abc	36 bcd	.	.	4,989 a	1,983 ab	6,972 a
4	UREA	120	lb ai/A	4-5 leaf	113 ab	35 cd	.	.	4,795 a	2,132 ab	6,927 a
5	UREA	150	lb ai/A	4-5 leaf	115 ab	39 a	.	.	4,387 a	2,263 ab	6,650 ab
6	UREA	180	lb ai/A	4-5 leaf	115 ab	38 abc	.	.	4,311 a	2,069 ab	6,380 ab
7	UREA	210	lb ai/A	4-5 leaf	116 ab	39 a	.	.	4,460 a	1,835 b	6,296 ab
8	UREA	270	lb ai/A	4-5 leaf	117 a	38 ab	5	2	3,490 a	2,040 ab	5,530 b
9	UREA	45	lb ai/A	4-5 leaf	112 abc	36 bcd	.	.	4,392 a	2,318 a	6,710 ab
	UREA	45	lb ai/A	PD							
10	UREA	75	lb ai/A	4-5 leaf	112 abc	36 bcd	.	.	5,077 a	2,023 ab	7,100 a
	UREA	45	lb ai/A	PD							
11	UREA	105	lb ai/A	4-5 leaf	114 ab	36 a-d	.	.	4,953 a	1,949 ab	6,903 a
	UREA	45	lb ai/A	PD							
12	UREA	135	lb ai/A	4-5 leaf	114 ab	38 abc	.	.	4,931 a	2,088 ab	7,018 a
	UREA	45	lb ai/A	PD							
LSD (P=.05)					3.03	1.82	.	.	905.20	278.90	827.30
Standard Deviation					2.10	1.07	.	.	626.90	193.20	572.90
CV					1.86	2.94	.	.	13.76	9.22	8.61

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 Catahoula to nitrogen fertilizer rate and time of application (4.1). Evaluate Green Seeker technology. Evaluate N soil test. Vermilion Parish.

Crop Name					Rice		Rice		Rice		Rice		Rice	
Rating Date							7/29/2010		8/2/2010		10/26/2010			
Rating Type					50% HD		Height		Yield		Yield		Yield	
Rating Unit					days		in		lb/A		lb/A		lb/A	
Crop Stage Majority					Main		Main		Main		Ratoon		Total	
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage										
1	UREA	0	lb ai/A	4-5 leaf	95	c	36	ab	5,503	d	1,962	a	7,465	c
2	UREA	30	lb ai/A	4-5 leaf	98	ab	34	b	5,572	cd	2,610	a	8,181	b
3	UREA	60	lb ai/A	4-5 leaf	97	bc	36	ab	6,247	bcd	2,364	a	8,611	ab
4	UREA	90	lb ai/A	4-5 leaf	100	ab	38	ab	6,552	a-d	2,305	a	8,857	ab
5	UREA	120	lb ai/A	4-5 leaf	98	ab	39	ab	6,848	ab	2,007	a	8,855	ab
6	UREA	150	lb ai/A	4-5 leaf	99	ab	38	ab	7,029	ab	2,241	a	9,269	ab
7	UREA	180	lb ai/A	4-5 leaf	98	b	38	ab	6,631	abc	2,080	a	8,710	ab
8	UREA	210	lb ai/A	4-5 leaf	100	ab	37	ab	6,181	bcd	2,486	a	8,667	ab
9	UREA	270	lb ai/A	4-5 leaf	102	a	40	ab	6,333	a-d	2,286	a	8,619	ab
10	UREA	45	lb ai/A	4-5 leaf	97	bc	36	ab	6,466	a-d	1,936	a	8,402	b
	UREA	45	lb ai/A	PD										
11	UREA	75	lb ai/A	4-5 leaf	98	ab	38	ab	6,653	abc	2,252	a	8,905	ab
	UREA	45	lb ai/A	PD										
12	UREA	105	lb ai/A	4-5 leaf	99	ab	36	ab	6,839	ab	2,199	a	9,038	ab
	UREA	45	lb ai/A	PD										
13	UREA	135	lb ai/A	4-5 leaf	99	ab	38	ab	7,490	a	2,354	a	9,844	a
	UREA	45	lb ai/A	PD										
14	UREA	75	lb ai/A	4-5 leaf	99	ab	38	ab	6,902	ab	2,325	a	9,226	ab
	SBNR†	†	lb ai/A	PD										
15	UREA	105	lb ai/A	4-5 leaf	97	bc	41	a	7,179	ab	2,199	a	9,378	ab
	SBNR‡	‡	lb ai/A	PD										
16	90% NSTAR	45	lb ai/A	4-5 leaf	97	bc	37	ab	6,562	a-d	2,180	a	8,742	ab
		45	lb ai/A	PD										
17	95% NSTAR	70	lb ai/A	4-5 leaf	98	ab	38	ab	6,960	ab	2,169	a	9,129	ab
		45	lb ai/A	PD										
18	100% NSTAR	95	lb ai/A	4-5 leaf	99	ab	39	ab	6,641	abc	2,214	a	8,855	ab
		45	lb ai/A	PD										
LSD (P=.05)					2		3		678		504		708	
Standard Deviation					2		2		480		357		501	
CV					2		5		7		16		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.

Note: †‡ Because of Newpath drift, Green Seeker data was not taken.

Table 22. Determine the agronomic response of drill-seeded CL111 (XC011) to nitrogen fertilizer rate and time of application (2.2). Vermilion Parish.

Crop Name					Rice		Rice		Rice		Rice		Rice	
Rating Date							7/29/2010		8/2/2010		10/26/2010			
Rating Type					50% HD		Height		Yield		Yield		Yield	
Rating Unit					days		in		lb/A		lb/A		lb/A	
Crop Stage Majority					Main		Main		Main		Ratoon		Total	
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage										
1	UREA	0	lb ai/A	4-5 leaf	91	h	38	a	7,231	b	2,797	ab	10,028	c
2	UREA	60	lb ai/A	4-5 leaf	94	fg	38	a	8,100	a	2,705	ab	10,806	abc
3	UREA	90	lb ai/A	4-5 leaf	96	def	40	a	8,561	a	2,882	ab	11,443	a
4	UREA	120	lb ai/A	4-5 leaf	97	cde	41	a	8,069	a	2,777	ab	10,846	abc
5	UREA	150	lb ai/A	4-5 leaf	98	bcd	42	a	7,951	ab	2,543	ab	10,494	abc
6	UREA	180	lb ai/A	4-5 leaf	100	b	42	a	7,807	ab	2,432	ab	10,239	bc
7	UREA	210	lb ai/A	4-5 leaf	99	b	42	a	7,959	ab	2,673	ab	10,632	abc
8	UREA	270	lb ai/A	4-5 leaf	102	a	42	a	7,689	ab	2,329	b	10,018	c
9	UREA	45	lb ai/A	4-5 leaf	93	g	39	a	8,007	a	2,675	ab	10,682	abc
	UREA	45	lb ai/A	PD										
10	UREA	75	lb ai/A	4-5 leaf	95	ef	40	a	8,360	a	2,829	ab	11,189	ab
	UREA	45	lb ai/A	PD										
11	UREA	105	lb ai/A	4-5 leaf	98	bcd	40	a	8,099	a	2,956	a	11,055	ab
	UREA	45	lb ai/A	PD										
12	UREA	135	lb ai/A	4-5 leaf	98	bc	41	a	8,028	a	2,708	ab	10,736	abc
	UREA	45	lb ai/A	PD										
LSD (P=.05)					1		3		516		332		602	
Standard Deviation					1		2		357		230		417	
CV					1		4		4		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 23. Determine the agronomic response of drill-seeded CL151 to nitrogen fertilizer rate and time of application (4.2). Evaluate Green Seeker technology. Vermilion Parish.

Crop Name					Rice	Rice	Rice	Rice	Rice	Rice	Rice
Rating Date						7/29/2010	8/2/2010		8/2/2010	10/26/2010	
Rating Type					50% HD	Height	Lodge	Lodge	Yield	Yield	Yield
Rating Unit					days	in	% plot	rate	lb/A	lb/A	lb/A
Crop Stage Majority					Main	Main	Main	Main	Main	Ratoon	Total
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage							
1	UREA	0	lb ai/A	4-5 leaf	95 g	39 a	.	.	9,019 a	3,039 a	12,058 a
2	UREA	60	lb ai/A	4-5 leaf	97 fg	41 a	.	.	9,168 a	2,810 abc	11,978 a
3	UREA	90	lb ai/A	4-5 leaf	99 de	39 a	.	.	9,012 a	2,493 abc	11,505 a
4	UREA	120	lb ai/A	4-5 leaf	100 cd	42 a	.	.	9,093 a	2,532 abc	11,625 a
5	UREA	150	lb ai/A	4-5 leaf	101 ab	41 a	.	.	9,021 a	2,767 abc	11,787 a
6	UREA	180	lb ai/A	4-5 leaf	102 ab	43 a	.	.	8,713 a	2,341 bc	11,054 a
7	UREA	210	lb ai/A	4-5 leaf	102 a	43 a	10 a	1 a	9,099 a	2,300 c	11,399 a
8	UREA	270	lb ai/A	4-5 leaf	103 a	42 a	47 a	4 a	8,396 a	1,668 d	10,064 b
9	UREA	45	lb ai/A	4-5 leaf	97 fg	40 a	.	.	9,067 a	2,934 ab	12,001 a
	UREA	45	lb ai/A	PD							
10	UREA	75	lb ai/A	4-5 leaf	98 ef	39 a	.	.	8,706 a	2,694 abc	11,400 a
	UREA	45	lb ai/A	PD							
11	UREA	105	lb ai/A	4-5 leaf	100 bcd	42 a	.	.	8,698 a	2,567 abc	11,265 a
	UREA	45	lb ai/A	PD							
12	UREA	135	lb ai/A	4-5 leaf	101 abc	42 a	.	.	8,,870 a	2,532 abc	11,401 a
	UREA	45	lb ai/A	PD							
LSD (P=.05)					1	3	158	6	623	368	793
Standard Deviation					1	1	15	1	431	255	549
CV					1	4	54	25	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 23. Continued.

Crop Name					Rice	Rice	Rice	Rice	Rice
Description					Tissue Sample				Grain
Rating Date					5/26/2010	5/26/2010	6/22/2010	6/22/2010	
Rating Type					Biomass	Total N	Biomass	Total N	Total N
Rating Unit					DryWt(g)	%	DryWt(g)	%	%
Sample Size, Unit					3 ft		3 ft		
Collection Basis, Unit					1 row		1 row		
Crop Stage Majority					PD	PD	50%head	50%head	Maturity
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage					
1	UREA	0	lb ai/A	4-5 leaf	66 a	2.4 e	215 a	1.3 b	1.2 d
2	UREA	60	lb ai/A	4-5 leaf	81 a	2.8 cde	217 a	1.5 ab	1.3 bcd
3	UREA	90	lb ai/A	4-5 leaf	74 a	3.7 abc	220 a	1.9 ab	1.3 cd
4	UREA	120	lb ai/A	4-5 leaf	85 a	3.4 a-d	236 a	1.7 ab	1.4 abc
5	UREA	150	lb ai/A	4-5 leaf	89 a	3.5 a-d	256 a	1.9 ab	1.3 bcd
6	UREA	180	lb ai/A	4-5 leaf	83 a	3.7 abc	235 a	1.9 ab	1.4 ab
7	UREA	210	lb ai/A	4-5 leaf	86 a	3.9 ab	257 a	2.1 a	1.4 abc
8	UREA	270	lb ai/A	4-5 leaf	86 a	4.1 a	247 a	2.1 a	1.5 a
9	UREA	45	lb ai/A	4-5 leaf	70 a	2.6 de	229 a	1.4 b	1.3 cd
	UREA	45	lb ai/A	PD					
10	UREA	75	lb ai/A	4-5 leaf	80 a	3.0 b-e	228 a	1.7 ab	1.3 cd
	UREA	45	lb ai/A	PD					
11	UREA	105	lb ai/A	4-5 leaf	75 a	3.4 a-d	259 a	1.9 ab	1.3 cd
	UREA	45	lb ai/A	PD					
12	UREA	135	lb ai/A	4-5 leaf	78 a	3.7 abc	245.03 a	1.9 ab	1.3 bcd
	UREA	45	lb ai/A	PD					
LSD (P=.05)					20	0.6	45	0.4	0.1
Standard Deviation					14	0.4	31	0.3	0.1
CV					17	12.1	13	15.8	5.1

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 CL142 to nitrogen fertilizer rate and time of application (1.2). Vermilion Parish.

Crop Name					Rice		Rice		Rice		Rice		Rice	
Rating Date							7/29/2010		8/3/2010		10/26/2010			
Rating Type					50% HD		Height		Yield		Yield		Yield	
Rating Unit					days		in		lb/A		lb/A		lb/A	
Crop Stage Majority					Main		Main		Main		Ratoon		Total	
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage										
1	UREA	0	lb ai/A	4-5 leaf	97	f	40	d	6,417	a	3,102	a	9,519	a
2	UREA	60	lb ai/A	4-5 leaf	100	de	44	c	6,337	a	3,149	a	9,486	a
3	UREA	90	lb ai/A	4-5 leaf	102	de	45	c	6,732	a	2,965	a	9,697	a
4	UREA	120	lb ai/A	4-5 leaf	103	cd	45	bc	6,182	a	3,187	a	9,369	a
5	UREA	150	lb ai/A	4-5 leaf	105	bc	46	abc	5,730	a	2,911	a	8,641	a
6	UREA	180	lb ai/A	4-5 leaf	106	b	46	abc	5,890	a	2,862	a	8,752	a
7	UREA	210	lb ai/A	4-5 leaf	107	b	45	abc	6,034	a	2,986	a	9,020	a
8	UREA	270	lb ai/A	4-5 leaf	109	a	48	ab	5,631	a	3,070	a	8,701	a
9	UREA	45	lb ai/A	4-5 leaf	100	e	43	c	6,709	a	3,236	a	9,945	a
	UREA	45	lb ai/A	PD										
10	UREA	75	lb ai/A	4-5 leaf	101	de	45	c	6,382	a	2,951	a	9,333	a
	UREA	45	lb ai/A	PD										
11	UREA	105	lb ai/A	4-5 leaf	103	cd	45	abc	6,308	a	2,911	a	9,219	a
	UREA	45	lb ai/A	PD										
12	UREA	135	lb ai/A	4-5 leaf	105	bc	48	a	6,032	a	3,022	a	9,054	a
	UREA	45	lb ai/A	PD										
LSD (P=.05)					2		2		692		485		859	
Standard Deviation					1		1		479		336		595	
CV					1		2		8		11		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 CL181 to nitrogen fertilizer rate and time of application (1.2). Vermilion Parish.

Crop Name					Rice		Rice		Rice		Rice		Rice	
Rating Date							7/29/2010		8/3/2010		10/26/2010			
Rating Type					50% HD		Height		Yield		Yield		Yield	
Rating Unit					days		in		lb/A		lb/A		lb/A	
Crop Stage Majority					Main		Main		Main		Ratoon		Total	
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage										
1	UREA	0	lb ai/A	4-5 leaf	99	f	33	b	5,828	a	2,113	a	7,941	a
2	UREA	60	lb ai/A	4-5 leaf	102	ef	35	ab	6,012	a	1,942	a	7,953	a
3	UREA	90	lb ai/A	4-5 leaf	104	de	37	ab	5,666	a	1,846	a	7,512	a
4	UREA	120	lb ai/A	4-5 leaf	105	cde	37	ab	5,835	a	2,090	a	7,925	a
5	UREA	150	lb ai/A	4-5 leaf	108	bc	37	ab	5,558	a	2,003	a	7,561	a
6	UREA	180	lb ai/A	4-5 leaf	109	ab	35	ab	5,089	a	1,945	a	7,034	a
7	UREA	210	lb ai/A	4-5 leaf	110	ab	38	a	5,331	a	2,025	a	7,356	a
8	UREA	270	lb ai/A	4-5 leaf	112	a	36	ab	4,874	a	1,865	a	6,740	a
9	UREA	45	lb ai/A	4-5 leaf	102	ef	36	ab	5,847	a	1,976	a	7,823	a
	UREA	45	lb ai/A	PD										
10	UREA	75	lb ai/A	4-5 leaf	103	e	36	ab	5,426	a	1,834	a	7,260	a
	UREA	45	lb ai/A	PD										
11	UREA	105	lb ai/A	4-5 leaf	105	cde	38	a	5,407	a	1,943	a	7,350	a
	UREA	45	lb ai/A	PD										
12	UREA	135	lb ai/A	4-5 leaf	107	bcd	37	ab	5,756	a	2,040	a	7,796	a
	UREA	45	lb ai/A	PD										
LSD (P=.05)					3		2		872		230		904	
Standard Deviation					2		1		604		159		626	
CV					2		4		11		8		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 26. Determine the agronomic response of drill-seeded CL261 to nitrogen fertilizer rate and time of application (1.2). Vermilion Parish.

Crop Name					Rice		Rice		Rice		Rice		Rice	
Rating Date							7/29/2010		8/3/2010		10/26/2010			
Rating Type					50% HD		Height		Yield		Yield		Yield	
Rating Unit					days		in		lb/A		lb/A		lb/A	
Crop Stage Majority					Main		Main		Main		Ratoon		Total	
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage										
1	UREA	0	lb ai/A	4-5 leaf	97	e	39	a	7,207	ab	2,510	a	9,718	ab
2	UREA	60	lb ai/A	4-5 leaf	98	e	39	a	7,468	ab	2,453	a	9,921	ab
3	UREA	90	lb ai/A	4-5 leaf	98	e	40	a	7,367	ab	2,360	a	9,727	ab
4	UREA	120	lb ai/A	4-5 leaf	100	d	41	a	7,258	ab	2,699	a	9,956	ab
5	UREA	150	lb ai/A	4-5 leaf	101	cd	40	a	7,165	ab	2,497	a	9,662	ab
6	UREA	180	lb ai/A	4-5 leaf	102	bc	41	a	6,807	bc	2,508	a	9,315	b
7	UREA	210	lb ai/A	4-5 leaf	104	ab	42	a	6,880	bc	2,619	a	9,498	b
8	UREA	270	lb ai/A	4-5 leaf	105	a	41	a	6,483	c	2,613	a	9,096	b
9	UREA	45	lb ai/A	4-5 leaf	98	e	39	a	7,813	a	2,587	a	10,400	a
	UREA	45	lb ai/A	PD										
10	UREA	75	lb ai/A	4-5 leaf	98	e	40	a	7,224	ab	2,486	a	9,710	ab
	UREA	45	lb ai/A	PD										
11	UREA	105	lb ai/A	4-5 leaf	101	cd	40	a	7,319	ab	2,335	a	9,654	ab
	UREA	45	lb ai/A	PD										
12	UREA	135	lb ai/A	4-5 leaf	102	bc	39	a	6,856	bc	2,543	a	9,400	b
	UREA	45	lb ai/A	PD										
LSD (P=.05)					1		2		436		221		550	
Standard Deviation					1		1		302		153		381	
CV					1		3		4		6		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 27. Determine the agronomic response of drill-seeded Neptune to nitrogen fertilizer rate and time of application (5.2). Evaluate Green Seeker technology. Vermilion Parish.

Crop Name					Rice		Rice		Rice		Rice		Rice	
Rating Date							7/29/2010		8/3/2010		10/26/2010			
Rating Type					50% HD		Height		Yield		Yield		Yield	
Rating Unit					days		in		lb/A		lb/A		lb/A	
Crop Stage Majority					Main		Main		Main		Ratoon		Total	
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage										
1	UREA	0	lb ai/A	4-5 leaf	108	c	30	a	4,566	a	3,828	a	8,395	a
2	UREA	60	lb ai/A	4-5 leaf	113	ab	34	a	5,682	a	3,917	a	9,599	a
3	UREA	90	lb ai/A	4-5 leaf	113	ab	32	a	6,270	a	3,857	a	10,127	a
4	UREA	120	lb ai/A	4-5 leaf	114	ab	33	a	6,063	a	4,212	a	10,275	a
5	UREA	150	lb ai/A	4-5 leaf	116	a	34	a	5,701	a	4,428	a	10,129	a
6	UREA	180	lb ai/A	4-5 leaf	116	a	33	a	5,987	a	4,261	a	10,248	a
7	UREA	210	lb ai/A	4-5 leaf	116	a	35	a	5,974	a	4,507	a	10,481	a
8	UREA	270	lb ai/A	4-5 leaf	117	a	35	a	4,199	a	4,357	a	8,556	a
9	UREA	45	lb ai/A	4-5 leaf	113	ab	32	a	5,961	a	4,085	a	10,046	a
	UREA	45	lb ai/A	PD										
10	UREA	75	lb ai/A	4-5 leaf	111	b	32	a	6,004	a	4,060	a	10,064	a
	UREA	45	lb ai/A	PD										
11	UREA	105	lb ai/A	4-5 leaf	113	ab	33	a	6,174	a	4,032	a	10,205	a
	UREA	45	lb ai/A	PD										
12	UREA	135	lb ai/A	4-5 leaf	116	a	34	a	6,190	a	4,389	a	10,579	a
	UREA	45	lb ai/A	PD										
LSD (P=.05)					3		4		1,298		463		1,358	
Standard Deviation					2		2		899		321		940	
CV					2		7		16		8		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.

Note: Because of Newpath drift, Green Seeker data was not taken.

Table 28. Determine the agronomic response of drill-seeded Bowman to nitrogen fertilizer rate and time of application (3.2). Vermilion Parish.

Crop Name					Rice		Rice		Rice		Rice		Rice	
Rating Date							7/29/2010		8/3/2010		10/26/2010			
Rating Type					50% HD		Height		Yield		Yield		Yield	
Rating Unit					days		in		lb/A		lb/A		lb/A	
Crop Stage Majority					Main		Main		Main		Ratoon		Total	
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage										
1	UREA	0	lb ai/A	4-5 leaf	99	e	33	a	5,157	abc	2,493	a	7,650	ab
2	UREA	60	lb ai/A	4-5 leaf	102	cde	35	a	5,771	ab	2,687	a	8,458	a
3	UREA	90	lb ai/A	4-5 leaf	103	b-e	37	a	5,767	ab	2,807	a	8,574	a
4	UREA	120	lb ai/A	4-5 leaf	105	a-d	38	a	5,645	ab	2,386	a	8,031	ab
5	UREA	150	lb ai/A	4-5 leaf	108	ab	36	a	5,335	abc	2,683	a	8,018	ab
6	UREA	180	lb ai/A	4-5 leaf	107	abc	36	a	4,942	bc	2,383	a	7,325	bc
7	UREA	210	lb ai/A	4-5 leaf	108	ab	37	a	4,807	c	2,350	a	7,157	bc
8	UREA	270	lb ai/A	4-5 leaf	109	a	37	a	4,266	d	2,397	a	6,663	c
9	UREA	45	lb ai/A	4-5 leaf	101	de	33	a	5,697	ab	2,655	a	8,352	a
	UREA	45	lb ai/A	PD										
10	UREA	75	lb ai/A	4-5 leaf	104	a-d	34	a	5,947	a	2,537	a	8,484	a
	UREA	45	lb ai/A	PD										
11	UREA	105	lb ai/A	4-5 leaf	104	a-d	34	a	5,288	abc	2,379	a	7,667	ab
	UREA	45	lb ai/A	PD										
12	UREA	135	lb ai/A	4-5 leaf	107	a-d	33	a	5,391	abc	2,494	a	7,885	ab
	UREA	45	lb ai/A	PD										
LSD (P=.05)					4		4		527		406		658	
Standard Deviation					2		2		365		281		455	
CV					2		7		7		11		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 29. Determine the agronomic response of drill-seeded Templeton to nitrogen fertilizer rate and time of application (3.2). Vermilion Parish.

Crop Name					Rice		Rice		Rice		Rice		Rice	
Rating Date							7/29/2010				10/26/2010			
Rating Type					50% HD		Height		Yield		Yield		Yield	
Rating Unit					days		in		lb/A		lb/A		lb/A	
Crop Stage Majority					Main		Main		Main		Ratoon		Total	
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage										
1	UREA	0	lb ai/A	4-5 leaf	100	b	34	a	5,049	a	3,629	a	8,678	a
2	UREA	60	lb ai/A	4-5 leaf	105	a	35	a	5,354	a	3,490	a	8,845	a
3	UREA	90	lb ai/A	4-5 leaf	106	a	36	a	5,575	a	3,571	a	9,146	a
4	UREA	120	lb ai/A	4-5 leaf	107	a	37	a	5,611	a	3,657	a	9,268	a
5	UREA	150	lb ai/A	4-5 leaf	108	a	38	a	5,517	a	3,837	a	9,354	a
6	UREA	180	lb ai/A	4-5 leaf	108	a	38	a	5,038	a	3,855	a	8,894	a
7	UREA	210	lb ai/A	4-5 leaf	108	a	39	a	5,241	a	3,761	a	9,002	a
8	UREA	270	lb ai/A	4-5 leaf	108	a	38	a	4,053	a	3,731	a	7,784	a
9	UREA	45	lb ai/A	4-5 leaf	105	a	34	a	5,035	a	3,663	a	8,698	a
	UREA	45	lb ai/A	PD										
10	UREA	75	lb ai/A	4-5 leaf	106	a	37	a	5,699	a	3,737	a	9,436	a
	UREA	45	lb ai/A	PD										
11	UREA	105	lb ai/A	4-5 leaf	107	a	38	a	5,887	a	3,528	a	9,415	a
	UREA	45	lb ai/A	PD										
12	UREA	135	lb ai/A	4-5 leaf	108	a	36	a	5,443	a	3,773	a	9,216	a
	UREA	45	lb ai/A	PD										
LSD (P=.05)					2		3		978		490		965	
Standard Deviation					1		2		677		340		668	
CV					1		5		13		9		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 30. Determine the agronomic response of drill-seeded Taggart to nitrogen fertilizer rate and time of application (2.2). Vermilion Parish.

Crop Name					Rice		Rice		Rice		Rice		Rice	
Rating Date							7/29/2010		8/3/2010		10/26/2010			
Rating Type					50% HD		Height		Yield		Yield		Yield	
Rating Unit					days		in		lb/A		lb/A		lb/A	
Crop Stage Majority					Main		Main		Main		Ratoon		Total	
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage										
1	UREA	0	lb ai/A	4-5 leaf	106	e	34	c	4,405	ab	3,196	a	7,601	ab
2	UREA	60	lb ai/A	4-5 leaf	113	d	38	ab	5,350	a	3,695	a	9,044	a
3	UREA	90	lb ai/A	4-5 leaf	113	d	40	ab	5,470	a	3,514	a	8,984	a
4	UREA	120	lb ai/A	4-5 leaf	119	a-d	41	ab	5,162	a	3,760	a	8,921	a
5	UREA	150	lb ai/A	4-5 leaf	118	a-d	41	ab	4,473	ab	3,867	a	8,340	ab
6	UREA	180	lb ai/A	4-5 leaf	119	a-d	43	a	4,323	ab	3,763	a	8,086	ab
7	UREA	210	lb ai/A	4-5 leaf	121	ab	41	ab	4,238	ab	3,856	a	8,094	ab
8	UREA	270	lb ai/A	4-5 leaf	122	a	41	ab	3,140	b	3,915	a	7,055	b
9	UREA	45	lb ai/A	4-5 leaf	115	cd	38	b	4,688	ab	3,761	a	8,449	a
	UREA	45	lb ai/A	PD										
10	UREA	75	lb ai/A	4-5 leaf	113	d	39	ab	5,586	a	3,529	a	9,116	a
	UREA	45	lb ai/A	PD										
11	UREA	105	lb ai/A	4-5 leaf	115	bcd	40	ab	5,413	a	3,582	a	8,995	a
	UREA	45	lb ai/A	PD										
12	UREA	135	lb ai/A	4-5 leaf	119	abc	41	ab	4,976	a	3,895	a	8,871	a
	UREA	45	lb ai/A	PD										
LSD (P=.05)					4		3		1,062		498		932	
Standard Deviation					2		2		735		345		646	
CV					2		4		15		9		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 31. Determine the agronomic response of drill-seeded Rex to nitrogen fertilizer rate and time of application (1.2). Vermilion Parish.

Crop Name					Rice		Rice		Rice		Rice		Rice	
Rating Date							7/29/2010		8/3/2010		10/26/2010			
Rating Type					50% HD		Height		Yield		Yield		Yield	
Rating Unit					days		in		lb/A		lb/A		lb/A	
Crop Stage Majority					Main		Main		Main		Ratoon		Total	
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage										
1	UREA	0	lb ai/A	4-5 leaf	99	d	37	b	5,046	c	3,085	a	8,131	c
2	UREA	60	lb ai/A	4-5 leaf	104	c	39	ab	6,165	a	3,138	a	9,303	ab
3	UREA	90	lb ai/A	4-5 leaf	105	c	39	ab	6,397	a	3,230	a	9,627	a
4	UREA	120	lb ai/A	4-5 leaf	107	bc	41	ab	6,260	a	3,545	a	9805	a
5	UREA	150	lb ai/A	4-5 leaf	110	ab	42	a	5,866	ab	3,291	a	9,157	ab
6	UREA	180	lb ai/A	4-5 leaf	111	ab	41	a	5,816	ab	3,107	a	8,924	abc
7	UREA	210	lb ai/A	4-5 leaf	113	a	41	ab	5,480	bc	3,434	a	8,914	abc
8	UREA	270	lb ai/A	4-5 leaf	111	ab	40	ab	5,011	c	3,329	a	8,340	bc
9	UREA	45	lb ai/A	4-5 leaf	103	c	41	ab	6,262	a	3,411	a	9,673	a
	UREA	45	lb ai/A	PD										
10	UREA	75	lb ai/A	4-5 leaf	105	c	40	ab	6,256	a	3,170	a	9,426	a
	UREA	45	lb ai/A	PD										
11	UREA	105	lb ai/A	4-5 leaf	105	c	42	a	5,877	ab	3,159	a	9,036	abc
	UREA	45	lb ai/A	PD										
12	UREA	135	lb ai/A	4-5 leaf	108	bc	42	a	5,955	ab	3,387	a	9,342	ab
	UREA	45	lb ai/A	PD										
LSD (P=.05)					3		2		462		394		672	
Standard Deviation					2		1		320		273		465	
CV					2		3		5		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.

Rice Variety by Nitrogen Experiments at Richland Parish

Experiment number ....: 10-RP-06 through 10-RP-10

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**........................: 2.054
- **pH**...: 7.4
- **Extractable nutrients** ppm ....: Ca-3,959; Cu-3.31; Mg-819; P-23.8; K-220; Na-141; S-35.2; Zn-3.8

Crop/Variety ....: Rice / See data sheet
- **Planting method/date** ....: Drill seeded / April 15
- **Seeding rate/depth**......................: 40 seeds/ft^2 / 1 inch
- **Emergence date**...........................: April 29
- **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** ....: May 5
- **Flood**..: May 28
- **Drain**..: August 18

Pest management...............................:
- **Herbicides**...................................: 1 gal/A Propanil + 1 oz/A Londax + .5 oz/A Permit, May 5;
  1 gal/A Rice Beaux + 4 oz/A Newpath + .75 oz/A Permit, May 28
- **Insecticides** ....: 0.137 lb ai/cwt Dermacor seed treatment
- **Fungicides**...................................: None

Table 32. Determine the agronomic response of drill-seeded CL111 (XC011) to nitrogen fertilizer rate and time of application (2.3). Richland Parish.

Crop Name					Rice		Rice		Rice		Rice		Rice	
Rating Date							9/1/2010		9/1/2010		9/1/2010		9/1/2010	
Rating Type					50% HD		Height		Lodge		Lodge		Yield	
Rating Unit					days		in		% plot		rate		lb/A	
Crop Stage Majority					Main		Main		Main		Main		Main	
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage										
1	UREA	0	lb ai/A	4-5 leaf	92	g	36	d	60	a	1	a	5,903	e
2	UREA	60	lb ai/A	4-5 leaf	92	fg	39	bc	.		.		7,314	d
3	UREA	90	lb ai/A	4-5 leaf	94	ef	41	abc	30	a	2	a	7,634	cd
4	UREA	120	lb ai/A	4-5 leaf	95	de	41	abc	.		.		7,935	bcd
5	UREA	150	lb ai/A	4-5 leaf	97	bcd	41	abc	35	a	2	a	8,214	abc
6	UREA	180	lb ai/A	4-5 leaf	98	bc	41	abc	60	a	2	a	8,379	abc
7	UREA	210	lb ai/A	4-5 leaf	98	b	43	a	40	a	1	a	8,959	a
8	UREA	270	lb ai/A	4-5 leaf	100	a	42	ab	67	a	1	a	8,664	ab
9	UREA	45	lb ai/A	4-5 leaf	93	fg	38	c	.		.		7,628	cd
	UREA	45	lb ai/A	PD										
10	UREA	75	lb ai/A	4-5 leaf	94	ef	41	abc	.		.		8,294	abc
	UREA	45	lb ai/A	PD										
11	UREA	105	lb ai/A	4-5 leaf	96	cde	40	abc	45	a	2	a	8,783	ab
	UREA	45	lb ai/A	PD										
12	UREA	135	lb ai/A	4-5 leaf	96	bcd	41	abc	43	a	1	a	8,845	ab
	UREA	45	lb ai/A	PD										
LSD (P=.05)					2		2		33		1		614	
Standard Deviation					1		1		16		1		425	
CV					1		3		33		43		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 33. Determine the agronomic response of drill-seeded CL151 to nitrogen fertilizer rate and time of application (4.3). Richland Parish.

Crop Name					Rice		Rice		Rice		Rice		Rice	
Rating Date							9/1/2010		9/1/2010		9/1/2010		9/1/2010	
Rating Type					50% HD		Height		Lodge		Lodge		Yield	
Rating Unit					days		in		% plot		rate		lb/A	
Crop Stage Majority					Main		Main		Main		Main		Main	
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage										
1	UREA	0	lb ai/A	4-5 leaf	92	d	33	b	60	ab	2	a	6,014	b
2	UREA	60	lb ai/A	4-5 leaf	93	cd	37	a	90	a	2	a	7,857	a
3	UREA	90	lb ai/A	4-5 leaf	96	bc	39	a	50	ab	2	a	8,468	a
4	UREA	120	lb ai/A	4-5 leaf	98	ab	39	a	63	ab	3	a	8,687	a
5	UREA	150	lb ai/A	4-5 leaf	99	ab	38	a	70	ab	2	a	8,493	a
6	UREA	180	lb ai/A	4-5 leaf	98	ab	41	a	73	ab	3	a	8,464	a
7	UREA	210	lb ai/A	4-5 leaf	100	a	39	a	87	ab	3	a	8,438	a
8	UREA	270	lb ai/A	4-5 leaf	101	a	39	a	87	ab	3	a	6,857	ab
9	UREA	45	lb ai/A	4-5 leaf	93	cd	38	a	40	b	2	a	8,146	a
	UREA	45	lb ai/A	PD										
10	UREA	75	lb ai/A	4-5 leaf	96	bc	40	a	60	ab	2	a	8,318	a
	UREA	45	lb ai/A	PD										
11	UREA	105	lb ai/A	4-5 leaf	97	b	39	a	83	ab	3	a	8,766	a
	UREA	45	lb ai/A	PD										
12	UREA	135	lb ai/A	4-5 leaf	99	ab	40	a	80	ab	3	a	8,813	a
	UREA	45	lb ai/A	PD										
LSD (P=.05)					2		3		28		1		1,417	
Standard Deviation					2		2		16		1		981	
CV					2		5		23		24		12	

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 CL142 to nitrogen fertilizer rate and time of application (1.3). Richland Parish.

Crop Name					Rice		Rice		Rice		Rice		Rice	
Rating Date							9/1/2010		9/1/2010		9/1/2010		9/1/2010	
Rating Type					50% HD		Height		Lodge		Lodge		Yield	
Rating Unit					days		in		% plot		rate		lb/A	
Crop Stage Majority					Main		Main		Main		Main		Main	
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage										
1	UREA	0	lb ai/A	4-5 leaf	95	f	36	f	.		.		6,374	d
2	UREA	60	lb ai/A	4-5 leaf	95	ef	41	e	.		.		7,607	c
3	UREA	90	lb ai/A	4-5 leaf	97	cde	44	cde	.		.		8,474	abc
4	UREA	120	lb ai/A	4-5 leaf	98	bcd	45	bcd	35	a	1	a	8,518	abc
5	UREA	150	lb ai/A	4-5 leaf	98	bcd	46	abc	65	a	1	a	8,833	ab
6	UREA	180	lb ai/A	4-5 leaf	99	abc	48	ab	47	a	1	a	8,547	abc
7	UREA	210	lb ai/A	4-5 leaf	100	ab	49	a	50	a	2	a	8,937	ab
8	UREA	270	lb ai/A	4-5 leaf	101	a	49	a	40	a	1	a	8,187	abc
9	UREA	45	lb ai/A	4-5 leaf	96	def	42	de	30	a	1	a	8,052	bc
	UREA	45	lb ai/A	PD										
10	UREA	75	lb ai/A	4-5 leaf	98	bcd	44	cd	35	a	1	a	8,545	abc
	UREA	45	lb ai/A	PD										
11	UREA	105	lb ai/A	4-5 leaf	98	bcd	45	bcd	30	a	1	a	8,887	ab
	UREA	45	lb ai/A	PD										
12	UREA	135	lb ai/A	4-5 leaf	99	bcd	47	abc	55	a	2	a	9,154	a
	UREA	45	lb ai/A	PD										
LSD (P=.05)					2		2		41		1		656	
Standard Deviation					1		1		22		0		454	
CV					1		3		51		40		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 35. Determine the agronomic response of drill-seeded CL181 to nitrogen fertilizer rate and time of application (1.3). Richland Parish.

Crop Name					Rice		Rice		Rice	
Rating Date							9/1/2010		9/1/2010	
Rating Type					50% HD		Height		Yield	
Rating Unit					days		in		lb/A	
Crop Stage Majority					Main		Main		Main	
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage						
1	UREA	0	lb ai/A	4-5 leaf	97	e	31	d	5,644	c
2	UREA	60	lb ai/A	4-5 leaf	97	de	32	d	6,918	b
3	UREA	90	lb ai/A	4-5 leaf	98	cd	34	c	7,372	ab
4	UREA	120	lb ai/A	4-5 leaf	100	bc	35	bc	7,523	ab
5	UREA	150	lb ai/A	4-5 leaf	100	bc	36	bc	7,603	ab
6	UREA	180	lb ai/A	4-5 leaf	101	ab	37	abc	7,479	ab
7	UREA	210	lb ai/A	4-5 leaf	102	a	37	ab	7,872	a
8	UREA	270	lb ai/A	4-5 leaf	102	a	39	a	7,437	ab
9	UREA	45	lb ai/A	4-5 leaf	98	cd	35	bc	7,083	ab
	UREA	45	lb ai/A	PD						
10	UREA	75	lb ai/A	4-5 leaf	99	cd	35	bc	7,581	ab
	UREA	45	lb ai/A	PD						
11	UREA	105	lb ai/A	4-5 leaf	100	bc	35	bc	7,688	ab
	UREA	45	lb ai/A	PD						
12	UREA	135	lb ai/A	4-5 leaf	99	c	37	abc	7,624	ab
	UREA	45	lb ai/A	PD						
LSD (P=.05)					1		2		518	
Standard Deviation					1		1		358	
CV					1		3		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 36. Determine the agronomic response of drill-seeded CL261 to nitrogen fertilizer rate and time of application (1.3). Richland Parish.

Crop Name					Rice		Rice		Rice		Rice		Rice	
Rating Date							9/1/2010		9/1/2010		9/1/2010		9/1/2010	
Rating Type					50% HD		Height		Lodge		Lodge		Yield	
Rating Unit					days		in		% plot		rate		lb/A	
Crop Stage Majority					Main		Main		Main		Main		Main	
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage										
1	UREA	0	lb ai/A	4-5 leaf	91	d	32	d	.		.		4,555	e
2	UREA	60	lb ai/A	4-5 leaf	92	cd	35	c	.		.		6,171	d
3	UREA	90	lb ai/A	4-5 leaf	93	bcd	37	bc	60	ab	1	c	6,980	bcd
4	UREA	120	lb ai/A	4-5 leaf	94	bc	39	ab	20	b	1	c	7,456	abc
5	UREA	150	lb ai/A	4-5 leaf	94	b	38	ab	55	ab	2	bc	7,579	abc
6	UREA	180	lb ai/A	4-5 leaf	96	a	39	ab	65	ab	2	bc	7,423	abc
7	UREA	210	lb ai/A	4-5 leaf	97	a	41	ab	67	ab	3	b	8,439	a
8	UREA	270	lb ai/A	4-5 leaf	98	a	41	a	83	a	4	a	7,690	abc
9	UREA	45	lb ai/A	4-5 leaf	93	bcd	37	bc	10	b	2	bc	6,706	cd
	UREA	45	lb ai/A	PD										
10	UREA	75	lb ai/A	4-5 leaf	93	bcd	38	ab	10	b	1	c	7,455	abc
	UREA	45	lb ai/A	PD										
11	UREA	105	lb ai/A	4-5 leaf	94	bc	39	ab	30	ab	1	c	7,877	ab
	UREA	45	lb ai/A	PD										
12	UREA	135	lb ai/A	4-5 leaf	95	b	39	ab	70	ab	2	bc	7,875	ab
	UREA	45	lb ai/A	PD										
LSD (P=.05)					1		2		35		1		709	
Standard Deviation					1		1		18		0		491	
CV					1		3		39		22		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.

Comparison of N Uptake Efficiency of Seven Rice Varieties

Experiment number	10-CM-16
Site and design	
Location/Cooperator	Rice Research Station (Crowley Main)
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	Crowley silt loam
% organic matter	1.157
pH	7.1
Extractable nutrients ppm	Ca-1,044; Cu-1.47; Mg-237; P-4.24; K-52.2; Na-86.9; S-6.96; Zn-3.37
Crop/Variety	Rice / See Data Sheet
Planting method/date	Drill seeded / March 14
Seeding rate/depth	40 seeds/ft^2 / 1 inch
Emergence date	April 1
Harvest date	August 8
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, March 16
Water management	
Flush	April 8
Flood	April 29
Drain	July 21
Pest management	
Herbicides	1 gal/A Propanil + 1 oz/A Londax + ¾ oz/A Permit, April 15 1 gal/A Rice Beaux + 1 oz/A Londax + ½ oz/A Permit, April 28
Insecticides	0.137 lb ai/cwt Dermacor seed treatment
Fungicides	19 oz/A Stratego, June 24

Table 37. Comparison of N uptake efficiency of seven rice varieties (1.1). Rice Research Station.

Crop Name				Rice		Rice		Rice		Rice		Rice		Rice	
Description												Tissue Sample			
Rating Date						7/27/2010				8/8/2010					
Rating Type				50% HD		Height		Lodge		Yield		Biomass		Total N	
Rating Unit				days		in		% plot	rate	lb/A		DryWt(g)		%	
Sample Size, Unit												3 ft			
Collection Basis, Unit												1 row			
Crop Stage Majority				Main		Main		Main		Main		50%HD		50%HD	
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage											
1	0 N CL151	0	lb ai/A	4-5 leaf	98 j	33	de	.	.	4,979	f	76.7	c	1.1	def
2	0 N CL111	0	lb ai/A	4-5 leaf	95 k	30	fg	.	.	3,846	g	81.3	c	0.9	ef
3	0 N CL181	0	lb ai/A	4-5 leaf	101 fgh	26	h	.	.	3,953	g	68.7	c	1.2	def
4	0 N Catahoula	0	lb ai/A	4-5 leaf	98 j	32	def	.	.	3,910	g	90.2	c	1.0	def
5	0 N Jazzman	0	lb ai/A	4-5 leaf	111 a	30	f	.	.	3,633	g	81.2	c	0.9	f
6	0 N CL261	0	lb ai/A	4-5 leaf	103 def	31	ef	.	.	3,472	g	61.4	c	1.0	def
7	0 N Neptune	0	lb ai/A	4-5 leaf	109 b	28	gh	.	.	3,975	g	102.8	c	1.0	ef
8	90 N SPF CL151	90	lb ai/A	4-5 leaf	101 fgh	41	abc	.	.	10,509	a	168.2	b	1.1	def
9	90 N SPF CL111	90	lb ai/A	4-5 leaf	99 ij	40	abc	.	.	9,017	bc	210.6	b	1.1	def
10	90 N SPF CL181	90	lb ai/A	4-5 leaf	102 efg	35	d	.	.	8,601	cd	205.2	b	1.2	def
11	90 N SPF Catahoula	90	lb ai/A	4-5 leaf	102 efg	39	bc	.	.	9,172	bc	181.6	b	1.3	c-f
12	90 N SPF Jazzman	90	lb ai/A	4-5 leaf	106 c	40	abc	.	.	7,318	e	237.5	b	1.0	def
13	90 N SPF CL261	90	lb ai/A	4-5 leaf	99 hij	38	c	.	.	7,936	d	177.0	b	1.1	def
14	90 N SPF Neptune	90	lb ai/A	4-5 leaf	107 bc	35	d	.	.	8,534	cd	216.7	b	1.1	def

Continued.

Table 37. Continued.

Crop Name					Rice		Rice		Rice		Rice		Rice		Rice	
Description													Tissue Sample			
Rating Date							7/27/2010				8/8/2010					
Rating Type					50% HD		Height		Lodge		Yield		Biomass		Total N	
Rating Unit					days		in		% plot	rate	lb/A		DryWt(g)		%	
Sample Size, Unit													3 ft			
Collection Basis, Unit													1 row			
Crop Stage Majority					Main		Main		Main		Main		50%HD		50%HD	
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage												
15	150 N SPF CL151	150	lb ai/A	4-5 leaf	102	def	42	ab	26	1	11,180	a	228.1	b	1.4	bcd
16	150 N SPF CL111	150	lb ai/A	4-5 leaf	100	ghi	42	ab	.	.	10,470	a	232.0	b	1.6	abc
17	150 N SPF CL181	150	lb ai/A	4-5 leaf	103	de	38	c	.	.	9,489	b	215.1	b	1.4	bcd
18	150 N SPF Catahoula	150	lb ai/A	4-5 leaf	104	d	42	ab	.	.	10,626	a	206.2	b	1.8	a
19	150 N SPF Jazzman	150	lb ai/A	4-5 leaf	111	a	42	ab	.	.	8,373	cd	298.2	a	1.3	b-e
20	150 N SPF CL261	150	lb ai/A	4-5 leaf	101	fg	43	a	.	.	9,451	b	201.9	b	1.7	ab
21	150 N SPF Neptune	150	lb ai/A	4-5 leaf	108	b	34	d	.	.	10,479	a	190.7	b	1.6	abc
LSD (P=.05)					1		2		.	.	568		41.6		0.2	
Standard Deviation					1		1		.	.	402		29.4		0.2	
CV					1		3		.	.	5		17.5		13.3	

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 Time of Application of Five Different N Sources on N Uptake and Grain Yield of Cheniere Rice (1R.1)

Experiment number	: 10-CM-18
Site and design	:
Location/Cooperator	: Rice Research Station (Crowley Main)
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	: Crowley silt loam
% organic matter	: 0.966
pH	: 7.7
Extractable nutrients ppm	: Ca-1,303; Cu-1.54; Mg-231; P-4.24; K-53.8; Na-77.2; S-5.20; Zn-3.89
Crop/Variety	: Rice / Cheniere
Planting method/date	: Drill seeded / March 14
Seeding rate/depth	: 33 seeds/ft^2 / 1 inch
Emergence date	: April 1
Harvest date	: August 10
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, March 16
Water management	:
Flush	: April 8
Flood	: April 30
Drain	: July 28
Pest management	:
Herbicides	: 1 gal/A Propanil + 1 oz/A Londax + ¾ oz/A Permit, April 15
	1 gal/A Rice Beaux + 1 oz/A Londax + ½ oz/A Permit, April 28
Insecticides	: 0.137 lb ai/cwt Dermacor seed treatment
Fungicides	: 19 oz/A Stratego, June 24

Table 38. Evaluation of time of application of five different N sources on N uptake and grain yield of drill-seeded Cheniere rice (1R.1). Rice Research Station.

Crop Name				Rice		Rice		Rice		Rice		Rice		Rice	
Description										Tissue Sample				Grain	
Rating Date						8/3/2010		8/10/2010		7/7/2010					
Rating Type				50% HD		Height		Yield		Biomass		Total N		Total N	
Rating Unit				days		in		lb/A		DryWt(g)		%		%	
Sample Size, Unit										3 ft					
Collection Basis, Unit										1 row					
Crop Stage Majority				Main		Main		Main		50%HD		50%HD		Maturity	
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage											
1	Urea 10 DPF	150	lb ai/A	4-5 leaf	110 a	38	a	7,231	d	182	a	1.3	a-d	1.3	a
2	Urea 7 DPF	150	lb ai/A	4-5 leaf	110 a	39	a	7,873	bcd	194	a	1.2	a-d	1.1	a
3	Urea 4 DPF	150	lb ai/A	4-5 leaf	110 a	37	a	7,950	bcd	165	a	1.5	a	1.2	a
4	Urea 1 DPF	150	lb ai/A	4-5 leaf	110 a	38	a	8,940	a	166	a	1.3	a-d	1.2	a
5	Agrotain-Urea 10 DPF	150	lb ai/A	4-5 leaf	110 a	38	a	8,469	abc	172	a	1.3	a-d	1.1	a
6	Agrotain-Urea 7 DPF	150	lb ai/A	4-5 leaf	110 a	37	a	8,410	abc	154	a	1.5	ab	1.2	a
7	Agrotain-Urea 4 DPF	150	lb ai/A	4-5 leaf	110 a	38	a	8,531	abc	184	a	1.5	a	1.3	a
8	Agrotain-Urea 1 DPF	150	lb ai/A	4-5 leaf	110 a	37	a	8,520	abc	203	a	1.4	a-d	1.1	a
9	Super-U 10 DPF	150	lb ai/A	4-5 leaf	110 a	39	a	8,137	a-d	176	a	1.4	a-d	1.2	a
10	Super-U 7 DPF	150	lb ai/A	4-5 leaf	110 a	36	a	8,285	abc	222	a	1.3	a-d	1.2	a
11	Super-U 4 DPF	150	lb ai/A	4-5 leaf	110 a	37	a	8,361	abc	175	a	1.4	a-d	1.2	a
12	Super-U 1 DPF	150	lb ai/A	4-5 leaf	110 a	37	a	8,523	abc	196	a	1.4	abc	1.2	a
13	AS 10 DPF	150	lb ai/A	4-5 leaf	110 a	35	a	7,655	cd	197	a	1.0	cd	1.1	a
14	AS 7 DPF	150	lb ai/A	4-5 leaf	110 a	36	a	7,855	bcd	192	a	1.1	bcd	1.2	a
15	AS 4 DPF	150	lb ai/A	4-5 leaf	110 a	37	a	7,967	bcd	208	a	1.1	cd	1.2	a
16	AS 1 DPF	150	lb ai/A	4-5 leaf	110 a	33	ab	8,110	a-d	185	a	1.2	a-d	1.2	a
17	AS-Urea 10 DPF	150	lb ai/A	4-5 leaf	110 a	32	ab	7,547	cd	205	a	1.0	cd	1.1	a
18	AS-Urea 7 DPF	150	lb ai/A	4-5 leaf	110 a	36	a	8,078	a-d	173	a	1.1	a-d	1.1	a
19	AS-Urea 4 DPF	150	lb ai/A	4-5 leaf	110 a	34	a	8,420	abc	203	a	1.2	a-d	1.2	a
20	AS-Urea 1 DPF	150	lb ai/A	4-5 leaf	110 a	38	a	8,823	ab	191	a	1.3	a-d	1.2	a
21	UTC				110 a	28	b	2,367	e	52	b	1.0	d	1.2	a
LSD (P=.05)					0	5		552		47		0.2		0.1	
Standard Deviation					0	3		390		33		0.2		0.1	
CV					0	8		5		18		13.4		8.2	

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.

Ratoon Nutrition Studies Conducted at the Rice Research Station

Experiment number	10-CM-20 to 10-CM-22
Site and design	
Location/Cooperator	Rice Research Station (Crowley Main)
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	Crowley silt loam
% organic matter	1.021
pH	7.6
Extractable nutrients ppm	Ca-1,214; Cu-1.62; Mg-218; P-4.13; K-48.7; Na-85.3; S-6.48; Zn-4.66
Crop/Variety	Rice / See Data Sheet
Planting method/date	Drill seeded / March 14
Seeding rate/depth	33 seeds/ft^2 / 1 inch
Emergence date	April 1
Harvest date	August 4
Ratoon harvest date	November 5
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, March 16 150 lb N/A 46-0-0, April 28
Water management	
Flush	April 8
Flood	April 30
Drain	July 22
Ratoon flood	August 10
Ratoon drain	October 22
Pest management	
Herbicides	1 gal/A Propanil + 1 oz/A Londax + ¾ oz/A Permit, April 15 1 gal/A Rice Beaux + 1 oz/A Londax + ½ oz/A Permit, April 28 1 qt/A 2,4-D, August 9
Insecticides	0.137 lb ai/cwt Dermacor seed treatment
Fungicides	19 oz/A Stratego, June 24

Table 39. Determine the effect of N source, rate, and variety (CL151 and CL111) on ratoon yields (1.1). Rice Research Station.

Crop Name					Rice		Rice		Rice		Rice		Rice		Rice	
Rating Date							7/28/2010		8/4/2010				11/4/2010			
Rating Type					50% HD		Height		Yield		50% HD		Yield		Yield	
Rating Unit					days		in		lb/A		days		lb/A		lb/A	
Crop Stage Majority					Main		Main		Main		Ratoon		Ratoon		Total	
Trt No.	Trt Name	Rate	Rate Unit	Source												
1	Rate CL111	45	lb ai/A	46%	102	b	45	a	10,120	a	40	g	2,030	b-e	12,150	ab
2	Rate CL151	45	lb ai/A	46%	105	a	42	a	10,446	a	52	ab	1,537	de	11,983	ab
3	Rate CL111	45	lb ai/A	21%	102	b	44	a	9,878	a	42	fg	1,784	de	11,662	b
4	Rate CL151	45	lb ai/A	21%	105	a	43	a	10,225	a	51	a-d	1,463	e	11,688	b
5	Rate CL111	45	lb ai/A	33%	102	b	44	a	9,885	a	43	fg	1,775	de	11,659	b
6	Rate CL151	45	lb ai/A	33%	105	a	41	a	10,238	a	50	a-e	1,635	de	11,873	ab
7	Rate CL111	90	lb ai/A	46%	102	b	44	a	10,493	a	45	ef	2,102	b-e	12,595	ab
8	Rate CL151	90	lb ai/A	46%	105	a	42	a	10,240	a	53	ab	1,838	cde	12,079	ab
9	Rate CL111	90	lb ai/A	21%	102	b	43	a	10,134	a	49	b-e	1,973	cde	12,107	ab
10	Rate CL151	90	lb ai/A	21%	105	a	43	a	9,989	a	50	a-e	2,444	abc	12,433	ab
11	Rate CL111	90	lb ai/A	33%	102	b	45	a	10,089	a	43	fg	2,003	b-e	12,093	ab
12	Rate CL151	90	lb ai/A	33%	105	a	43	a	10,136	a	51	abc	2,115	b-e	12,251	ab
13	Rate CL111	135	lb ai/A	46%	102	b	44	a	10,064	a	44	fg	2,686	a	12,750	ab
14	Rate CL151	135	lb ai/A	46%	105	a	44	a	10,653	a	52	ab	2,186	a-d	12,839	ab
15	Rate CL111	135	lb ai/A	21%	102	b	42	a	9,841	a	47	c-f	2,600	ab	12,441	ab
16	Rate CL151	135	lb ai/A	21%	105	a	42	a	10,537	a	54	a	2,003	b-e	12,540	ab
17	Rate CL111	135	lb ai/A	33%	102	b	43	a	10,174	a	46	def	2,686	a	12,861	ab
18	Rate CL151	135	lb ai/A	33%	105	a	43	a	10,346	a	53	ab	2,729	a	13,075	a
LSD (P=.05)					0		2		691		3		380		735	
Standard Deviation					0		1		488		2		269		520	
CV					0		3		5		5		13		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 40. Ratoon response of CL111 and CL151to nitrogen fertilizer rates (1.1). Rice Research Station.

Crop Name				Rice		Rice		Rice		Rice		Rice		Rice	
Rating Date						7/28/2010		8/4/2010				11/4/2010			
Rating Type				50% HD		Height		Yield		50% HD		Yield		Yield	
Rating Unit				days		in		lb/A		days		lb/A		lb/A	
Crop Stage Majority				Main		Main		Main		Ratoon		Ratoon		Total	
Trt No.	Trt Name	Rate	Rate Unit												
1	CL111			102	b	44	a	9,377	b	39	c	1,202	d	10,579	d
	0 lb/A	0	lb ai/A												
2	CL111			102	b	43	a	9,617	ab	40	c	1,814	c	11,431	c
	30 lb/A	30	lb ai/A												
3	CL111			102	b	44	a	9,571	ab	43	b	2,266	b	11,837	bc
	60 lb/A	60	lb ai/A												
4	CL111			102	b	43	a	9,674	ab	43	b	2,554	ab	12,228	abc
	90 lb/A	90	lb ai/A												
5	CL111			102	b	42	a	9,875	ab	44	b	3,067	a	12,942	ab
	120 lb/A	120	lb ai/A												
6	CL111			102	b	44	a	9,876	ab	44	b	3,013	a	12,890	ab
	150 lb/A	150	lb ai/A												
7	CL151			105	a	42	a	10,662	a	50	a	1,206	d	11,867	bc
	0 lb/A	0	lb ai/A												
8	CL151			105	a	42	a	10,445	ab	50	a	1,520	cd	11,964	bc
	30 lb/A	30	lb ai/A												
9	CL151			105	a	42	a	10,461	ab	49	a	2,308	b	12,769	ab
	60 lb/A	60	lb ai/A												
10	CL151			105	a	42	a	10,435	ab	50	a	2,748	ab	13,182	a
	90 lb/A	90	lb ai/A												
11	CL151			105	a	43	a	10,350	ab	50	a	2,648	ab	12,998	ab
	120 lb/A	120	lb ai/A												
12	CL151			105	a	43	a	10,715	a	50	a	2,506	ab	13,221	a
	150 lb/A	150	lb ai/A												
LSD (P=.05)				0		2		692		2		399		751	
Standard Deviation				0		1		480		1		276		520	
CV				0		3		5		3		12		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 41. Evaluation and comparison of the agronomic response of CL111 ratoon rice crop to post-harvest N application source and rate (1.1). Rice Research Station.

Crop Name					Rice	Rice	Rice	Rice	Rice	Rice
Rating Date						7/28/2010	8/4/2010		11/4/2010	
Rating Type					50% HD	Height	Yield	50% HD	Yield	Yield
Rating Unit					days	in	lb/A	days	lb/A	lb/A
Crop Stage Majority					Main	Main	Main	Ratoon	Ratoon	Total
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage						
1	Agrotain-urea 0 lb/A	0	lb ai/A	PostHarv	102 a	44 a	9,477 a	40 a	1,270 d	10,747 e
2	Agrotain-urea 30 lb/A	30	lb ai/A	PostHarv	102 a	43 a	9,571 a	41 a	2,060 c	11,631 cde
3	Agrotain-urea 60 lb/A	60	lb ai/A	PostHarv	102 a	42 a	9,666 a	41 a	2,670 b	12,336 a-d
4	Agrotain-urea 90 lb/A	90	lb ai/A	PostHarv	102 a	44 a	9,550 a	42 a	2,678 b	12,228 a-d
5	Agrotain-urea 120 lb/A	120	lb ai/A	PostHarv	102 a	43 a	10,037 a	43 a	3,190 a	13,227 a
6	Agrotain-urea 150 lb/A	150	lb ai/A	PostHarv	102 a	42 a	9,607 a	43 a	3,210 a	12,817 abc
7	Urea 0 lb/A	0	lb ai/A	PostHarv	102 a	42 a	10,166 a	42 a	1,369 d	11,536 de
8	Urea 30 lb/A	30	lb ai/A	PostHarv	102 a	42 a	9,915 a	41 a	1,926 c	11,841 bcd
9	Urea 60 lb/A	60	lb ai/A	PostHarv	102 a	44 a	10,009 a	43 a	2,209 c	12,218 a-d
10	Urea 90 lb/A	90	lb ai/A	PostHarv	102 a	43 a	9,944 a	43 a	2,654 b	12,599 a-d
11	Urea 120 lb/A	120	lb ai/A	PostHarv	102 a	44 a	10,018 a	43 a	3,066 ab	13,084 ab
12	Urea 150 lb/A	150	lb ai/A	PostHarv	102 a	43 a	9,984 a	43 a	2,979 ab	12,963 ab
LSD (P=.05)					0	2	669	3	324	800
Standard Deviation					0	1	463	2	224	554
CV					0	2	5	4	9	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 Rice Response to N Fertilization and Time of Application for Three Different Seeding Rates

Experiment number	: 10-CM-32 and 10-CM-33
Site and design	:
Location/Cooperator	: Rice Research Station (Crowley Main)
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	: Crowley silt loam
% organic matter	: 1.116
pH	: 7.4
Extractable nutrients ppm	: Ca-1,338; Cu-1.80; Mg-261; P-5.94; K-62.0; Na-84.2; S-8.10; Zn-4.20
Crop/Variety	: Rice / See Data Sheet
Planting method/date	: Drill seeded / March 14
Seeding rate/depth	: 15, 30, 45 seeds/ft^2 / 1 inch
Emergence date	: April 1
Harvest date	: August 10
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, March 16
Water management	:
Flush	: April 8
Flood	: April 29
Drain	: July 21
Pest management	:
Herbicides	: 1 gal/A Propanil + 1 oz/A Londax + ¾ oz/A Permit, April 15
	1 gal/A Rice Beaux + 1 oz/A Londax + ½ oz/A Permit, April 28
Insecticides	: 5 oz Dermacor product/cwt (35 lb/A seeding rate)
	3.5 oz Dermacor product/cwt (70 lb/A seeding rate)
	2.5 oz Dermacor product/cwt (105 lb/A seeding rate)
Fungicides	: 19 oz/A Stratego, June 24

Table 42. Evaluation of CL151 response to N fertilization and time of application for three different seeding rates (1.1). Rice Research Station.

Crop Name				Rice		Rice		Rice		Rice		Rice	
Rating Date						7/28/2010		10/8/2010		10/8/2010		10/8/2010	
Rating Type				50% HD		Height		Lodge		Lodge		Yield	
Rating Unit				days		in		% plot		rate		lb/A	
Crop Stage Majority				Main		Main		Main		Main		Main	
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage									
1	15 seed/ft^2			104	b-g	42	a-e	.		.		9,666	fg
	UREA	90	lb ai/A	4-5 leaf									
2	15 seed/ft^2			105	abc	45	abc	.		.		10,516	b-g
	UREA	135	lb ai/A	4-5 leaf									
3	15 seed/ft^2			104	b-g	44	a-e	.		.		10,212	c-g
	UREA	90	lb ai/A	4-5 leaf									
	UREA	45	lb ai/A	PD									
4	15 seed/ft^2			103	c-h	43	a-e	.		.		9,460	g
	UREA	90	lb ai/A	4-5 leaf									
	UREA	45	lb ai/A	50%HD									
5	15 seed/ft^2			105	ab	45	ab	.		.		10,654	a-f
	UREA	180	lb ai/A	4-5 leaf									
6	15 seed/ft^2			104	a-f	44	a-e	.		.		10,157	c-g
	UREA	90	lb ai/A	4-5 leaf									
	UREA	45	lb ai/A	PD									
	UREA	45	lb ai/A	50%HD									
7	15 seed/ft^2			104	a-e	45	ab	.		.		10,271	c-g
	UREA	135	lb ai/A	4-5 leaf									
	UREA	45	lb ai/A	PD									
8	15 seed/ft^2			105	abc	44	a-d	.		.		10,653	a-f
	UREA	135	lb ai/A	4-5 leaf									
	UREA	45	lb ai/A	50%HD									
9	15 seed/ft^2			105	a	46	a	37	bc	1	c	10,890	a-e
	UREA	225	lb ai/A	4-5 leaf									
10	15 seed/ft^2			104	a-e	45	abc	.		.		10,696	a-f
	UREA	135	lb ai/A	4-5 leaf									
	UREA	45	lb ai/A	PD									
	UREA	45	lb ai/A	50%HD									
11	30 seed/ft^2			102	h	41	de	.		.		9,945	d-g
	UREA	90	lb ai/A	4-5 leaf									
12	30 seed/ft^2			103	fgh	43	a-e	.		.		11,028	a-e
	UREA	135	lb ai/A	4-5 leaf									
13	30 seed/ft^2			102	gh	42	b-e	.		.		10,503	b-g
	UREA	90	lb ai/A	4-5 leaf									
	UREA	45	lb ai/A	PD									
14	30 seed/ft^2			102	h	41	de	10	e	1	c	9,957	c-g
	UREA	90	lb ai/A	4-5 leaf									
	UREA	45	lb ai/A	50%HD									
15	30 seed/ft^2			104	a-d	44	a-e	30	cd	1	c	11,723	a
	UREA	180	lb ai/A	4-5 leaf									
16	30 seed/ft^2			102	h	42	b-e	.		.		10,564	b-g
	UREA	90	lb ai/A	4-5 leaf									
	UREA	45	lb ai/A	PD									
	UREA	45	lb ai/A	50%HD									

Continued.

Table 42. Continued.

Crop Name					Rice		Rice		Rice		Rice		Rice	
Rating Date							7/28/2010		10/8/2010		10/8/2010		10/8/2010	
Rating Type					50% HD		Height		Lodge		Lodge		Yield	
Rating Unit					days		in		% plot		rate		lb/A	
Crop Stage Majority					Main		Main		Main		Main		Main	
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage										
17	30 seed/ft^2				103	d-h	43	a-e	.		.		11,132	abc
	UREA	135	lb ai/A	4-5 leaf										
	UREA	45	lb ai/A	PD										
18	30 seed/ft^2				103	e-h	43	a-e	.		.		10,856	a-e
	UREA	135	lb ai/A	4-5 leaf										
	UREA	45	lb ai/A	50%HD										
19	30 seed/ft^2				104	a-e	44	a-e	60	a	3	ab	11,558	ab
	UREA	225	lb ai/A	4-5 leaf										
20	30 seed/ft^2				103	e-h	44	a-e	.		.		10,961	a-e
	UREA	135	lb ai/A	4-5 leaf										
	UREA	45	lb ai/A	PD										
	UREA	45	lb ai/A	50%HD										
21	45 seed/ft^2				102	h	38	f	.		.		9,864	efg
	UREA	90	lb ai/A	4-5 leaf										
22	45 seed/ft^2				103	fgh	44	a-e	.		.		10,844	a-e
	UREA	135	lb ai/A	4-5 leaf										
23	45 seed/ft^2				102	h	41	de	.		.		10,319	c-g
	UREA	90	lb ai/A	4-5 leaf										
	UREA	45	lb ai/A	PD										
24	45 seed/ft^2				102	h	42	cde	.		.		10,017	c-g
	UREA	90	lb ai/A	4-5 leaf										
	UREA	45	lb ai/A	50%HD										
25	45 seed/ft^2				104	b-g	44	a-d	53	a	3	b	11,116	a-d
	UREA	180	lb ai/A	4-5 leaf										
26	45 seed/ft^2				102	h	41	e	.		.		10,266	c-g
	UREA	90	lb ai/A	4-5 leaf										
	UREA	45	lb ai/A	PD										
	UREA	45	lb ai/A	50%HD										
27	45 seed/ft^2				103	e-h	43	a-e	20	de	1	c	11,032	a-e
	UREA	135	lb ai/A	4-5 leaf										
	UREA	45	lb ai/A	PD										
28	45 seed/ft^2				103	c-h	42	cde	.		.		10,940	a-e
	UREA	135	lb ai/A	4-5 leaf										
	UREA	45	lb ai/A	50%HD										
29	45 seed/ft^2				104	a-e	45	abc	48	ab	4	a	10,714	a-f
	UREA	225	lb ai/A	4-5 leaf										
30	45 seed/ft^2				103	e-h	43	a-e	.		.		11,125	abc
	UREA	135	lb ai/A	4-5 leaf										
	UREA	45	lb ai/A	PD										
	UREA	45	lb ai/A	50%HD										
LSD (P=.05)					1		2		13		0		639	
Standard Deviation					1		1		9		0		452	
CV					1		3		25		13		4	

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

Table 43. Evaluation of CL111 response to N fertilization and time of application for three different seeding rates (1.1). Rice Research Station.

Crop Name					Rice		Rice		Rice		Rice		Rice	
Rating Date							7/28/2010		8/10/2010		8/10/2010		8/10/2010	
Rating Type					50% HD		Height		Lodge		Lodge		Yield	
Rating Unit					days		in		% plot		rate		lb/A	
Crop Stage Majority					Main		Main		Main		Main		Main	
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage										
1	15 seed/ft^2			ATPLAN	103	abc	43	b-e	.		.		8,259	h
	UREA	90	lb ai/A	4-5 leaf										
2	15 seed/ft^2			ATPLAN	103	abc	44	a-e	.		.		9,873	a-e
	UREA	135	lb ai/A	4-5 leaf										
3	15 seed/ft^2			ATPLAN	101	cde	45	a-e	.		.		9,187	efg
	UREA	90	lb ai/A	4-5 leaf										
	UREA	45	lb ai/A	PD										
4	15 seed/ft^2			ATPLAN	103	abc	45	a-e	.		.		8,302	h
	UREA	90	lb ai/A	4-5 leaf										
	UREA	45	lb ai/A	50%HD										
5	15 seed/ft^2			ATPLAN	104	a	46	ab	.		.		10,376	ab
	UREA	180	lb ai/A	4-5 leaf										
6	15 seed/ft^2			ATPLAN	102	abc	44	b-e	.		.		9,400	c-g
	UREA	90	lb ai/A	4-5 leaf										
	UREA	45	lb ai/A	PD										
	UREA	45	lb ai/A	50%HD										
7	15 seed/ft^2			ATPLAN	103	abc	45	a-e	.		.		10,143	abc
	UREA	135	lb ai/A	4-5 leaf										
	UREA	45	lb ai/A	PD										
8	15 seed/ft^2			ATPLAN	103	ab	46	abc	.		.		9,665	a-g
	UREA	135	lb ai/A	4-5 leaf										
	UREA	45	lb ai/A	50%HD										
9	15 seed/ft^2			ATPLAN	104	a	48	a	20	b	1	b	9,988	a-d
	UREA	225	lb ai/A	4-5 leaf										
10	15 seed/ft^2			ATPLAN	104	a	45	a-e	.		.		9,933	a-d
	UREA	135	lb ai/A	4-5 leaf										
	UREA	45	lb ai/A	PD										
	UREA	45	lb ai/A	50%HD										
11	30 seed/ft^2			ATPLAN	100	def	42	b-e	.		.		9,085	fg
	UREA	90	lb ai/A	4-5 leaf										
12	30 seed/ft^2			ATPLAN	103	abc	45	a-e	.		.		9,842	a-e
	UREA	135	lb ai/A	4-5 leaf										
13	30 seed/ft^2			ATPLAN	99	f	44	b-e	.		.		9,689	a-f
	UREA	90	lb ai/A	4-5 leaf										
	UREA	45	lb ai/A	PD										
14	30 seed/ft^2			ATPLAN	99	ef	43	b-e	.		.		9,320	d-g
	UREA	90	lb ai/A	4-5 leaf										
	UREA	45	lb ai/A	50%HD										
15	30 seed/ft^2			ATPLAN	103	ab	45	a-e	.		.		10,269	ab
	UREA	180	lb ai/A	4-5 leaf										
16	30 seed/ft^2			ATPLAN	99	ef	44	b-e	.		.		9,703	a-f
	UREA	90	lb ai/A	4-5 leaf										
	UREA	45	lb ai/A	PD										
	UREA	45	lb ai/A	50%HD										

Continued.

Table 43. Continued.

Crop Name				Rice		Rice		Rice		Rice		Rice	
Rating Date						7/28/2010		8/10/2010		8/10/2010		8/10/2010	
Rating Type				50% HD		Height		Lodge		Lodge		Yield	
Rating Unit				days		in		% plot		rate		lb/A	
Crop Stage Majority				Main		Main		Main		Main		Main	
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage									
17	30 seed/ft^2			ATPLAN	103 abc	45	a-e	.		.		10,414	a
	UREA	135	lb ai/A	4-5 leaf									
	UREA	45	lb ai/A	PD									
18	30 seed/ft^2			ATPLAN	102 abc	45	a-e	.		.		10,023	a-d
	UREA	135	lb ai/A	4-5 leaf									
	UREA	45	lb ai/A	50%HD									
19	30 seed/ft^2			ATPLAN	104 a	46	a-d	30	a	2	a	10,280	ab
	UREA	225	lb ai/A	4-5 leaf									
20	30 seed/ft^2			ATPLAN	103 ab	44	a-e	.		.		10,130	abc
	UREA	135	lb ai/A	4-5 leaf									
	UREA	45	lb ai/A	PD									
	UREA	45	lb ai/A	50%HD									
21	45 seed/ft^2			ATPLAN	99 f	41	e	.		.		9,047	fg
	UREA	90	lb ai/A	4-5 leaf									
22	45 seed/ft^2			ATPLAN	100 def	43	b-e	.		.		9,855	a-e
	UREA	135	lb ai/A	4-5 leaf									
23	45 seed/ft^2			ATPLAN	98 f	43	b-e	.		.		9,759	a-f
	UREA	90	lb ai/A	4-5 leaf									
	UREA	45	lb ai/A	PD									
24	45 seed/ft^2			ATPLAN	99 f	42	de	.		.		8,973	g
	UREA	90	lb ai/A	4-5 leaf									
	UREA	45	lb ai/A	50%HD									
25	45 seed/ft^2			ATPLAN	100 def	45	a-e	.		.		10,224	ab
	UREA	180	lb ai/A	4-5 leaf									
26	45 seed/ft^2			ATPLAN	99 f	42	cde	.		.		9,125	fg
	UREA	90	lb ai/A	4-5 leaf									
	UREA	45	lb ai/A	PD									
	UREA	45	lb ai/A	50%HD									
27	45 seed/ft^2			ATPLAN	102 abc	42	cde	.		.		10,390	ab
	UREA	135	lb ai/A	4-5 leaf									
	UREA	45	lb ai/A	PD									
28	45 seed/ft^2			ATPLAN	102 abc	42	cde	.		.		9,612	b-g
	UREA	135	lb ai/A	4-5 leaf									
	UREA	45	lb ai/A	50%HD									
29	45 seed/ft^2			ATPLAN	103 ab	45	a-e	27	ab	2	a	10,118	abc
	UREA	225	lb ai/A	4-5 leaf									
30	45 seed/ft^2			ATPLAN	101 bcd	44	a-e	.		.		9,985	a-d
	UREA	135	lb ai/A	4-5 leaf									
	UREA	45	lb ai/A	PD									
	UREA	45	lb ai/A	50%HD									
LSD (P=.05)				1		2		8		0		436	
Standard Deviation				1		1		5		0		308	
CV				1		3		19		21		3	

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

Evaluation of Starter N Sources for Rice Production

Experiment number	10-CM-36
Site and design	
Location/Cooperator	Rice Research Station (Crowley Main)
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	Crowley silt loam
% organic matter	1.116
pH	7.4
Extractable nutrients ppm	Ca-1,338; Cu-1.80; Mg-261; P-5.94; K-62.0; Na-84.2; S-8.10; Zn-4.20
Crop/Variety	Rice / Cheniere
Planting method/date	Drill seeded / March 14
Seeding rate/depth	33 seeds/ft^2 / 1 inch
Emergence date	April 1
Harvest date	August 10
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, March 16 150 lb N/A 46-0-0, April 28
Water management	
Flush	April 8
Flood	April 29
Drain	July 21
Pest management	
Herbicides	1 gal/A Propanil + 1 oz/A Londax + ¾ oz/A Permit, April 15 1 gal/A Rice Beaux + 1 oz/A Londax + ½ oz/A Permit, April 28
Insecticides	0.137 lb ai/cwt Dermacor seed treatment
Fungicides	19 oz/A Stratego, June 24

Table 44. Evaluation of starter N sources for rice production (1R.1). Rice Research Station.

Crop Name					Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice
Description					2-3 leaf	2-3 leaf	4-leaf					
Rating Date					4/14/2010	4/14/2010	4/27/2010		7/28/2010	8/10/2010		8/10/2010
Rating Type					Stand Cnt	Height	Height	50% HD	Height	Lodge	Lodge	Yield
Rating Unit					number	cm	cm	days	in	% plot	rate	lb/A
Sample Size, Unit					10 ft							
Collection Basis, Unit					1 row							
Crop Stage Majority					Main	Main	Main	Main	Main	Main	Main	Main
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage								
1	UTC	0	lb ai/A	ATPLAN	107 a	11.5 a	10.5 a	107 a	41 a	50 a	3 a	9,984 a
2	Amm. Sulfate	10	lb ai/A	ATPLAN	118 a	11.0 a	10.5 a	107 a	39 a	30 a	2 a	9,792 a
3	Amm. Sulfate	20	lb ai/A	ATPLAN	116 a	11.5 a	10.5 a	107 a	40 a	20 a	2 a	9,832 a
4	Agrotain-treated urea	10	lb ai/A	ATPLAN	107 a	11.5 a	11.0 a	106 a	40 a	30 a	2 a	10,193 a
5	Agrotain-treated urea	20	lb ai/A	ATPLAN	118 a	11.3 a	10.8 a	107 a	40 a	40 a	2 a	9,888 a
6	Urea	10	lb ai/A	ATPLAN	129 a	11.0 a	11.0 a	106 a	41 a	40 a	2 a	10,090 a
7	Urea	20	lb ai/A	ATPLAN	111 a	11.5 a	10.8 a	107 a	40 a	20 a	2 a	10,414 a
8	SuperU	10	lb ai/A	ATPLAN	116 a	11.3 a	10.8 a	107 a	40 a	20 a	2 a	10,276 a
9	SuperU	20	lb ai/A	ATPLAN	119 a	11.5 a	10.5 a	107 a	40 a	10 a	1 a	9,925 a
LSD (P=.05)					20	1	1	1	2	43	2	919
Standard Deviation					14	0	1	1	1	22	1	630
CV					12	3	9	1	3	76	69	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.

Yield Benefit and Optimum Application Timing of HM0715

Experiment number ....: 10-CM-37

Site and design ....:
- **Location/Cooperator** ....: Rice Research Station (Crowley Main)
- **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 ....: Crowley silt loam
- **% organic matter**........................: 1.116
- **pH**...: 7.4
- **Extractable nutrients** ppm ....: Ca-1,338; Cu-1.80; Mg-261; P-5.94; K-62.0; Na-84.2; S-8.10; Zn-4.20

Crop/Variety ....: Rice / Catahoula
- **Planting method/date** ....: Drill seeded / March 14
- **Seeding rate/depth**......................: 33 seeds/ft^2 / 1 inch
- **Emergence date**...........................: April 1
- **Harvest date** ....: August 10

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, March 16
150 lb N/A 46-0-0, March 28

Water management ....:
- **Flush** ....: April 8
- **Flood** ....: April 29
- **Drain**...: July 21

Pest management ....:
- **Herbicides**....................................: 1 gal/A Propanil + 1 oz/A Londax + ¾ oz/A Permit, April 15
1 gal/A Rice Beaux + 1 oz/A Londax + ½ oz/A Permit, April 28
- **Insecticides** ....: 0.137 lb ai/cwt Dermacor seed treatment
- **Fungicides**....................................: 19 oz/A Stratego, June 24

Table 45. Yield benefit and optimum application timing of HM0715 (1.1). Rice Research Station.

Crop Name					Rice	Rice	Rice	Rice	Rice
Description									
Rating Date						7/28/2010	8/10/2010		
Rating Type					50% HD	Height	Yield	Milling	Milling
Rating Unit					days	in	lb/A	head	total
Sample Size, Unit								g	g
Collection Basis, Unit								100g	100g
Crop Stage Majority					Main	Main	Main	Main	Main
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage					
1	Grower Standard - Check			UNTREATED	106 a	42 a	9,640 a	62.52 a	72.48 a
2	HM0715	1.0	pt/A	LP/PREFLOOD	106 a	42 a	9,780 a	62.62 a	72.18 a
	HM9110	0.25	% v/v	LP/PREFLOOD					
3	HM0715	1.0	pt/A	PI	106 a	42 a	10,038 a	62.72 a	72.46 a
	HM9110	0.25	% v/v	PI					
4	HM0715	1.0	pt/A	PD + 7 Days	107 a	42 a	9,691 a	63.05 a	72.43 a
	HM9110	0.25	% v/v	PD + 7 Days					
5	HM0715	1.0	pt/A	BOOT SPLIT	107 a	42 a	10,228 a	62.47 a	72.05 a
	HM9110	0.25	% v/v	BOOT SPLIT					
6	HM0715	1.0	pt/A	10% HEADING	107 a	42 a	9,958 a	62.88 a	72.51 a
	HM9110	0.25	% v/v	10% HEADING					
LSD (P=.05)					1	2	563	1.61	0.88
Standard Deviation					1	1	374	1.07	0.59
CV					1	3	4	1.70	0.81

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.

Nitrogen Replacement Study in Rice

Experiment number	: 10-CM-38
Site and design	:
Location/Cooperator	: Rice Research Station (Crowley Main)
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	: Crowley silt loam
% organic matter	: 1.116
pH	: 7.4
Extractable nutrients ppm	: Ca-1,338; Cu-1.80; Mg-261; P-5.94; K-62.0; Na-84.2; S-8.10; Zn-4.20
Crop/Variety	: Rice / Cheniere
Planting method/date	: Drill seeded / March 14
Seeding rate/depth	: 33 seeds/ft^2 / 1 inch
Emergence date	: April 1
Harvest date	: August 10
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, March 16
	92 lb N/A 46-0-0, April 28
Water management	:
Flush	: April 8
Flood	: April 29
Drain	: July 21
Pest management	:
Herbicides	: 1 gal/A Propanil + 1 oz/A Londax + ¾ oz/A Permit, April 15
	1 gal/A Rice Beaux + 1 oz/A Londax + ½ oz/A Permit, April 28
Insecticides	: 0.137 lb ai/cwt Dermacor seed treatment
Fungicides	: 19 oz/A Stratego, June 24

Table 46. Nitrogen replacement study in rice - 2010. Rice Research Station.

Description					2-3 leaf	2-3 leaf	10d post PI Trt	10d post 5% HD						
Rating Date					4/16/2010		6/10/2010	7/8/2010		7/28/2010	8/10/2010			
Rating Type					Stand Cnt	Height	Height	Height	50% HD	Height	Yield	Milling	Milling	
Rating Unit					number	cm	in	in	days	in	lb/A	head	total	
Sample Size, Unit					10 ft							g	g	
Collection Basis, Unit					1 row							100g	100g	
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage										
1	Nitrogen	92	lb/A	Preflood	102.0 a	12.0 a	30 a	39 a	109 a	37 a	8,600 a	62.77 a	72.93 a	
2	Nitrogen	92	lb/A	Preflood	103.8 a	11.8 a	29 a	39 a	109 a	39 a	8,481 a	63.00 a	72.92 a	
	Nitrogen (46-0-0)	46	lb/A	PI										
3	Nitrogen	92	lb/A	Preflood	113.0 a	11.5 a	31 a	39 a	109 a	38 a	8,627 a	63.95 a	73.55 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	98.5 a	11.5 a	30 a	39 a	109 a	39 a	8,836 a	63.82 a	73.18 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	102.5 a	11.3 a	31 a	39 a	109 a	39 a	9,012 a	63.45 a	73.13 a	
	HM9310	2.0	gal/A	PI										
	Quilt	14	oz/A	Heading										
	Penetrator Plus	8	oz/A	Heading										
	HM9310	2.0	gal/A	Heading										
6	Nitrogen	92	lb/A	Preflood	106.3 a	12.0 a	32 a	39 a	109 a	39 a	9,019 a	64.01 a	73.38 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	106.8 a	12.0 a	31 a	39 a	109 a	38 a	8,788 a	64.02 a	73.33 a	
	HM9310	2.0	gal/A	PI										
	HM0938	5	oz/A	PI										
	Quilt	14	oz/A	Heading										
	Penetrator Plus	8	oz/A	Heading										
	HM9310	2.0	gal/A	Heading										
8	Nitrogen	92	lb/A	Preflood	95.3 a	11.5 a	31 a	39 a	109 a	38 a	8,997 a	63.90 a	73.36 a	
	HM9310	3.0	gal/A	PI										
	HM0938	5	oz/A	PI										
	Quilt	14	oz/A	Heading										
	Penetrator Plus	8	oz/A	Heading										
	HM9310	1.0	gal/A	Heading										
LSD (P=.05)					20.2	0.6	2	1	0	2	721	1.38	0.50	
Standard Deviation					13.8	0.4	1	1	0	1	490	0.94	0.34	
CV					13.3	3.4	5	2	0	3	6	1.48	0.47	

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.

Nitrogen Uptake Modeling Study

Experiment number	: 10-CM-34
Site and design	:
Location/Cooperator	: Rice Research Station (Crowley Main)
Tillage type	: Fall Stale
Experimental design	: Randomized complete block
Number of reps	: 6
Plot size	: 4.66 x 16 ft
Row width/rows per plot	: 8 in / 7
Soil type	: Crowley silt loam
% organic matter	: 1.157
pH	: 7.1
Extractable nutrients ppm	: Ca-1,050; Cu-1.57; Mg-240; P-5.63; K-62.4; Na-83.0; S-7.40; Zn-4.13
Crop/Variety	: Rice / Catahoula & Neptune
Planting method/date	: Drill seeded / March 13
Seeding rate/depth	: 33 seeds/ft^2 / ¾ inch
Emergence date	: March 30
Harvest date	: August 9
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, March 16 90 lb N/A 46-0-0, August 9
Water management	:
Flush	: April 8
Flood	: April 29
Drain	: July 21
Ratoon flood	: August 10
Ratoon drain	: October 18
Pest management	:
Herbicides	: 1 gal/A Propanil + 1 oz/A Londax + ¾ oz/A Permit, April 15 1 gal/A Rice Beaux + 1 oz/A Londax + ½ oz/A Permit, April 28 1 qt/A 2,4-D, August 9
Insecticides	: 0.137 lb ai/cwt Dermacor seed treatment
Fungicides	: 19 oz/A Stratego, June 24

Table 47. Nitrogen uptake modeling study (2.1). Rice Research Station.

Crop Name					Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice
Rating Date						7/27/2010	8/9/2010			11/4/2010			8/5/2010	
Rating Type					50% HD	Height	TestWt.	Yield	50% HD	TestWt	Yield	Yield	Plant	Seed
Rating Unit					days	in	lb/bu	lb/A	days	lb/bu	lb/A	lb/A	DryWt(g)	DryWt(g)
Sample Size, Unit													3 ft	3 ft
Collection Basis, Unit													1 row	1 row
Crop Stage Majority					Main	Main	Main	Main	Ratoon	Ratoon	Ratoon	Total	Maturity	Maturity
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage										
1	Catahoula				104 b	42 a	44 a	9,397 a	37 b	48 a	2623 c	12,020 b	404.6 a	213.1 a
	150 SPF	150	lb/A	4-5 leaf										
2	Catahoula				103 b	41 a	44 a	9,674 a	37 b	47 a	3006 c	12,680 b	380.7 a	190.8 a
	150 split	100	lb/A	4-5 leaf										
		50	lb/A	PD										
3	Catahoula				96 c	32 c	44 a	4,043 b	21 c	48 a	1948 d	5,991 d	103.0 b	42.5 b
	0 lb N/A	0	lb/A	4-5										
4	Neptune				107 a	38 b	43 b	10,375 a	39 a	47 a	4777 a	15,152 a	362.7 a	182.8 a
	150 SPF	150	lb/A	4-5 leaf										
5	Neptune				107 a	36 b	42 b	9,685 a	39 a	47 a	5081 a	14,765 a	361.1 a	186.5 a
	150 split	100	lb/A	4-5 leaf										
		50	lb/A	PD										
6	Neptune				107 a	29 d	43 b	4,618 b	38 b	48 a	4129 b	8,747 c	145.3 b	76.7 b
	0 lb N/A	0	lb/A	4-5										
LSD (P=.05)					2	2	1	890	1	1	414	1,127	105.1	55.1
Standard Deviation					2	1	0	489	1	1	228	619	57.8	30.3
CV					1	3	1	6	1	1	6	5	19.7	20.4

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 47. Continued.

Crop Name					Rice											
Description					Tissue Sample											
Rating Date					4/27/2010	5/3/2010	5/6/2010	5/10/2010	5/13/2010	5/17/2010	5/20/2010	5/24/2010	5/27/2010	5/31/2010	6/3/2010	6/7/2010
Rating Type					Biomass	Biomass	Biomass	Biomass	Biomass	Biomass	Biomass	Biomass	Biomass	Biomass	Biomass	Biomass
Rating Unit					DryWt(g)	DryWt(g)	DryWt(g)	DryWt(g)	DryWt(g)	DryWt(g)	DryWt(g)	DryWt(g)	DryWt(g)	DryWt(g)	DryWt(g)	DryWt(g)
Sample Size, Unit					3 ft	3 ft	3 ft	3 ft	3 ft	3 ft	3 ft	3 ft	3 ft	3 ft	3 ft	3 ft
Collection Basis, Unit					1 row	1 row	1 row	1 row	1 row	1 row	1 row	1 row	1 row	1 row	1 row	1 row
Crop Stage Majority					Main	Main	Main	Main	Main	Main	Main	Main	Main	Main	Main	Main
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage												
1	Catahoula				1.2 a	1.5 a	2.1 a	4.1 a	9.6 a	15.3 a	13.4 a	37.3 a	41.0 a	62.9 a	87.2 a	119.1 a
	150 SPF	150	lb/A	4-5 leaf												
2	Catahoula				1.1 a	1.9 a	2.3 a	6.3 a	7.8 a	12.3 a	15.1 a	28.9 ab	39.5 a	62.8 a	72.9 a	93.5 a
	150 split	100	lb/A	4-5 leaf												
		50	lb/A	PD												
3	Catahoula				1.1 a	1.7 a	3.0 a	2.9 a	7.2 a	6.4 a	9.4 a	10.6 c	16.8 b	16.0 b	19.9 b	35.2 b
	0 lb N/A	0	lb/A	4-5												
4	Neptune				1.3 a	1.7 a	2.9 a	3.8 a	6.7 a	9.7 a	13.0 a	24.2 b	31.3 a	52.8 a	75.0 a	90.9 a
	150 SPF	150	lb/A	4-5 leaf												
5	Neptune				1.0 a	1.8 a	2.9 a	4.7 a	7.2 a	10.0 a	15.5 a	26.8 ab	39.1 a	52.8 a	77.0 a	86.3 a
	150 split	100	lb/A	4-5 leaf												
		50	lb/A	PD												
6	Neptune				1.2 a	2.0 a	2.4 a	4.1 a	4.6 a	6.0 a	4.7 a	9.7 c	14.6 b	13.1 b	16.7 b	25.3 b
	0 lb N/A	0	lb/A	4-5												
LSD (P=.05)					0.3	1.1	1.2	2.9	4.0	6.9	7.1	9.1	11.2	12.4	23.7	30.4
Standard Deviation					0.2	0.6	0.7	1.6	2.2	3.8	3.9	5.0	6.1	6.8	13.1	16.7
CV					16.5	32.7	26.1	36.2	30.4	38.3	32.8	21.7	20.2	15.8	22.5	22.3

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 47. Continued.

Crop Name					Rice											
Description					Tissue Sample											
Rating Date					6/10/2010	6/14/2010	6/17/2010	6/21/2010	6/24/2010	6/28/2010	4/27/2010	5/3/2010	5/6/2010	5/10/2010	5/13/2010	5/17/2010
Rating Type					Biomass	Biomass	Biomass	Biomass	Biomass	Biomass	Total N	Total N	Total N	Total N	Total N	Total N
Rating Unit					DryWt(g)	DryWt(g)	DryWt(g)	DryWt(g)	DryWt(g)	DryWt(g)	%	%	%	%	%	%
Sample Size, Unit					3 ft	3 ft	3 ft	3 ft	3 ft	3 ft						
Collection Basis, Unit					1 row	1 row	1 row	1 row	1 row	1 row						
Crop Stage Majority					Main	Main	Main	Main	Main	Main	Main	Main	Main	Main	Main	Main
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage												
1	Catahoula				111.3 a	189.2 a	177.9 a	256.0 a	251.7 a	.	3.6 a	4.0 a	4.1 a	3.5 a	3.4 a	3.4 a
	150 SPF	150	lb/A	4-5 leaf												
2	Catahoula				107.4 a	157.6 ab	178.8 a	200.0 b	264.6 a	.	3.4 a	3.8 a	4.0 a	3.4 a	3.4 a	3.2 a
	150 split	100	lb/A	4-5 leaf												
		50	lb/A	PD												
3																
	Catahoula				32.4 b	56.1 c	57.5 b	51.3 c	78.8 c	.	3.5 a	3.5 b	2.8 b	2.1 b	1.7 b	1.6 b
	0 lb N/A	0	lb/A	4-5												
4	Neptune				113.7 a	121.7 b	166.6 a	157.9 b	206.0 b	235.2 a	3.4 a	4.0 a	4.2 a	3.6 a	3.3 a	3.2 a
	150 SPF	150	lb/A	4-5 leaf												
5	Neptune				100.2 a	151.8 ab	157.1 a	163.0 b	178.7 b	222.2 a	3.4 a	4.0 a	4.0 a	3.6 a	3.3 a	3.3 a
	150 split	100	lb/A	4-5 leaf												
		50	lb/A	PD												
6	Neptune				21.6 b	37.4 c	37.3 b	51.1 c	64.2 c	72.1 b	3.7 a	3.5 b	2.7 b	2.1 b	1.7 b	1.6 b
	0 lb N/A	0	lb/A	4-5												
LSD (P=.05)					18.6	41.1	69.3	38.3	41.9	44.5	0.3	0.2	0.2	0.3	0.3	0.3
Standard Deviation					10.2	22.6	38.1	21.0	23.0	19.6	0.2	0.1	0.1	0.2	0.1	0.2
CV					12.6	19.0	29.5	14.4	13.2	11.1	4.9	2.8	3.1	5.3	5.0	7.0

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.

Table 47. Continued.

Crop Name					Rice											
Description					Tissue Sample											
Rating Date					5/20/2010	5/24/2010	5/27/2010	5/31/2010	6/3/2010	6/7/2010	6/10/2010	6/14/2010	6/17/2010	6/21/2010	6/24/2010	6/28/2010
Rating Type					Total N	Total N	Total N	Total N	Total N	Total N	Total N	Total N	Total N	Total N	Total N	Total N
Rating Unit					%	%	%	%	%	%	%	%	%	%	%	%
Crop Stage Majority					Main	Main	Main	Main	Main	Main	Main	Main	Main	Main	Main	Main
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage												
1	Catahoula				3.3 a	3.3 a	3.0 a	3.3 a	2.9 a	2.5 b	2.0 a	1.8 a	1.6 a	1.5 a	1.4 a	.
	150 SPF	150	lb/A	4-5 leaf												
2	Catahoula				3.1 ab	3.0 a	3.1 a	2.5 b	2.7 a	2.3 b	1.9 a	1.5 a	1.6 a	1.6 a	1.4 a	.
	150 split	100	lb/A	4-5 leaf												
		50	lb/A	PD												
3	Catahoula				1.7 c	1.5 b	1.5 b	1.4 c	1.3 b	1.4 c	1.2 b	1.3 a	1.1 a	1.1 b	1.2 a	.
	0 lb N/A	0	lb/A	4-5												
4	Neptune				3.0 ab	3.2 a	2.9 a	3.4 a	2.9 a	2.8 a	2.4 a	1.7 a	1.8 a	1.7 a	1.5 a	1.5 a
	150 SPF	150	lb/A	4-5 leaf												
5	Neptune				2.9 ab	2.9 a	2.9 a	2.6 b	2.6 a	2.4 b	2.2 a	1.6 a	1.4 a	1.6 a	1.5 a	1.5 a
	150 split	100	lb/A	4-5 leaf												
		50	lb/A	PD												
6	Neptune				2.1 bc	1.6 b	1.7 b	1.7 c	1.4 b	1.7 c	1.3 b	1.5 a	1.2 a	1.2 b	1.4 a	1.4 a
	0 lb N/A	0	lb/A	4-5												
LSD (P=.05)					0.7	0.5	0.6	0.5	0.4	0.2	0.4	0.5	0.7	0.2	0.4	0.4
Standard Deviation					0.4	0.3	0.3	0.2	0.2	0.1	0.2	0.3	0.4	0.1	0.2	0.2
CV					13.8	9.9	12.4	10.0	10.0	5.9	12.6	18.2	24.3	7.2	15.6	12.2

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.

Determine the Influence of Zinc Fertilization on Rice Yields and Uptake in Rice

Experiment number ....: 10-DL-01

Site and design ....:
- **Location/Cooperator** ....: Acadia Parish/Dennis Leonards
- **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 ....: Crowley silt loam
- **% organic matter**........................: 1.483
- **pH**...: 7.7
- **Extractable nutrients** ppm ....: Ca-2,072; Cu-1.76; Mg-493; P-15; K-70; Na-178; S-7.3; Zn-.657

Crop/Variety ....: Rice / Jupiter
- **Planting method/date** ....: Drill seeded / March 31
- **Seeding rate/depth**......................: 33 seeds/ft^2 / .5 inches
- **Emergence date**...........................: April 12
- **Harvest date** ....: September 26

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 N/A 21-0-0-24S, March 31
60 lb/A TSP, March 31
60 lb/A Potash, March 31

Water management ....:
- **Flush** ....: April 13, April 28, May 11
- **Flood**...: May 24
- **Drain**...: August 12

Pest management ....:
- **Herbicides**....................................: .82 gal/A Propanil + .33 oz/A Permit + 2 pt/A Prowl, April 27
1 gal/A Propanil + 1 oz/A Londax + .75 oz/A Permit, May 6
- **Insecticides** ....: 0.137 lb ai/cwt Dermacor seed treatment
- **Fungicides**....................................: 21 oz/A Quilt + 3 oz/A Quadris, July 12

Table 48. Determine the influence of Zn fertilization on rice yields and uptake in rice. Acadia Parish.

Crop Name					Rice		Rice		Rice		Rice		Rice		Rice		Rice	
Description											Tissue Samples				Fol. Zn Symp.		Fol. Zn Symp.2	
Rating Date							8/25/2010				5/26/2010		6/9/2010		6/9/2010		6/9/2010	
Rating Type					50% HD		Height		Yield		Biomass		Biomass		Scale		Scale	
Rating Unit					days		in		lb/A		DryWt(g)		DryWt(g)		0-9		0-9	
Sample Size, Unit											1 ft		1 ft					
Collection Basis, Unit											1 row		1 row					
Crop Stage Majority					Main		Main		Main									
Crop Stage Scale											4-5 leaf		mid till		mid till		mid till	
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage														
1	Zn Sulfate	0	lb ai/A	ATPLAN	93	a	35	a	8,270	a	6.7	a	20.6	a	0.3	c	0.8	c
	21-0-0	150	lb ai/A	3-4 leaf														
2	Zn Sulfate	5	lb ai/A	ATPLAN	93	a	35	a	8,274	a	5.8	a	22.8	a	0.8	bc	0.3	c
	21-0-0	150	lb ai/A	3-4 leaf														
3	Zn Sulfate	10	lb ai/A	ATPLAN	93	a	35	a	8,083	a	5.7	a	21.6	a	0.8	bc	0.5	c
	21-0-0	150	lb ai/A	3-4 leaf														
4	Zn Sulfate	15	lb ai/A	ATPLAN	94	a	35	a	8,304	a	6.0	a	20.5	a	1.0	bc	0.5	c
	21-0-0	150	lb ai/A	3-4 leaf														
5	Zn Sulfate	20	lb ai/A	ATPLAN	93	a	34	a	8,230	a	6.1	a	22.2	a	0.5	c	0.0	c
	21-0-0	150	lb ai/A	3-4 leaf														
6	Zn Sulfate	0	lb ai/A	ATPLAN	95	a	34	a	8,295	a	6.1	a	20.8	a	4.3	a	3.3	a
	46-0-0	150	lb ai/A	ATPLAN														
7	Zn Sulfate	5	lb ai/A	ATPLAN	94	a	34	a	8,226	a	5.6	a	21.0	a	3.3	ab	2.8	ab
	46-0-0	150	lb ai/A	ATPLAN														
8	Zn Sulfate	10	lb ai/A	ATPLAN	93	a	35	a	8,324	a	4.7	a	14.4	a	1.5	bc	1.3	bc
	46-0-0	150	lb ai/A	ATPLAN														
9	Zn Sulfate	15	lb ai/A	ATPLAN	94	a	35	a	8,227	a	5.9	a	21.8	a	2.0	bc	1.5	bc
	46-0-0	150	lb ai/A	ATPLAN														
10	Zn Sulfate	20	lb ai/A	ATPLAN	93	a	34	a	8,323	a	5.6	a	23.9	a	1.3	bc	1.3	bc
	46-0-0	150	lb ai/A	ATPLAN														
LSD (P=.05)					1		2		452		2.3		8.8		1.6		1.2	
Standard Deviation					1		1		311		1.6		6.0		1.1		0.9	
CV					1		3		4		27.4		28.8		72.2		71.2	

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.

Table 48. Continued.

Description				Al	B	Ca	Cu	Fe	Mg	Mn	P	K	Na	S	Zn
Rating Date				5/26/2010											
Rating Type				Tissue Samples											
Rating Unit				ppm	ppm	%	ppm	ppm	%	ppm	%	ppm	ppm	%	ppm
Crop Stage Scale				4-5 leaf											
Trt No.	Trt Name	Rate	Rate Unit												
1	Zn Sulfate	0	lb ai/A	1,953 a	7.6 a	0.4 a	33.3 a	2,018 a	0.23 a	146 a	0.25 a	1.4 a	1,965 a	0.20 a	37.8 a
	21-0-0	150	lb ai/A												
2	Zn Sulfate	5	lb ai/A	1,864 a	7.4 a	0.5 a	27.5 a	2,040 a	0.23 a	159 a	0.23 a	1.4 a	2,393 a	0.20 a	36.3 a
	21-0-0	150	lb ai/A												
3	Zn Sulfate	10	lb ai/A	1,578 a	5.2 ab	0.4 a	36.5 a	1,263 a	0.23 a	147 a	0.22 a	1.5 a	1,941 a	0.21 a	45.8 a
	21-0-0	150	lb ai/A												
4	Zn Sulfate	15	lb ai/A	2,326 a	7.2 a	0.5 a	39.0 a	2,403 a	0.25 a	149 a	0.23 a	1.3 a	2,193 a	0.20 a	51.8 a
	21-0-0	150	lb ai/A												
5	Zn Sulfate	20	lb ai/A	2,464 a	7.2 a	0.5 a	33.5 a	2,506 a	0.23 a	151 a	0.25 a	1.4 a	2,176 a	0.21 a	55.8 a
	21-0-0	150	lb ai/A												
6	Zn Sulfate	0	lb ai/A	2,115 a	7.5 a	0.4 a	37.5 a	2,232 a	0.24 a	140 a	0.23 a	1.3 a	2,405 a	0.19 a	34.0 a
	46-0-0	150	lb ai/A												
7	Zn Sulfate	5	lb ai/A	1,942 a	6.8 a	0.5 a	38.8 a	1,957 a	0.24 a	143 a	0.23 a	1.3 a	2,362 a	0.18 a	39.5 a
	46-0-0	150	lb ai/A												
8	Zn Sulfate	10	lb ai/A	1,685 a	7.2 a	0.5 a	56.5 a	1,796 a	0.26 a	144 a	0.23 a	1.3 a	2,616 a	0.19 a	51.0 a
	46-0-0	150	lb ai/A												
9	Zn Sulfate	15	lb ai/A	1,434 a	3.8 b	0.5 a	29.8 a	932 a	0.24 a	139 a	0.12 b	1.3 a	2,453 a	0.18 a	41.0 a
	46-0-0	150	lb ai/A												
10	Zn Sulfate	20	lb ai/A	2,077 a	7.2 a	0.5 a	41.8 a	2,244 a	0.25 a	157 a	0.24 a	1.3 a	2,587 a	0.20 a	59.3 a
	46-0-0	150	lb ai/A												
LSD (P=.05)				1,293	2.0	0.1	20.9	1,483	0.02	34	0.06	0.2	623	0.02	16.9
Standard Deviation				891	1.4	0.1	14.4	1,022	0.02	23	0.04	0.1	429	0.02	11.6
CV				46	20.7	17.1	38.5	53	6.57	16	17.65	9.2	19	8.40	25.8

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 48. Continued.

Description				Al	B	Ca	Cu	Fe	Mg	Mn	P	K	Na	S	Zn
Rating Date				6/9/2010											
Rating Type				Tissue Samples											
Rating Unit				ppm	ppm	%	ppm	ppm	%	ppm	%	ppm	ppm	%	ppm
Crop Stage Scale				mid till											
Trt No.	Trt Name	Rate	Rate Unit												
1	Zn Sulfate	0	lb ai/A	1,273 a	7.0 a	0.23 a	5.3 a	1,256 a	0.25 a	490 b	0.31 a	1.7 a	7,961 a	0.29 abc	23 bc
	21-0-0	150	lb ai/A												
2	Zn Sulfate	5	lb ai/A	1,545 a	6.8 a	0.22 a	4.8 a	1,497 a	0.23 a	458 b	0.28 a	1.5 a	8,399 a	0.29 abc	33 b
	21-0-0	150	lb ai/A												
3	Zn Sulfate	10	lb ai/A	1,531 a	7.3 a	0.25 a	5.5 a	1,417 a	0.26 a	445 b	0.30 a	1.6 a	8,262 a	0.30 ab	24 bc
	21-0-0	150	lb ai/A												
4	Zn Sulfate	15	lb ai/A	1,372 a	6.5 a	0.22 a	5.5 a	1,271 a	0.24 a	468 b	0.29 a	1.5 a	9,315 a	0.30 ab	30 bc
	21-0-0	150	lb ai/A												
5	Zn Sulfate	20	lb ai/A	1,197 a	7.3 a	0.24 a	5.0 a	1,115 a	0.26 a	455 b	0.31 a	1.6 a	8,968 a	0.32 a	45 a
	21-0-0	150	lb ai/A												
6	Zn Sulfate	0	lb ai/A	1,720 a	6.8 a	0.21 a	5.0 a	1,574 a	0.22 a	450 b	0.24 a	1.4 a	8,330 a	0.24 c	14 c
	46-0-0	150	lb ai/A												
7	Zn Sulfate	5	lb ai/A	1,645 a	7.3 a	0.24 a	5.5 a	1,720 a	0.27 a	446 b	0.30 a	1.6 a	9,156 a	0.25 bc	17 bc
	46-0-0	150	lb ai/A												
8	Zn Sulfate	10	lb ai/A	2,164 a	7.0 a	0.24 a	5.5 a	2,039 a	0.27 a	624 a	0.32 a	1.8 a	8,815 a	0.26 bc	21 bc
	46-0-0	150	lb ai/A												
9	Zn Sulfate	15	lb ai/A	1,562 a	6.5 a	0.23 a	5.0 a	1,515 a	0.23 a	429 b	0.27 a	1.5 a	9,293 a	0.25 bc	22 bc
	46-0-0	150	lb ai/A												
10	Zn Sulfate	20	lb ai/A	1,611 a	6.5 a	0.22 a	5.3 a	1,482 a	0.24 a	426 b	0.29 a	1.4 a	10,019 a	0.25 bc	22 bc
	46-0-0	150	lb ai/A												
LSD (P=.05)				1,041	1.0	0.03	0.9	899	0.04	87	0.05	0.3	1,633	0.04	10
Standard Deviation				718	0.7	0.02	0.6	620	0.03	60	0.03	0.2	1,126	0.03	7
CV				46	9.9	9.31	12.2	42	10	13	11.48	15.1	13	9.22	29

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 Varietal Response to Zinc Deficiency

Experiment number ....: 10-DL-05

Site and design ....:
- **Location/Cooperator** ....: Acadia Parish/Dennis Leonards
- **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 ....: Crowley silt loam
- **% organic matter** ....: 1.483
- **pH** ....: 7.7
- **Extractable nutrients** ppm ....: Ca-2,072; Cu-1.76; Mg-493; P-15; K-70; Na-178; S-7.3; Zn-.657

Crop/Variety ....: Rice / Multiple varieties
- **Planting method/date** ....: Drill seeded / March 31
- **Seeding rate/depth** ....: 33 seeds/ft^2 / .5 inches
- **Emergence date** ....: April 12
- **Harvest date** ....: September 26

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, May 24

Water management ....:
- **Flush** ....: April 13, April 28, May 11
- **Flood** ....: May 24
- **Drain** ....: August 12

Pest management ....:
- **Herbicides** ....: .82 gal/A Propanil + .33 oz/A Permit + 2 pt/A Prowl, April 27
1 gal/A Propanil + 1 oz/A Londax + .75 oz/A Permit, May 6
- **Insecticides** ....: 0.137 lb ai/cwt Dermacor seed treatment
- **Fungicides** ....: 21 oz/A Quilt + 3 oz/A Quadris, July 12

Table 49. Evaluation of varietal response to Zn deficiency. All varieties received 1 lb Zn as seed treatment ($ZnSO_4$-derived). Acadia Parish.

Crop Name					Rice		Rice		Rice		Rice		Rice	
Description					Est % Stand		Est Zn Symp		Mid-till					
Rating Date					6/9/2010		6/9/2010		6/8/2010				8/25/2010	
Rating Type					Visual Est		Visual Est		Biomass		50% HD		Height	
Rating Unit					%		0-9		g		days		in	
Sample Size, Unit									1 ft					
Collection Basis, Unit									1 row					
Crop Stage Majority					Main		Main		Main		Main		Main	
Trt No.	**Trt Name**	**Rate**	**Rate Unit**	**Growth Stage**										
1	CL151				98	a	1	b-e	18.2	a	91	ef	40	a
	Seed trt only (1 lb Zn/A)													
2	CL151				98	a	0	e	13.7	a	91	ef	40	ab
	ST + 15 lb Zn/A	15	lb ai/A	ATPLAN										
3	CL111				100	a	1	de	18.7	a	89	f	41	a
	Seed trt only (1 lb Zn/A)													
4	CL111				99	a	1	de	16.1	a	89	f	40	ab
	ST + 15 lb Zn/A	15	lb ai/A	ATPLAN										
5	Catahoula				99	a	2	a-e	14.4	a	91	ef	39	abc
	Seed trt only (1 lb Zn/A)													
6	Catahoula				100	a	2	a-e	14.3	a	92	def	39	abc
	ST + 15 lb Zn/A	15	lb ai/A	ATPLAN										
7	Cocodrie				99	a	4	a	12.5	a	93	def	38	a-d
	Seed trt only (1 lb Zn/A)													
8	Cocodrie				98	a	2	a-e	11.1	a	92	def	39	abc
	ST + 15 lb Zn/A	15	lb ai/A	ATPLAN										
9	Cheniere				100	a	2	a-e	8.8	a	96	bcd	38	a-d
	Seed trt only (1 lb Zn/A)													
10	Cheniere				100	a	1	cde	11.1	a	94	de	38	a-d
	ST + 15 lb Zn/A	15	lb ai/A	ATPLAN										
11	Wells				100	a	3	ab	8.5	a	102	a	39	abc
	Seed trt only (1 lb Zn/A)													
12	Wells				91	a	2	a-e	12.2	a	100	ab	39	abc
	ST + 15 lb Zn/A	15	lb ai/A	ATPLAN										
13	Jazzman				99	a	3	a-d	10.8	a	102	a	36	cde
	Seed trt only (1 lb Zn/A)													
14	Jazzman				100	a	1	cde	16.8	a	98	abc	39	abc
	ST + 15 lb Zn/A	15	lb ai/A	ATPLAN										
15	Jupiter				100	a	2	a-e	16.1	a	95	cd	36	b-e
	Seed trt only (1 lb Zn/A)													
16	Jupiter				100	a	1	b-e	12.6	a	96	cd	35	de
	ST + 15 lb Zn/A	15	lb ai/A	ATPLAN										
17	Neptune				100	a	3	abc	9.8	a	100	ab	37	a-e
	Seed trt only (1 lb Zn/A)													
18	Neptune				100	a	2	a-e	11.4	a	98	abc	34	e
	ST + 15 lb Zn/A	15	lb ai/A	ATPLAN										
19	CL261				88	a	0	e	20.4	a	90	ef	41	a
	Seed trt only (1 lb Zn/A)													
20	CL261				100	a	0	e	18.1	a	90	ef	40	a
	ST + 15 lb Zn/A	15	lb ai/A	ATPLAN										
LSD (P=.05)					10		1		6.7		2.80		2.22	
Standard Deviation					7		1		4.7		2.00		1.34	
CV					7		65		34.3		2.12		3.49	

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 49. Continued.

Crop Name		Rice		Rice	Rice					
Description					Tissue Samples					
Rating Date				8/26/2010	6/8/2010					
Rating Type		Lodge		Yield	Al	B	Ca	Cu	Fe	Mg
Rating Unit		% plot	rate	lb/A	ppm	ppm	%	ppm	ppm	%
Crop Stage Majority		Main		Main						
Trt No.	Trt Name									
1	CL151 Seed trt only (1 lb Zn/A)	20	4	8,762 ab	358 a	8.0 ab	0.26 bcd	4.9 bcd	367 a	0.22 c
2	CL151 ST + 15 lb Zn/A	40	5	9,066 a	206 a	8.2 ab	0.25 cd	4.8 bcd	248 a	0.22 c
3	CL111 Seed trt only (1 lb Zn/A)	.	.	6,920 cde	202 a	7.6 b	0.24 cd	5.4 bc	246 a	0.23 c
4	CL111 ST + 15 lb Zn/A	.	.	6,973 cde	273 a	7.4 b	0.24 cd	4.9 bcd	307 a	0.24 bc
5	Catahoula Seed trt only (1 lb Zn/A)	.	.	6,777 de	259 a	7.6 b	0.25 cd	5.0 bcd	294 a	0.23 c
6	Catahoula ST + 15 lb Zn/A	.	.	7,588 bcd	314 a	7.8 ab	0.26 bcd	4.2 cd	314 a	0.23 c
7	Cocodrie Seed trt only (1 lb Zn/A)	.	.	7,386 bcd	392 a	8.4 ab	0.29 bcd	4.7 bcd	368 a	0.21 cd
8	Cocodrie ST + 15 lb Zn/A	.	.	7,551 bcd	476 a	8.5 ab	0.33 abc	4.4 bcd	451 a	0.23 bc
9	Cheniere Seed trt only (1 lb Zn/A)	.	.	7,101 cd	318 a	8.9 ab	0.28 bcd	5.2 bc	321 a	0.25 bc
10	Cheniere ST + 15 lb Zn/A	.	.	7,793 a-d	332 a	9.1 ab	0.29 bcd	5.0 bcd	353 a	0.24 bc
11	Wells Seed trt only (1 lb Zn/A)	.	.	6,946 cde	396 a	9.6 a	0.40 a	5.6 b	401 a	0.29 a
12	Wells ST + 15 lb Zn/A	.	.	7,658 bcd	496 a	8.7 ab	0.35 ab	5.0 bcd	498 a	0.27 ab
13	Jazzman Seed trt only (1 lb Zn/A)	.	.	5,781 e	326 a	9.0 ab	0.32 bcd	7.3 a	330 a	0.29 a
14	Jazzman ST + 15 lb Zn/A	.	.	6,789 de	225 a	7.8 ab	0.27 bcd	5.4 bc	266 a	0.25 bc
15	Jupiter Seed trt only (1 lb Zn/A)	.	.	8,609 ab	247 a	8.4 ab	0.26 bcd	5.2 bc	280 a	0.25 bc
16	Jupiter ST + 15 lb Zn/A	.	.	8,375 abc	293 a	8.4 ab	0.27 bcd	4.7 bcd	307 a	0.24 bc
17	Neptune Seed trt only (1 lb Zn/A)	.	.	7,823 a-d	325 a	9.6 a	0.40 a	4.9 bcd	337 a	0.24 bc
18	Neptune ST + 15 lb Zn/A	.	.	8,384 abc	296 a	8.1 ab	0.30 bcd	3.8 d	314 a	0.18 d
19	CL261 Seed trt only (1 lb Zn/A)	.	.	7,081 cd	189 a	8.3 ab	0.22 d	4.8 bcd	238 a	0.22 c
20	CL261 ST + 15 lb Zn/A	.	.	7,960 a-d	286 a	7.9 ab	0.24 cd	4.3 cd	310 a	0.21 cd
LSD (P=.05)		.	.	838	257	1.1	0.05	0.7	230	0.03
Standard Deviation		.	.	592	182	0.8	0.04	0.5	163	0.02
CV		.	.	8	59	9.0	13.58	10.5	50	7.55

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 49. Continued.

Crop Name														
Description							Rice							
Rating Date							Tissue							
							6/8/2010							
Rating Type	Mn		Mo		P		K		Na		S		Zn	
Rating Unit	ppm		ppm		%		%		ppm		%		ppm	
Trt No. / Trt Name														
1 CL151 Seed trt only (1 lb Zn/A)	401	a	3.5	a	0.303	a-d	1.47	abc	3,593	def	0.20	ab	15	ab
2 CL151 ST + 15 lb Zn/A	365	a	3.2	a	0.305	a-d	1.43	abc	3,314	ef	0.22	ab	17	ab
3 CL111 Seed trt only (1 lb Zn/A)	420	a	3.8	a	0.318	ab	1.44	abc	3,867	def	0.20	b	16	ab
4 CL111 ST + 15 lb Zn/A	427	a	2.7	a	0.340	a	1.66	a	3,950	def	0.22	ab	21	a
5 Catahoula Seed trt only (1 lb Zn/A)	367	a	3.1	a	0.265	b-g	1.33	abc	3,210	ef	0.19	b	15	ab
6 Catahoula ST + 15 lb Zn/A	308	a	2.3	a	0.248	efg	1.27	abc	3,429	ef	0.20	b	17	ab
7 Cocodrie Seed trt only (1 lb Zn/A)	300	a	2.3	a	0.233	g	1.05	c	3,449	ef	0.19	b	11	b
8 Cocodrie ST + 15 lb Zn/A	378	a	2.5	a	0.235	fg	1.14	c	3,769	def	0.20	ab	17	ab
9 Cheniere Seed trt only (1 lb Zn/A)	354	a	3.1	a	0.258	d-g	1.31	abc	3,333	ef	0.22	ab	12	b
10 Cheniere ST + 15 lb Zn/A	371	a	2.4	a	0.263	c-g	1.31	abc	3,280	ef	0.24	a	17	ab
11 Wells Seed trt only (1 lb Zn/A)	392	a	3.3	a	0.223	g	1.23	abc	2,837	f	0.21	ab	11	b
12 Wells ST + 15 lb Zn/A	351	a	2.7	a	0.225	g	1.23	abc	3,729	def	0.21	ab	18	ab
13 Jazzman Seed trt only (1 lb Zn/A)	397	a	3.3	a	0.230	g	1.34	abc	3,316	ef	0.20	ab	11	b
14 Jazzman ST + 15 lb Zn/A	339	a	2.1	a	0.238	fg	1.66	a	3,945	def	0.21	ab	19	ab
15 Jupiter Seed trt only (1 lb Zn/A)	420	a	3.5	a	0.295	a-e	1.48	abc	5,369	abc	0.22	ab	15	ab
16 Jupiter ST + 15 lb Zn/A	411	a	2.8	a	0.290	a-f	1.47	abc	5,485	ab	0.24	a	20	ab
17 Neptune Seed trt only (1 lb Zn/A)	362	a	3.3	a	0.235	fg	1.08	c	4,103	def	0.21	ab	11	b
18 Neptune ST + 15 lb Zn/A	320	a	2.1	a	0.248	efg	1.18	bc	6,163	a	0.21	ab	15	ab
19 CL261 Seed trt only (1 lb Zn/A)	388	a	3.8	a	0.325	a	1.62	ab	4,468	cde	0.21	ab	15	ab
20 CL261 ST + 15 lb Zn/A	376	a	3.3	a	0.315	abc	1.63	ab	4,799	bcd	0.21	ab	22	a
LSD (P=.05)	106		1.1		0.035		0.26		765		0.02		5	
Standard Deviation	75		0.8		0.025		0.18		541		0.01		4	
CV	20		25.7		9.130		13.32		14		6.77		22	

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.

Nutritional Studies in Evangeline Parish

Experiment number	10-RF-01 to 10-RF-04 and 10-RF-06
Site and design	
Location/Cooperator	Evangeline Parish/Richard Fontenot
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	6.4
Extractable nutrients ppm	Ca-882; Cu-1.43; Mg-137; P-11.5; K-62.6; Na-52.9; S-5.4; Zn-1.64
Crop/Variety	Rice / CL151
Planting method/date	Drill seeded / April 7
Seeding rate/depth	33 seeds/ft^2 / .5 inches
Emergence date	April 17
Harvest date	August 11
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, May 10
Water management	
Flush	
Flood	May 11
Drain	July 26
Pest management	
Herbicides	1 gal/A Propanil + 1 oz/A Londax + .75 oz/A Permit, May 6 4 oz/A Newpath, May 10
Insecticides	0.137 lb ai/cwt Dermacor seed treatment 2 oz/A Karate, May 20
Fungicides	20 oz/A Stratego, June 24

Table 50. Evaluation of main and ratoon rice yield response to K fertilization. Evangeline Parish.

Crop Name					Rice		Rice		Rice				Rice	
Rating Date							8/11/2010		8/11/2010				8/11/2010	
Rating Type					50% HD		Height		Lodge				Yield	
Rating Unit					days		in		% plot		rate		lb/A	
Crop Stage Majority					Main		Main		Main				Main	
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage										
1	0 K2O (MC)	0	lb ai/A	ATPLAN	86	a	40	a	95	a	5	a	9,844	a
	0 lb K2O (RC)	0	lb ai/A	harv+14d										
2	0 K2O (MC)	0	lb ai/A	ATPLAN	86	a	41	a	90	a	4	a	9,707	a
	20 lb K2O @ 50% Head (RC)	20	lb ai/A	50% Head										
3	0 K2O (MC)	0	lb ai/A	ATPLAN	86	a	40	a	86	a	4	a	9,569	a
	20 lb K2O @ MC harv (RC)	20	lb ai/A	MC Harv										
4	0 K2O (MC)	0	lb ai/A	ATPLAN	86	a	43	a	86	a	4	a	10,200	a
	20 lb K2O @ Harv+14d (RC)	20	lb ai/A	harv+14d										
5	20 K2O (MC)	20	lb ai/A	ATPLAN	86	a	43	a	95	a	5	a	10,083	a
	0 lb K2O (RC)	0	lb ai/A	harv+14d										
6	20 K2O (MC)	20	lb ai/A	ATPLAN	86	a	41	a	83	a	5	a	10,244	a
	20 lb K2O @ 50% Head (RC)	20	lb ai/A	50% Head										
7	20 K2O (MC)	20	lb ai/A	ATPLAN	86	a	42	a	80	a	5	a	9,841	a
	20 lb K2O @ MC harv (RC)	20	lb ai/A	MC Harv										
8	20 K2O (MC)	20	lb ai/A	ATPLAN	86	a	41	a	79	a	5	a	9,803	a
	20 lb K2O @ Harv+14d (RC)	20	lb ai/A	harv+14d										
9	40 K2O (MC)	40	lb ai/A	ATPLAN	86	a	41	a	81	a	4	a	10,103	a
	0 lb K2O (RC)	0	lb ai/A											
10	40 K2O (MC)	40	lb ai/A	ATPLAN	86	a	41	a	95	a	5	a	10,626	a
	20 lb K2O @ 50% Head (RC)	20	lb ai/A	50% Head										
11	40 K2O (MC)	40	lb ai/A	ATPLAN	86	a	44	a	85	a	4	a	10,233	a
	20 lb K2O @ MC harv (RC)	20	lb ai/A	MC Harv										
12	40 K2O (MC)	40	lb ai/A	ATPLAN	86	a	43	a	89	a	4	a	10,196	a
	20 lb K2O @ Harv+14d (RC)	20	lb ai/A	harv+14d										
13	60 K2O (MC)	60	lb ai/A	ATPLAN	86	a	43	a	88	a	4	a	10,235	a
	0 lb K2O (RC)	0	lb ai/A											
14	60 K2O (MC)	60	lb ai/A	ATPLAN	86	a	42	a	83	a	4	a	10,252	a
	20 lb K2O @ 50% Head (RC)	20	lb ai/A	50% Head										
15	60 K2O (MC)	60	lb ai/A	ATPLAN	86	a	42	a	90	a	4	a	10,374	a
	20 lb K2O @ MC harv (RC)	20	lb ai/A	MC Harv										
16	60 K2O (MC)	60	lb ai/A	ATPLAN	86	a	43	a	74	a	4	a	10,330	a
	20 lb K2O @ Harv+14d (RC)	20	lb ai/A	harv+14d										
17	80 K2O (MC)	80	lb ai/A	ATPLAN	86	a	42	a	66	a	4	a	10,452	a
	0 lb K2O (RC)	0	lb ai/A											
18	80 K2O (MC)	80	lb ai/A	ATPLAN	86	a	42	a	84	a	4	a	10,574	a
	20 lb K2O @ 50% Head (RC)	20	lb ai/A	50% Head										
19	80 K2O (MC)	80	lb ai/A	ATPLAN	86	a	43	a	89	a	4	a	10,209	a
	20 lb K2O @ MC harv (RC)	20	lb ai/A	MC Harv										
20	80 K2O (MC)	80	lb ai/A	ATPLAN	86	a	42	a	86	a	4	a	10,379	a
	20 lb K2O @ Harv+14d (RC)	20	lb ai/A	harv+14d										
LSD (P=.05)					0		2		22		1		762	
Standard Deviation					0		2		15		1		539	
CV					0		4		18		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.
Note: Excessive lodging and drying of rice plants prior to harvesting limited ratoon regrowth; therefore, ratoon yields were not determined.

Table 51. Evaluation of ratoon rice yield response to P fertilization. Evangeline Parish.

Crop Name				Rice		Rice		Rice				Rice	
Rating Date						8/11/2010		8/11/2010				8/11/2010	
Rating Type				50% HD		Height		Lodge				Yield	
Rating Unit				days		in		% plot		rate		lb/A	
Crop Stage Majority				Main		Main		Main				Main	
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage									
1	0 P2O5 (MC)	0	lb ai/A	ATPLAN	86 a	42	a	90	a	5	a	9,310	a
	0 lb P2O5 (RC)	0	lb ai/A	harv+14d									
2	0 P2O5 (MC)	0	lb ai/A	ATPLAN	86 a	42	a	88	a	5	a	9,844	a
	20 lb P2O5 @ 50% Head(RC)	20	lb ai/A	50% Head									
3	0 P2O5 (MC)	0	lb ai/A	ATPLAN	86 a	42	a	80	a	4	a	10,215	a
	20 lb P2O5@ MC harv (RC)	20	lb ai/A	MC Harv									
4	0 P2O5 (MC)	0	lb ai/A	ATPLAN	87 a	42	a	79	a	5	a	9,660	a
	20 lb P2O5 @ Harv+14d(RC)	20	lb ai/A	harv+14d									
5	20 P2O5 (MC)	20	lb ai/A	ATPLAN	87 a	41	a	76	a	4	a	9,988	a
	0 lb P2O5 (RC)	0	lb ai/A										
6	20 P2O5 (MC)	20	lb ai/A	ATPLAN	87 a	41	a	88	a	5	a	10,102	a
	20 lb P2O5 @ 50% Head(RC)	20	lb ai/A	50% Head									
7	20 P2O5 (MC)	20	lb ai/A	ATPLAN	87 a	42	a	64	a	4	a	9,735	a
	20 lb P2O5@ MC harv (RC)	20	lb ai/A	MC Harv									
8	20 P2O5 (MC)	20	lb ai/A	ATPLAN	87 a	41	a	74	a	5	a	9,706	a
	20 lb P2O5 @ Harv+14d(RC)	20	lb ai/A	harv+14d									
9	40 P2O5 (MC)	40	lb ai/A	ATPLAN	87 a	42	a	88	a	5	a	9,980	a
	0 lb P2O5 (RC)	0	lb ai/A										
10	40 P2O5 (MC)	40	lb ai/A	ATPLAN	87 a	41	a	79	a	4	a	10,119	a
	20 lb P2O5 @ 50% Head(RC)	20	lb ai/A	50% Head									
11	40 P2O5 (MC)	40	lb ai/A	ATPLAN	86 a	42	a	78	a	5	a	9,495	a
	20 lb P2O5@ MC harv (RC)	20	lb ai/A	MC Harv									
12	40 P2O5 (MC)	40	lb ai/A	ATPLAN	87 a	43	a	73	a	5	a	9,835	a
	20 lb P2O5 @ Harv+14d(RC)	20	lb ai/A	harv+14d									
13	60 P2O5 (MC)	60	lb ai/A	ATPLAN	87 a	43	a	83	a	4	a	9,697	a
	0 lb P2O5 (RC)	0	lb ai/A										
14	60 P2O5 (MC)	60	lb ai/A	ATPLAN	87 a	42	a	75	a	4	a	10,236	a
	20 lb P2O5 @ 50% Head(RC)	20	lb ai/A	50% Head									
15	60 P2O5 (MC)	60	lb ai/A	ATPLAN	87 a	42	a	70	a	5	a	9,726	a
	20 lb P2O5@ MC harv (RC)	20	lb ai/A	MC Harv									
16	60 P2O5 (MC)	60	lb ai/A	ATPLAN	87 a	42	a	83	a	4	a	9,159	a
	20 lb P2O5 @ Harv+14d(RC)	20	lb ai/A	harv+14d									
17	80 P2O5 (MC)	80	lb ai/A	ATPLAN	86 a	43	a	73	a	4	a	10,178	a
	0 lb P2O5 (RC)	0	lb ai/A										
18	80 P2O5 (MC)	80	lb ai/A	ATPLAN	87 a	43	a	83	a	4	a	9,907	a
	20 lb P2O5 @ 50% Head(RC)	20	lb ai/A	50% Head									
19	80 P2O5 (MC)	80	lb ai/A	ATPLAN	87 a	42	a	69	a	4	a	9,772	a
	20 lb P2O5@ MC harv (RC)	20	lb ai/A	MC Harv									
20	80 P2O5 (MC)	80	lb ai/A	ATPLAN	87 a	43	a	75	a	5	a	9,972	a
	20 lb P2O5 @ Harv+14d(RC)	20	lb ai/A	harv+14d									
LSD (P=.05)					1		2	22			1	797	
Standard Deviation					1		1	15			1	564	
CV					1		3	20			15	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.
Note: Excessive lodging and drying of rice plants prior to harvesting limited ratoon regrowth; therefore, ratoon yields were not determined.

Table 52. Evaluation of Organolize as soil additive to increase P and K fertilizer efficiency (1.1). Evangeline Parish.

Crop Name					Rice		Rice		Rice				Rice	
Rating Date							8/11/2010		8/11/2010					
Rating Type					50% HD		Height		Lodge				Yield	
Rating Unit					days		in		% plot		rate		lb/A	
Crop Stage Majority					Main		Main		Main				Main	
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage										
1	Untreated Check (0)	0	lb/A	ATPLAN	87	a	41	a	89	a	4	a	9,636	a
2	Untreated Check (20)	0	lb/A	ATPLAN	87	a	41	a	84	a	5	a	9,885	a
3	Organolize 50 lb/A	50	lb/A	ATPLAN	87	a	40	a	69	a	4	a	10,154	a
4	Organolize 100 lb/A	100	lb/A	ATPLAN	86	a	40	a	83	a	4	a	10,087	a
5	Organolize 200 lb/A	200	lb/A	ATPLAN	87	a	40	a	88	a	5	a	9,639	a
6	Organolize 1000 lb/A	1000	lb/A	ATPLAN	87	a	41	a	79	a	4	a	10,356	a
7	Untreated Check (40)	0	lb/A	ATPLAN	87	a	42	a	89	a	4	a	9,926	a
8	Organolize 50 lb/A	50	lb/A	ATPLAN	87	a	42	a	85	a	4	a	10,019	a
9	Organolize 100 lb/A	100	lb/A	ATPLAN	87	a	41	a	51	a	3	a	10,188	a
10	Organolize 200 lb/A	200	lb/A	ATPLAN	87	a	42	a	70	a	4	a	10,370	a
11	Organolize 1000 lb/A	1000	lb/A	ATPLAN	87	a	42	a	83	a	4	a	10,148	a
12	Untreated Check (60)	0	lb/A	ATPLAN	88	a	41	a	74	a	4	a	10,045	a
LSD (P=.05)					2		2		25		1		546	
Standard Deviation					1		1		17		1		378	
CV					1		3		22		22		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 53. Determine the influence of Zn fertilization on rice yields and uptake in rice. Determine critical soil test and plant tissue levels (3.1). Evangeline Parish.

Crop Name					Rice		Rice		Rice		Rice				Rice	
Description					Mid-till											
Rating Date					6/10/2010				8/11/2010		8/11/2010				8/11/2010	
Rating Type					Biomass		50% HD		Height		Lodge				Yield	
Rating Unit					g		days		in		% plot		rate		lb/A	
Sample Size, Unit					1 ft											
Collection Basis, Unit					1 row											
Crop Stage Majority					Main		Main		Main		Main				Main	
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage												
1	Zn Sulfate	0	lb ai/A	ATPLAN	39.7	a	87	a	40	a	35	a	2	a	9,641	a
	21-0-0	150	lb ai/A	3-4 leaf												
2	Zn Sulfate	5	lb ai/A	ATPLAN	50.8	a	87	a	41	a	40	a	3	a	9,814	a
	21-0-0	150	lb ai/A	3-4 leaf												
3	Zn Sulfate	10	lb ai/A	ATPLAN	48.4	a	87	a	41	a	33	a	2	a	9,699	a
	21-0-0	150	lb ai/A	3-4 leaf												
4	Zn Sulfate	15	lb ai/A	ATPLAN	45.9	a	87	a	41	a	35	a	3	a	9,857	a
	21-0-0	150	lb ai/A	3-4 leaf												
5	Zn Sulfate	20	lb ai/A	ATPLAN	43.1	a	87	a	41	a	10	a	1	a	9,981	a
	21-0-0	150	lb ai/A	3-4 leaf												
6	Zn Sulfate	0	lb ai/A	ATPLAN	39.2	a	88	a	42	a	50	a	3	a	10,092	a
	46-0-0	150	lb ai/A	ATPLAN												
7	Zn Sulfate	5	lb ai/A	ATPLAN	42.0	a	88	a	42	a	33	a	2	a	9,935	a
	46-0-0	150	lb ai/A	ATPLAN												
8	Zn Sulfate	10	lb ai/A	ATPLAN	37.5	a	88	a	41	a	45	a	1	a	9,993	a
	46-0-0	150	lb ai/A	ATPLAN												
9	Zn Sulfate	15	lb ai/A	ATPLAN	45.7	a	88	a	41	a	50	a	2	a	10,027	a
	46-0-0	150	lb ai/A	ATPLAN												
10	Zn Sulfate	20	lb ai/A	ATPLAN	40.8	a	88	a	41	a	23	a	2	a	10,139	a
	46-0-0	150	lb ai/A	ATPLAN												
LSD (P=.05)					14.4		1		1		32		1		480	
Standard Deviation					9.9		0		1		20		1		331	
CV					22.9		0		2		56		39		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 53. Continued.

Crop Name					Rice												
Description					Tissue Samples												
Rating Date					6/10/2010												
Rating Type					Al	B	Ca	Cu	Fe	Mg	Mn	Mo	P	K	Na	S	Zn
Rating Unit					ppm	ppm	%	ppm	ppm	%	ppm	ppm	%	%	ppm	%	ppm
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage													
1	Zn Sulfate	0	lb ai/A	ATPLAN	131 a	4.8 a	0.25 a	3.2 a	259 a	0.21 ab	790 a	1.68 bcd	0.32 a	1.4 a	6,441 a	0.18 a	35 a
	21-0-0	150	lb ai/A	3-4 leaf													
2	Zn Sulfate	5	lb ai/A	ATPLAN	335 a	5.1 a	0.26 a	4.0 a	554 a	0.21 ab	929 a	1.52 cd	0.30 a	1.5 a	5,862 a	0.17 a	36 a
	21-0-0	150	lb ai/A	3-4 leaf													
3	Zn Sulfate	10	lb ai/A	ATPLAN	234 a	5.2 a	0.26 a	4.2 a	362 a	0.20 b	901 a	1.40 d	0.30 a	1.8 a	4,921 a	0.19 a	37 a
	21-0-0	150	lb ai/A	3-4 leaf													
4	Zn Sulfate	15	lb ai/A	ATPLAN	227 a	5.0 a	0.26 a	4.1 a	366 a	0.21 ab	885 a	1.79 bcd	0.32 a	1.6 a	5,419 a	0.20 a	44 a
	21-0-0	150	lb ai/A	3-4 leaf													
5	Zn Sulfate	20	lb ai/A	ATPLAN	234 a	4.9 a	0.25 a	3.8 a	383 a	0.21 ab	875 a	1.92 bcd	0.31 a	1.5 a	6,289 a	0.18 a	41 a
	21-0-0	150	lb ai/A	3-4 leaf													
6	Zn Sulfate	0	lb ai/A	ATPLAN	271 a	5.2 a	0.24 a	3.3 a	373 a	0.22 ab	725 a	3.84 a	0.33 a	1.6 a	5,665 a	0.18 a	37 a
	46-0-0	150	lb ai/A	ATPLAN													
7	Zn Sulfate	5	lb ai/A	ATPLAN	291 a	5.4 a	0.25 a	3.7 a	402 a	0.23 ab	785 a	4.03 a	0.34 a	1.4 a	6,603 a	0.18 a	39 a
	46-0-0	150	lb ai/A	ATPLAN													
8	Zn Sulfate	10	lb ai/A	ATPLAN	149 a	5.1 a	0.25 a	3.8 a	258 a	0.24 a	867 a	3.28 abc	0.34 a	1.4 a	6,725 a	0.18 a	38 a
	46-0-0	150	lb ai/A	ATPLAN													
9	Zn Sulfate	15	lb ai/A	ATPLAN	459 a	5.1 a	0.25 a	3.5 a	584 a	0.23 ab	835 a	3.41 ab	0.33 a	1.5 a	6,366 a	0.18 a	44 a
	46-0-0	150	lb ai/A	ATPLAN													
10	Zn Sulfate	20	lb ai/A	ATPLAN	100 a	5.1 a	0.26 a	3.6 a	232 a	0.23 ab	866 a	2.34 a-d	0.31 a	1.4 a	5,999 a	0.18 a	38 a
	46-0-0	150	lb ai/A	ATPLAN													
LSD (P=.05)					357	0.5	0.03	0.7	362	0.02	183	1.21	0.03	0.4	1451	0.02	7
Standard Deviation					246	0.4	0.02	0.5	250	0.01	126	0.83	0.02	0.2	1000	0.01	5
CV					101	7.1	8.51	13.8	66	6.80	15	33.05	5.49	16.4	17	7.89	12

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 54. Effect of Avail treated TSP vs. untreated TSP on rice yields at four different rates of P_2O_5. Evangeline Parish.

Crop Name					Rice		Rice		Rice				Rice
Rating Date							8/11/2010		8/11/2010				8/11/2010
Rating Type					50% HD		Height		Lodge				Yield
Rating Unit					days		in		% plot		rate		lb/A
Crop Stage Majority					Main		Main		Main				Main
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage									
1	UTC	0	lb ai/A	2-3 leaf	86	a	40	ab	89	a	5	a	9,821
2	25 lb P_2O_5/A	25	lb ai/A	2-3 leaf	86	a	40	ab	90	a	5	a	9,512
3	25 lb P_2O_5/A + Avail	25	lb ai/A	2-3 leaf	86	a	40	ab	91	a	5	a	9,806
4	50 lb P_2O_5/A	50	lb ai/A	2-3 leaf	86	a	40	ab	89	a	5	a	9,571
5	50 lb P_2O_5/A + Avail	50	lb ai/A	2-3 leaf	86	a	42	a	86	a	5	a	9,754
6	75 lb P_2O_5/A	75	lb ai/A	2-3 leaf	86	a	40	ab	94	a	5	a	10,034
7	75 lb P_2O_5/A + Avail	75	lb ai/A	2-3 leaf	86	a	41	ab	95	a	5	a	9,704
8	100 lb P_2O_5/A	100	lb ai/A	2-3 leaf	86	a	41	ab	95	a	5	a	9,025
9	100 lb P_2O_5/A + Avail	100	lb ai/A	2-3 leaf	86	a	39	b	94	a	5	a	9,526
LSD (P=.05)					0		1		11		1		913
Standard Deviation					0		1		7		0		625
CV					0		2		8		10		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.

CULTURAL MANAGEMENT RESEARCH

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

Cultural Management Research

During the 2010 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 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 pounds of seed per acre, 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 of urea.

In the CL111 trial, the main effect of tillage was only significant for ratoon yield. Ratoon yields were 137 lb/A higher in the stale seedbed tillage system. Plant population at the 2- to 3-leaf development stage increased linearly from 3 to 22.9 plants/ft^2 from the lowest to the highest seeding rate. Yield was not statistically influenced by seeding rate; however, a numerical increase was evident from the 5 to the 10 seed/ft^2 rate and again from the 10 to 15 seed/ft^2 seeding rate. Filled grains per panicle decreased with increasing seeding rates from the 5 to 20 seed/ft^2 rate and were similar at higher seeding rates. The number of panicle producing tillers decreased from 11 panicles at the 5 seed/ft^2 seeding rate to 2 tillers at seeding rates of 35 seed/ft^2 and above.

In the CL151 trial, the main effect of tillage was significant for days to 50% heading, lodging rate, and ratoon yield. Days to 50% heading was longer, lodging was slightly less, and ratoon yields were increased by 339 lb/A in the stale seedbed tillage system compared with conventional tillage. Plant population at the 2- to 3-leaf development stage increased linearly from 2.4 to 15.1 plants/ft^2 from the lowest to the highest seeding rate. It should be noted that the CL151 seed used for this study was 2-year old seed that was taken from cold storage and had a lower germ compared with the other varieties. This explains the lower number of plants at the 2- to 3-leaf stage of development compared to the other varieties tested. In general, lodging increased as seeding rates increased. Grain yield increased from the 5 to 10 seed/ft^2 seeding rate and remained similar at higher seeding rates. Filled grains per panicle decreased from 156 grains/panicle to 135 grains/panicle at the 5 and 10 seed/ft^2 seeding rates, respectively. The number of panicle producing tillers decreased from 12 panicles at the 5 seed/ft^2 seeding rate to 3 tillers at seeding rates of 35 seed/ft^2 and above.

In the CL131 trial, the main effect of tillage was significant for days to 50% heading, grain moisture of the first crop, and ratoon yield. Days to 50% heading was 2 days longer, first crop grain moisture was only slightly higher, and ratoon yields were increased by 189 lb/A in the stale seedbed tillage system compared with conventional tillage. Plant population at the 2- to 3-leaf development stage increased linearly from 2.6 to 21.5 plants/ft^2 from the lowest to the highest seeding rate. Grain yield increased from the 5 to 10 seed/ft^2 seeding rate and remained similar at higher seeding rates. Filled grains per panicle decreased from 108 grains/panicle to 92 grains/panicle at the 5 to 15 seed/ft^2 seeding rates, respectively. The number of panicle producing tillers decreased from 21 panicles at the 5 seed/ft^2 seeding rate to 9 tillers at 10 seed/ft^2 and subsequently decreased to 4 (or less) panicles at seeding rates of 25 seed/ft^2 and above.

In the CL142 trial, the main effect of tillage was not significant for any of the measured response variables. Plant population at the 2- to 3-leaf development stage increased linearly from 3.6 to 24.7 plants/ft^2 from the lowest to highest seeding rate. Grain yield increased from the 5 to 10 seed/ft^2 seeding rate and again between the 10 seed/ft^2 to the 45 seed/ft^2 rate. Filled grains per panicle decreased from 157 grains/panicle to 116 grains/panicle at the 5 to 15 seed/ft^2 seeding rates, respectively. The number of panicle producing tillers decreased from 6 panicles at the 5 seed/ft^2 seeding rate to 4 tillers at 10 seed/ft^2 and subsequently decreased to 3 (or less) panicles at seeding rates of 15 seed/ft^2 and above.

In the CL181 trial, the main effect of tillage was not significant for any of the measured response variables. Plant population at the 2- to 3-leaf development stage increased linearly from 3.8 to 25.2 plants/ft^2 from the lowest to the highest seeding rate. Grain yield increased from the 5 to 10 seed/ft^2 seeding rate and again between the 10 seed/ft^2 to the 40 seed/ft^2 rate. Filled grains per panicle decreased from 115 grains/panicle to 94 grains/panicle at the

5 to 25 seed/ft^2 seeding rates, respectively. The number of panicle producing tillers decreased from 9 panicles at the 5 seed/ft^2 seeding rate to 6 tillers at 10 seed/ft^2 and subsequently decreased to 5 (or less) panicles at seeding rates of 15 seed/ft^2 and above.

In the CL261 trial, the main effect of tillage was not significant for any of the measured response variables. Plant population at the 2- to 3-leaf development stage increased linearly from 2.5 to 24.0 plants/ft^2 from the lowest to the highest seeding rate. Grain yield was not statistically different between seeding rates; however, numerical increase in grain yield was evident between the 5 and 10 seed/ft^2 seeding rates. Filled grains per panicle decreased from 128 grains/panicle to 118 grains/panicle between the 5 and 10 seed/ft^2 rates. The number of panicle producing tillers decreased from 12 panicles at the 5 seed/ft^2 seeding rate to 5 tillers at 10 seed/ft^2 and subsequently decreased to 4 (or less) panicles at seeding rates of 15 seed/ft^2 and above.

Two trials were initiated in 2009 and continued in 2010 to evaluate the effects of tillage system selection on optimum seeding rates of Catahoula and Neptune rice. Two tillage systems (conventional and fall stale seedbed) and six seeding rates (5, 10, 20, 30, 40 and 50 seed/ft^2) were used in the study. In the Catahoula trial, mean grain yield was not different between the conventional (9,582 lb/A) and the stale seedbed (9,508 lb/A). Mean grain yield was affected by (P<0.001) by seeding rate. Mean grain yield was 7,940, 9,304, 9,937, 10,047, 9,939, and 10,105 lb/A for the 5, 10, 20, 30, 40, and 50 seed/ft^2 treatments (LSD = 319 lb/A), respectively. Yield was optimized at a seeding rate of 20 seed/ft^2. In the Neptune trial, mean grain yield was not different between the conventional (10,031 lb/A) and the stale seedbed (10,080 lb/A). Mean grain yield was affected by (P<0.001) by seeding rate. Mean grain yield was 8,830, 9,574, 10,135, 10,361, 10,627, and 10,805 lb/A for the 5, 10, 20, 30, 40, and 50 seed/ft^2 treatments (LSD = 450 lb/A), respectively. Yield was optimized at 40 seed/ft^2.

A study was established in 2010 to evaluate the combined effects of stubble management practices and ratoon fungicide applications on ratoon rice grain yield. 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 flail mowing to approximately 8 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. Significant differences in grain yield were not observed between fungicide treatments. CL131 had significantly higher yield compared (P<0.001) with Catahoula. CL131 and Catahoula ratoon grain yields were 2,074 lb/A and 918 lb/A, respectively. Ratoon grain yield was altered (P=0.054) due to stubble management.

Evaluation of Stubble Management Practices and Fungicide Use on Ratoon Yields

Experiment number	10-CM-23
Site and design	
Location/Cooperator	Rice Research Station (Crowley Main)
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	Crowley silt loam
% organic matter	1.021
pH	7.6
Extractable nutrients ppm	Ca-1,214; Cu-1.62; Mg-218; P-4.13; K-48.7; Na-85.3; S-6.48; Zn-4.66
Crop/Variety	Rice / Catahoula & CL131
Planting method/date	Drill seeded / March 14
Seeding rate/depth	33 seeds/ft^2 / 1 inch
Emergence date	April 1
Harvest date	August 4
Ratoon harvest date	November 5
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, March 16 150 lb N/A 46-0-0, April 28
Water management	
Flush	April 8
Flood	April 30
Drain	July 22
Ratoon flood	August 10
Ratoon drain	October 22
Pest management	
Herbicides	1 gal/A Propanil + 1 oz/A Londax + ¾ oz/A Permit, April 15 1 gal/A Rice Beaux + 1 oz/A Londax + ½ oz/A Permit, April 28 1 qt/A 2,4-D, August 9
Insecticides	0.137 lb ai/cwt Dermacor seed treatment
Fungicides	19 oz/A Stratego, June 24

Table 1. Evaluation of stubble management practices and fungicide use 4WAH on CL131 and Catahoula ratoon yields and disease pressure (1.1). Rice Research Station.

Crop Name					Rice	Rice	Rice	Rice	Rice	Rice	Rice
Rating Date						7/28/2010			10/18/2010	11/4/2010	
Rating Type					50% HD	Height	Yield	50% HD	Disease	Yield	Yield
Rating Unit					days	in	lb/A	days	0-9	lb/A	lb/A
Crop Stage Majority					Main	Main	Main	Ratoon	Ratoon	Ratoon	Total
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage							
1	w/o QuiltXL Norm harv ht(16") CL131	0	fl oz/A	4WPH	105 b	38 b	9,266 a	49 ab	5.5 ab	1,801 bc	11,067 b-e
2	w/o QuiltXL Norm harv ht(16") Catahoula	0	fl oz/A	4WPH	106 a	41 a	8,918 a	48 b	6.0 a	1,059 cde	9,977 de
3	w/o QuiltXL Low harv ht (8") CL131	0	fl oz/A	4WPH	105 b	37 b	9,089 a	49 ab	4.3 b-e	2,933 a	12,022 b
4	w/o QuiltXL Low harv ht (8") Catahoula	0	fl oz/A	4WPH	106 a	41 ab	9,684 a	49 ab	3.8 cde	1,264 cde	10,948 b-e
5	w/o QuiltXL flail mowed (=<8") CL131	0	fl oz/A	4WPH	105 b	37 b	9,968 a	50 ab	4.0 b-e	1,578 bcd	11,547 b-e
6	w/o QuiltXL flail mowed (=<8") Catahoula	0	fl oz/A	4WPH	106 a	40 ab	9,754 a	51 a	3.8 cde	615 e	10,369 b-e
7	w/o QuiltXL rolled (16") CL131	0	fl oz/A	4WPH	105 b	38 b	9,655 a	50 ab	4.8 a-d	1,616 bcd	11,272 b-e
8	w/o QuiltXL rolled (16") Catahoula	0	fl oz/A	4WPH	106 a	41 ab	9,223 a	50 ab	4.3 b-e	571 e	9,794 e

Continued.

Table 1. Continued.

Crop Name					Rice	Rice	Rice	Rice	Rice	Rice	Rice
Rating Date						7/28/2010			10/18/2010	11/4/2010	
Rating Type					50% HD	Height	Yield	50% HD	Disease	Yield	Yield
Rating Unit					days	in	lb/A	days	0-9	lb/A	lb/A
Crop Stage Majority					Main	Main	Main	Ratoon	Ratoon	Ratoon	Total
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage							
9	QuiltXL Norm harv ht(16") CL131	21	fl oz/A	4WPH	105 b	37 b	9,609 a	49 ab	4.5 b-e	2,262 b	11,871 bc
10	QuiltXL Norm harv ht(16") Catahoula	21	fl oz/A	4WPH	106 a	42 a	9,238 a	48 b	5.3 abc	1,256 cde	10,494 b-e
11	QuiltXL Low harv ht (8") CL131	21	fl oz/A	4WPH	105 b	37 b	10,200 a	49 ab	4.3 b-e	3,081 a	13,281 a
12	QuiltXL Low harv ht (8") Catahoula	21	fl oz/A	4WPH	106 a	41 ab	8,844 a	49 ab	3.5 de	1,275 cde	10,118 cde
13	QuiltXL flail mowed (=<8") CL131	21	fl oz/A	4WPH	105 b	37 b	9,959 a	51 a	3.3 de	1,806 bc	11,764 bcd
14	QuiltXL flail mowed (=<8") Catahoula	21	fl oz/A	4WPH	106 a	41 a	10,308 a	50 ab	3.3 de	854 de	11,162 b-e
15	QuiltXL rolled (16") CL131	21	fl oz/A	4WPH	105 b	37 b	9,861 a	51 a	3.8 cde	1,518 bcd	11,378 b-e
16	QuiltXL rolled (16") Catahoula	21	fl oz/A	4WPH	106 a	42 a	9,554 a	51 a	3.0 e	446 e	10,000 de
LSD (P=.05)					0	2	897	1	1.0	539	1072
Standard Deviation					0	2	628	1	0.7	377	750
CV					0	4	7	2	16.4	25	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.

Evaluation of the Interaction of Seeding Rate and Tillage System for Drill-Seeded Rice

Experiment number ....: 10-CM-24 and 10-CM-25

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** ....: 1.157
- **pH** ....: 7.1
- **Extractable nutrients** ppm ....: Ca-1,050; Cu-1.57; Mg-240; P-5.63; K-62.4; Na-83.0; S-7.40; Zn-4.13

Crop/Variety ....: Rice / See Data Sheet
- **Planting method/date** ....: Drill seeded / March 13
- **Seeding rate/depth** ....: 5, 10, 20, 30, 40, and 50 seeds/ft^2 / 1 inch
- **Emergence date** ....: Fall Stale, March 30; Conventional, April 1
- **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, March 16
150 lb N/A 46-0-0, April 28
90 lb N/A 46-0-0, August 9

Water management ....:
- **Flush** ....: April 8
- **Flood** ....: April 29
- **Drain** ....: July 21
- **Ratoon flood** ....: August 10
- **Ratoon drain** ....: October 18

Pest management ....:
- **Herbicides** ....: 1 gal/A Propanil + 1 oz/A Londax + ¾ oz/A Permit, April 15
1 gal/A Rice Beaux + 1 oz/A Londax + ½ oz/A Permit, April 28
1 qt/A 2,4-D, 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** ....: 19 oz/A Stratego, June 24

Table 2. Evaluation of the interaction of seeding rate and tillage system for drill-seeded Catahoula rice (3.1). Rice Research Station.

Crop Name					Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice
Rating Date					4/13/2010		7/27/2010	8/7/2010	8/7/2010		11/4/2010	11/4/2010	
Rating Type					Stand Cnt	50% HD	Height	Yield	TestWt	50% HD	Testwt	Yield	Yield
Rating Unit					number	days	in	lb/A	lb/bu	days	lb/bu	lb/A	lb/A
Sample Size, Unit					10 ft								
Collection Basis, Unit					1 row								
Crop Stage Majority					Main	Main	Main	Main	Main	Ratoon	Ratoon	Ratoon	Total
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage									
1	Conventional tillage			PREPLA	15 g	107 ab	42 a	7,923 d	40.6 c	39	46 a	1,173 c	9,095 c
	5 seed/sq foot	12	lb/A	ATPLAN									
2	Conventional tillage			PREPLA	30 g	107 ab	42 a	9,389 bc	40.8 bc	39	46 a	1,610 ab	10,999 b
	10 seed/sq foot	24	lb/A	ATPLAN									
3	Conventional tillage			PREPLA	59 ef	106 ab	42 a	9,930 ab	40.8 bc	39	46 a	1,850 a	11,781 a
	20 seed/sq foot	48	lb/A	ATPLAN									
4	Conventional tillage			PREPLA	81 de	105 b	42 a	10,186 a	41.0 ab	39	46 a	2,046 a	12,232 a
	30 seed/sq foot	72	lb/A	ATPLAN									
5	Conventional tillage			PREPLA	107 bcd	104 b	42 a	10,049 a	41.1 ab	39	46 a	1,705 a	11,753 a
	40 seed/sq foot	96	lb/A	ATPLAN									
6	Conventional tillage			PREPLA	118 bc	105 b	42 a	10,016 a	41.0 ab	39	46 a	1,967 a	11,984 a
	50 seed/sq foot	120	lb/A	ATPLAN									
7	Stale seedbed			PREPLA	19 g	109 a	40 a	7,957 d	40.3 d	39	45 a	1,240 bc	9,197 c
	5 seed/sq foot	12	lb/A	ATPLAN									
8	Stale seedbed			PREPLA	38 fg	108 ab	42 a	9,218 c	40.6 c	39	46 a	1,635 ab	10,853 b
	10 seed/sq foot	24	lb/A	ATPLAN									
9	Stale seedbed			PREPLA	65 e	105 b	43 a	9,944 ab	41.0 ab	39	46 a	1,830 a	11,774 a
	20 seed/sq foot	48	lb/A	ATPLAN									
10	Stale seedbed			PREPLA	95 cd	105 b	42 a	9,909 ab	40.9 bc	39	46 a	1,975 a	11,884 a
	30 seed/sq foot	72	lb/A	ATPLAN									
11	Stale seedbed			PREPLA	125 b	104 b	42 a	9,828 ab	41.0 ab	39	46 a	1,909 a	11,737 a
	40 seed/sq foot	96	lb/A	ATPLAN									
12	Stale seedbed			PREPLA	152 a	105 b	42 a	10,193 a	41.2 a	39	46 a	2,155 a	12,348 a
	50 seed/sq foot	120	lb/A	ATPLAN									
LSD (P=.05)					22	2	3	414	0.2	.	1	334	531
Standard Deviation					15	1	2	287	0.2	.	0	231	368
CV					20	1	4	3	0.4	.	1	13	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 2. Continued.

Crop Name		Rice												
Description		Yield Components												
Rating Date		7/30/2010												
Rating Type		WP dry wt.		Panicle #		Grain wt.		10 P wt.		10 P seed		Milling		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 tillage 5 seed/ft^2	693.3	a	95	a	262.1	a	47.10	a	2,151	a	60.86	a	72.33 bc
2	Conventional tillage 10 seed/ft^2	657.1	a	98	a	275.4	a	46.51	a	2,099	ab	61.66	a	72.81 abc
3	Conventional tillage 20 seed/ft^2	783.3	a	123	a	347.6	a	40.43	ab	1,824	a-d	61.50	a	72.94 abc
4	Conventional tillage 30 seed/ft^2	708.9	a	117	a	300.6	a	41.90	ab	1,860	a-d	62.12	a	73.04 abc
5	Conventional tillage 40 seed/ft^2	828.5	a	154	a	368.5	a	34.58	ab	1,568	bcd	62.39	a	73.26 ab
6	Conventional tillage 50 seed/ft^2	711.0	a	141	a	315.9	a	30.87	b	1,385	d	62.17	a	73.19 abc
7	Stale seedbed 5 seed/ft^2	733.5	a	108	a	296.3	a	44.06	a	2,002	abc	61.04	a	72.27 c
8	Stale seedbed 10 seed/ft^2	718.7	a	106	a	350.3	a	41.14	ab	1,848	a-d	61.32	a	73.00 abc
9	Stale seedbed 20 seed/ft^2	711.4	a	116	a	317.1	a	37.87	ab	1,710	a-d	61.74	a	73.10 abc
10	Stale seedbed 30 seed/ft^2	737.7	a	141	a	317.4	a	34.08	ab	1,532	cd	62.65	a	73.35 a
11	Stale seedbed 40 seed/ft^2	712.2	a	145	a	299.3	a	34.24	ab	1,482	cd	61.62	a	73.11 abc
12	Stale seedbed 50 seed/ft^2	722.8	a	147	a	313.3	a	34.34	ab	1,509	cd	61.59	a	73.05 abc
LSD (P=.05)		173.9		33		87.8		7.75		351		1.67		0.57
Standard Deviation		102.7		20		51.8		4.58		207		0.98		0.33
CV		14.1		16		16.5		11.76		12		1.59		0.46

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. Evaluation of the interaction of seeding rate and tillage system for drill-seeded Neptune rice (3.1). Rice Research Station.

Crop Name					Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice	Rice
Description					2-3 leaf								
Rating Date					4/13/2010		7/27/2010	8/9/2010	8/9/2010		11/4/2010	11/4/2010	
Rating Type					Stand Cnt	50% HD	Height	Test Wt	Yield	50% HD	Test Wt	Yield	Yield
Rating Unit					number	days	in	lb/bu	lb/A	days	lb/bu	lb/A	lb/A
Sample Size, Unit					10ft								
Collection Basis, Unit					1 row								
Crop Stage Majority					Main	Main	Main	Main	Main	Ratoon	Ratoon	Ratoon	Total
Trt No.	Trt Name	Rate	Rate Unit	Growth Stage									
1	Conventional tillage			PREPLA	24 e	112 a	35 a	41 ef	8,712 d	39	46 a	3,649 c	12,361 e
	5 seed/ft^2	12	lb/A	ATPLAN									
2	Conventional tillage			PREPLA	39 e	112 ab	37 a	42 def	9,807 bc	39	46 a	4,100 abc	13,907 cd
	10 seed/ft^2	24	lb/A	ATPLAN									
3	Conventional tillage			PREPLA	84 d	110 abc	38 a	42 a-d	10,286 ab	39	46 a	4,378 abc	14,664 a-d
	20 seed/ft^2	48	lb/A	ATPLAN									
4	Conventional tillage			PREPLA	117 cd	110 abc	37 a	42 abc	10,208 b	39	46 a	4,617 abc	14,825 abc
	30 seed/ft^2	72	lb/A	ATPLAN									
5	Conventional tillage			PREPLA	160 ab	109 c	37 a	42 ab	10,637 ab	39	46 a	4,817 ab	15,453 ab
	40 seed/ft^2	96	lb/A	ATPLAN									
6	Conventional tillage			PREPLA	187 a	109 c	38 a	43 a	10,536 ab	39	46 a	4,717 ab	15,252 abc
	50 seed/ft^2	120	lb/A	ATPLAN									
7	Stale seedbed			PREPLA	22 e	112 a	37 a	41 f	8,949 d	39	46 a	3,798 bc	12,747 e
	5 seed/ft^2	12	lb/A	ATPLAN									
8	Stale seedbed			PREPLA	39 e	111 abc	36 a	42 def	9,342 cd	39	46 a	4,150 abc	13,492 de
	10 seed/ft^2	24	lb/A	ATPLAN									
9	Stale seedbed			PREPLA	85 d	111 abc	37 a	42 b-e	9,984 bc	39	46 a	4,326 abc	14,310 bcd
	20 seed/ft^2	48	lb/A	ATPLAN									
10	Stale seedbed			PREPLA	117 cd	110 bc	37 a	42 c-f	10,513 ab	39	46 a	4,668 ab	15,181 abc
	30 seed/ft^2	72	lb/A	ATPLAN									
11	Stale seedbed			PREPLA	135 bc	109 c	37 a	42 ab	10,617 ab	39	46 a	4,445 abc	15,062 abc
	40 seed/ft^2	96	lb/A	ATPLAN									
12	Stale seedbed			PREPLA	191 a	109 bc	38 a	43 a	11,074 a	39	46 a	5,027 a	16,101 a
	50 seed/ft^2	120	lb/A	ATPLAN									
LSD (P=.05)					30	1	3	0	562	.	0	625	943
Standard Deviation					21	1	1	0	389	.	0	433	653
CV					21	1	4	1	4	.	1	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 3. Continued.

Crop Name		Rice						
Description		Yield Components						
Rating Date		8/5/2010						
Rating Type		WP dry wt.	Panicle #	Grain wt.	10 P wt.	10 P seed	Milling	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 tillage 5 seed/ft^2	768.1 a	110 c	359.7 a	34.14 a	1378 a	65.27 ab	69.74 ab
2	Conventional tillage 10 seed/ft^2	804.5 a	142 abc	376.8 a	33.01 a	1377 a	65.44 ab	69.72 ab
3	Conventional tillage 20 seed/ft^2	932.5 a	153 abc	430.1 a	33.24 a	1327 a	65.21 ab	69.78 ab
4	Conventional tillage 30 seed/ft^2	847.3 a	144 abc	393.0 a	35.61 a	1422 a	65.14 ab	69.83 ab
5	Conventional tillage 40 seed/ft^2	923.5 a	180 a	432.2 a	30.07 a	1137 a	65.88 a	69.87 ab
6	Conventional tillage 50 seed/ft^2	893.0 a	178 ab	418.0 a	32.75 a	1261 a	65.37 ab	69.79 ab
7	Stale seedbed 5 seed/ft^2	832.7 a	134 abc	398.6 a	33.66 a	1354 a	64.50 b	69.10 b
8	Stale seedbed 10 seed/ft^2	817.7 a	128 bc	397.1 a	39.44 a	1566 a	64.56 ab	69.13 b
9	Stale seedbed 20 seed/ft^2	789.2 a	135 abc	376.3 a	35.01 a	1387 a	64.68 ab	69.50 ab
10	Stale seedbed 30 seed/ft^2	782.9 a	146 abc	369.1 a	31.46 a	1199 a	65.42 ab	69.60 ab
11	Stale seedbed 40 seed/ft^2	801.2 a	166 ab	394.1 a	30.05 a	1172 a	65.49 ab	70.19 a
12	Stale seedbed 50 seed/ft^2	846.7 a	181 a	384.4 a	31.06 a	1201 a	64.93 ab	69.33 ab
LSD (P=.05)		131.3	30	69.3	7.31	334	0.78	0.61
Standard Deviation		77.6	18	40.9	4.32	198	0.46	0.36
CV		9.3	12	10.4	12.97	15	0.71	0.51

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.

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

Experiment number ....: 10-CM-26 to 10-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** ....: 1.157
- **pH** ....: 7.1
- **Extractable nutrients** ppm ....: Ca-1,050; Cu-1.57; Mg-240; P-5.63; K-62.4; Na-83.0; S-7.40; Zn-4.13

Crop/Variety ....: Rice / See Data Sheet
- **Planting method/date** ....: Drill seeded / March 13
- **Seeding rate/depth** ....: 5, 10, 15, 20, 25, 30, 35, 40, and 45 seeds/ft^2 / Stale, 3/4 inch; Conventional, 1 inch
- **Emergence date** ....: Fall Stale, March 30; Conventional, April 1
- **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, March 16
150 lb N/A 46-0-0, April 28
90 lb N/A 46-0-0, August 9

Water management ....:
- **Flush** ....: April 8
- **Flood** ....: April 29
- **Drain** ....: July 21
- **Ratoon flood** ....: August 10
- **Ratoon drain** ....: October 18

Pest management ....:
- **Herbicides** ....: 1 gal/A Propanil + 1 oz/A Londax + ¾ oz/A Permit, April 15
1 gal/A Rice Beaux + 1 oz/A Londax + ½ oz/A Permit, April 28
1 qt/A 2,4-D, 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** ....: 19 oz/A Stratego, June 24

Table 4. Determination of optimum seeding rate in a conventional and stale seedbed tillage system for CL111 (1.1). Rice Research Station.

	Plant Population plants/ft^2	50% HD days	Height in	Lodging		Moist %	Yield lb/A	Milling head g/100g	Milling total g/100g
				% plot	rating (1-5)				
	2-3 leaf	Main	Main	Main	Main	Main	Main	Main	Main
	4/13/2010		7/27/2010	7/27/2010		8/7/2010	8/7/2010	8/7/2010	8/7/2010
Tillage (TILL)									
Conventional Till	13.4	103	45	10	2.7	19	10,205	64.8	74.1
Stale Seedbed	12.8	104	45	10	2	18	10,267	64.5	73.9
LSD (0.05)	ns	1	ns	.	.	ns	ns	ns	ns
P	0.4939	<0.0001	0.7538	.	.	0.7844	0.3408	0.3248	0.3001
Seeding Rate (SR)									
5 seed/ft^2	3.0	107	47	.	.	19	9817	65.2	74.0
10 seed/ft^2	5.7	105	46	.	.	19	10,109	64.7	73.9
15 seed/ft^2	8.4	104	45	.	.	18	10,259	64.8	74.1
20 seed/ft^2	11.4	104	45	.	.	18	10,273	64.7	74.1
25 seed/ft^2	14.6	103	44	.	.	18	10,473	65.2	74.1
30 seed/ft^2	15.0	102	46	10	3	19	10,312	64.5	74.4
35 seed/ft^2	17.4	102	44	10	2	18	10,434	64.4	74.0
40 seed/ft^2	19.7	101	44	10	3	18	10,246	64.5	73.7
45 seed/ft^2	22.9	101	44	.	.	19	10,202	63.7	73.7
LSD (0.05)	2	2	ns	.	.	ns	ns	ns	ns
P	<0.0001	<0.0001	0.1315	.	.	0.8242	0.4019	0.1073	0.1201
TILL x SR									
Conventional Till 5 seed/ft^2	2.6	107	48	.	.	20	9,784	65.4	74.0
Stale Seedbed 5 seed/ft^2	3.4	108	45	.	.	19	9,849	65.0	73.9
Conventional Till 10 seed/ft^2	6.6	104	46	.	.	19	10,183	64.4	73.8
Stale Seedbed 10 seed/ft^2	4.8	105	45	.	.	20	10,035	65.0	74.0
Conventional Till 15 seed/ft^2	9.3	103	45	.	.	19	10,021	64.4	74.1
Stale Seedbed 15 seed/ft^2	7.5	104	46	.	.	18	10,498	65.2	74.1
Conventional Till 20 seed/ft^2	12.3	104	44	.	.	17	10,682	65.4	74.3
Stale Seedbed 20 seed/ft^2	10.5	104	46	.	.	20	9,864	63.9	73.9
Conventional Till 25 seed/ft^2	15.3	102	44	.	.	18	10,190	65.2	74.4
Stale Seedbed 25 seed/ft^2	13.9	104	45	.	.	17	10,756	65.3	73.9
Conventional Till 30 seed/ft^2	14.2	101	46	10	3	18	10,273	65.1	74.6
Stale Seedbed 30 seed/ft^2	15.8	102	45	.	.	19	10,350	63.9	74.2
Conventional Till 35 seed/ft^2	17.7	101	44	10	2	19	10,232	64.5	74.2
Stale Seedbed 35 seed/ft^2	17.1	103	45	.	.	17	10,636	64.3	73.9
Conventional Till 40 seed/ft^2	19.6	101	45	10	3	18	10,315	65.0	73.7
Stale Seedbed 40 seed/ft^2	19.8	101	44	10	2	19	10,177	64.0	73.7
Conventional Till 45 seed/ft^2	23.2	101	44	.	.	19	10,164	63.6	73.6
Stale Seedbed 45 seed/ft^2	22.6	101	44	.	.	18	10,239	63.7	73.8
LSD (0.05)	ns	ns	2	.	.	ns	ns	ns	ns
P	0.7293	0.4706	0.0297	.	.	0.3598	0.1175	0.2039	0.7905

Continued.

Table 4. Continued.

	Biomass lb/A Harvest 8/3/2010	Harvest Index % Main 8/3/2010	Filled Grain gr/pan Main 8/7/2010	Panicle Density pan/ft^2 Main 8/7/2010	Grain Weight g/1000gr Main 8/7/2010	Tiller Est.	50% HD days Ratoon	Moist % Ratoon 11/4/2010	Yield lb/A Ratoon 11/4/2010	Yield lb/A Total
Tillage (TILL)										
Conventional Till	17,576	59	95	40	24	4	41	18	2653	12,894
Stale Seedbed	16,412	63	105	36	24	4	41	18	2790	13,117
LSD (0.05)	ns	ns	ns	ns	ns	ns	ns	ns	77	ns
P	0.2306	0.2656	0.2406	0.1278	0.2545	0.9918	.	0.1249	0.0107	0.0517
Seeding Rate (SR)										
5 seed/ft^2	16,766	59	127	28	23	11	41	18	2306	12,054
10 seed/ft^2	18,365	55	109	36	24	7	41	18	2776	12,945
15 seed/ft^2	17,206	60	114	36	24	5	41	18	2804	13,102
20 seed/ft^2	17,068	60	87	38	24	4	41	17	2755	12,999
25 seed/ft^2	16,577	63	93	39	24	3	41	18	2817	13,313
30 seed/ft^2	16,971	61	94	41	25	3	41	18	2831	13,273
35 seed/ft^2	15,740	67	99	38	24	2	41	18	2790	13,335
40 seed/ft^2	16,617	62	89	42	24	2	41	18	2631	12,974
45 seed/ft^2	1,7634	59	87	44	24	2	41	18	2782	13,051
LSD (0.05)	ns	5	14	4	1	1	ns	ns	251	539
P	0.1123	0.0293	0.0006	<0.0001	0.0481	<0.0001	.	0.4362	0.0055	0.0163
TILL x SR										
Conventional Till 5 seed/ft^2	17,716	56	124	30	23	11	41	18	2,355	12,083
Stale Seedbed 5 seed/ft^2	15,816	63	130	26	24	10	41	18	2,256	12,024
Conventional Till 10 seed/ft^2	18,791	55	97	36	23	6	41	18	2,674	12,905
Stale Seedbed 10 seed/ft^2	17,939	56	122	37	24	8	41	18	2,877	12,985
Conventional Till 15 seed/ft^2	18,376	55	109	43	24	5	41	18	2,728	12,742
Stale Seedbed 15 seed/ft^2	16,036	66	118	29	24	4	41	17	2,880	13,462
Conventional Till 20 seed/ft^2	17,682	60	82	40	24	4	41	17	2,685	13,310
Stale Seedbed 20 seed/ft^2	16,454	60	92	35	24	3	41	17	2,826	12,688
Conventional Till 25 seed/ft^2	16,970	60	91	40	24	3	41	18	2,889	13,146
Stale Seedbed 25 seed/ft^2	16,184	66	95	37	24	3	41	18	2,746	13,480
Conventional Till 30 seed/ft^2	17,501	59	97	42	25	3	41	18	2,731	13,119
Stale Seedbed 30 seed/ft^2	16,441	63	91	39	24	3	41	19	2,930	13,427
Conventional Till 35 seed/ft^2	15,527	67	91	39	23	2	41	18	2,563	12,935
Stale Seedbed 35 seed/ft^2	15,953	67	106	36	24	2	41	18	3,018	13,735
Conventional Till 40 seed/ft^2	17,008	61	81	44	24	2	41	18	2,597	12,914
Stale Seedbed 40 seed/ft^2	16,226	63	96	40	24	2	41	18	2,665	13,033
Conventional Till 45 seed/ft^2	18,609	56	83	45	24	2	41	19	2,655	12,887
Stale Seedbed 45 seed/ft^2	16,660	62	92	44	24	2	41	18	2,910	13,,215
LSD (0.05)	ns	ns	ns	ns	ns	ns	ns	ns	ns	481
P	0.8696	0.6474	0.8897	0.5549	0.6445	0.7585	.	0.4351	0.2896	0.0487

Table 5. Determination of optimum seeding rate in a conventional and stale seedbed tillage system for CL131 (1.1). Rice Research Station.

	Plant Population plants/ft^2 2-3 leaf 4/13/2010	50% HD days Main	Height in Main 7/27/2010	Moist % Main 8/7/2010	Yield lb/A Main 8/7/2010	Milling head g/100g Main 8/7/2010	Milling total g/100g Main 8/7/2010	Biomass lb/A harvest 8/3/2010	Harvest Index % Main 8/3/2010
Tillage (TILL)									
Conventional Till	11.8	104	39	17.7	9,735	65.9	74.0	18594	53
Stale Seedbed	10.8	106	40	18.2	9,750	65.7	73.9	18237	54
LSD (0.05)	ns	1	ns	0.4	ns	ns	ns	ns	ns
P	0.1261	0.0077	0.3394	0.027	0.5868	0.1364	0.7071	0.8082	0.7883
Seeding Rate (SR)									
5 seed/ft^2	2.6	108	40	19	9,034	66.2	73.6	20,067	46
10 seed/ft^2	5.1	107	41	19	9,639	66.0	73.9	18,749	52
15 seed/ft^2	7.3	106	40	18	9,871	65.0	73.8	16,864	59
20 seed/ft^2	9.6	105	40	18	9,995	65.9	74.3	20,389	50
25 seed/ft^2	11.2	105	39	18	9,883	66.0	74.1	18,880	54
30 seed/ft^2	13.9	104	39	17	9,814	65.8	74.0	17,587	56
35 seed/ft^2	14.3	104	39	18	9,816	65.3	73.7	18,478	54
40 seed/ft^2	16.0	104	38	17	9,927	66.0	74.1	17,760	57
45 seed/ft^2	21.5	104	39	18	9,704	65.9	74.2	16,969	57
LSD (0.05)	2.6	1	1	1	347	ns	ns	ns	ns
P	<0.0001	<0.0001	0.0138	<0.0001	0.0045	0.4036	0.5154	0.5729	0.2046
TILL x SR									
Conventional Till 5 seed/ft^2	2.8	108	41	19	9,062	66.5	73.7	20,371	46
Stale Seedbed 5 seed/ft^2	2.3	109	39	19	9,007	65.8	73.6	19,762	47
Conventional Till 10 seed/ft^2	5.4	107	40	18	9,795	66.1	74.0	19,877	51
Stale Seedbed 10 seed/ft^2	4.8	107	41	19	9,484	66.0	73.8	17,621	54
Conventional Till 15 seed/ft^2	7.8	104	40	17	9,871	65.8	74.1	16,798	59
Stale Seedbed 15 seed/ft^2	6.9	107	39	18	9,871	64.2	73.5	16,930	58
Conventional Till 20 seed/ft^2	9.3	105	39	18	9,949	65.5	74.1	21,098	48
Stale Seedbed 20 seed/ft^2	9.9	106	41	18	10,041	66.3	74.4	19,680	53
Conventional Till 25 seed/ft^2	11.7	103	38	18	9,817	66.0	74.1	18,360	55
Stale Seedbed 25 seed/ft^2	10.6	106	40	18	9,948	66.0	74.2	19,399	53
Conventional Till 30 seed/ft^2	13.6	104	40	17	9,731	66.0	74.0	17,146	57
Stale Seedbed 30 seed/ft^2	14.2	105	38	18	9,898	65.5	74.0	18,028	55
Conventional Till 35 seed/ft^2	16.5	103	39	18	9,825	65.4	73.8	17,855	55
Stale Seedbed 35 seed/ft^2	12.1	105	39	17	9,806	65.3	73.6	19,102	53
Conventional Till 40 seed/ft^2	16.8	103	37	17	9,862	66.0	74.1	19,227	53
Stale Seedbed 40 seed/ft^2	15.3	104	39	18	9,991	66.1	74.0	16,293	61
Conventional Till 45 seed/ft^2	21.9	103	37	18	9,700	66.0	74.3	16,616	59
Stale Seedbed 45 seed/ft^2	21.0	104	40	18	9,707	65.7	74.1	17,321	56
LSD (0.05)	ns	ns	2	1	ns	ns	ns	ns	ns
P	0.1684	0.1599	0.0112	0.7097	0.929	0.6382	0.9488	0.7194	0.8278

Continued.

Table 5. Continued.

	Filled Grain gr/pan Main 8/7/2010	Panicle Density pan/ft^2 Main 8/7/2010	Grain Weight g/1000gr Main 8/7/2010	Tiller Est.	50% HD days Ratoon	Moist % Ratoon 11/4/2010	Yield lb/A Ratoon 11/4/2010	Yield lb/A Total
Tillage (TILL)								
Conventional Till	88	47	21	6	45	12	2,699	12,466
Stale Seedbed	89	45	21	7	45	12	2,888	12,653
LSD (0.05)	ns	ns	ns	ns	ns	ns	110	ns
P	0.7128	0.38	0.2734	0.7594	.	0.7656	0.0121	0.0537
Seeding Rate (SR)								
5 seed/ft^2	108	40	21	21	45	12	2,028	11,001
10 seed/ft^2	98	43	21	9	45	12	2,603	12,197
15 seed/ft^2	92	41	21	6	45	12	2,744	12,641
20 seed/ft^2	91	46	21	5	45	12	2,845	12,801
25 seed/ft^2	82	49	21	4	45	12	2,962	13,057
30 seed/ft^2	88	48	21	4	45	12	2,867	12,715
35 seed/ft^2	83	46	21	3	45	12	3,003	12,830
40 seed/ft^2	81	49	21	3	45	12	3,071	13,068
45 seed/ft^2	73	51	21	2	45	12	3,017	12,723
LSD (0.05)	12	5	ns	5	ns	ns	367	596
P	0.0035	0.0186	0.06	0.0002	.	0.4157	<0.0001	0.0003
TILL x SR								
Conventional Till 5 seed/ft^2	104	39	20	18	45	13	2,009	10,972
Stale Seedbed 5 seed/ft^2	111	41	21	23	45	12	2,046	11,030
Conventional Till 10 seed/ft^2	100	45	20	10	45	12	2,318	12,028
Stale Seedbed 10 seed/ft^2	97	41	21	9	45	12	2,888	12,366
Conventional Till 15 seed/ft^2	94	40	21	6	45	12	2,521	12,386
Stale Seedbed 15 seed/ft^2	91	42	22	6	45	12	2,966	12,897
Conventional Till 20 seed/ft^2	93	47	21	6	45	12	2,866	12,850
Stale Seedbed 20 seed/ft^2	90	45	21	5	45	12	2,823	12,751
Conventional Till 25 seed/ft^2	84	49	21	4	45	12	3,034	13,112
Stale Seedbed 25 seed/ft^2	80	49	22	5	45	13	2,890	13,001
Conventional Till 30 seed/ft^2	87	49	22	4	45	12	2,692	12,441
Stale Seedbed 30 seed/ft^2	90	47	21	3	45	12	3,042	12,989
Conventional Till 35 seed/ft^2	82	49	21	3	45	11	2,895	12,745
Stale Seedbed 35 seed/ft^2	84	42	20	4	45	12	3,111	12,915
Conventional Till 40 seed/ft^2	76	53	21	3	45	12	3,108	13,097
Stale Seedbed 40 seed/ft^2	87	45	21	3	45	12	3,034	13,038
Conventional Till 45 seed/ft^2	74	52	21	2	45	12	2,845	12,560
Stale Seedbed 45 seed/ft^2	73	50	21	2	45	12	3,190	12,887
LSD (0.05)	ns	ns	ns	ns	ns	ns	ns	ns
P	0.9682	0.5796	0.6917	0.8482	.	0.6742	0.2381	0.9175

Table 6. Determination of optimum seeding rate in a conventional and stale seedbed tillage system for CL151 (1.1). Rice Research Station.

	Plant Population plants/ft² 2-3 leaf 4/13/2010	50% HD days Main	Height in Main 7/27/2010	Lodging % plot Main 7/27/2010	Lodging rating (1-5) Main 7/27/2010	Moist % Main 8/7/2010	Yield lb/A Main 8/7/2010	Milling head g/100g Main 8/7/2010	Milling total g/100g Main 8/7/2010
Tillage (TILL)									
Conventional Till	9.5	104	44	27	2.8	20.1	10,972	61.75	73.57
Stale Seedbed	9.0	105	44	22	2.1	20.4	10,926	61.36	73.42
LSD (0.05)	ns	0.7	ns	ns	0.6	ns	ns	ns	ns
P	0.2564	0.034	0.907	0.2858	0.0286	0.311	0.268	0.136	0.3692
Seeding Rate (SR)									
5 seed/ft²	2.4	108	45	.	.	21	10,169	62.43	73.4
10 seed/ft²	4.7	107	44	10	2.5	21	11,028	60.8	73.24
15 seed/ft²	6.4	105	44	.	.	20.2	11,071	60.96	73.54
20 seed/ft²	8.2	104	45	10	2.5	20.5	11,025	61.23	73.29
25 seed/ft²	9.1	104	44	27	2.2	19.8	11,080	61.82	73.6
30 seed/ft²	11.0	104	44	15	2.3	19.7	11,120	62.08	73.62
35 seed/ft²	12.4	104	44	.	.	20.6	10,850	61.67	73.45
40 seed/ft²	13.9	103	44	40	3	20	11,248	61.66	73.81
45 seed/ft²	15.1	104	44	40	2.5	19.6	10,948	61.36	73.52
LSD (0.05)	1.4	1	ns	11.7	0.5	ns	450	ns	ns
P	<0.0001	<0.0001	0.2374	<0.0001	<0.0001	0.0577	0.0214	0.2523	0.4535
TILL x SR									
Conventional Till 5 seed/ft²	2.4	108	45	.	.	20.8	10,067	62.51	73.17
Stale Seedbed 5 seed/ft²	2.4	108	45	.	.	21.3	10,270	62.36	73.63
Conventional Till 10 seed/ft²	4.5	107	45	10	2.5	21.1	10,876	61.56	73.42
Stale Seedbed 10 seed/ft²	4.8	107	43	.	.	20.9	11,181	60.03	73.06
Conventional Till 15 seed/ft²	7.0	104	44	.	.	20	11,203	60.56	73.64
Stale Seedbed 15 seed/ft²	5.7	106	44	.	.	20.5	10,940	61.35	73.44
Conventional Till 20 seed/ft²	8.4	104	44	10	3	20.2	11,133	60.29	73.13
Stale Seedbed 20 seed/ft²	7.9	105	45	10	2	20.7	10,917	62.17	73.44
Conventional Till 25 seed/ft²	9.2	103	43	23	2.3	19.5	11,073	62.29	73.84
Stale Seedbed 25 seed/ft²	8.9	105	44	30	2	20.2	11,087	61.35	73.35
Conventional Till 30 seed/ft²	11.2	103	44	20	3	19.5	11,019	62.54	73.85
Stale Seedbed 30 seed/ft²	10.7	104	44	10	1.5	19.9	11,221	61.61	73.38
Conventional Till 35 seed/ft²	13.3	104	43	.	.	19.9	11,083	62.16	73.46
Stale Seedbed 35 seed/ft²	11.5	104	45	.	.	21.3	10,616	61.18	73.45
Conventional Till 40 seed/ft²	13.5	103	44	50	3.5	19.8	11,420	62.52	73.95
Stale Seedbed 40 seed/ft²	14.4	104	43	30	2.5	20.1	11,077	60.81	73.67
Conventional Till 45 seed/ft²	16.0	103	44	50	2.7	20.1	10,870	61.34	73.67
Stale Seedbed 45 seed/ft²	14.2	104	44	30	2.3	19.1	11,027	61.37	73.38
LSD (0.05)	ns	1	ns	ns	ns	ns	ns	ns	ns
P	0.7349	0.0125	0.0915	0.2796	0.777	0.385	0.7696	0.1694	0.8078

Continued.

Table 6. Continued.

	Biomass	Harvest	Filled	Panicle	Grain	Tiller	50% HD	Moist	Yield	Yield
	lb/A	Index	Grain	Density	Weight	Est.	days	%	lb/A	lb/A
		%	gr/pan	pan/ft^2	g/1000gr					
	harvest	Main	Main	Main	Main		Ratoon	Ratoon	Ratoon	Total
	8/3/2010	8/3/2010	8/7/2010	8/7/2010	8/7/2010			11/4/2010	11/4/2010	
Tillage (TILL)										
Conventional Till	17,924	62	131	39	23	5	51	22.52	2679	13595
Stale Seedbed	17,880	62	132	40	23	5	51	22.24	3018	13909
LSD (0.05)	ns	ns	ns	ns	ns	ns	ns	ns	174	ns
P	0.8953	0.9743	0.8637	0.2092	0.9301	0.6675	.	0.4748	0.0085	0.0547
Seeding Rate (SR)										
5 seed/ft^2	17,054	60	156	31	22	12	52	22.69	2,160	12,232
10 seed/ft^2	18,189	62	135	37	22	8	52	22.31	2,409	13,220
15 seed/ft^2	17,431	64	138	37	23	6	51	22.88	2,661	13,702
20 seed/ft^2	18,701	59	122	43	23	5	52	22.46	2,969	13,918
25 seed/ft^2	17,001	66	115	39	22	4	52	23.42	2,780	14,035
30 seed/ft^2	18,426	61	139	43	23	4	51	21.18	3,023	14,187
35 seed/ft^2	17,895	61	128	40	23	3	51	20.93	3,338	14,222
40 seed/ft^2	17,960	63	125	43	23	3	51	23.01	2,901	14,034
45 seed/ft^2	18,459	59	126	41	23	3	51	22.54	3,393	14,220
LSD (0.05)	ns	ns	17	ns	ns	1	ns	1.47	503	ns
P	0.4052	0.6602	0.0167	0.0941	0.4368	<0.0001	.	0.299	0.0006	0.7091
TILL x SR										
Conventional Till 5 seed/ft^2	17,428	58	150	34	23	12	52	22.91	2,089	11,987
Stale Seedbed 5 seed/ft^2	16,680	62	162	28	22	11	51	22.48	2,230	12,477
Conventional Till 10 seed/ft^2	18,842	58	125	37	22	8	52	23.28	2,335	12,883
Stale Seedbed 10 seed/ft^2	17,536	65	146	38	22	7	51	21.34	2,484	13,557
Conventional Till 15 seed/ft^2	18,525	61	136	42	23	6	51	23.58	2,255	13,586
Stale Seedbed 15 seed/ft^2	16,336	67	140	33	23	6	51	22.19	3,067	13,817
Conventional Till 20 seed/ft^2	18,890	59	120	44	23	5	52	22.47	2,686	13,817
Stale Seedbed 20 seed/ft^2	18,513	59	125	42	23	5	51	22.44	3,252	14,019
Conventional Till 25 seed/ft^2	16,418	68	121	38	22	4	52	23.01	2,679	13,891
Stale Seedbed 25 seed/ft^2	17,584	63	109	41	22	5	52	23.82	2,881	14,179
Conventional Till 30 seed/ft^2	17,636	63	142	40	23	4	51	20.96	2,948	14,005
Stale Seedbed 30 seed/ft^2	19,216	59	135	46	23	5	51	21.41	3,097	14,369
Conventional Till 35 seed/ft^2	17,506	64	138	37	23	3	51	20.78	3,183	14,226
Stale Seedbed 35 seed/ft^2	18,285	58	118	44	22	4	51	21.07	3,493	14,217
Conventional Till 40 seed/ft^2	18,118	63	124	43	23	3	51	23.05	2,712	13,923
Stale Seedbed 40 seed/ft^2	17,803	62	126	44	22	3	51	22.98	3,089	14,144
Conventional Till 45 seed/ft^2	17,953	61	124	37	23	2	51	22.67	3,222	14,035
Stale Seedbed 45 seed/ft^2	18,965	58	129	46	23	3	51	22.42	3,565	14,405
LSD (0.05)	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
P	0.525	0.5867	0.2881	0.0939	0.5593	0.086	.	0.7127	0.8158	0.9742

Table 7. Determination of optimum seeding rate in a conventional and stale seedbed tillage system for CL142 (1.1). Rice Research Station.

	Plant Population plants/ft^2 2-3 leaf 4/13/2010	50% HD days Main	Height in Main 7/27/2010	Moist % Main 8/7/2010	Yield lb/A Main 8/7/2010	Milling head g/100g Main 8/7/2010	Milling total g/100g Main 8/7/2010	Biomass lb/A harvest 8/3/2010	Harvest Index % Main 8/3/2010
Tillage (TILL)									
Conventional Till	14.8	105	48	19	9491	50.4	71.4	17,831	54
Stale Seedbed	14.4	105	49	19	9071	49.1	71.0	17,703	52
LSD (0.05)	ns	ns	ns	ns	ns	ns	ns	ns	ns
P	0.0722	0.6807	0.1022	0.5275	0.3755	0.6500	0.4633	0.5583	0.5930
Seeding Rate (SR)									
5 seed/ft^2	3.6	108	50	19	8263	52.5	71.5	15,696	57
10 seed/ft^2	6.4	107	50	19	9270	51.2	71.3	17,543	54
15 seed/ft^2	9.1	106	48	19	8960	47.6	70.6	17,315	52
20 seed/ft^2	12.5	105	49	19	9480	51.4	71.2	18,045	53
25 seed/ft^2	14.8	105	49	19	9503	50.9	71.3	19,166	50
30 seed/ft^2	17.4	105	49	18	9013	47.8	70.9	18,062	50
35 seed/ft^2	20.6	104	49	19	9650	48.7	71.1	17,468	55
40 seed/ft^2	22.3	103	49	18	9530	49.0	71.1	17,574	54
45 seed/ft^2	24.7	104	48	18	9859	48.7	71.8	19,033	52
LSD (0.05)	2.7	1	ns	ns	556	ns	0.5	ns	ns
P	<0.0001	<0.0001	0.1392	0.0619	0.0031	0.1167	0.0281	0.1033	0.8098
TILL x SR									
Conventional Till 5 seed/ft^2	3.9	108	52	18	8,704	53.7	72.1	15,867	55
Stale Seedbed 5 seed/ft^2	3.3	109	47	19	7,822	51.3	70.9	15,525	58
Conventional Till 10 seed/ft^2	6.3	106	50	19	9,489	51.9	71.6	16,173	59
Stale Seedbed 10 seed/ft^2	6.6	107	50	20	9,051	50.4	70.9	18,913	48
Conventional Till 15 seed/ft^2	8.4	106	46	19	9,367	48.7	71.1	18,629	51
Stale Seedbed 15 seed/ft^2	9.9	106	49	19	8,552	46.4	70.0	16,000	54
Conventional Till 20 seed/ft^2	12.1	106	48	20	9,341	50.6	71.1	18,863	50
Stale Seedbed 20 seed/ft^2	12.8	105	49	19	9,618	52.1	71.2	17,226	56
Conventional Till 25 seed/ft^2	16.2	105	49	19	9,625	52.3	71.6	18,815	51
Stale Seedbed 25 seed/ft^2	13.4	105	49	20	9,381	49.6	71.0	19,518	48
Conventional Till 30 seed/ft^2	17.3	105	48	19	9,466	48.5	71.0	18,189	53
Stale Seedbed 30 seed/ft^2	17.5	104	49	18	8,559	47.1	70.8	17,935	48
Conventional Till 35 seed/ft^2	20.3	104	48	18	9,947	50.3	71.2	16,905	59
Stale Seedbed 35 seed/ft^2	21	105	50	19	9,353	47.1	71.0	18,031	52
Conventional Till 40 seed/ft^2	23.8	103	48	18	9,531	48.5	70.9	17,870	53
Stale Seedbed 40 seed/ft^2	20.8	103	49	17	9,529	49.4	71.3	17,278	55
Conventional Till 45 seed/ft^2	25.2	104	46	19	9,946	49.0	71.7	19,168	52
Stale Seedbed 45 seed/ft^2	24.1	104	50	18	9,773	48.4	71.8	18,898	52
LSD (0.05)	2	ns	3	ns	ns	ns	ns	ns	ns
P	0.0288	0.1752	0.0114	0.6616	0.4714	0.6677	0.5490	0.5680	0.8554

Continued.

Table 7. Continued.

	Filled Grain gr/pan Main 8/7/2010	Panicle Density pan/ft^2 Main 8/7/2010	Grain Weight g/1000gr Main 8/7/2010	Tiller Est.	50% HD days Ratoon	Moist % Ratoon 11/4/2010	Yield lb/A Ratoon 11/4/2010	Yield lb/A Total
Tillage (TILL)								
Conventional Till	115	31	27	3	49	22	3,129	12,729
Stale Seedbed	113	32	26	3	49	21	3,324	12,468
LSD (0.05)	ns	ns	ns	ns	ns	ns	ns	ns
P	0.7620	0.5289	0.8894	0.7158	.	0.3334	0.1909	0.3568
Seeding Rate (SR)								
5 seed/ft^2	157	19	26	6	49	20	3,195	11,579
10 seed/ft^2	121	26	26	4	49	22	3,425	12,788
15 seed/ft^2	116	29	26	3	49	21	3,111	12,142
20 seed/ft^2	110	31	27	3	49	21	3,238	12,765
25 seed/ft^2	116	36	27	3	49	23	2,959	12,673
30 seed/ft^2	102	34	26	2	49	21	3,252	12,375
35 seed/ft^2	100	38	27	2	49	22	3,288	13,059
40 seed/ft^2	108	35	27	2	49	21	3,271	12,816
45 seed/ft^2	94	36	27	1	49	23	3,300	13,189
LSD (0.05)	17	6	ns	1	ns	2	ns	484
P	0.0003	0.0009	0.0930	<0.0001	.	0.0134	0.1266	0.0005
TILL x SR								
Conventional Till 5 seed/ft^2	156	20	26	6	49	20	3,110	11,938
Stale Seedbed 5 seed/ft^2	158	19	26	6	49	20	3,281	11,220
Conventional Till 10 seed/ft^2	115	24	27	4	49	22	3,265	12,864
Stale Seedbed 10 seed/ft^2	127	28	26	5	49	22	3,585	12,713
Conventional Till 15 seed/ft^2	121	34	26	4	49	22	2,945	12,284
Stale Seedbed 15 seed/ft^2	112	25	26	2	49	21	3,277	12,000
Conventional Till 20 seed/ft^2	111	31	27	3	49	21	3,063	12,584
Stale Seedbed 20 seed/ft^2	108	31	27	2	49	21	3,413	12,946
Conventional Till 25 seed/ft^2	113	32	27	2	49	23	2,959	12,803
Stale Seedbed 25 seed/ft^2	120	40	27	3	49	23	2,958	12,544
Conventional Till 30 seed/ft^2	97	31	27	2	49	21	3,094	12,732
Stale Seedbed 30 seed/ft^2	107	36	26	2	49	20	3,409	12,017
Conventional Till 35 seed/ft^2	103	37	27	2	49	22	3,330	13,358
Stale Seedbed 35 seed/ft^2	96	38	27	2	49	22	3,245	12,759
Conventional Till 40 seed/ft^2	120	36	27	2	49	21	3,162	12,759
Stale Seedbed 40 seed/ft^2	97	34	27	2	49	21	3,380	12,874
Conventional Till 45 seed/ft^2	96	33	27	1	49	24	3,236	13,242
Stale Seedbed 45 seed/ft^2	92	38	27	1	49	22	3,365	13,136
LSD (0.05)	ns	ns	ns	ns	ns	ns	ns	ns
P	0.3071	0.1606	0.6258	0.3578	.	0.9015	0.7430	0.5519

Table 8. Determination of optimum seeding rate in a conventional and stale seedbed tillage system for CL181 (1.1). Rice Research Station.

	Plant Population plants/ft^2 2-3 leaf 4/13/2010	50% HD days Main	Height in Main 7/27/2010	Moist % Main 8/7/2010	Yield lb/A Main 8/7/2010	Milling head g/100g Main 8/7/2010	Milling total g/100g Main 8/7/2010	Biomass lb/A harvest 8/3/2010	Harvest Index % Main 8/3/2010
Tillage (TILL)									
Conventional Till	15.0	106	39	18	8543	57.1	69.1	17,241	50
Stale Seedbed	13.8	106	39	18	8833	57.4	69.3	16,334	54
LSD (0.05)	ns	ns	ns	ns	ns	ns	ns	ns	ns
P	0.1584	0.6638	0.4226	0.5654	0.0603	0.7069	0.3856	0.3091	0.1518
Seeding Rate (SR)									
5 seed/ft^2	3.8	110	40	20	7578	55.6	68.1	15,796	48
10 seed/ft^2	6.0	108	40	18	8395	57.8	69.2	15,612	54
15 seed/ft^2	8.7	107	39	18	8821	57.7	69.6	17,978	49
20 seed/ft^2	12.5	105	39	18	8962	56.5	68.9	17,175	53
25 seed/ft^2	14.5	105	38	18	9309	58.1	69.7	16,765	56
30 seed/ft^2	18.9	104	39	17	8672	57.9	69.6	17,627	50
35 seed/ft^2	19.1	105	39	18	8351	56.5	69.1	16,407	51
40 seed/ft^2	21.1	104	38	17	9193	57.4	69.5	17,069	54
45 seed/ft^2	25.2	104	38	17	8914	57.5	69.4	16,659	54
LSD (0.05)	1.6	1	ns	1.1	752	ns	0.7	ns	ns
P	<0.0001	<0.0001	0.0917	0.0026	0.0202	0.6027	0.0152	0.1639	0.2397
TILL x SR									
Conventional Till 5 seed/ft^2	3.7	110	40	20	8,062	57.1	68.2	15,231	53
Stale Seedbed 5 seed/ft^2	3.9	110	40	19	7,095	54.2	68.0	16,361	43
Conventional Till 10 seed/ft^2	6.5	108	40	19	8,752	58.2	69.6	15,931	55
Stale Seedbed 10 seed/ft^2	5.5	108	40	18	8,038	57.5	68.8	15,292	53
Conventional Till 15 seed/ft^2	9.5	106	39	19	8,672	58.0	69.4	18,144	48
Stale Seedbed 15 seed/ft^2	7.9	107	38	17	8,970	57.5	69.7	17,813	50
Conventional Till 20 seed/ft^2	13.0	106	38	18	8,698	56.1	68.5	18,063	48
Stale Seedbed 20 seed/ft^2	11.9	105	40	18	9,226	57.0	69.3	16,288	57
Conventional Till 25 seed/ft^2	15.1	105	38	18	9,082	58.2	69.9	17,438	53
Stale Seedbed 25 seed/ft^2	13.9	105	39	19	9,536	58.0	69.6	16,093	59
Conventional Till 30 seed/ft^2	19.7	104	39	17	8,555	57.0	69.2	18,143	47
Stale Seedbed 30 seed/ft^2	18.1	104	39	17	8,789	58.8	69.9	17,111	52
Conventional Till 35 seed/ft^2	20.1	104	39	17	7,549	55.5	68.8	17,101	44
Stale Seedbed 35 seed/ft^2	18.1	105	39	18	9,153	57.5	69.4	15,713	58
Conventional Till 40 seed/ft^2	22.3	104	38	17	8,871	56.6	69.2	17,802	50
Stale Seedbed 40 seed/ft^2	20.0	104	37	18	9,514	58.2	69.8	16,336	59
Conventional Till 45 seed/ft^2	25.5	104	38	18	8,649	57.5	69.3	17,318	50
Stale Seedbed 45 seed/ft^2	24.9	104	38	17	9,180	57.6	69.5	16,001	58
LSD (0.05)	ns	ns	ns	ns	830	ns	ns	ns	ns
P	0.9806	0.7632	0.8363	0.3018	0.0379	0.7273	0.8616	0.7129	0.0601

Continued.

Table 8. Continued.

	Filled Grain gr/pan Main 8/7/2010	Panicle Density pan/ft^2 Main 8/7/2010	Grain Weight g/1000gr Main 8/7/2010	Tiller Est.	50% HD days Ratoon	Moist % Ratoon 11/4/2010	Yield lb/A Ratoon 11/4/2010	Yield lb/A Total
Tillage (TILL)								
Conventional Till	97	45	23	4	43	17	2,318	10931
Stale Seedbed	97	42	23	4	43	17	2,431	11302
LSD (0.05)	ns	ns	ns	ns	ns	ns	ns	ns
P	0.8852	0.3156	0.284	0.1837	.	0.5367	0.4271	0.2266
Seeding Rate (SR)								
5 seed/ft^2	115	32	22	9	43	18	1,878	9,508
10 seed/ft^2	109	35	23	6	43	17	2,211	10,623
15 seed/ft^2	105	43	23	5	43	18	2,373	11,302
20 seed/ft^2	101	45	22	4	43	17	2,469	11,470
25 seed/ft^2	94	45	23	3	43	17	2,361	11,891
30 seed/ft^2	89	48	23	3	43	17	2,556	11,339
35 seed/ft^2	88	46	23	2	43	16	2,465	10,820
40 seed/ft^2	85	49	23	2	43	17	2,543	11,719
45 seed/ft^2	90	49	24	2	43	17	2,512	11,375
LSD (0.05)	15	4	ns	1	ns	ns	311	748
P	0.0215	<0.0001	0.594	<0.0001	.	0.2072	0.0035	0.0009
TILL x SR								
Conventional Till 5 seed/ft^2	122	30	23	8	43	18	1,862	9,939
Stale Seedbed 5 seed/ft^2	107	34	21	10	43	17	1,895	9,077
Conventional Till 10 seed/ft^2	102	33	23	5	43	18	2,207	10,884
Stale Seedbed 10 seed/ft^2	116	36	22	6	43	16	2,215	10,362
Conventional Till 15 seed/ft^2	105	44	23	4	43	19	2,313	11,164
Stale Seedbed 15 seed/ft^2	105	42	24	6	43	17	2,432	11,439
Conventional Till 20 seed/ft^2	105	49	23	4	43	16	2,404	11,337
Stale Seedbed 20 seed/ft^2	97	40	21	4	43	17	2,534	11,603
Conventional Till 25 seed/ft^2	98	48	23	3	43	17	2,375	11,674
Stale Seedbed 25 seed/ft^2	90	43	23	3	43	18	2,347	12,107
Conventional Till 30 seed/ft^2	81	50	23	2	43	17	2,547	11,203
Stale Seedbed 30 seed/ft^2	97	46	23	3	43	17	2,564	11,474
Conventional Till 35 seed/ft^2	82	46	23	2	43	16	2,402	9,927
Stale Seedbed 35 seed/ft^2	93	45	23	3	43	16	2,528	11,713
Conventional Till 40 seed/ft^2	86	50	23	2	43	16	2,423	11,280
Stale Seedbed 40 seed/ft^2	83	47	23	2	43	17	2,662	12,159
Conventional Till 45 seed/ft^2	90	50	24	2	43	17	2,324	10,967
Stale Seedbed 45 seed/ft^2	91	47	24	2	43	17	2,700	11,782
LSD (0.05)	ns	ns	ns	ns	ns	ns	ns	867
P	0.8174	0.431	0.8238	0.515	.	0.36	0.9523	0.0436

Table 9. Determination of optimum seeding rate in a conventional and stale seedbed tillage system for CL261 (1.1). Rice Research Station.

	Plant Population plants/ft^2 2-3 leaf 4/13/2010	50% HD days Main	Height in Main 7/27/2010	Moist % Main 8/9/2010	Yield lb/A Main 8/9/2010	Milling head g/100g Main 7/28/2010	Milling total g/100g Main 7/28/2010	Biomass lb/A harvest 7/28/2010	Harvest Index % Main 7/28/2010
Tillage (TILL)									
Conventional Till	14.4	101	42	18	8527	67.5	71.0	16,068	53
Stale Seedbed	13.5	101	43	18	8700	67.7	71.2	15,515	57
LSD (0.05)	ns	ns	ns	ns	ns	ns	ns	ns	ns
P	0.206	0.267	0.691	0.445	0.382	0.595	0.586	0.323	0.139
Seeding Rate (SR)									
5 seed/ft^2	2.5	105	43	18	8,301	67.7	71.0	16,517	51
10 seed/ft^2	6.8	102	43	18	8,890	68.0	71.2	17,003	53
15 seed/ft^2	7.6	101	42	18	8,633	67.0	70.7	15,178	57
20 seed/ft^2	11.0	101	42	18	8,837	68.2	71.4	14,618	64
25 seed/ft^2	14.0	101	44	18	8,657	67.8	71.1	15,804	55
30 seed/ft^2	16.5	101	42	18	8,382	67.3	70.8	15,662	54
35 seed/ft^2	20.7	101	42	18	8,616	67.6	71.3	16,400	53
40 seed/ft^2	22.8	100	42	18	8,586	67.2	71.0	15,631	55
45 seed/ft^2	24.0	100	41	18	8,619	67.8	71.2	15,310	57
LSD (0.05)	3.0	1	1	ns	ns	ns	ns	ns	ns
P	<0.001	<0.001	0.007	0.413	0.074	0.152	0.389	0.256	0.3142
TILL x SR									
Conventional Till 5 seed/ft^2	2.5	104	44	18	8,440	67.5	70.8	15,557	54
Stale Seedbed 5 seed/ft^2	2.4	105	43	18	8,162	67.9	71.1	17,477	47
Conventional Till 10 seed/ft^2	7.5	102	44	18	8,765	68.1	71.3	17,414	50
Stale Seedbed 10 seed/ft^2	6.1	102	42	18	9,016	67.9	71.2	16,591	55
Conventional Till 15 seed/ft^2	8.1	101	43	17	8,327	66.3	70.1	14,989	56
Stale Seedbed 15 seed/ft^2	7.1	102	42	18	8,938	67.8	71.3	15,367	58
Conventional Till 20 seed/ft^2	11.8	101	42	18	8,631	68.1	71.3	15,421	56
Stale Seedbed 20 seed/ft^2	10.3	101	43	18	9,043	68.3	71.5	13,815	71
Conventional Till 25 seed/ft^2	15.1	101	44	18	8,730	68.2	71.4	16,301	54
Stale Seedbed 25 seed/ft^2	12.8	101	44	18	8,583	67.4	70.9	15,306	56
Conventional Till 30 seed/ft^2	17.1	101	42	18	7,994	67.1	70.6	16,330	49
Stale Seedbed 30 seed/ft^2	15.9	102	42	18	8,769	67.6	71.1	14,994	59
Conventional Till 35 seed/ft^2	19	101	41	18	8,764	67.5	71.3	17,120	51
Stale Seedbed 35 seed/ft^2	22.3	101	43	18	8,469	67.6	71.3	15,681	54
Conventional Till 40 seed/ft^2	23	100	41	18	8,586	67.1	70.8	15,842	54
Stale Seedbed 40 seed/ft^2	22.6	100	42	18	8,586	67.2	71.2	15,421	56
Conventional Till 45 seed/ft^2	25.8	100	41	18	8,503	67.8	71.4	15,635	55
Stale Seedbed 45 seed/ft^2	22.2	100	41	18	8,735	67.7	71.0	14,985	59
LSD (0.05)	2.4	ns	ns	ns	ns	ns	ns	ns	ns
P	0.032	0.919	0.120	0.725	0.080	0.454	0.384	0.498	0.365

Continued.

Table 9. Continued.

	Filled Grain gr/pan Main 7/28/2010	Panicle Density pan/ft^2 Main 7/28/2010	Grain Weight g/1000gr Main 7/28/2010	Tiller Est. 7/28/2010	50% HD days Ratoon	Moist % Ratoon 11/4/2010	Yield lb/A Ratoon 11/4/2010	Yield lb/A Total
Tillage (TILL)								
Conventional Till	108	37	23	4	38	15.1	3211	11,742
Stale Seedbed	106	36	24	4	37	15.1	3263	11,965
LSD (0.05)	ns	ns	ns	ns	.	ns	ns	ns
P	0.670	0.114	0.315	0.563	.	0.881	0.323	0.414
Seeding Rate (SR)								
5 seed/ft^2	128	31	22	12	38	15.1	2,935	11,262
10 seed/ft^2	118	36	23	5	38	15.1	3,284	12,173
15 seed/ft^2	111	34	23	4	38	15.1	3,315	11,923
20 seed/ft^2	102	34	24	3	38	15.0	3,361	12,132
25 seed/ft^2	109	38	23	3	38	15.1	3,316	12,030
30 seed/ft^2	99	37	23	2	38	15.0	3,176	11,546
35 seed/ft^2	96	41	24	2	37	15.3	3,145	11,731
40 seed/ft^2	98	39	24	2	37	15.3	3,275	11,911
45 seed/ft^2	99	40	24	2	37	15.2	3,325	11,974
LSD (0.05)	10	4	1	1	.	ns	218	442
P	<0.001	0.005	0.037	<0.001	.	0.888	0.013	0.030
TILL x SR								
Conventional Till 5 seed/ft^2	132	29	22	12	38	15.3	2,973	11,391
Stale Seedbed 5 seed/ft^2	124	33	23	12	38	14.8	2,897	11,133
Conventional Till 10 seed/ft^2	124	38	23	5	38	15.3	3,316	12,065
Stale Seedbed 10 seed/ft^2	112	34	23	6	38	15.0	3,252	12,281
Conventional Till 15 seed/ft^2	114	34	22	4	38	14.9	3,247	11,532
Stale Seedbed 15 seed/ft^2	108	34	23	5	38	15.3	3,383	12,313
Conventional Till 20 seed/ft^2	101	35	24	3	38	14.5	3,340	11,915
Stale Seedbed 20 seed/ft^2	103	33	23	3	38	15.5	3,383	12,349
Conventional Till 25 seed/ft^2	107	37	23	3	38	15.1	3,187	11,975
Stale Seedbed 25 seed/ft^2	112	38	23	3	38	15.1	3,444	12,084
Conventional Till 30 seed/ft^2	97	39	23	2	38	15.2	3,197	11,136
Stale Seedbed 30 seed/ft^2	101	35	23	2	38	14.8	3,155	11,955
Conventional Till 35 seed/ft^2	95	45	23	2	38	15.3	3,052	11,824
Stale Seedbed 35 seed/ft^2	98	38	24	2	36	15.2	3,237	11,639
Conventional Till 40 seed/ft^2	102	40	24	2	38	15.2	3,353	12,039
Stale Seedbed 40 seed/ft^2	95	39	24	2	36	15.4	3,198	11,782
Conventional Till 45 seed/ft^2	99	41	24	2	38	15.3	3,233	11,800
Stale Seedbed 45 seed/ft^2	100	39	24	2	36	15.1	3,417	12,149
LSD (0.05)	ns	ns	ns	ns	.	ns	ns	ns
P	0.924	0.584	0.293	0.776	.	0.139	0.203	0.231

ROTATIONAL CROP RESEARCH

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Rotational Crop Research

A trial was conducted to evaluate the effects of seeding rate on several agronomic and chemical characteristics of two sweet sorghum varieties. Six seeding rates (20,000, 40,000, 60,000, 80,000, 100,000, and 120,000 seed/A) and two sweet sorghum varieties (M81-E and Topper) were included in the trial. Days to 50% heading were significantly different between the two varieties. M81-E reached 50% heading at approximately 96 days after seeding while Topper reached 50% heading 106 days after seeding. The main effect of seeding rate was significant for plant population. Plant population increased significantly with each incremental seeding rate increase from 12,632 to 71,438 plants/A for the 20,000 and 120,000 seed/A seeding rates, respectively. Harvestable stalks also increased linearly from 21,127 to 68,607 stalks/A from the lowest to highest seeding rates, respectively. The amount of tillers produced was determined by subtracting the number of harvestable stalks at harvest from a designated flagged area from the number of plants determined at the 5-leaf stage of the same area. Approximately 41, 21, 9, and 8 tillers were formed per plant at the 20,000, 40,000, 60,000, and 80,000 seed/A seeding rates. Seeding rates of 100,000 and 120,000 had an estimate of -8 and -4 tillers/plant, indicating that less stalks were harvested than the initial stand count at the 5-leaf stage of development. In this case, we can infer that a stand decline due to plant competition occurred, and in general, all harvestable stalks were from non-tillered plants. Stalk biomass increased from 14 to 28 tons/A between the 20,000 and 80,000 seed/A seeding rate and then declined to 20 tons/A between the 80,000 and 120,000 seed/A seeding rate. Harvestable stalk diameter decreased from a high of 2.2 cm to 1.5 cm between the lowest and highest seeding rates, respectively. Fermentable solids were optimized at the 80,000 seed/A seeding rate which produced an approximate stand at the 5-leaf stage of development of 42,253 plants/A.

One variety each, representing Maturity Groups IV and V soybeans, were planted on April 15 to test the efficacy of soybean fungicides. The two row-widths, 16 and 32 inches, were used to represent narrow and standard widths to determine the influence row widths and subsequent canopy closure would have on disease development. Due to frequent rains and warm temperatures during late vegetative and early reproductive growth stages, disease development was ideal for aerial blight caused by the soil-borne fungus *Rhizoctonia solani*. Disease onset was rapid in all plots; therefore, row spacing did not influence disease development. Fungicides were applied according to protocol directions for rate and timing. Heavy disease pressure prior to the initial treatment influenced yield loss measurements. Disease pressure also reduced yield significantly for all treatments, including the untreated check, although, all fungicide treatments protected some of the yield potential.

Separate variety trials were conducted for Group III, early and late Group IV's, and Group V soybeans. Data are not included in this text but can be found online at http://www.lsuagcenter.com/en/crops_livestock/crops/soybeans/Variety+Trials++Recommendations/. Soybean variety trials are conducted annually to evaluate the maturity group (groups III-VI) and varietal response to the environmental and soil conditions in southwest Louisiana. In 2010, the varieties with the highest yield at the Rice Research Station location included Progeny PR4209RY (Group IV early), Progeny P4510RY (Group IV mid/late), and Progeny 5218RR (Group V).

Wheat varietal and experimental lines are evaluated annually. Testing of 42 wheat entries was done in 2010, including released varieties and experimental lines. Current released varieties with the highest 2-year performance in southwest Louisiana include Dyna-Gro Baldwin (81.17 bu/A), AGS 2035 (77.6 bu/A), and Terral LA821 (75.2 bu/A).

Grain sorghum hybrids are evaluated annually for their yield response. The trial at the Rice Research Station was lost due to droughty conditions and poor seedling emergence. The data from other locations can be found online at http://www.lsuagcenter.com/en/crops_livestock/crops/Sorghum/Variety+Trials++Recommendations/.

Evaluation of Sweet Sorghum Variety and Seeding Rate on Agronomic and Chemical Characteristics

Experiment number ....: SS2010

Site and design ....:
- **Location/Cooperator** ....: Rice Research Station
- **Tillage type** ....: Spring Stale
- **Experimental design** ....: Randomized complete block
- **Number of reps** ....: 4
- **Plot size** ....: 10 x 30 ft
- **Row width/rows per plot** ....: 30 in / 4

Soil type ....: Crowley silt loam
- **% organic matter** ....: 2.1
- **pH** ....: 5.7
- **Extractable nutrients** ppm ....: Ca-1,111; Cu-1.49; Mg-242; P-35; K-68; Na-63; S-10.8; Zn-5.77

Crop/Variety ....: Sweet Sorghum / M81-E, Topper
- **Planting method/date** ....: Drill seeded / June 14
- **Seeding rate/depth** ....: See Data Sheet / .5 inches
- **Emergence date** ....: June 21
- **Harvest date** ....: See Data Sheet

Seed treatment/cwt ....: NA

Fertilization ....: 270 lb/A 0-24-24, May 11
90 lb N/A 46-0-0, July 12

Water management ....:
- **Flush** ....: NA
- **Flood** ....: NA
- **Drain** ....: NA

Pest management ....:
- **Herbicides** ....: 1.5 lb ai/A Glyphosate + 1.5 lb ai/A Dual Magnum, May 21
.32 lb ai/A Facet + 1 pt/A COC, May 21
- **Insecticides** ....: 2 oz/A Karate Z, July 13
- **Fungicides** ....: None

Table 1. Evaluation of Sweet Sorghum Variety and Seeding Rate on Agronomic and Chemical Characteristics. Rice Research Station (south unit).

Description Rating Type Rating Unit	50% HD days	Plant Population plants/A	Harvestable Stalks stalks/A	% Tillers at Harvest %	Total Biomass tons/A	Stalk Biomass tons/A	Stalk Diameter at Base cm	Sol. Solids Stalk BRIX w/w	Fermentable† Solids Stalk ton/A
VARIETY (VAR)									
M81-E	96	38,623	42,761	13	26	23	1.8	12.5	3
Topper	106	42,834	43,850	9	25	19	2.0	16.0	3
LSD	1.3	3,966	NS‡	NS	NS	NS	NS	0.7	NS
SEEDING RATE (SR)									
20,000 seed/A	103	12,632	21,127	41	18	14	2.2	13.6	1.8
40,000 seed/A	101	25,918	32,888	21	26	21	2.1	13.8	2.6
60,000 seed/A	101	34,195	37,680	9	28	22	2.0	14.1	2.7
80,000 seed/A	101	42,253	45,520	8	27	28	1.8	14.5	3.5
100,000 seed/A	101	57,935	54,014	-8#	28	22	1.7	14.5	2.8
120,000 seed/A	101	71,438	68,607	-4	26	20	1.5	14.9	2.7
LSD	NS	7,869	8,353	17	5	8	0.2	0.8	0.9
VAR x SR									
LSD	NS	NS	NS	NS	NS	NS	NS	NS	NS

† This is a rough estimate of fermentable solids determined by: stalk biomass*BRIX*0.90.

‡ NS denotes a non-significant response.

Negative number indicates that the number of harvestable stalks counted from the flagged off area at the 5-leaf stage of development was less than the number of harvestable stalks determined at harvest.

Soybean Fungicide Efficacy Comparisons

Experiment number ....: 2010 Date of Planting #1 Soybeans

Site and design ....:
Location/Cooperator ....: Rice Research Station (South Unit)
Tillage type ....: Conventional
Experimental design ....: Randomized complete block
Number of reps ....: 4
Plot size ....: 5.33 x 20 ft
Row width/rows per plot ....: 16 and 32 in / 4 and 2

Soil type ....: Crowley silt loam
% organic matter ....: NA
pH ....: NA
Extractable nutrients ppm ....: NA

Crop/Variety ....: Soybeans / 94Y90 and 95Y40
Planting method/date ....: Drill seeded / April 12
Seeding rate/depth ....: 130,000 seeds/A / 1 inch
Emergence date ....: April 19
Harvest date ....: September 9

Seed treatment/cwt ....: NA

Fertilization ....: 250 lb/A 0-24-24, June 14

Water management ....:
Flush ....: NA
Flood ....: NA
Drain ....: NA

Pest management ....:
Herbicides ....: 2 qt/A Glyphosate + .5 oz/A Classic, May 3
1.5 lb ai/A Glyphosate, June 20
1.5 lb ai/A Glyphosate, July 13

Insecticides ....: 2 oz/A Karate Z, June1
2 oz/A Karate Z, July 23
6 oz/A Intrepid + .7 lb/A Acephate 90, August 11

Fungicides ....: None

Soybean Fungicide Efficacy Comparisons

Experiment number ....: 2010 Date of Planting #2 Soybeans

Site and design ....:
Location/Cooperator ....: Rice Research Station (South Unit)
Tillage type ....: Spring Stale
Experimental design ....: Randomized complete block
Number of reps ....: 4
Plot size ....: 5.33 x 20 ft
Row width/rows per plot ....: 16 and 32 in / 4 and 2

Soil type ....: Crowley silt loam
% organic matter ....: NA
pH ....: NA
Extractable nutrients ppm ....: NA

Crop/Variety ....: Soybeans / 94Y90 and 95Y40
Planting method/date ....: Drill seeded / May 21
Seeding rate/depth ....: 130,000 seeds/A / 3/4 inch
Emergence date ....: May 26
Harvest date ....: September 22

Seed treatment/cwt ....: NA

Fertilization ....: 250 lb/A 0-24-24, June 14

Water management ....:
Flush ....: NA
Flood ....: NA
Drain ....: NA

Pest management ....:
Herbicides ....: 1.5 lb ai/A Glyphosate + 1.5 lb ai Dual Magnum + .33 oz/A Classic, May 21
1.5 lb ai/A Glyphosate, July 13

Insecticides ....: 2 oz/A Karate Z, June1
2 oz/A Karate Z, July 23
6 oz/A Intrepid + .7 lb/A Acephate 90, August 11
2 oz/A Karate Z, September 7

Fungicides ....: None

Soybean Fungicide Efficacy Comparisons

Experiment number ....: 2010 Date of Planting #3 Soybeans

Site and design ....:
- **Location/Cooperator** ....: Rice Research Station (South Unit)
- **Tillage type** ....: Spring Stale
- **Experimental design** ....: Randomized complete block
- **Number of reps** ....: 4
- **Plot size** ....: 5.33 x 20 ft
- **Row width/rows per plot** ....: 16 and 32 in / 4 and 2

Soil type ....: Crowley silt loam
- **% organic matter** ....: NA
- **pH** ....: NA
- **Extractable nutrients** ppm ....: NA

Crop/Variety ....: Soybeans / 94Y90 and 95Y40
- **Planting method/date** ....: Drill seeded / June 11
- **Seeding rate/depth** ....: 130,000 seeds/A / 1 inch
- **Emergence date** ....: NA
- **Harvest date** ....: October 7

Seed treatment/cwt ....: NA

Fertilization ....: 250 lb/A 0-24-24, June 14

Water management ....:
- **Flush** ....: NA
- **Flood** ....: NA
- **Drain** ....: NA

Pest management ....:
- **Herbicides** ....: 1.5 lb ai/A Glyphosate + 1.5 lb ai Dual Magnum + .33 oz/A Classic, May 21
  1.5 lb ai/A Glyphosate, July 13
- **Insecticides** ....: 2 oz/A Karate Z, July 23
  6 oz/A Intrepid + .7 lb/A Acephate 90, August 11
  2 oz/A Karate Z, September 7
- **Fungicides** ....: None

Table 2. Fungicide comparisons and yield loss assessment of aerial blight on Pioneer 94Y90 (16-inch row spacing) at the Rice Research Station, 2010.

Treatment*	Rate	Application Time	Disease Rating AB R3-R6/7	Yield (bu/A)	Differences (bu/A)
Untreated			3-8	12.03	
Headline	6.0 oz	R3	2-5	34.77	22.74
BAS 703 02F	4.5 oz	R3	3-5	28.66	16.63
Quilt Xcel	10.5 oz	R3	2-5	30.75	18.72
Headline	6.0 oz	R5	2-6	26.22	14.19
BAS 703 02F	4.5 oz	R5	3-7	22.65	10.62
Quilt Xcel	10.5 oz	R5	3-6	28.88	16.85
BAS 703 02F	4.5 oz	R3+R5	3-6	28.09	16.06
Topguard	7.0 oz	R2	1-6	24.01	11.98
Topguard	7.0 oz	R2+R5	1-4	24.18	12.15
Domark	5.0 oz	R2+R5	1-5	27.77	15.74
Quadris/HL/Echo	6/6/1	R1+R3+R5+R6	0-1	43.61	31.58
Quadris	6.0 oz	R3	3-5	38.75	26.72
Quadris	6.0 oz	R3+R5	3-4	41.45	29.42

*Each treatment contained Induce at the rate of 0.25% v/v.

Table 3. Fungicide comparisons and yield loss assessment of aerial blight on Pioneer 94Y90 (32-inch row spacing) at the Rice Research Station, 2010.

Treatment*	Rate	Application Time	Disease Rating AB R3-R6/7	Yield (bu/A)	Differences (bu/A)	Test Weight
Untreated			3-9	14.73		47.9
Headline	6.0 oz	R3	2-5	37.93	23.20	48.8
BAS 703 02F	4.5 oz	R3	3-6	18.75	4.02	48.6
Quilt Xcel	10.5 oz	R3	2-5	28.93	14.20	49.9
Headline	6.0 oz	R5	3-6	29.10	14.37	50.1
BAS 703 02F	4.5 oz	R5	3-7	24.93	7.20	50.9
Quilt Xcel	10.5 oz	R5	3-7	21.40	6.67	50.2
BAS 703 02F	4.5 oz	R3+R5	3-6	28.75	14.02	51.0
Topguard	7.0 oz	R2	1-6	26.40	11.67	50.0
Topguard	7.0 oz	R2+R5	1-4	25.10	10.37	51.0
Domark	5.0 oz	R2+R5	1-4	29.48	14.75	50.9
Quadris/HL/Echo	6/6/1	R1+R3+R5+R6	0-1	46.10	32.37	51.2
Quadris	6.0 oz	R3	3-6	40.75	26.02	49.2
Quadris	6.0 oz	R3+R5	3-4	44.50	29.77	49.9

*Each treatment contained Induce at the rate of 0.25% v/v.

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 164,000 cwt. of pedigreed stock of 43 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 are 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 in rates 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. Therefore, 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.

2010 ACTIVITIES

Of the 859 cwt. of foundation seed rice sold in 2010, the varieties and quantities were as follows: Cheniere, 266 cwt.; Catahoula, 215 cwt.; Neptune, 130 cwt.; Jazzman, 69 cwt.; Della, 46 cwt.; and Bengal, 16 cwt.

The Rice Research Station's foundation seed crop in 2010 consisted of 10 acres of Caffey, 8.8 acres of Jazzman-2, 8.3 acres of Cocodrie, 7 acres of Jupiter, and 1 acre each of Toro-2, Dellrose, and Pirogue.

Headrows of Caffey, Jazzman-2, Cocodrie, Pirogue, Dellrose, and Toro-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, 2009-2010 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 10 months following the previous crawfish season of 2007 - 2008. Rice crops were planted in April 2009, and fields were stocked with brood crawfish during May and June 2009.

Soil Type: Crowley silt loam

Water Source: Ground water

Pond Area: Twelve 1-acre ponds in a contiguous arrangement

Forage Crops: Rice, variety 'Catahoula,' was drill seeded on 16 Apr 2009 at 100 lb/A. Grain was harvested by rice combine on 13 and 14 Aug 2009, and a ratoon forage crop was managed for crawfish production

Fertilizer: Main Crop: 8-24-24 at 250 lb/A, post plant; 46-0-0 at 200 lb/A (topdress), 18 May; 46-0-0 100 lb/A (topdress), 10 June; Ratoon Crop: 46-0-0 at 100 lb/A (topdress), 19 Aug 2009

Herbicide: Propanil 1gal/A on 5 May, Rice Star at 20 oz/A on 19 May; Rice Star HT 24 oz/A, 26 June 2009

Insecticide: None

Fungicide: None

Stocking Rate: 60 lb/A from 28 May - 30 June 2009

Permanent Flood Date: 11 Sept 2009

Feed: None

Trap Type and Trap Density: 3-funnel pyramid trap (0.75-inch square mesh). Trap density = 16 traps/A

Bait Used: Manufactured baits: *Early On* and *Southern Pride* (Purina Mills, Inc., St. Louis, MO); or fish baits (herring, gizzard shad, or menhaden).

Crawfish Harvest: 29 Jan - 30 June 2010 (784 total trap-sets/A/season)

Table 1. Annual environmental conditions and crawfish production (averaged or totaled weekly). Rice Research Station, Crowley, La. 2009 - 2010.

	Soil Temp.[1]		Air Temp.		Water Temp.		Avg. D.O.[2]	Total Rainfall	Crawfish Harvest	Crawfish Size[4]	Total Trapsets
Week	Min.	Max.	Min.	Max.	Min.	Max.					
	-------------------------deg.F-------------------------						(mg/L)	(inches)	(lb/A)	(cnt/lb)	(#/A)
June 1-6	66.4	85.7	65.7	87.2				.27			
June 7-13	80.0	89.4	70.9	90.6							
June 14-20	84.0	94.1	72.1	94.4							
June 21-27	86.7	97.0	75.7	98.1				.16			
June 28-July 4	86.0	97.0	76.6	98.7				.28			
July 5-11	83.3	93.1	75.9	93.7				4.55			
July 12-18	84.4	92.7	76.3	92.0				.72			
July 19-25	79.0	78.9	70.6	89.1				1.04			
July 26-Aug 1	81.3	88.9	75.1	91.7				.12			
Aug 2-8	81.9	90.1	74.6	93.3				1.30			
Aug 9-15	82.3	88.4	74.1	93.3				1.53			
Aug 16-22	81.6	85.6	74.1	91.4				1.85			
Aug 23-29	77.7	82.9	68.6	89.6				.37			
Aug 30-Sept 5	76.6	82.0	67.0	89.1				.64			
Sept 6-12	77.7	82.4	71.1	89.1				2.78			
Sept 13-19	77.3	80.9	71.9	83.3				1.25			
Sept 20-26	78.0	81.7	73.3	87.6				4.47			
Sept 27-Oct 3	75.6	80.1	66.9	87.6	74.3	81.5	.77	.68			
Oct 4-10	77.0	68.7	71.7	87.0	77.8	82.4	.59	2.55			
Oct 11-17	72.4	77.1	64.6	79.9	72.4	77.3	.94	4.71			
Oct 18-24	64.1	69.9	51.0	71.7	63.2	69.2	1.88	2.35			
Oct 25-31	64.0	70.0	55.7	74.9	63.0	69.5	1.82	3.59			
Nov 1-7	61.6	66.7	49.9	73.6	60.4	66.8	2.16	.96			
Nov 8-14	62.7	67.0	50.9	74.6	61.6	66.9	1.28				
Nov 15-21	58.9	64.1	47.6	70.1	56.4	61.8					
Nov 22-28	56.3	60.0	44.7	62.4	54.5	59.2	2.68	1.50			
Nov 29-Dec 5	53.7	57.4	42.1	60.0	50.7	55.0		2.11			
Dec 6-12	51.0	56.0	42.9	58.0	49.8	54.2		4.00			
Dec 13-19	52.7	56.1	46.3	59.6	50.7	54.0		3.25			
Dec 20-26	50.9	56.0	41.3	62.9	49.7	54.9					

Continued.

Table 1. Continued.

Week	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	Crawfish Size[4]	Total Trapsets
	--------------------------deg.F--------------------------						(mg/L)	(inches)	(lb/A)	(cnt/lb)	(#/A)
Dec 27-Jan 2	48.7	52.4	36.9	54.6	47.3	51.4		2.55			
Jan 3-9	43.9	47.7	28.1	45.1	41.6	45.8		.52			
Jan 10-16	41.7	45.9	31.1	51.0	43.4	48.7	6.21	.94			
Jan 17-23	52.1	56.3	48.7	67.4	55.4	61.3	3.92	.10			
Jan 24-30	52.9	57.6	44.1	66.9	52.7	59.7	1.78	.48	1.1	17.8	16
Jan 31-Feb 6	49.4	52.1	41.1	51.6	47.2	53.1		2.85			
Feb 7-13	46.4	50.0	34.9	49.4	44.8	51.7		1.52			
Feb 14-20	44.4	49.4	32.9	55.7	45.9	56.9	6.53	.40			
Feb 21-27	50.1	54.7	42.1	60.9	51.8	60.5		.11			
Feb 28-Mar-6	47.6	53.1	37.6	60.3	50.0	63.3	3.35	1.76	1.7	13.6	16
Mar 7-13	55.1	59.7	46.9	70.0	59.1	68.2		.20	2.4	13.4	16
Mar 14-20	55.9	60.9	46.6	68.3	58.7	71.2		.30	8.5	12.1	32
Mar 21-27	54.4	60.1	45.3	65.7	54.6	69.8		.44	6.8	12.3	32
Mar 28-Apr 3	58.4	64.0	52.3	73.0	62.3	78.4			9.9	11.5	32
Apr 4-10	65.1	70.3	59.4	79.1	66.9	80.3	.67	.52	5.3	13.4	32
Apr 11-17	65.0	71.4	56.9	81.1	66.8	82.0		.07	14.1	11.0	48
Apr 18-24	67.9	73.1	61.6	79.0	70.5	82.1		.54	19.1	11.3	64
Apr 25-May 1	69.1	75.1	58.7	83.0	68.8	81.9		.08	29.0	10.0	64
May 2-8	73.6	80.0	66.3	86.9	74.2	89.6		.05	35.8	9.3	64
May 9-15	75.0	80.6	69.3	85.0	73.7	86.6			39.3	9.8	64
May 16-22	76.0	81.7	70.9	88.0	79.4	94.2		2.10	35.5	9.1	48
May 23-29	78.1	85.3	71.6	91.3	81.0	96.9		1.33	40.2	9.0	48
May 30-June 5	78.3	84.1	73.3	88.0	79.8	89.2		3.34	52.1	9.6	64
June 6-12	81.1	86.6	75.7	89.6	82.4	94.7		3.70	53.6	10.1	48
June 13-19	82.9	89.3	75.7	92.0	85.6	101.0		.78	22.9	9.9	32
June 20-26	84.0	90.0	76.4	92.4	86.2	99.6		1.04	20.4	10.7	32
June 27-30	83.5	89.0	75.8	91.3	83.4	91.7		2.17	17.2		32
								64.53[3]	**418.8**		**784**

[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 (1 June 2009 – 31 May 2010) and does not include additional rainfall for the extended harvest period (June 2010).
[4] Average size count was determined from crawfish captured on the second harvest day of each week.

COMPARISONS OF WATER TEMPERATURE IN EXPERIMENTAL CRAWFISH PONDS OVER THE LAST DECADE

W.R. McClain, R.P. Romaire, and J.J. Sonnier

INTRODUCTION

Rice farmers are generally familiar with a computer program that predicts rice growth and development based on a formula derived from response data of rice crops to changes in air temperature. This program is called the DD-50 model because it is based on cumulative degree-days (DD) and the low temperature (50 degrees F) at which rice growth and development ceases. This program considers that as temperatures exceed 50 degrees F, rice development accelerates accordingly. A similar growth formula was recently developed for crawfish by applying data obtained from monitoring the growth rate of crawfish at various water temperatures in crawfish ponds at the LSU AgCenter's Rice Research Station. This formula, designated DD-41, is based on our best estimate of the minimum water temperature at which crawfish growth ceases for all practical purposes in red swamp crawfish (41 degrees F) and the propensity for crawfish growth to accelerate when temperatures warm above 41 degrees F.

Although the DD-41 formula for crawfish is based on limited data collected in experimental crawfish ponds, we think it provides a good approximation of the growth response of crawfish to varying temperatures. A degree-day is calculated by subtracting 41 from the average daily water temperature. On days when the average water temperature is below 41 degrees F, the degree-day value is zero. A degree-day value of 10 would result from an average daily water temperature of 51 degree F. Cumulative degree-days can be useful in estimating growth potential. For example, previous research showed that about 1,800 cumulative degree-days is required for 50 percent of hatchling crawfish to reach a minimal harvest size (30 count or 30 crawfish to the pound) under typical conditions in rice-crawfish production operations. The requirement of 1,800 cumulative degree-days could be somewhat more or less depending on such factors as crawfish density, food availability, and water quality.

The DD-41 formula can be a useful tool in predicting when crawfish recruitment classes are likely to attain harvest size or for comparing growth responses of crawfish from past production seasons (years). For example, we used actual water temperature data during the winter months of the 2009-2010 crawfish season to calculate the cumulative degree-days for that period and compared those to the water temperature for the same period of the previous nine crawfish seasons in terms of favorable growing conditions related to water temperature. By calculating cumulative degree-days for each of the past 10 crawfish seasons, we compared growing conditions for the previous season with past seasons.

Location: Experimental crawfish ponds at the South Unit of the Rice Research Station, Crowley, La.

Crawfish Production Scenario: Rice-crawfish field rotational practice.

Seasonal Data: Recorded water temperature data at this location for December, January, and February of the 2000-2001 crawfish season through the 2009-2010 season were used.

Water Temperature Measurement: Recorded every 4 hours by a temperature data-logger (Hobo®, Onset Computers, Pocasset, Massachusetts, USA, model TEMP) placed randomly in ponds on site.

Temperature Calculations: Average daily temperature was derived by obtaining the mean for each 24-hour period, and daily means were averaged to obtain the monthly means.

Cumulative Fahrenheit Degree-Days: Calculated by summing the daily difference between the average daily temperature and the thermal minima (threshold) for growth of red swamp crawfish (estimated to be 41 degrees F). The thermal maxima for growth was not approached during these winter months. Therefore, the cumulative degree-days for growth during this study were determined from the following equation: $DD = \sum (MDT_i - TMin)$ where MDT_i = mean daily temperature for day i, TMin = thermal minimum for growth, and $\sum$ is the symbol for summation. The symbol i represents each day of the December to February period.

Number of Days Above 55 F: Determined from average daily temperatures and is used to compare the number of acceptable harvest days based on the potential response of crawfish to bait as it relates to water temperature.

Comments: Table 1 provides information on average water temperature in December, January, and February, and the cumulative degree-days above 41 degrees F for those three months. Only one season (2000-2001) in the past decade had a colder December than occurred the previous season (2009-2010), and two seasons (2000-2001 and 2002-2003) had colder Januarys, but the month of February in 2010 was the coldest February in the past decade. Overall, while two previous winters (2000-2001 and 2002-2003) were nearly as cold (had comparable cumulative degree-days), the winter season of 2009-2010 has proven to be the coldest of the past decade, and this undoubtedly had affected the growth and subsequent crawfish catch early in the season.

To further illustrate the point regarding unusually cold weather conditions in early 2010, note in Table 1, the number of days during January and February that average water temperature was above 55 degrees F. There were only 16 days in January and February where the average water temperature was above 55 degrees F. In comparison, for the previous nine seasons, there was an average of 28 days (range of 14 - 43 days) where average water temperature exceeded 55 degrees F. Only the 2002-2003 crawfish season had fewer warmer days (14) than the 2010 season. So it is not surprising that a reduced crawfish catch through February of 2010 was noted for a majority of crawfish farmers.

Crawfish significantly reduce their food consumption and movement at temperatures below 55-60 degrees F and, thus, are not as attracted to baited traps. Crawfish harvest was essentially non-existent during January and February of 2010 at the Rice Research Station; although typically, these months represent minimum harvest efforts as an artifact of the field rotation strategy of production employed (Table 2). Crawfish yield at the LSU AgCenter Aquaculture Research Station in Baton Rouge (employing a permanent pond production scenario) was reported to be 45 percent less than the average January/February catch for the previous nine seasons at that location. Much, if not most, of the reduction at the Aquaculture Research Station was attributed to unseasonably cold winter water temperatures.

Crawfish harvest at the Rice Research Station increased significantly following warm weather (Table 2) in 2010, but overall yield was lower than normal. Note that peak yields were not realized until June of 2010 – the first time peak yield has been observed that late at this location. Comparison of harvest data for 2010 was also compared with average crawfish harvest data at the Rice Research Station for the previous eight seasons. However, it should be noted that annual yield for two of the eight previous seasons was artificially low due to imposed experimental treatments that eliminated natural recruitment for the implementation of the stocking of hatchlings as the sole source of fall recruitment. While annual yields and CPUE were affected as a result of the experimental practice during those years, it is unknown what, if any, effect that practice may have had on the average proportional yield by month. Nonetheless, the most outstanding observation when comparing harvest data of 2010 with the previous years' averages is the proportion of the annual yield for 2010 that was harvested early in the season versus late in the season when compared with that of the previous average. The proportion of the total catch that occurred during the last two months in 2010 was much greater than normal, and unlike any of the previous eight years, the peak harvest occurred in June of 2010. This can largely be explained by weather patterns and the severe cold winter of 2009-2010.

Table1. Winter water temperature comparisons from the 2000-01 through 2009-10 crawfish seasons in experimental rice-crawfish culture ponds at the LSU AgCenter's Rice Research Station. Rice Research Station, Crowley, La. 2010.

	Average Monthly Water Temperature (°F)			**Cumulative Degree-days[1] (Dec–Feb)**	**Number of Days above 55°F (Jan-Feb)**
Season	**Dec**	**Jan**	**Feb**		
00-01	48	49	60	983	21
01-02	57	53	53	1224	23
02-03	51	47	56	907	14
03-04	52	53	53	1080	21
04-05	54	57	58	1358	36
05-06	53	58	57	1325	43
06-07	55	53	56	1247	24
07-08	58	51	59	1334	32
08-09	55	55	60	1388	37
09-10	**51**	**51**	**51**	**905**	**16**

[1] Cumulative degree-days are derived by summing individual degree-days, which are calculated by subtracting 41 from each average daily temperature because 41 degrees F is the threshold temperature at which growth ceases in crawfish.

Table 2. Comparison of 2010 harvesting statistics by month with the previous 8-year average for the Rice Research Station. CPUE refers to the average catch per unit effort (i.e., catch per trap lift), and the overall average represents a weighted average. Rice Research Station, Crowley, La. 2010.

	2010				**2002-2009[1]**			
Month of Harvest	**Yield (lb/A)**	**% of total**	**Days Ran**	**CPUE**	**Yield (lb/A)**	**% of total**	**Days Ran**	**CPUE**
January	1.1	0.3	1	0.07	25	4.6	1	0.55
February	0	-	0	-	52	9.7	4	0.37
March	29.3	7.0	8	0.23	95	17.7	10	0.51
April	71.4	17.0	13	0.34	134	25.0	14	0.53
May	150.8	36.0	14	0.67	150	28.0	16	0.52
June	166.2	39.7	14	0.74	81	15.1	10	0.45
Totals (Average)	**418.8**		**50**	**(0.52)**	**537**		**55**	**(0.49)**

[1] Data include two seasons whereby the only substantial young-of-the-year recruitment occurred as a result of the stocking of hatchlings in lieu of the natural recruitment processes. Yields and CPUE were unusually low for those years.

EFFECT OF BAIT RETENTION WELLS IN TRAPS ON CRAWFISH CATCH

W.R. McClain and J.J. Sonnier

INTRODUCTION

Crawfish aquaculture is unique compared with other aquaculture industries. First, commercial production relies solely on natural reproduction from indigenous or supplemented broodstock, and recruitment of young to the pond is continuous. The method of harvest is also unique. 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 6 days a week beginning as early as November and continuing through May or June of the following year.

Harvesting is the most labor-intense component of crawfish aquaculture and represents the largest operating expense; therefore, continued research to investigate any means of increasing harvesting efficiency or effectiveness is warranted. Many factors are likely to have an effect on the efficacy of traps to capture and retain crawfish, such as size and shape of the mesh wire, size of crawfish, size and shape of the entrance funnel, food (bait) availability inside the trap, density of crawfish in the field and in the trap, soak (set) time, and water temperature.

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 today. Therefore, the question remains as to what, if any, benefit that bait wells may offer in the more efficient square-mesh pyramid trap in use today.

One unknown benefit, not directly related to catch per unit effort (CPUE) but may be important in decreasing cost of harvesting, is whether bait amounts can be decreased (i.e., lower bait costs) with the use of bait wells without jeopardizing CPUE. Thus, this project was initiated to reinvestigate the employment of bait wells in modern traps and to develop baseline data regarding the effects of bait wells alone on CPUE. Further research is warranted if findings suggest that bait wells have little or no adverse effect on trap yields.

Location: Experimental crawfish ponds at the South Unit of the Rice Research Station, Crowley, La. Study encompassed two consecutive production seasons, 2008-2009 and 2009-2010.

Crawfish Production Scenario: Rice-crawfish field rotational practice.

Rice: 2008-09; Jupiter was drill seeded at 125 lb/A on 14 April. Grain was harvested on 29 Aug, and the ratoon forage crop was subsequently managed for crawfish production. **2009-10**; Catahoula was drill seeded at 100 lb/A on 16 April, and grain was harvested on 13 and 14 Aug. The ratoon forage crop was managed for crawfish production.

Stocking Rate: **2008-09**; Adult red swamp crawfish (*Procambarus clarkii*), along with a small percentage of sub-adults, were stocked into the growing rice crop 30 May - 18 June at 65 lb/A. **2009-10**; Mostly adult red swamp crawfish were stocked at 60 lb/A from 28 May - 30 June.

Permanent Flood Date: **2008-09**, 1 Oct; **2009-10**, 11 Sept

Feed: None, growth was sustained solely from the forage-based system.

Trap Type and Density: 3-funnel pyramid trap: (0.75 inch square mesh) equipped either with bait retention wells or no retention wells. Trap density was 22 traps/A. Traps, with or without bait wells, constituted the experimental treatments in this study.

Bait Wells: In **2009**, bait retention wells were constructed of 3/4-inch plastic mesh wire, and in **2010**, bait wells were constructed of either 1/8-inch or 3/4-inch plastic mesh wire. Bait wells were cylindrical in shape, approximately 3 inches in diameter, and were placed in the center of the trap and fastened to the bottom of the trap with hog ring clamps (Figure 1). Bait wells extended above the water line when traps were placed in the pond but did not extend to the top of the trap.

Bait Used: Manufactured baits: *Early On* and *Southern Pride* (Purina Mills, Inc., St. Louis, MO); or fish baits (herring, gizzard shad, or menhaden). Bait type and amounts were consistent across all treatments on a daily basis.

Crawfish Harvest: **2008-09**; Extended from 11 March - 12 June. **2009-10**; Extended from 24 Feb - 4 June. Trap soak duration ranged from 24 to 48 hours and was consistent across treatments every day each year.

Experimental Design: Traps were placed in rows with a random alternating pattern of treatments, except that no two replicates of the same treatment were placed next to each other.

Parameters: Crawfish CPUE or trap lift by numbers of crawfish per trap and by weight of crawfish per trap, and average size of crawfish per trap lift (in count per pound). Results were summarized by bait type and soak duration, by year, and overall without regard to bait or soak duration used.

Statistical Analysis: Analysis of variance with means separated by Duncan's multiple range test. Means were considered to be statistically significant at alpha=0.05.

Comments: As a prerequisite to examining cost-cutting measures for decreasing harvesting cost in crawfish aquaculture, this study was undertaken to examine the effect of using bait retention wells in crawfish traps. As observed in Table 1, few significant differences were observed in CPUE, whether measured by numbers of crawfish caught per trap lift or weight of crawfish caught when comparing harvesting efficiency with or without employment of bait retention wells in the trap. Results were also generally consistent for the two seasons, whether the data were combined for bait type or soak time or segregated by those variables. Significant differences among treatments were observed only twice, and those were for average size and not CPUE. Though significant differences were observed only in 2010, albeit in only two cases, clearly there was a trend of smaller crawfish (i.e., higher count/lb) in traps with no bait well. Less clear was any trend in CPUE with regard to bait well use. These results provide incentive for the use of bait wells in further testing with reduced quantities of bait as a means of mitigating high bait costs.

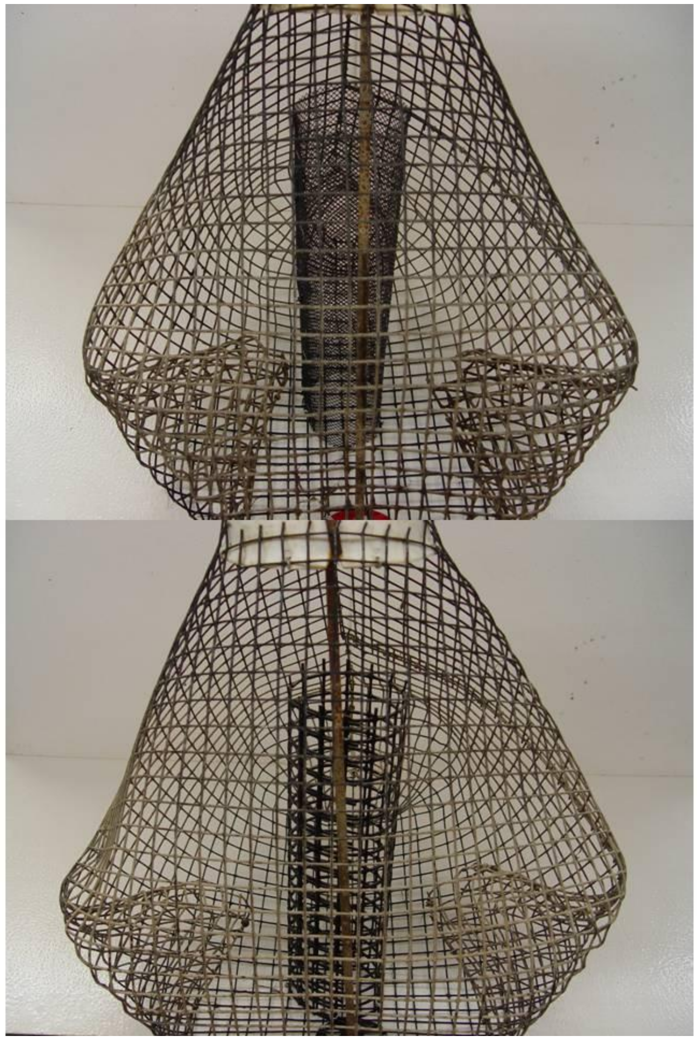


Figure 1. Illustration of small-mesh (upper photo) and large-mesh (lower photo) bait retention wells fastened inside of pyramid traps.

Table 1. Average size (count/lb) and catch per unit effort (by weight and by number) for traps fitted with and without bait retention wells. Data reflect two production seasons with use of formulated or cut-fish baits and 24-hr or 48-hr trap soak durations. In 2009, bait wells were constructed of 3/4-inch plastic mesh wire, and in 2010, bait wells were constructed of either 1/8-inch or 3/4-inch plastic mesh wire. Values within columns, by section, with the same superscript were not significantly different ($P > 0.05$) and *NS* indicates no significant differences among the treatments. Rice Research Station, Crowley, La. 2010.

Treatment	No.	Avg. Size (count/lb)	CPUE - Weight (lb/trap)	CPUE - Number (no./trap)
---------- Overall, 2009 ----------				
No Bait well	37	14.1	0.469	6.5
Bait well	37	13.8	0.479	6.5
		NS	***NS***	***NS***
---------- Overall, 2010 ----------				
No Bait well	42	15.4^{A}	0.580	8.7
Small-mesh Bait well	42	14.8^{AB}	0.525	7.6
Large-mesh Bait well	42	14.4^{B}	0.536	7.6
			NS	***NS***
---------- Formulated Bait Only, 2009 ----------				
No Bait well	24	13.2	0.463	6.0
Bait well	24	12.6	0.492	6.1
		NS	***NS***	***NS***
---------- Formulated Bait Only, 2010 ----------				
No Bait well	31	14.7	0.661	9.7^{A}
Small-mesh Bait well	31	14.5	0.575	8.2^{B}
Large-mesh Bait well	31	14.0	0.596	8.3^{B}
		NS	***NS***	
---------- Fish Bait Only, 2009 ----------				
No Bait well	13	15.7	0.480	7.4
Bait well	13	15.9	0.455	7.2
		NS	***NS***	***NS***
---------- Fish Bait Only, 2010 ----------				
No Bait well	11	17.4	0.353	5.9
Small-mesh Bait well	11	15.7	0.382	5.8
Large-mesh Bait well	11	15.5	0.366	5.6
		NS	***NS***	***NS***
---------- 24-hr Soak Only, 2009 ----------				
No Bait well	27	14.4	0.464	6.6
Bait well	27	14.0	0.480	6.6
		NS	***NS***	***NS***
---------- 24-hr Soak Only, 2010 ----------				
No Bait well	36	15.7^{A}	0.563	8.6
Small-mesh Bait well	36	15.1^{AB}	0.507	7.5
Large-mesh Bait well	36	14.7^{B}	0.533	7.7
			NS	***NS***
---------- 48-hr Soak Only, 2009 ----------				
No Bait well	10	13.3	0.484	6.3
Bait well	10	13.2	0.476	6.1
		NS	***NS***	***NS***
---------- 48-hr Soak Only, 2010 ----------				
No Bait well	5	14.0	0.668	9.2
Small-mesh Bait well	5	13.6	0.574	7.7
Large-mesh Bait well	5	13.2	0.526	6.8
		NS	***NS***	***NS***

EFFECT OF MODIFIED TRAP ENTRANCE FUNNELS ON CRAWFISH CATCH

W.R. McClain and J.J. Sonnier

INTRODUCTION

Harvesting of crawfish in aquaculture ponds requires intense trapping efforts of 3 to 6 days per week for 4 to 8 months of the year. Because of the time, labor, and equipment costs associated with harvesting, coupled with the cost of bait, harvesting expenses account for the largest operating expense associated with farming of crawfish in the South. While the current standard trap used in the industry today (3-funnel pyramid style constructed of welded square mesh wire) is the most effective and efficient trap to date, one flaw still exists – that is, many crawfish that enter the trap actually exit the trap before it is raised and emptied. Thus, the trap design is far from 100% efficient. Many marketable crawfish simply exit the trap through the same funnel opening that they entered.

Several studies have evaluated different trap entrance funnel configurations designed to minimize the escape of crawfish. Much of those modifications tested were designed for the recreational fishery of European crawfish species. The results from similar modifications with traps for Louisiana crawfish were largely disappointing. Some of the modifications tested reduced escape of crawfish from traps but they also often impeded the ingress of animals into the traps, thereby resulting in no net increase in catch and often a decrease in net yield.

This study was initiated to investigate the concept of entrance funnel modification using alternative materials and methods on the current industry trap design to determine their effect on daily catch of crawfish under typical pond culture strategies.

Location: Experimental crawfish ponds at the South Unit of the Rice Research Station, Crowley, La. Study encompassed two consecutive production seasons, 2008-2009 and 2009-2010.

Crawfish Production Scenario: Rice-crawfish field rotational practice.

Rice: **2008-09**; Jupiter was drill seeded at 125 lb/A on 14 April. Grain was harvested on 29 Aug, and the ratoon forage crop was subsequently managed for crawfish production. **2009-10**; Catahoula was drill seeded at 100 lb/A on 16 April, and grain was harvested on 13 and 14 Aug. The ratoon forage crop was managed for crawfish production.

Stocking Rate: **2008-09**; Adult red swamp crawfish (*Procambarus clarkii*), along with a small percentage of sub-adults, were stocked into the growing rice crop 30 May - 18 June at 65 lb/A. **2009-10**; Mostly adult red swamp crawfish were stocked at 60 lb/A from 28 May - 30 June.

Permanent Flood Date: **2008-09**, 1 Oct; **2009-10**. 11 Sept

Feed: None, growth was sustained solely from the forage-based system.

Trap Type and Density: 3-funnel pyramid trap: (0.75 inch square mesh) equipped either with or without modified entrance funnels. Trap density was 16 traps/A. Trap modification constituted the experimental treatments in this study.

Trap Modification: Trap entrance funnels were either left unaltered or modified to constitute treatment factors. Funnels of modified traps were fitted with small 4-inch cable ties or replaced with solid plastic funnels exhibiting approximately the same depth and diameter opening as standard wire mesh funnels (Figure 1). The cable ties were fitted around the circumference of the funnel openings such that the ends of the cable ties were facing the interior of the trap and approximately centered in the funnel opening. Either three or six cable ties were fitted to each funnel. Each funnel of a single trap was modified the same way, and each trap constituted a treatment replica.

Experimental Treatments: **2008-09**; Two treatments were employed: traps were either fitted with six cable ties per funnel or were used without modification (control). **2009-10**; Four treatments were employed: traps were fitted with either three or six cable ties per funnel, fitted with solid funnels, or were used as a control without modification.

Bait Used: Manufactured baits: *Early On* and *Southern Pride* (Purina Mills, Inc., St. Louis, MO); or fish baits (herring, gizzard shad, or menhaden). Bait type and amounts were consistent across all treatments on a daily basis.

Crawfish Harvest: **2008-09**; Extended from 11 Mar - 12 June. **2009-10**; Extended from 24 Feb - 4 June. Trap soak duration was either 24 or 48 hours and was consistent across treatments each day. Three replicates in 2010 were observed with a 72-hr trap soak duration.

Experimental Design: Traps were placed in rows with a random alternating pattern of treatments, except that no two replicates of the same treatment were placed next to each other.

Parameters: Crawfish catch per unit effort (CPUE) by numbers of crawfish per trap and by weight of crawfish per trap, and average size of crawfish per trap lift (in count per pound). Results were summarized by bait type and soak duration, by year, and overall without regard to bait or soak duration used.

Statistical Analysis: Analysis of variance with means separated by Duncan's multiple range test. Means were considered to be statistically significant at alpha=0.05.

Comments: The theory behind the use of cable ties, placed in the funnel openings and positioned to orient inward (with the funnel narrowing) terminating near the center of the opening, was that the cable ties would offer little resistance and open up to crawfish entering the trap yet provide a much more formidable blockade to crawfish trying to exit via the funnel opening. However, results from this study corroborated much of the previous findings with modified entrance funnels on crawfish traps by clearly hampering CPUE, whether the catch was measured by numbers or weight of crawfish caught (Table 1). In most cases, the catch was significantly greater when no obstruction was present in the openings of the standard mesh funnels. This trend was fairly consistent for years, and for method of segregating the data. Findings from 2010 also show that funnels with three cable ties, in lieu of six, usually resulted in higher CPUE but less than from control traps. The magnitude of the difference in CPUE was usually less for longer soak durations and when fish was used as bait.

Crawfish captured in traps with modified funnels were also smaller (higher count per pound) on average, compared with those from standard traps without funnel modifications. It is not clearly understood from this study why trap funnel modifications resulted in lower CPUE and larger average size crawfish, but it is possible that the cable ties impeded entrance of crawfish into the trap – whether or not there was any effect of reducing egress from the trap – resulting in lower average catches. It also is easy to assume that smaller crawfish were able to negotiate the cable obstructions better than larger individuals, resulting in a smaller overall size captured for traps with the cable ties. It is unclear how or why the solid funnels often resulted in less catch and/or smaller crawfish harvested.

More research is needed to understand the factors affecting ingress and egress of crawfish through trap entrance funnels, as well as other factors affecting catch and retention efficiency of crawfish traps, but it may be desirable to also investigate finer, more flexible material in the same manner as was done with the cable ties in this study.

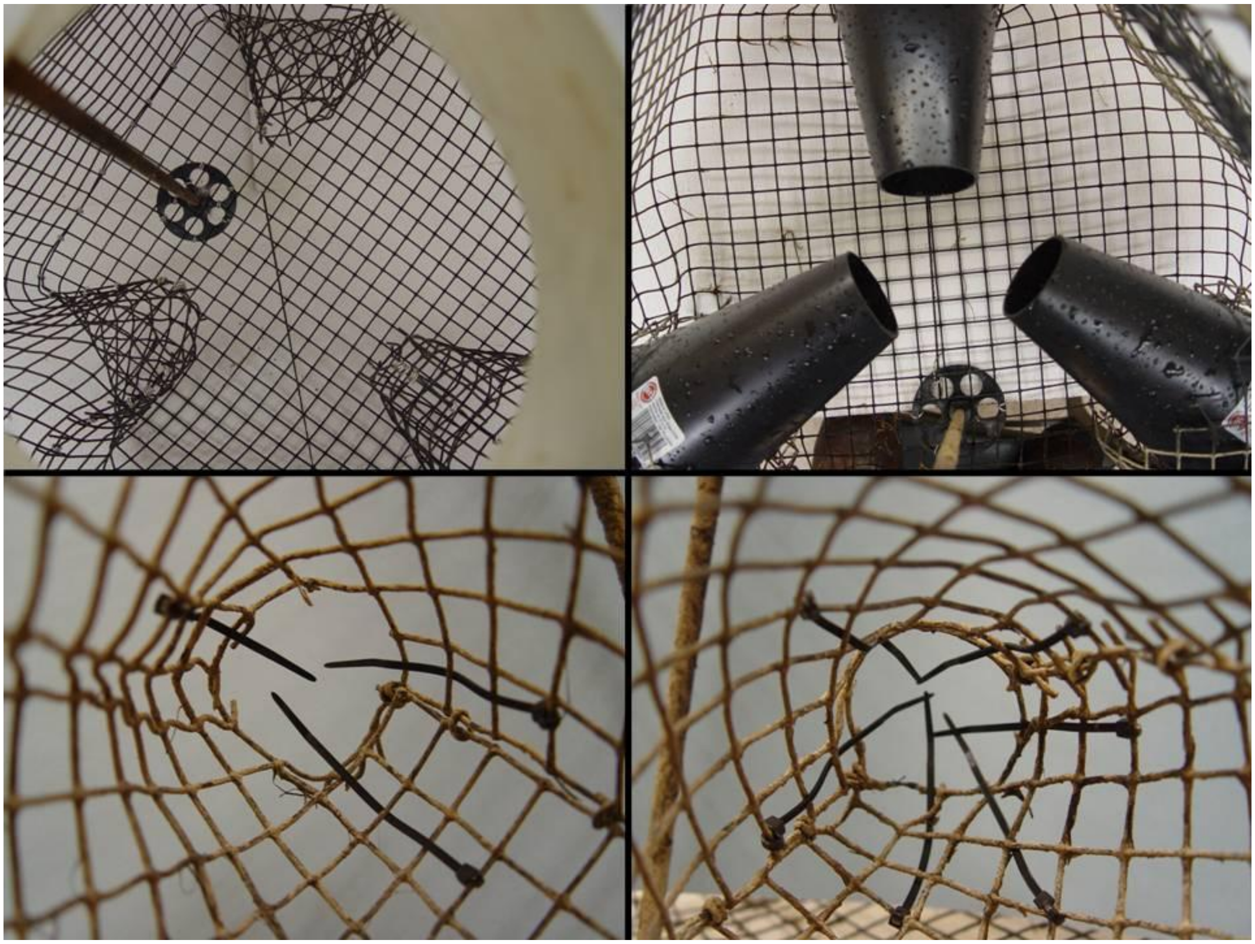


Figure 1. Illustration of control trap (upper left photo) with conventional funnels integral with the trap, trap where the conventional wire mesh funnels were replaced with solid plastic funnels (upper right photo), conventional funnel modified with three cable ties per funnel opening (lower left photo), and conventional funnel modified with six cable ties per funnel opening (lower right photo).

Table 1. Average size (count/lb) and catch per unit effort (by weight and by number) for traps fitted with and without modified entrance funnels. Data reflect two production seasons with use of formulated or cut-fish baits and a 24-hr or 48-hr trap soak duration. Findings for the 72-hr soak duration in 2010 are also presented. Trap modifications consisted of (a) no modifications (control), (b) six cable ties per entrance, (c) three cable ties per entrance, or (d) wire-mesh funnel entrances replaced with solid entrance funnels. Values within columns, by section, with the same superscript were not significantly different (P > 0.05). Rice Research Station, Crowley, La. 2010.

Treatment	No.	Avg. Size (count/lb)	CPUE - Weight (lb/trap)	CPUE - Number (no./trap)
Overall, 2009				
Control	37	14.1^{B}	0.469^{A}	6.5^{A}
6-Cable Tie Entrance	37	17.2^{A}	0.209^{B}	3.6^{B}
Overall, 2010				
Control	138	10.4^{C}	0.584^{A}	5.7^{A}
Solid Entrance Funnel	138	10.6^{BC}	0.453^{C}	4.4^{B}
3-Cable Tie Entrance	138	11.2^{B}	0.517^{B}	5.4^{A}
6-Cable Tie Entrance	138	12.1^{A}	0.407^{C}	4.6^{B}
Formulated Bait Only, 2009				
Control	24	13.2^{B}	0.463^{A}	6.0^{A}
6-Cable Tie Entrance	24	16.2^{A}	0.183^{B}	3.0^{B}
Formulated Bait Only, 2010				
Control	114	9.9^{C}	0.642^{A}	6.1^{A}
Solid Entrance Funnel	114	10.0^{C}	0.504^{C}	4.8^{B}
3-Cable Tie Entrance	114	10.7^{B}	0.576^{B}	5.9^{A}
6-Cable Tie Entrance	114	11.6^{A}	0.450^{C}	4.8^{B}
Fish Bait Only, 2009				
Control	13	15.7^{B}	0.478^{A}	7.4^{A}
6-Cable Tie Entrance	13	19.1^{A}	0.256^{B}	4.7^{B}
Fish Bait Only, 2010				
Control	24	12.5^{A}	0.311^{A}	3.8^{A}
Solid Entrance Funnel	24	13.4^{A}	0.208^{A}	2.6^{A}
3-Cable Tie Entrance	24	13.4^{A}	0.235^{A}	2.9^{A}
6-Cable Tie Entrance	24	14.2^{A}	0.205^{A}	2.8^{A}
24-hr Soak Only, 2009				
Control	27	14.4^{B}	0.463^{A}	6.6^{A}
6-Cable Tie Entrance	27	17.3^{A}	0.204^{B}	3.5^{B}
24-hr Soak Only, 2010				
Control	120	10.4^{C}	0.589^{A}	5.8^{A}
Solid Entrance Funnel	120	10.7^{BC}	0.457^{BC}	4.5^{B}
3-Cable Tie Entrance	120	11.2^{B}	0.520^{B}	5.5^{A}
6-Cable Tie Entrance	120	12.1^{A}	0.411^{C}	4.5^{B}
48-hr Soak Only, 2009				
Control	10	13.3^{B}	0.483^{A}	6.3^{A}
6-Cable Tie Entrance	10	17.1^{A}	0.222^{B}	3.9^{B}
48-hr Soak Only, 2010				
Control	15	10.4^{A}	0.544^{A}	5.0^{A}
Solid Entrance Funnel	15	10.2^{A}	0.424^{A}	3.9^{A}
3-Cable Tie Entrance	15	10.7^{A}	0.517^{A}	5.1^{A}
6-Cable Tie Entrance	15	11.9^{A}	0.375^{A}	3.8^{A}
72-hr Soak Only, 2010				
Control	3	8.4^{A}	0.617^{A}	5.2^{A}
Solid Entrance Funnel	3	10.7^{A}	0.423^{A}	4.4^{A}
3-Cable Tie Entrance	3	11.2^{A}	0.387^{A}	4.3^{A}
6-Cable Tie Entrance	3	12.5^{A}	0.417^{A}	5.3^{A}

INVESTIGATION OF VARIOUS INGREDIENTS AS POTENTIAL ATTRACTANTS FOR CRAWFISH IN COOL AND WARM WATER

W.R. McClain and J.J. Sonnier

INTRODUCTION

Crawfish 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 fishes for crawfish baits include the gizzard shad and menhaden, but common carp, buffalofish, herring, and other fish species may be used. At water temperatures exceeding 70 degrees 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 degrees F, current formulations of manufactured bait are inferior to fresh-frozen fish as an attractant for crawfish. Using fish for crawfish bait has become expensive, costing nearly twice that of commercially formulated bait, and 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. The long-term sustainability and availability of fish as bait in the future necessitates development of a biologically and economically effective cold-water formulated crawfish bait.

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. Research efforts to date that have investigated the efficacy of commercially formulated experimental baits, even those marketed for use in cool water, have not provided favorable results. While research and anecdotal evidence from the crawfish industry have shown the efficacy of some grain-based formulated baits at water temperatures greater than 70 degrees F surpasses cut fish as bait, no viable alternative to cut fish at cooler water temperatures has been identified. One scientific study found that at higher temperatures the absorption rate of carbohydrates in red swamp crawfish was greater than that of protein and that crawfish tend to maximize energy intake at higher water temperatures, presumably to sustain higher metabolic rates. That research also determined that at lower temperatures crawfish maximize the efficiency of protein absorption, presumably for maintenance and growth. Thus, differences in feeding habits and response to food-type attractants at different water temperatures are likely due to metabolic needs – with preferences for proteins and associated biochemical components in cool water.

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.

Efforts in this lab to develop an effective protocol for evaluating bait preferences of crawfish in the laboratory have not been effective. 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 not predictable. Therefore, this research was directed at testing various ingredients in experimental ponds using conventional commercial crawfish traps – a slow and methodical, but necessary, approach to obtaining useful, real-time information regarding the potential of test attractants. Along with the testing of various bait products, a gelatin-based test medium was developed to access the potential ingredients

Test Site: A commercial crawfish pond in Acadia Parish, located east of Crowley, Louisiana.

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. Note: for some treatments, baits were used outside of bait retention wells to allow maximum access by crawfish in 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 (gizzard shad) was used as a positive control treatment, and traps without bait were used as a negative control. A commercially available manufactured formulated bait (*Early On*, Purina Mills, Inc., St. Louis, MO) was also used in some trials for comparative results.

Cool Water Experimental Baits: **Commercial plant products** = a) Cotton seed cake, b) Soybean-cheese cake; **Commercial animal products** = c) Cheese trimmings, d) Canned dog food, e) Canned cat food, f) Canned fish (Mackerel); **Lab Formulated Products** = g) Lye soap made with beef fat, h) Beef blood contained in a gelatin matrix, i) Minced fish flesh (fresh or air dried) contained in a gelatin matrix, j) Fish soluble contained in a gelatin matrix, k) Fish meal contained in a gelatin matrix, l) Stearin (a glyceryl ester of stearic acid) contained in a gelatin matrix; **Proprietary Experimental Products** = m) Minced fish flesh contained in experimental matrix, n) Experimental 101, o) Experimental 102, p) Experimental 103, q) Experimental 104, and r) Experimental 105.

Matrix for Test Products: 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) was predominately utilized, but a commercial food-grade (flavored) gelatin product was also tested for comparison. Oatmeal was added to the gelatin baits as an aid to help bind the gelatin block together and in one piece during the trap soak duration.

Warm Water Experimental Baits: Selected baits from the cool water testing trials along with other bait modifications were also tested for efficacy under warm water conditions. Dog food, cheese trimmings, soybean-cheese cake, cottonseed cake, two commercial proprietary formulations, and Purina "Early On" pellets dipped in either paraffin wax or fish solubles were tested against unaltered Purina "Early On" pellets as the control (Figure 2). Pellets dipped in paraffin wax were tested to determine if pellet deterioration could be slowed, and pellets soaked (2 hrs) in fish solubles were tested for increase in attractability.

Bait Weight: All 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 approximately 75 g of flesh products or Stearin, 115 g of blood or fish solubles, or 20 g of fish meal. In every case for all baits, large residual pieces remained following the trap soak duration, even though most baits showed evidence of consumption (Figure 1).

Trap Soak Duration: Approximately 17 hours for cool water testing and 24 hours for trials in warm water.

Water Temperature: Water temperature remained well below 70 degrees F during the cool water tests and above 70 F for the warm water comparisons.

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 from 5 to 10 replicas per trial. Replication was usually achieved over 2 or more days.

Parameters: Crawfish CPUE by numbers of crawfish per trap; average size of crawfish per trap lift (in count per pound). Results were summarized by trial.

Statistical Analysis: Analysis of variance with means separated by Duncan's multiple range test. Means were considered to be statistically significant at alpha=0.05.

Comments: Summary of the results for cool water testing, by trial, is presented in Table 1. Since residue of all baits existed following the 17-hr trap soak duration, it is presumed that all attractants were present for the duration of the nightly tests, and that no results were biased due to the absence of bait/attractant for any replicate. Since cut shad is considered one of the industry standards for cool water use in crawfish ponds and the bait by which all other test baits in this study were compared with, the catch results were also presented as a percentage of that with cut shad.

Overall, it seems that all baits tested had some level of attractiveness to crawfish when compared with the non-baited traps, although only a few were comparable with cut shad in CPUE. While the formulated Purina bait (Early On) caught, on average, 59% as well as cut shad in cool water, several products averaged as good or nearly as good as shad. The dog food-gelatin baits averaged 106% and the cat food-gelatin baits average 104% of the CPUE with shad. The canned fish bait averaged 86% as well as shad. All of these products were fully cooked products, so it seems that cooking alone under some conditions may not hamper the attractive qualities of flesh-type baits.

Of the commercial plant-based products tested, only the soybean-cheese cake was as effective as the commercial crawfish bait (Purina) in cool water; however, this was far inferior to cut shad. Of the experimental proprietary baits, the one with incorporated minced fish caught on average only 55% of that with cut shad. It is not clear whether the amount of fish in the bait was inadequate or the bait was too "hard" in texture to be fully effective. All of the experimental proprietary baits exhibited a much stiffer texture and showed the least evidence of "grazing" by crawfish in the trap. Bait #105 exhibited a somewhat "softer" texture but was still much firmer than the gelatin-based products, yet the CPUE was similar to the proprietary bait with minced fish. Little difference in comparative CPUE was detected when these baits were placed outside of the bait wells (trial 4) where crawfish could have unrestricted access to them. It is interesting to note, however, that residual experimental proprietary bait (from a previous soak) caught as well or better than fresh pieces of the same bait.

From these tests, it appears that the gelatin-based matrix seems to be an excellent medium for testing experimental attractants. Minced fish used as the attractant in this medium resulted in as good or better CPUE than cut fish, indicating the potential of the gelatin-matrix to act as an acceptable medium for testing unknown products or ingredients as potential attractants for crawfish. Without any additional "attractant," however, the gelatin-oats medium caught 45% as many crawfish as cut shad (trial 6). This indicates some attractant qualities may be attributed to the matrix alone; nonetheless, other additions to the matrix increased CPUE.

Inclusion of fish solubles to the gelatin matrix resulted in a CPUE of 78% of cut shad (trial 6), and the addition of a commercial fish meal resulted in yields of 93% of cut shad (trial 6). Inclusion of minced fresh shad in the gelatin matrix resulted in a CPUE of 97% of that from cut shad, while inclusion of air-dried minced shad resulted in a catch that was 154% of cut shad. It is not clear why air-dried minced shad at the same wet weight quantities resulted in greater yields than cut shad or minced fresh shad, but further investigations are warranted.

It seemed to matter little if oats were present in the gelatin matrix or if flavored gelatin was used instead of the lab-grade gelatin (although the flavored gelatin yielded a slightly softer bait block). Further trials utilizing other potential attractants under cool water conditions are clearly warranted.

A summary of results for testing selected baits under warm water conditions are found in Table 2. While the dog food, cheese trimmings, and soybean-cheese cake resulted in CPUEs that were as high, or higher, than the Purina pellets (warm water industry standard), other baits fell short. Pellets coated with paraffin wax (to prolong the pellet form) did little to preserve the nature of the pellet after 24 hours under water but appeared to render its effectiveness as an attractant slightly when compared with unmodified pellets. Pellets soaked in fish solubles actually resulted in fewer crawfish captured.

Figure 1. Gelatin-matrix bait blocks are illustrated with incorporated commercial fish meal (upper left photo), minced fish (upper right photo), and commercial fish solubles (lower left photo) as experimental attractants. An experimental commercial proprietary bait block is illustrated in the lower right photo. Each bait type (left) is paired with the residue (right) of a replicate bait remaining after 17 hr in the trap.

Figure 2. Purina "Early On" pellets used in the warm water bait efficacy tests. Pellet on the left was soaked in fish solubles and pellet in the center was dipped in paraffin wax, while the pellet on the right was used as the control without modification.

Table 1. Average catch per trap (and average size count) after a 17-h trap soak interval with various test baits in cool water. Crawfish catch with test baits were also expressed as a percentage of that captured with cut shad per trial. Minimum, maximum, and average water temperatures (°F) are presented for each trial. Values within columns, by section, with the same superscript were not significantly different ($P > 0.05$). Rice Research Station, Crowley, La. 2010.

Treatment	No. Traps	Avg. No. Crawfish	Avg. Size (count/lb)	% of Catch with Cut Shad
Trial 1 (temp = 50.1 min / 52.6 max / 51.4 average)				
Non-baited Control	10	2.6 ^{F}	30.2 ^{A}	8.1 ^{D}
Lye Soap w/beef fat	10	6.5 ^{EF}	22.4 ^{B}	21.2 ^{CD}
Cotton Seed Cake	10	6.9 ^{EF}	24.6 ^{B}	21.6 ^{CD}
Gelatin-based w/blood	10	8.0 ^{E}	23.7 ^{B}	25.2 ^{C}
Cheese Trimmings	10	10.8 ^{CDE}	23.3 ^{B}	33.4 ^{BC}
Purina Bait	10	12.5 ^{CD}	23.7 ^{B}	39.6 ^{B}
Soybean-Cheese Cake	10	14.7 ^{C}	23.8 ^{B}	47.6 ^{B}
Dogfood	10	24.7 ^{B}	22.2 ^{B}	76.2 ^{A}
Cut Shad	10	33.0 ^{A}	22.8 ^{B}	-

Continued.

Table 1. Continued.

Treatment	No. Traps	Avg. No. Crawfish	Avg. Size (count/lb)	% of Catch with Cut Shad
Trial 2 (temp = 52.5 min / 56.7 max / 54.9 average)				
Non-baited Control	8	4.4[C]	27.3[A]	16.5[D]
Cheese Trimmings	8	11.6[B]	21.4[CD]	44.2[C]
Purina Bait	8	12.0[B]	25.4[AB]	45.4[C]
Soybean-Cheese Cake	8	16.4[B]	25.7[AB]	63.6[BC]
Minced Shad	8	22.4[A]	22.1[CD]	82.6[AB]
Canned Fish (Mackerel)	5	25.0[A]	21.3[CD]	88.5[A]
Dogfood	8	26.0[A]	23.6[BC]	93.9[A]
Catfood	8	27.3[A]	20.1[D]	103.5[A]
Cut Shad	8	27.1[A]	21.5[CD]	-
Trial 3 (temp = 49.7 min / 52.8 max / 51.4 average)				
Non-baited Control	6	3.3[C]	30.7[A]	14.8[B]
Experimental 101	6	8.7[C]	20.9[B]	34.5[B]
Experimental 102	6	10.0[C]	23.9[B]	39.5[B]
Experimental with minced fish	5	12.8[BC]	21.9[B]	49.9[B]
Gelatin-based w/oats/minced fish	6	21.7[AB]	21.0[B]	89.9[A]
Gelatin-based w/blood/minced fish	6	23.7[A]	22.2[B]	91.8[A]
Gelatin-based w/oats/blood/minced fish	6	25.0[A]	22.3[B]	101.4[A]
Flavored Gelatin-based w/oats/minced fish	6	25.5[A]	21.6[B]	104.5[A]
Cut Shad	6	24.8[A]	20.9[B]	-
Trial 4 (temp = 59.2 min / 60.1 max / 59.7 average)				
Non-baited Control	5	2.8[D]	21.3[A]	20.2[D]
Experimental 102[1]	5	8.2[CD]	24.1[A]	55.3[CD]
Experimental with minced fish[1]	5	9.4[C]	25.1[A]	59.1[C]
Experimental 101[1]	5	8.8[C]	24.4[A]	61.0[C]
Experimental 102 – Residual[1,2]	5	9.8[C]	24.5[A]	67.5[BC]
Purina Bait	5	10.6[C]	28.1[A]	67.8[BC]
Gelatin-based w/oats/minced fish	5	15.8[B]	24.1[A]	97.3[B]
Dogfood	5	23.4[A]	21.5[A]	146.9[A]
Cut Shad	5	15.4[B]	21.9[A]	-
Trial 5 (temp = 59.8 min / 64.6 max / 62.4 average)				
Non-baited Control	8	2.6[C]	19.7[A]	13.2[B]
Gelatin-based w/oats/fish solubles	8	15.5[B]	24.5[A]	77.6[A]
Purina Bait	8	16.6[AB]	25.7[A]	83.2[A]
Cut Shad	8	19.9[A]	24.2[A]	-
Trial 6 (temp = 61.0 min / 64.7 max / 62.8 average)				
Non-baited Control	8	3.0[E]	22.3[BC]	15.6[E]
Experimental 103	8	4.3[E]	29.1[A]	21.1[DE]
Gelatin-based w/oats/Stearin	8	5.8[DE]	27.0[AB]	28.8[DE]
Experimental 104	8	8.6[D]	25.9[ABC]	42.5[CDE]
Gelatin-based w/oats	8	8.6[D]	25.2[ABC]	45.1[CD]
Experimental 105	8	12.1[C]	23.5[BC]	61.2[C]
Gelatin-based w/oats/fish meal	8	18.0[B]	21.0[C]	92.6[B]
Gelatin-based w/oats/minced air-dry shad	8	30.3[A]	22.3[BC]	153.8[A]
Cut Shad	8	20.3[B]	24.3[ABC]	-

[1] Experimental baits were used outside of bait wells in this trial because of their exception residual remaining in the previous trial.

[2] This refers to the re-use of bait residual from a previous baiting.

Table 2. Average catch per trap (and average size count) after a 24-hr trap soak interval with selected test baits in warm water. Crawfish catch with test baits were also expressed as a percentage of that captured with Purina pellets. Minimum, maximum, and average water temperatures (^oF) are presented for each trial. Rice Research Station, Crowley, La. 2010.

Treatment	Reps	Catch (no./trp.)	Catch (lb/trp.)	Size (g)	% of Purina (by no.)	% of Purina (by wt.)
Trial 1 (temp = 72.2 min / 88.6 max / 79.0 average)						
No Bait	28	1.9	0.19	45.4	52.0	46.1
Dog Food	28	6.6	0.79	54.8	184.0	197.1
Cheese Trimmings	28	3.9	0.45	52.8	108.0	111.3
Purina Pellets[1]	28	3.6	0.40	51.2	-	-
Trial 2 (temp = 71.9 min / 88.6 max / 78.9 average)						
No Bait	24	2.5	0.25	44.5	70.6	60.0
Soybean-Cheese Cake	24	3.7	0.43	53.4	103.5	105.6
Cottonseed Cake	24	2.9	0.28	44.0	82.4	69.2
Purina Pellets[1]	24	3.5	0.41	52.4	-	-
Trial 3 (temp = 70.7 min / 86.7 max / 77.5 average)						
No Bait	11	3.1	0.27	39.4	40.0	31.8
Experimental 105	11	5.9	0.72	55.4	76.5	85.3
Experimental 104	11	4.5	0.54	53.6	58.8	63.5
Purina Pellets[1]	11	7.7	0.85	49.6	-	-
Trial 4 (temp = 73.3 min / 90.0 max / 80.1 average)						
No Bait	16	3.1	0.33	48.0	45.5	41.7
Waxed Pellets[2]	16	6.2	0.76	55.6	90.0	95.7
Pellets w/Fish Solubles[3]	16	5.4	0.65	55.0	78.2	82.3
Purina Pellets[1]	16	6.9	0.79	52.3	-	-

[1] Purina pellets = “Early-On” formulation as a control treatment.

[2] Waxed pellets = “Early-On” Purina pellets that were dipped in paraffin wax.

[3] Pellets w/Fish Solubles = “Early-On” Purina pellets what were soaked in a concentrate of fish solubles from a commercial source.

ASSESSMENT OF CAPTURE RATE AND CRAWFISH MOVEMENT IN EXPERIMENTAL CRAWFISH PONDS

W.R. McClain and J.J. Sonnier

INTRODUCTION

It has been assumed by many producers and scientists alike that crawfish are readily attracted to baited traps within a given distance, provided optimum conditions of water temperature, water chemistry, acceptable attractants, and other conditions are met. In reality, little is known of how effective baited traps can be in attracting and retaining crawfish, even within the sphere of influence of the attractant. Furthermore, the sphere of influence of the bait for a given set of pond conditions is basically unknown. Limited research has been conducted in this area and these questions have not been effectively addressed. Some recent preliminary research also suggests that the efficiency of baited traps in commercial crawfish ponds is actually fairly low – that a small percentage of the harvestable population is actually captured each day of the harvest.

It is known that not all crawfish that enter baited traps remain in the trap until emptied. Crawfish do escape. Crawfish of all sizes are also susceptible to predators, cannibalism, and natural mortality, and crawfish are also highly mobile and able to move out of the pond at will. So, some percentage of the harvestable population will die or exit the pond before being captured. All of these factors influence the efficiency with which crawfish can be removed from the pond with the passive systems of trap harvesting that is in place.

The efficiency of the current harvest method should also be a major factor when considering the practice of releasing crawfish (once captured) back into the pond for further growth. The practice of using inboard graders on crawfish harvesting boats to release small, less desirable crawfish back into the pond for further growth with the expectation of re-harvesting those individuals later at a larger, more valuable, size has increased dramatically in recent years. Larger crawfish are more easily marketed. However, the efficacy and economics of this practice of release and recapture are largely unknown.

Therefore, a mark/recapture study was undertaken to better assess the efficiency of baited traps and to ascertain actual recapture rates of released crawfish under simulated commercial conditions of culture. Another objective of this study was to gain some insight about crawfish movement patterns across pond levees.

Test Site: Rice Research Station South Unit

Study Dates: 4 May - 8 June 2010

Experimental Ponds: The system of earthen crawfish ponds, managed to simulate a typical commercial rice-crawfish field rotational cropping strategy, was composed of two sets of six contiguous 1-acre (surface area) experimental ponds separated by a water supply lateral that provided water by gravity flow to individual ponds (Figure 1). The ponds had a levee height of approximately 16 inches and base width of about 12 feet. Water depth in the ponds when filled did not exceed 12 inches. Each pond was fitted with inflow and outflow pipes of 8-inch diameter and all interior ends of inflow pipes were held off the pond bottom and near the water surface with a tension line to minimize free movement of crawfish between ponds and the supply lateral. Rice was planted in April of 2009, harvested in August, and the stubble was subsequently reflooded and managed for a crawfish crop.

Crawfish: For the initial marking, crawfish were captured from the research ponds, marked, and released within 2 to 3 hours of their capture. All crawfish were red swamp crawfish (*Procambarus clarkii*) and only mature individuals were marked and released. Subsequent catches of marked crawfish were noted as to date and pond of release, remarked with a different color/pattern, and released in the same pond as captured.

Marking Technique: Crawfish were marked on the dorsal and lateral surfaces of the carapace with a long lasting waterproof marker (Dykem®, BRITE-MARK®, ITW Dymon, Olathe, Kansas, USA) using a combination of marker colors (e.g. yellow, red, white, and blue) and identifying marks (e.g. dots, circles, and stripes) such that each mark could be identified as to the date and pond of release and number of times captured.

Release Date and Ponds: Crawfish were released on 4 May in ponds C3 and D4.

Mortality Controls: On the day of release, additional crawfish were marked in a similar fashion, segregated by gender and placed in enclosures within the ponds of release. Crawfish were placed in the cylindrical cages (0.5 m^2 bottom surface area) at 3 crawfish (of the same sex) per cage. These were monitored weekly for mortality.

Trap Type and Density: 3-funnel pyramid trap constructed of ¾-inch square-mesh wire. Trap density generally consisted of 16 traps/A in the 1-acre ponds and 22 traps/A in the central water supply lateral. Number of trapping days per week was consistent across all ponds and the respective total trap-lifts were accounted for in the cumulative harvest results.

Baits Used: Manufactured baits: Cajun World, Early On, and Southern Pride (Purina Mills, Inc., St. Louis, Mo.). Bait type was consistent across all ponds each day.

Harvesting Protocol: Harvesting method employed was consistent with commercial operations and consisted of 24- or 48-hr trap sets, 2 to 4 days per week. Harvests occurred in all 12 ponds and the lateral, and the daily catch remained segregated for each pond. For each marked crawfish retrieved in a baited trap, the mark identifier and color were recorded for that day for that pond and later associated with pond of release and number of times captured. Harvesting protocol was consistent across all ponds each day.

Harvest in Lateral: Area of the central lateral was 0.9 acre and contained 20 traps (22 traps/A). Harvest proceeded in a similar manner in this area and captures of marked crawfish were recorded accordingly. For the purpose of this study, the lateral was treated as an adjacent pond to each and all other 1-acre ponds because of its contiguous proximity to the other ponds.

Parameters: Total and percentage of marked crawfish recaptured, recapture rate by gender, times recaptured, and recapture rate by week after released (adjusted for estimated mortality).

Comments: Table 1 summarizes the initial recapture rates of marked crawfish by location relative to pond of release. No marked crawfish were captured after 5 weeks following the release events. With a total of 288 trap lifts per acre over the 5-week harvesting period, 89 marked crawfish out of the 200 released or 44.5% were recaptured. Of those recaptured, 96.6% were captured in the pond of their release. Only 3.4% of the recaptures occurred in a pond adjacent to the pond of release, and none were captured in ponds further removed from the release pond. With little other evidence regarding recapture rates and trap harvest efficiency, it is not known whether this 44.5% recovery rate represents a typical recovery rate from commercial operations. In a similar trial conducted at this study site previously, the recovery rate of marked mature crawfish was 49.1%, and in one preliminary trial conducted for 1 week in a commercial pond, only 20% of the mature marked crawfish released was recaptured.

Recapture rates of males and females in this study were almost identical, with 45 and 44% recaptured, respectively (Table 2). Because captured marked crawfish were remarked (different markings) and released, it was possible to determine the percentage of multiple recaptures. Of the crawfish originally marked and released, 17% were captured twice, 5% were captured three times, and 0.5% were captured four times (Table 2).

Because marked crawfish were also maintained in cages and observed for mortality weekly, recovery rate was adjusted for estimated natural mortality in ponds. Overall, the total recovery rate (first time captures only) was estimated to be 49.5% when mortality was taken into consideration (Table 3). This means that a majority of the harvestable population possibly is not harvestable with baited traps as is currently used. The adjusted capture rate by week for this study is further presented in Table 3. Most of the recaptures were made during the first two weeks following release. Very few marked crawfish were retrieved from traps after the second week.

It is not clear why the capture rate appears to be so low in these mark/recapture studies or why more marked crawfish were not captured later in the season. By using mature individuals only, it is assumed that crawfish molting rarely occurs, especially late in the production season, thus biasing the rate of recovery; however, hard evidence does not exist for molting rates under these conditions. Aside for natural mortality of older adult crawfish (estimated in this study), other possible causes for low recovery could be 1) attrition from burrowing, 2) crawfish migration out of the pond, 3) mortality from predators, or 4) simply due to inefficiencies of the passive system of trap harvesting. There is little evidence for massive losses due to either of the first two possibilities. Although it is difficult to comprehend a majority loss of the population due to predators, perhaps when all three possibilities are combined with a low efficiency of harvest, low recovery rates can be expected over time.

The implication of these results, which corroborate previous findings, is not good news for those crawfish producers that routinely release the smaller, less desirable, crawfish from the harvest with intentions of recapturing them later at a larger, more valuable size for market. The low recapture rate may not be conducive for best profits in many cases. It may be best for producers in some situations to consolidate smaller crawfish into the catch when possible and acceptable in the marketplace or consider sorting out the less desirable individuals and market those at a reduced price rather than return them back to the pond. Returning crawfish back to the pond could negatively affect subsequent yields and/or sizes in some cases as well.

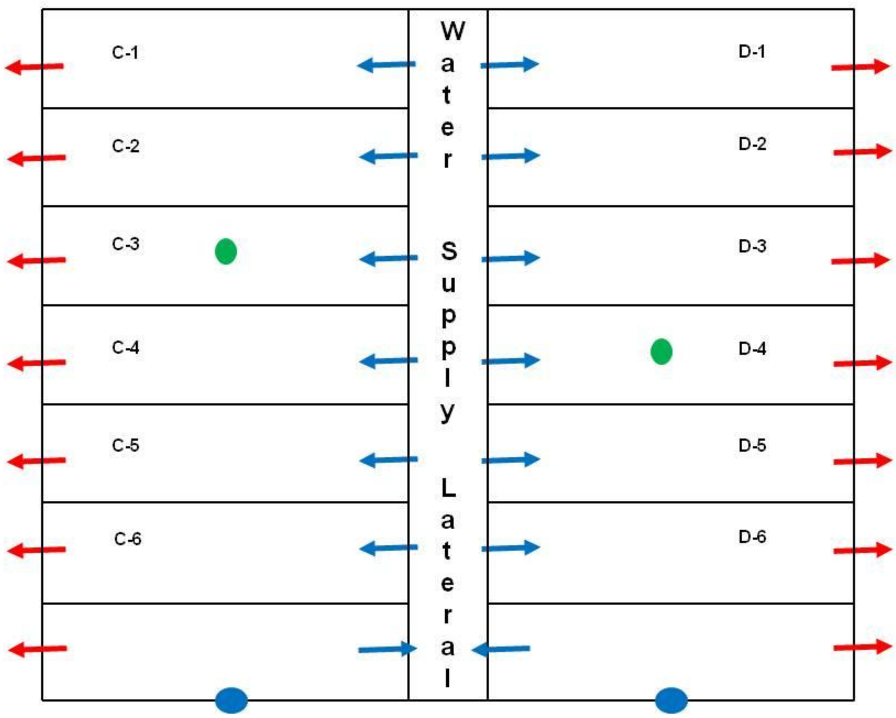


Figure 1. Schematic representation of the pond system where this study was conducted. All ponds (C-1 to C-6 and D-1 to D-6) were 1 acre in size (183 x 238 feet), and the central water supply lateral consisted of 0.89 acre (1171 x 33 feet). The two large circles represent fresh water inlets and arrows represent water flow direction into and out of ponds. Release locations are represented by the small circles in ponds C-3 and D-4.

Table 1. Summary of release and first recapture of marked crawfish and associated harvest effort (number of trap lifts/A) by release date. N.º = number of Individuals. Rice Research Station, Crowley, LA. 2010.

Pond	Release Date	Total Crawfish Released	Total Harvest Effort[1]	Total Crawfish Recaptured		Crawfish Recaptured in Release Pond		Crawfish Recaptured in Adjacent Pond		Crawfish Recaptured Two Ponds Over	
		N.º	Trap-lifts/A	N.º	% by N.º	N.º	% by N.º	N.º	% by N.º	N.º	% by N.º
C-3	4-May	100	288	53	53.0	53	53.0	0	0.0	0	0.0
D-4	4-May	100	288	36	36.0	33	33.0	3	3.0	0	0.0
Total (Average)		**200**	**---**	**89**	**(44.5[a])**	**86**	**(43[a])**	**3**	**(1.5 [a])**	**0**	**(0[a])**
% of Total Recaptured		**---**	**---**	**---**	**---**	**---**	**96.6[b]**	**---**	**3.4[b]**	**---**	**0[b]**

[1] Total harvesting effort represents the cumulative trap-lifts within the pond of release following each release event.

[a] Represents average percentage of crawfish recaptured by pond category and in total, regardless of category.

[b] Represents percentage of total crawfish recaptured by pond category.

Table 2. Summary of times captured for marked crawfish (overall and by gender) as a percentage of marked crawfish released. Average and range are for both release events (in ponds C-3 and D-4 on 4 May 2010). Rice Research Station, Crowley, La. 2010.

	Overall		**Males**		**Females**	
Times Captured	**Average (%)**	**Range (%)**	**Average (%)**	**Range (%)**	**Average (%)**	**Range (%)**
Once	44.5	36 - 53	45	32 - 58	44	40 - 48
Twice	17.0	7 - 27	20	10 - 30	14	4 - 24
3 Times	5.0	1 - 9	6	2 - 10	4	0 - 8
4 Times	0.5	0 - 1	0		1	0 - 2

Table 3. Recapture rates of marked crawfish by time after release (in weeks) – first time capture only, adjusted for natural mortality (from caged individuals). Cumulative harvesting efforts (i.e., number of trap-lifts/A) were derived by totalling the number of trap lifts per acre respective of the number of weeks since release. N.º = number of crawfish; Cum = cumulative percentage. Rice Research Station, Crowley, La. 2010.

Weeks after Release	Cumulative Caged Mortality (Avg %)	Cumulative Harvesting Effort[1] (trap-lifts/A)	Crawfish Recaptured in Release Pond			Crawfish Recaptured in Adjacent Pond		
			N.º	**%**	**Cum %**	**N.º**	**%**	**Cum %**
1	8.3	64	55	30.0	30.1	1	0.5	0.5
2	12.5	128	28	16.0	46.1	2	1.1	1.6
3	12.5	160	0	0.0	46.1	0	0.0	1.6
4	16.7	224	1	0.6	46.7	0	0.0	1.6
5	20.8	288	2	1.3	47.9	0	0.0	1.6
6		336	0	0.0	47.9	0	0.0	2.5
7		384	0	0.0	47.9	0	0.0	2.5
8		416	0	0.0	47.9	0	0.0	2.5
9		432	0	0.0	47.9	0	0.0	2.5
Total		**-**	**86**	**47.9**	**-**	**3**	**1.6**	**-**

[1] Average harvesting effort represents the average number of trap-lifts across all fields by week after release.

RICE DISEASE CONTROL RESEARCH

RICE DISEASE CONTROL STUDIES, 2010[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 disease development (immunity) and 9 indicates maximum disease development possible (very

[1] This research is supported in part by funds provided by rice producers through the Louisiana Rice Research Board and various agricultural chemical companies.

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 2010.

	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

2010 Varietal and URN Disease Resistance Evaluation (DN1, DN2)

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: One to three 6-ft rows

Planting Method/Date: Drill seeded, Mar 12

Fertilization: Preplant 20-60-60, Mar 12; preflood 135-0-0, May 4; topdress 46-0-0, May 27

Experimental Design: Randomized complete block design with two to four replications

Water Management: Flushed, Mar 23, Apr 1, 9, 16, 27; flooded, May 5; drained, July 23

Herbicides: Propanil 4 qt, Apr 23; Rice Beaux 3 qt, May 4

Insecticides: Dermacor seed treatment; Karate 2 oz aerial application, May 15

Fungicides: None

Inoculation Dates: *Rhizoctonia solani* culture grown on rice grain/hull mixture, June 1

Application Equipment: CO_2 backpack sprayer, 3-tip (TJ8002) hand wand, 20 gal/A

Disease Ratings: July 29

Drained: July 23

Harvest: NA

Results: See Tables 2-9

Comments: Sheath blight was severe; bacterial panicle blight and rotten neck blast were moderate in severity.

Table 2. Disease reaction of various varieties and experimental lines to flooded field leaf blast (Lf blast), bacterial panicle blight (BPB), sheath blight (SB), upland leaf blast (Lf blast), and rotten neck blast (RNB) at the Rice Research Station, Crowley, LA. 2010. (Variety Trial).

Character Rated		Lf blast		BPB		SB		Lf blast		RNB	
Rating Date		7/8/2010		7/30/2010		7/30/2010		7/30/2010		8/20/2010	
Trt No.	Treatment Name										
1	Bowman	3	a	3.5	b-e	7	a-d	4.5	ab	4.5	a-d
2	Catahoula	0	b	3	de	7	a-d	0	g	1.5	fgh
3	Cheniere	1	b	3.8	a-e	6.5	a-d	3.5	a-e	3.8	b-g
4	CL111	0	b	5	a-e	7.5	abc	0	g	5.3	abc
5	CL261	0	b	4.5	a-e	6.5	a-d	5.3	a	4.3	a-e
6	CL131	1	b	5.8	abc	8	a	0	g	1.8	e-h
7	CL151	1.8	ab	4.3	a-e	7	a-d	3.8	a-d	5.8	ab
8	CL161	0.3	b	5.3	a-d	6.5	a-d	3.5	a-e	3.8	b-g
9	CL171 AR	0.8	b	5	a-e	7	a-d	3.8	a-d	3.8	b-g
10	Cocodrie	0.3	b	4.3	a-e	7	a-d	0	g	4.5	a-d
11	Cypress	.		.		.		.		.	
12	Jazzman	0	b	5	a-e	6	cde	1	efg	1	h
13	Presido	1	b	4.3	a-e	6	cde	0.5	fg	4.3	a-e
14	Tagart	0	b	3.5	b-e	4.8	e	1.5	c-g	4.3	a-e
15	Templeton	0	b	5.3	a-d	6	cde	1.8	c-g	1	h
16	Trenasse	0.8	b	6	ab	7.8	ab	0.5	fg	4	a-f
17	Wells	0	b	6	ab	6	cde	3.8	a-d	3.8	b-g
18	Bengal	0.3	b	4.8	a-e	6.5	a-d	4	abc	5.3	abc
19	Jupiter	0	b	2.5	e	6	cde	3.8	a-d	1.8	e-h
20	Neptune	0	b	3.8	a-e	6.3	b-e	3.8	a-d	1	h
21	0802022 URN 022	0.8	b	5	a-e	6	cde	1.5	c-g	4.3	a-e
22	0802140 URN 025	1	b	5	a-e	6.3	b-e	1.3	d-g	2.8	c-h
23	0802149 URN 149	0.3	b	5.8	abc	6.5	a-d	0.8	fg	2.3	d-h
24	1002146 URN146	0	b	6.3	a	7.8	ab	1	efg	2.3	d-h
25	0802051 URN051	1	b	4.5	a-e	7.3	a-d	3	a-f	5.3	abc
26	0702085 URN 048	0	b	3.8	a-e	5.8	de	0.5	fg	4.8	a-d
27	0702165 2010 URN 065	0.5	b	4.5	a-e	6.3	b-e	2.5	b-g	1.3	gh
28	0902082 URN 042	1.8	ab	3.5	b-e	6.8	a-d	4.8	ab	4.5	a-d
29	0902088 URN 002	0.5	b	3.3	cde	7.8	ab	0.5	fg	3.5	b-g
30	0902005 URN 005	0.3	b	5	a-e	8	a	0	g	2.5	d-h
31	0902103 URN 008	1	b	5.8	abc	6.8	a-d	2.3	b-g	6.5	a
32	1002011 URN 011	0.8	b	4.5	a-e	7.3	a-d	4	abc	4.5	a-d
33	0902085 URN 045	0	b	6.3	a	8	a	0.5	fg	4.5	a-d
LSD (P=.05)		1.12		1.36		0.92		1.52		1.46	
Standard Deviation		0.8		0.97		0.66		1.08		1.04	
CV		144.85		21		9.73		51.52		29.37	
Replicate F		1.142		1.131		0.8		7.089		2.416	
Replicate Prob(F)		0.3365		0.3408		0.497		0.0002		0.0714	
Treatment F		2.866		4.106		5.552		9.779		8.417	
Treatment Prob(F)		0.0001		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 3. Disease reaction of various varieties and experimental lines to flooded field leaf blast (Lf blast), bacterial panicle blight (BPB), sheath blight (SB), upland leaf blast (Lf blast), and rotten neck blast (RNB) at the Rice Research Station, Crowley, LA. 2010. (URN Group I).

Character Rated		SB		BPB		LfBlstUp		RNB	
Rating Date		8/2/2010		8/2/2010		8/17/2010		8/20/2010	
Trt No.	Treatment Name								
1	FRNS/6/LBNT/9902/3/DAWN/9695//STBN/4/LGRU/5/DREW	6	a-d	5.3	abc	2.8	abc	6.5	ab
2	9502008-A//AR1188/CCDR/3/…	6.8	abc	3.8	bc	1.5	bc	4.5	a-e
3	(LGRU/LSCN)RU9801111/(RU8803072/(KATY//GFMT/PCOS))RU9803092	5.3	bcd	4.5	abc	1	c	1.8	f
4	KBNT/Q36194	5.3	bcd	6.3	a	3.5	ab	6.8	a
5	9502008-A/DREW//CLR 20	7	abc	5	abc	1.5	bc	3.5	c-f
6	CPRS/CCDR	5.3	bcd	4.5	abc	2.8	abc	4.5	a-e
7	LGRU//KATY/STBN/3/LGRU	5.5	bcd	4.3	abc	2.3	abc	5	a-e
8	FRANCIS/CLR 13	6.8	abc	4.8	abc	2.8	abc	6	abc
9	CPRS/9901081	5.3	bcd	4.5	abc	1.8	bc	3.5	c-f
10	DREW/UA99-167	7.5	a	3	c	1.8	bc	3.3	def
11	CPRS/9502008-A/3/CFX 29//AR 1142/LA 2031	7	abc	4.8	abc	2.8	abc	4.8	a-e
12	LCSN/LGRU	7.3	ab	5	abc	2	abc	3.3	def
13	FRNS/6/LBNT/9902/3/DAWN/9695//STBN/4/LGRU/5/DREW	5	cd	5.8	ab	3.5	ab	5.5	a-d
14	RSMT/KATY	7.5	a	3.8	bc	4	a	3.8	c-f
15	L202//TBNT/BLMT	4.8	d	4.3	abc	2	abc	2.5	ef
16	RSMT//RXMT/IR36	5.5	bcd	3.3	c	3.5	ab	3.5	c-f
17	CL111	6.5	a-d	5	abc	2.5	abc	4.3	b-f
18	CL151	7	abc	4.8	abc	2.8	abc	3.5	c-f
19	PRESIDIO (PRSD)	6	a-d	3.5	bc	1.8	bc	4	c-f
20	CATAHOULA	5.8	a-d	4.5	abc	2	abc	3	def
LSD (P=.05)		1.13		1.3		1.17		1.52	
Standard Deviation		0.8		0.92		0.82		1.08	
CV		12.97		20.44		34.16		25.85	
Replicate F		6.123		1.072		1		1.795	
Replicate Prob(F)		0.0011		0.3682		0.3995		0.1583	
Treatment F		5.129		3.014		3.769		5.846	
Treatment Prob(F)		0.0001		0.0007		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 4. Disease reaction of various varieties and experimental lines to flooded field leaf blast (Lf blast), bacterial panicle blight (BPB), sheath blight (SB), upland leaf blast (Lf blast), and rotten neck blast (RNB) at the Rice Research Station, Crowley, LA. 2010. (URN Group II).

Character Rated		SB		BPB		LfBlstUp		RNB	
Rating Date		8/2/2010		8/2/2010		8/17/2010		8/20/2010	
Trt No.	Treatment Name								
21	RU9901127/GP-2	7.3	ab	5.5	ab	2.3	b-e	1.3	e
22	AC1398 (LGRU/LSCN)RU9801111/(RU8803072/(KATY//GFMT/PCOS))	6.3	a-d	4.3	a-d	2.3	b-e	3.8	bcd
23	RU9803092	5.5	bcd	3.5	cd	1.3	e	2	de
24	MDRK/PI 312777//JING 185-7	5	cd	5	a-d	3	a-e	2.3	cde
25	CPRS//L-205/DLLA	5.8	bcd	4.3	a-d	1.8	cde	3.3	bcd
26	CCDR/LQ275a	5	cd	3.8	bcd	2.3	b-e	1.3	e
27	FRNS/6/LBNT/9902/3/DAWN/9695//STBN/4/LGRU/5/DREW	4.5	d	5.8	a	3.5	abc	5.3	ab
28	CCDR/AC1048	7.3	ab	5.3	abc	3.8	ab	5	ab
29	CPRS/CCDR	5.8	bcd	4.5	a-d	1.5	de	3.5	bcd
30	CYBT/LM1	5.8	bcd	4.8	a-d	1.8	cde	2.3	cde
31	AC1399	6.8	abc	4.5	a-d	2	b-e	4.3	abc
32	CCDR/L202	6.3	a-d	4.3	a-d	2	b-e	4.3	abc
33	CFX-18(CL 161)/0004054	7.3	ab	4	a-d	3.5	abc	4.3	abc
34	CCDR/AC627	6.5	abc	4.8	a-d	2	b-e	4.5	ab
35	CL162	7	ab	4	a-d	4.5	a	4.8	ab
36	LMNT//TBNT/LA110	7.8	a	4.3	a-d	4.3	a	5	ab
37	JUPITER								
38	WELLS	5	cd	5	a-d	2	b-e	4.8	ab
39	BWMN	6.5	abc	3.3	d	3.5	abc	4	bc
40	FRANCIS	6	a-d	5.8	a	3.3	a-d	6.3	a
LSD (P=.05)		1.07		1.05		1.08		1.3	
Standard Deviation		0.76		0.74		0.76		0.92	
CV		12.34		16.3		28.78		24.25	
Replicate F		0.182		2.843		0.265		3.363	
Replicate Prob(F)		0.908		0.0462		0.8504		0.0252	
Treatment F		5.83		3.715		6.487		9.37	
Treatment Prob(F)		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 5. Disease reaction of various varieties and experimental lines to flooded field leaf blast (Lf blast), bacterial panicle blight (BPB), sheath blight (SB), upland leaf blast (Lf blast), and rotten neck blast (RNB) at the Rice Research Station, Crowley, LA. 2010. (URN Group III).

Character Rated		SB		BPB		LfBlastUp		RNB	
Rating Date		8/2/2010		8/2/2010		8/17/2010		8/20/2010	
Trt No.	Treatment Name								
41	UA99-153/TOX 4136-38-2	7.8	a	3.3	e	1.8	bc	1.5	e
42	BNGL/CL 161	6.3	abc	4	b-e	2.5	abc	3.3	bcd
43	CPRS/CCDR	6	abc	4.3	b-e	2.8	abc	4.5	ab
44	SPRN/STG00F5-07-007	6.8	abc	5.8	ab	1.5	c	3.5	bc
45	9502008/3/MBLE//LMNT/20001-5/4/…	7.8	a	5.3	a-d	1.3	c	5.5	a
46	CPRS/CCDR	5.5	bc	4.5	a-e	1.8	bc	4.3	ab
47	CCDR/ZHE 733//WC 285	6	abc	5.5	abc	1.3	c	2	de
48	AR 1188/CCDR//9502008/LGRU	6	abc	3.8	cde	2.5	abc	4.3	ab
49	CPRS/CCDR	7	abc	3.5	de	1.8	bc	3.8	abc
50	FRNS/6/LBNT/9902/3/DAWN/9695//STBN/4/LGRU/5/DREW	5.5	bc	4.8	a-e	2.3	abc	1.5	e
51	TACAURI/3/CPRS//82CAY21/TBNT/4/CFX-18	6	abc	3.5	de	3.3	abc	4.3	ab
52	CPRS/CCDR	6.3	abc	4.5	a-e	1.5	c	4	ab
53	RSMT//8403113/3/KCAI/LEAH//LEAH	6.3	abc	4.3	b-e	3	abc	5.5	a
54	CFX-18(CL 161)/PSCL	6.5	abc	4.5	a-e	3.8	ab	5.5	a
55	RSMT//RXMT/IR36	6.5	abc	3.5	de	4	a	3.8	abc
56	TEMPLETON	5.3	c	4	b-e	2.5	abc	1.5	e
57	REX (RSMT//RXMT/IR36)	6.5	abc	4.5	a-e	3.8	ab	4	ab
58	CHENIERE	6.3	abc	3.5	de	3.3	abc	4	ab
59	COCODRIE	7.3	ab	3.3	e	2.3	abc	4.3	ab
60	CL 181 AR	5.8	bc	6	a	2	abc	2.3	cde
LSD (P=.05)			1.02		1.03		1.22		1.1
Standard Deviation			0.72		0.73		0.86		0.78
CV			11.35		17.01		35.5		21.31
Replicate F			0.578		0.311		0.787		0.826
Replicate Prob(F)			0.632		0.817		0.5061		0.485
Treatment F			3.618		5.095		3.944		10.974
Treatment Prob(F)			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 6. Disease reaction of various varieties and experimental lines to flooded field leaf blast (Lf blast), bacterial panicle blight (BPB), sheath blight (SB), upland leaf blast (Lf blast), and rotten neck blast (RNB) at the Rice Research Station, Crowley, LA. 2010. (URN Group IV).

Character Rated Rating Date Trt No.	Treatment Name	SB 8/2/2010		BPB 8/2/2010		Lf Blst 8/17/2010		RNB 8/20/2010	
61	GP13416/KATY//PI312777	5	bc	6.7	a	3.5	ab	6.8	a
62	9502065/3/MERC//MERC/…	6.3	abc	6.3	a	3.3	ab	2.3	cd
63	CPRS/CCDR	6.7	ab	5.3	ab	1.5	ab	3.3	bcd
64	JES	6	abc	3.7	b	1.3	b	0.8	d
65	BNGL//MERC/RICO/3/MERC/RICO//BNGL	6	abc	4.3	ab	2.8	ab	1.8	cd
66	SABR/CCDR	6.7	ab	5	ab	1.8	ab	1.8	cd
67	STG02PR-02-067/STG02AC-15-002//RU0401084	6.7	ab	4.3	ab	1.5	ab	1.3	cd
68	BNGL//MERC/RICO/3/MERC/RICO//BNGL	5.7	abc	6.7	a	3.5	ab	2.8	cd
69	LGRU/LCSN//CF4-85	5.3	bc	4	b	2.3	ab	4.3	bc
70	91642//KATY/NWBT/5/RU9201176/4/KATY/NWBT/3/LBNT/STBN//NWBT	6.7	ab	5.3	ab	1.3	b	3.5	bcd
71	LFTE/BNGL	7	ab	4.7	ab	2.8	ab	1.8	cd
72	CPRS/NWBT//KATY/3/CCDR	7.7	a	5	ab	2	ab	5.8	ab
73	CFX-18(CL 161)/0004054	6.3	abc	6	ab	3.3	ab	3.5	bcd
74	CFX-18(CL 161)/0004054	6.7	ab	6.7	a	2.8	ab	2.5	cd
75	CPRS/CCDR	7	ab	4.7	ab	1.8	ab	4	bc
76	LGRU//KATY/STBN/5/NWBT/KATY//RA73/LMNT/4/LBNT/9902/3/ DAWN/9695//STBN	4.3	c	4.7	ab	2.5	ab	3.5	bcd
77	CFX-18(CL 161)/PSCL	6	abc	3.7	b	2.3	ab	3	bcd
78	L201/SABR	5	bc	4.3	ab	2.5	ab	1.3	cd
79	CYBONNET (CYBT)	6.7	ab	4	b	2.3	ab	1.8	cd
80	NEPTUNE	7	ab	4.7	ab	3.8	a	1.3	cd
LSD (P=.05)		1.25		1.29		1.3		1.75	
Standard Deviation		0.76		0.78		0.92		1.24	
CV		12.17		15.66		37.96		43.85	
Replicate F		0.116		0.571		1.565		1.532	
Replicate Prob(F)		0.8909		0.5698		0.2079		0.2161	
Treatment F		3.543		4.807		2.864		6.28	
Treatment Prob(F)		0.0004		0.0001		0.0011		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 7. Disease reaction of various varieties and experimental lines to flooded field leaf blast (Lf blast), bacterial panicle blight (BPB), sheath blight (SB), upland leaf blast (Lf blast), and rotten neck blast (RNB) at the Rice Research Station, Crowley, LA. 2010. (URN Group V).

Character Rated		SB		BPB		LfBlastUp		RNB	
Rating Date		8/2/2010		8/2/2010		8/17/2010		8/20/2010	
Trt No.	Treatment Name								
81	WLLS/ZHE733//19981434	4.5	c	5.5	a-f	2	cd	2	bcd
82	KATY/CPRS//NWBT/…/3/9502008/4/CLR 6	5.5	abc	5	b-f	1	d	2	bcd
83	LBNT/9902/3/DAWN/9695//STBN/4/LGRU/5/WLLS/6/RU9201179	4.5	c	5	b-f	2	cd	4	a-d
84	RU0401064/IRAT 13//STG03F5-04-062	5.5	abc	5	b-f	1	d	1.5	cd
85	9502008/3/MBLE//LMNT/20001-5/4/CFX-18//…	7	abc	5.5	a-f	2	cd	4.5	a-d
86	SABR/CCDR	6.5	abc	5.5	a-f	1.5	cd	3	a-d
87	RU9201176/4/LBNT/STBN//NWBT/3/MILL/5/LGRU2/5/FRANCIS	5	bc	6	a-e	2	cd	5.5	ab
88	9502008-A/DREW//CLR 20	7	abc	5.5	a-f	2	cd	4	a-d
89	CPRS/CCDR	6.5	abc	4.5	c-f	1	d	2.5	a-d
90	LBNT/9902/3/DAWN/9695//STBN/4/LGRU/5/WLLS/6/19981429	6	abc	7.5	ab	2	cd	1.5	cd
91	CPRS/KBNT//WELLS CFX 18	6.5	abc	4.5	c-f	2.5	bcd	4	a-d
92	CCDR/L202	6.5	abc	5	b-f	1.5	cd	4.5	a-d
93	CL-161/PSCL	4.5	c	4.5	c-f	3.5	bc	5.5	ab
94	TACAURI/3/CPRS//82CAY21/TBNT/4/CFX 18	6.5	abc	3.5	ef	2.5	bcd	2.5	a-d
95	LGRU/LSCN/CF4-85	6.5	abc	3	f	2.5	bcd	4	a-d
96	STG02PR-02-067/STG02AC-15-002//RU0401084	8	a	8	a	1.5	cd	3.5	a-d
97	9502008/3/MBLE//LMNT/20001-5/4/WELLS/…	6.5	abc	7	abc	3	bcd	4.5	a-d
98	CPRS/NWBT//KATY/3/CCDR	7	abc	4	def	2	cd	5	abc
99	RU0401067/IRAT 13//STG03F5-04-062	5	bc	4	def	1.5	cd	1	d
100	CFX-18(CL 161)/PSCL	5.5	abc	7.5	ab	2	cd	3.5	a-d
101	CF4-69/CCDR	6	abc	4.5	c-f	1	d	2.5	a-d
102	RU0401084/IRAT 13//STG03F5-04-062	7	abc	5.5	a-f	2	cd	1.5	cd
103	CPRS//82CAY21/TBNT/3/CFX 29//…	6.5	abc	5.5	a-f	1.5	cd	4	a-d
104	CF4-69/CCDR	5.5	abc	4	def	1.5	cd	1.5	cd
105	FRNS/5/LBNT/9902//NWBT/3/KATY/NWBT/4/LGRU	6.5	abc	5	b-f	2.5	bcd	4	a-d
106	CPRS/9502008-A//CFX 26/WELLS	6	abc	5.5	a-f	3.5	bc	4	a-d
107	CF4-69/CCDR	6	abc	5	b-f	1	d	2.5	a-d
108	KATY/NWBT//L201/7402003/3/WLLS/4/FRNS	5.5	abc	7.5	ab	2	cd	3	a-d
109	CPRS/9502008-A/3/CFX 29//AR 1142/LA 2031	7	abc	5.5	a-f	1.5	cd	4	a-d
110	JEFF/CPRS/CPRS	6.5	abc	4.5	c-f	1	d	3	a-d
111	RU0401084/IRAT 13//M-401	6.5	abc	6.5	a-d	1.5	cd	1.5	cd
112	TACAURI/3/CPRS//82CAY21/TBNT/…	7	abc	4.5	c-f	2	cd	4.5	a-d
113	CPRS/CCDR	6.5	abc	3.5	ef	1	d	2.5	a-d
114	CFX-18(CL 161)/0004054	6	abc	6.5	a-d	2.5	bcd	2	bcd
115	CPRS/KBNT//WELLS CFX 18	6.5	abc	4.5	c-f	2	cd	3	a-d
116	CPRS/CCDR	5.5	abc	4.5	c-f	1	d	3.5	a-d
117	COCODRIE	7	abc	5	b-f	1.5	cd	5	abc
118	CL 142 AR	5.5	abc	4.5	c-f	2.5	bcd	5	abc
119	M206	7.5	ab	6	a-e	7	a	6	a
120	CL261	6.5	abc	5	b-f	4.5	b	3.5	a-d
LSD (P=.05)			1.33		1.45		1.22		2.03
Standard Deviation			0.66		0.72		0.6		1
CV			10.67		13.77		29.43		29.71
Replicate F			3.472		3.475		2.197		0.796
Replicate Prob(F)			0.0699		0.0698		0.1463		0.3778
Treatment F			3.043		5.146		6.817		3.335
Treatment Prob(F)			0.0004		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 varieties and experimental lines to flooded field leaf blast (Lf blast), bacterial panicle blight (BPB), sheath blight (SB), upland leaf blast (Lf blast), and rotten neck blast (RNB) at the Rice Research Station, Crowley, LA. 2010. (URN Group VI).

Character Rated Rating Date Trt No.	 Treatment Name	SB 8/3/2010		BPB 8/3/2010		LFBLST 8/17/2010		RNB 8/20/2010	
121	RU9901133/DREW//RU0101093	6	a-e	3	c	2	ab	2.5	abc
122	COLUMBIA2/BNGL	6	a-e	4.5	abc	3.5	ab	6	ab
123	CPRS/CCDR	6.5	a-d	4.5	abc	1.5	ab	4.5	abc
124	STG02F5-07-067/STG02F5-04-034//STG03P-03-041	8	a	4.5	abc	1.5	ab	1.5	c
125	CCDR/3/CPRS/KBNT//9502008-A	7	abc	4.5	abc	2	ab	4	abc
126	LGRU/LSCN/CF4-85	6	a-e	3	c	3	ab	5	abc
127	RNS3/RU9101001	6.5	a-d	4.5	abc	2	ab	3	abc
128	CCDR//9502008/LGRU	6.5	a-d	4	abc	1.5	ab	5	abc
129	SABR/CCDR	6.5	a-d	4	abc	1.5	ab	2	bc
130	UA99-25/UA99-140//STG03P-03-041	7.5	ab	3.5	bc	2	ab	2.5	abc
131	AC1403	7	abc	4.5	abc	3	ab	3.5	abc
132	CPRS/9901081	7	abc	6.5	a	2.5	ab	3.5	abc
133	19991516/19981467	5	cde	6.5	a	3.5	ab	3	abc
134	AC1075	7	abc	5	abc	2	ab	3	abc
135	CPRS/CCDR	6.5	a-d	3.5	bc	3	ab	3	abc
136	STG02PR-02-067/STG02AC-15-002//RU0401084	6	a-e	6	ab	4	ab	2	bc
137	KATY/CPRS//JKSN/3/AR 1188/CCDR/4/AC627	7	abc	4.5	abc	2	ab	5	abc
138	CCDR/L202	6.5	a-d	4	abc	4.5	a	5	abc
139	BASMATI-370/KATY/4/VSNTLM//L201/9NRZ/3/KATY/5/ CPRS/6/RU9701151	6.5	a-d	6.5	a	1.5	ab	3	abc
140	AC1075	6.5	a-d	5	abc	3	ab	3	abc
141	CPRS/CCDR	7	abc	5	abc	1.5	ab	4	abc
142	NWBT/3/LBNT/9902//LBLE/4/DREW/5/FRNS	5.5	b-e	5.5	abc	4	ab	6	ab
143	TACAURI/3/CPRS//82CAY21/TBNT/4/CL 131	7	abc	4	abc	2.5	ab	5	abc
144	CCDR/L202	6	a-e	4.5	abc	1.5	ab	3.5	abc
145	CCDR/ZHE 733//IRGA 417	6.5	a-d	4	abc	2	ab	2	bc
146	NWBT/KATY//9902207x2/3/JSMN/DLLA//…	7.5	ab	4.5	abc	2	ab	2	bc
147	CCDR/L202	7	abc	3.5	bc	2	ab	3	abc
148	LBNT/9902/3/DAWN/9695//STBN/4/LGRU/5/WLLS/6/19981434	6	a-e	6.5	a	1	b	2.5	abc
149	9502008//KATY/9902207X2/3/JSMN/…	7	abc	4.5	abc	1	b	2.5	abc
150	(JEFF//JEFF/O. RUFIPOGON)43_1-2	5	cde	3.5	bc	1	b	3	abc
151	UA99-25/UA99-140//STG03P-03-041	8	a	3.5	bc	2	ab	1.5	c
152	CPRS/KBNT//CFX 29/CCDR	6	a-e	4.5	abc	2	ab	1	c
153	CPRS/CCDR	4.5	de	4.5	abc	2	ab	4.5	abc
154	GFMT/RXMT//IR36	5.5	b-e	4	abc	2	ab	3.5	abc
155	CPRS//82CAY21/TBNT/3/CFX 29//…	8	a	5.5	abc	1	b	2	bc
156	CPRS/JKSN	6.5	a-d	4.5	abc	4	ab	3	abc
157	CPRS//LGRU/PI568891	6	a-e	4.5	abc	3.5	ab	6.5	a
158	JAZZMAN	5	cde	5	abc	2	ab	1.5	c
159	Sabine (SABN)	6	a-e	5	abc	2	ab	4	abc
160	TAGGART	4	e	4	abc	2	ab	2	bc
LSD (P=.05)			1.31		1.33		1.72		2.31
Standard Deviation			0.65		0.66		0.85		1.14
CV			10.18		14.47		37.58		34.39
Replicate F			2.395		3.472		0.432		0
Replicate Prob(F)			0.1298		0.0699		0.5147		1
Treatment F			3.851		3.837		2.306		2.834
Treatment Prob(F)			0.0001		0.0001		0.0053		0.0008

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 varieties and experimental lines to flooded field leaf blast (Lf blast), bacterial panicle blight (BPB), sheath blight (SB), upland leaf blast (Lf blast), and rotten neck blast (RNB) at the Rice Research Station, Crowley, LA. 2010. (URN Group VII).

Character Rated / Rating Date / Trt No.	Treatment Name	SB 8/3/2010		BPB 8/3/2010		LFBLST 8/17/2010		RNB 8/20/2010	
161	GP13416/KATY//PI312777/3/DREW	5.5	a	6	a-d	2	ab	4	a-e
162	BNGL//MERC/RICO/3/EARL	6.5	a	5.5	a-d	3	ab	3.5	a-e
163	SABR/CCDR	6	a	4	bcd	1.5	ab	1	ef
164	STG02F5-07-067/STG02F5-04-034//STG03P-03-041	8	a	4	bcd	2.5	ab	3	b-f
165	LFTE/4/KATY/CPRS/3/CPRS/LMNT/6/…	7.5	a	4	bcd	2	ab	2.5	c-f
166	CPRS/NWBT//KATY/3/CCDR	5.5	a	5	a-d	1.5	ab	4	a-e
167	LGRU//LMNT/RA73/3/LGRU/4/WLLS/5/CYBT	5.5	a	6.5	abc	2	ab	5	abc
168	MARS//M201/MARS/5/STRN//MERC/…	6	a	4.5	a-d	4	ab	3	b-f
169	CCDR/L202	6.5	a	5	a-d	4	ab	6	ab
170	CYBT/PI 560247//RU0301099	6.5	a	5	a-d	1.5	ab	2	c-f
171	ORIN/3/MERC/CAM9/MARS/4/BNGL	6.5	a	5	a-d	4.5	a	4.5	a-d
172	CPRS/CCDR	6.5	a	4.5	a-d	2.5	ab	3	b-f
173	CYBT/STG00F5-06-121	5.5	a	5	a-d	2	ab	2.5	c-f
174	TACAURI/3/CPRS//82CAY21/TBNT/4/MCR03-2771	7	a	4.5	a-d	2.5	ab	4	a-e
175	CCDR/L202	6.5	a	4.5	a-d	2.5	ab	4.5	a-d
176	FRNS/6/LBNT/9902/3/DAWN/9695//STBN/4/LGRU/5/DREW	5.5	a	5.5	a-d	3	ab	5	abc
177	TRNS//9502008-A/DREW	6.5	a	5.5	a-d	2.5	ab	2.5	c-f
178	CF4-69/CCDR	6	a	5.5	a-d	1	b	2	c-f
179	STG00F5-07-007/LM 1//CYBT	6	a	4.5	a-d	2	ab	1.5	def
180	95020083CPRS//82CAY21/TBNT/4/CPRS//…	7	a	6	a-d	1.5	ab	2.5	c-f
181	CCDR/L202	6.5	a	7	ab	2	ab	4.5	a-d
182	FRNS/6/LBNT/9902/3/DAWN/9695//STBN/4/LGRU/5/DREW	6.5	a	6.5	abc	3	ab	5	abc
183	CPRS/3/9502008-A//AR 1188/CCDR	6	a	5	a-d	2	ab	2.5	c-f
184	CPRS/NWBT//KATY/3/CCDR	6.5	a	5	a-d	4	ab	3	b-f
185	BASMATI-370/KATY/4/VSNTLM//L201/9NRZ/3/KATY/5/ CPRS/6/RU9701151	5	a	6.5	abc	1.5	ab	2	c-f
186	CFX-18(CL 161)/PSCL	5	a	5.5	a-d	3	ab	2.5	c-f
187	Carolina Gold/IR64//IR65610-24-3-6-3-2-3	5.5	a	3	d	2	ab	1	ef
188	CYBT/SABER	6.5	a	3.5	cd	3	ab	4.5	a-d
189	CPRS/KBNT//9502008-A/3/TRNS	6.5	a	5.5	a-d	2	ab	5	abc
190	CCDR/L202	5.5	a	4.5	a-d	2	ab	3.5	a-e
191	RSMT/KATY	6	a	3.5	cd	2.5	ab	5	abc
192	9502008/LGRU/3/CPRS//82CAY21/TBNT	6.5	a	5	a-d	2.5	ab	4	a-e
193	RSMT/KATY	6	a	5	a-d	4.5	a	6	ab
194	RSMT/RXMT/IR36	5.5	a	4.5	a-d	3.5	ab	6	ab
195	TACAURI/3/CPRS//82CAY21/TBNT/4/WELLS/CFX-18	6.5	a	7	ab	2.5	ab	3.5	a-e
196	RSMT//RXMT/IR36	6.5	a	4.5	a-d	3.5	ab	4	a-e
197	GFMT//NWBT/KATY	6.5	a	5.5	a-d	2	ab	4.5	a-d
198	PCOS/LMNT//GFMT//LMNT*2/82CAY83	5.5	a	6	a-d	3	ab	3	b-f
199	RONDO	5	a	4.5	a-d	4	ab	0	f
200	FRANCIS	6	a	7.5	a	3.5	ab	6.5	a
LSD (P=.05)		1.48		1.78		1.73		1.65	
Standard Deviation		0.73		0.88		0.86		0.82	
CV		11.87		17.17		32.91		22.98	
Replicate F		0.375		1.033		0.615		0.075	
Replicate Prob(F)		0.5438		0.3157		0.4378		0.7854	
Treatment F		1.596		2.575		2.179		6.775	
Treatment Prob(F)		0.0743		0.002		0.0085		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.

2010 Varietal and URN Resistance Evaluation (DN3, DN4)

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, 90 lb/A

Plot Size: One to three 6-ft row plots

Experimental Design: Randomized complete block design with two to four replications

Planting Method/Date: Drill seeded, May 12

Fertilization: Preplant 16-48-48, May 11; preflood 120-0-0, June 10; topdress 55-0-0, July 8

Water Management: Flushed, May 26; flooded, June 11; drained to induce blast, June 23; reflooded, June 29; drained, Aug 16

Herbicides: Rice shot 3 qt, May 24; Tank mix - Permit 1.43 oz and Rice Beaux 1 gal, June 10

Insecticides: Dermacor seed treatment

Fungicides: None

Inoculation Dates: All from natural inoculum

Application Equipment: N/A

Application Dates:

	Growth Stage	Time	Temp	Wind	RH	Clouds	Dew
N/A							

Disease Ratings: See Tables 2-9

Drained: Aug 16

Harvest: N/A

Results: See Tables 2-9

Comments: Leaf blast was light.

2010 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, CL261, Cheniere, 100 lb/A

Plot Size: 4 x 16 ft

Planting Method/Date: Drill seeded, Mar 12

Fertilization: Preplant 20-60-60, Mar 12; preflood 135-0-0, May 4; topdress 46-0-0, May 27

Experimental Design: Randomized complete block design with four replications

Water Management: Flushed, Mar 23, Apr 1, 9, 16, 27; flooded, May 5; drained, July 23

Herbicides: Propanil 4 qt, Apr 15; Rice Beaux 3 qt, May 4

Insecticides: Dermacor seed treatment; Karate 2 oz aerial application, May 15

Fungicides: Various (Quadris, Quilt Xcel, Stratego, and untreated check)

Inoculation Dates: *Rhizoctonia solani* culture grown on rice grain/hull mixture, June 1

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 16	Boot	10:30	89 F	2 mph	75%	50%	mod.

Disease Ratings: July 29

Drained: July 23

Harvest: Aug 4

Results: See Table 10

Comments: Sheath blight was severe.

Table 10. Effect of varietal resistance and fungicide applications on sheath blight development and yield of rice at the Rice Research Station, Crowley, LA. 2010.

Description Part Rated Rating Date Trt No.	Treatment Name	Form Conc	Form Unit	Rate	Rate Unit	Growth Stage	SB % Till 7/29/2010		SB 0-9 7/29/2010		Yield lb/A 8/4/2010		Milling %Whole 9/7/2010		Milling %Total 9/7/2010	
1	CL151 Unsprayed						75.4	ab	7	ab	8541	cd	62.5	a	71.3	a-e
2	CL151 Quadris	2.08	lb/gal	12	fl oz/A	Boot	45.6	cde	5.4	def	10432	a	61.5	a	70.8	b-e
3	CL151 Quilt Xcel	1.2	lb/gal	21	fl oz/A	Boot	29.4	e	4.2	g	10417	a	63.5	a	71.9	a-e
4	CL151 Stratego	2.08	lb/gal	19	fl oz/A	Boot	54	cd	6.2	bcd	10565	a	63.1	a	71.6	a-e
5	CL111 Unsprayed						88.2	a	7.8	a	7614	e	63.5	a	72.5	abc
6	CL111 Quadris	2.08	lb/gal	12	fl oz/A	Boot	51	cde	6.8	abc	9667	ab	65.1	a	72.9	ab
7	CL111 Quilt Xcel	1.2	lb/gal	21	fl oz/A	Boot	35.4	de	4.8	efg	9890	ab	65.5	a	73.7	ab
8	CL111 Stratego	2.08	lb/gal	19	fl oz/A	Boot	74.6	ab	7.4	a	9788	ab	64.1	a	72.8	ab
9	CL261 Unsprayed						78	ab	6.8	abc	8434	d	62.6	a	69.1	e
10	CL261 Quadris	2.08	lb/gal	12	fl oz/A	Boot	36.2	de	4.8	efg	9003	bcd	65.4	a	71	a-e
11	CL261 Quilt Xcel	1.2	lb/gal	21	fl oz/A	Boot	33.2	de	4.4	fg	9491	abc	65	a	69.8	cde
12	CL261 Stratego	2.08	lb/gal	19	fl oz/A	Boot	41.8	cde	5.4	def	9389	a-d	64.5	a	69.6	de
13	Cheniere Unsprayed						60.8	bc	6.2	bcd	9210	bcd	65.3	a	74	a
14	Cheniere Quadris	2.08	lb/gal	12	fl oz/A	Boot	36	de	4.8	efg	9828	ab	62.2	a	72.2	a-d
15	Cheniere Quilt Xcel	1.2	lb/gal	21	fl oz/A	Boot	35.2	de	4.4	fg	9998	ab	64.1	a	73.7	ab
16	Cheniere Stratego	2.08	lb/gal	19	fl oz/A	Boot	46.4	cde	5.8	cde	9618	ab	65.1	a	73.8	ab
LSD (P=.05)							14.02		0.73		711		2.62		1.81	
Standard Deviation							11.09		0.57		562.1		1.83		1.26	
CV							21.6		9.98		5.92		2.87		1.76	
Replicate F							3.009		3.159		5.976		12.884		7.441	
Replicate Prob(F)							0.025		0.0201		0.0004		0.0001		0.0004	
Treatment F							14.167		20.275		9.949		1.9		6.097	
Treatment Prob(F)							0.0001		0.0001		0.0001		0.0493		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.

2010 Lake Arthur Variety by Fungicide Trial

Location: Errol Lounsberry Farm, Lake Arthur, LA, Vermilion Parish

Soil Type: Crowley silt loam

Variety/Seed Rate: CL151, CL111, CL261, Cheniere, 100 lb/A

Plot Size: 4 x 16 ft

Planting Method/Date: Drill seeded, Mar 15

Fertilization: Preplant 15-60-60, Mar 15; preflood 168-0-0, April 29

Experimental Design: Factorial arrangement in a randomized complete block design with four replications

Water Management: Flushed, Mar 29 and April 22; flooded, April 30; drained, July 20

Herbicides: Tank mix - RiceShot 4 qt + Londax ½ oz + Permit ½ oz, Apr 16
Tank mix - RiceBeaux 4 qt + Londax 1 oz + Permit ½ oz, April 29

Insecticides: Dermacor seed treatment

Fungicides: Various (Quadris, Quilt Xcel, Stratego, and untreated check)

Inoculation Dates: All 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
June 24	Heading	12:00	89 F	2 mph	82%	75%	slight

Disease Ratings: Aug 3

Drained: July 20

Harvest: Aug 3

Results: See Table 11

Comments: Sheath blight severity was light; blast severity was moderate.

Table 11. Effect of varietal resistance and fungicide applications on sheath blight and blast development and yield of rice at the Lounsberry Farm, Lake Arthur, Louisiana, 2010.

Description Part Rated Rating Date Trt No.	Treatment Name	Form Conc	Form Unit	Rate	Rate Unit	Growth Stage	SB % Till 8/3/2010		SB 0-9 8/3/2010		Yield lb/A 8/3/2010		Milling % Whole 9/10/2010		Milling %Total 9/10/2010	
1	CL151 Unsprayed						84.3	ab	7.5	ab	5098	c	51.2	c	68.1	a
2	CL151 Quadris	2.08	lb/gal	12	fl oz/A	Boot	46	d	5.8	cd	6288	b	54.3	bc	68.3	a
3	CL151 Quilt Xcel	1.2	lb/gal	21	fl oz/A	Boot	38	d	5.5	cd	7168	ab	53.7	bc	67.8	a
4	CL151 Stratego	2.08	lb/gal	19	fl oz/A	Boot	40.3	d	5	d	7576	a	53.8	bc	67.6	a
5	CL111 Unsprayed						93.8	a	8	a	5061	c	50.5	c	64.9	a
6	CL111 Quadris	2.08	lb/gal	12	fl oz/A	Boot	61	cd	6.5	bcd	6595	ab	58.1	b	69.7	a
7	CL111 Quilt Xcel	1.2	lb/gal	21	fl oz/A	Boot	46.5	d	5.8	cd	6618	ab	54.8	bc	67.7	a
8	CL111 Stratego	2.08	lb/gal	19	fl oz/A	Boot	62.8	bcd	6	cd	6567	ab	54.8	bc	68	a
9	CL261 Unsprayed						77.8	abc	7.5	ab	6446	ab	62.7	a	68.6	a
10	CL261 Quadris	2.08	lb/gal	12	fl oz/A	Boot	38	d	5.5	cd	6758	ab	63.8	a	69.3	a
11	CL261 Quilt Xcel	1.2	lb/gal	21	fl oz/A	Boot	49.8	d	5.8	cd	6922	ab	64.6	a	69.1	a
12	CL261 Stratego	2.08	lb/gal	19	fl oz/A	Boot	41	d	5.8	cd	6402	ab	63.8	a	68.8	a
13	Cheniere Unsprayed						78.8	abc	6.8	abc	6605	ab	54.4	bc	68.6	a
14	Cheniere Quadris	2.08	lb/gal	12	fl oz/A	Boot	39	d	5.5	cd	6939	ab	55.2	bc	68.9	a
15	Cheniere Quilt Xcel	1.2	lb/gal	21	fl oz/A	Boot	41	d	5.3	cd	6978	ab	56.2	bc	69.6	a
16	Cheniere Stratego	2.08	lb/gal	19	fl oz/A	Boot	37.8	d	5.3	cd	7095	ab	54.7	bc	61.3	a
LSD (P=.05)							16.38		0.97		731.3		3.87		5.41	
Standard Deviation							11.46		0.68		511.7		2.32		3.25	
CV							20.95		11.16		7.79		4.1		4.78	
Replicate F							2.653		1.845		13.656		7.228		0.825	
Replicate Prob(F)							0.06		0.1525		0.0001		0.0027		0.448	
Treatment F							11.071		7.152		6.801		11.524		1.243	
Treatment Prob(F)							0.0001		0.0001		0.0001		0.0001		0.2957	

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.

2010 Jeff Davis Variety by Fungicide Trial

Location: Jimmy Hoppe Farm, Fenton, LA, Jefferson Davis Parish

Soil Type: Crowley silt loam

Variety/Seed Rate: CL151, CL111, CL261, Cheniere, 100 lb/A

Plot Size: 4 x 16 ft

Planting Method/Date: Drill seeded, April 19

Fertilization: Preplant 14-41-41, Mar 15; preflood 161-0-0, May 20

Experimental Design: Randomized complete block design with four replications

Water Management: Flushed, May 3 and May 10; flooded, May 21; drained, Aug 7

Herbicides: Tank mix - Stam 4 qt + Permit 1 oz, May 7
Tank mix - RiceBeaux 4 qt + Grandstand 11 oz, May 20

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
July 8	Boot	09:00	80 F	4 mph	96%	40%	Heavy

Disease Ratings: Aug 13

Drained: Aug 7

Harvest: Aug 24

Results: See Table 12

Comments: Sheath blight severity was high; other diseases were light.

Table 12. Effect of varietal resistance and fungicide applications on sheath blight development and yield of rice at the Hoppe Farm, Fenton, LA. 2010.

Description Part Rated Rating Date Trt No.	Treatment Name	Form Conc	Form Unit	Rate	Rate Unit	Growth Stage	SB 0-9 8/13/2010		BLST 0-9 8/13/2010		Yield lb/A 8/24/2010		Milling %Whole 9/16/2010		Milling %Total 9/16/2010	
1	CL151						4.2	ab	2.4	a	10362	ab	61.6	a-d	69.9	a
	Unsprayed															
2	CL151						3.6	ab	2.4	a	10423	ab	62.4	abc	70.9	a
	Quadris	2.08	lb/gal	12	fl oz/A	Boot										
3	CL151						3.5	ab	1.6	a	10461	ab	60.5	b-e	68.7	a
	Quilt Xcel	1.2	lb/gal	21	fl oz/A	Boot										
4	CL151						3.5	ab	1.6	a	10824	a	59.3	b-e	69.3	a
	Stratego	2.08	lb/gal	19	fl oz/A	Boot										
5	CL111						5	a	3.6	a	9228	a-d	63.6	ab	71.6	a
	Unsprayed															
6	CL111						4.8	ab	3.2	a	10186	abc	62.5	abc	70.9	a
	Quadris	2.08	lb/gal	12	fl oz/A	Boot										
7	CL111						4.5	ab	2.6	a	10136	abc	60.2	b-e	69.4	a
	Quilt Xcel	1.2	lb/gal	21	fl oz/A	Boot										
8	CL111						4.3	ab	2.9	a	10148	abc	61.3	a-d	69.9	a
	Stratego	2.08	lb/gal	19	fl oz/A	Boot										
9	CL261						4.5	ab	4.1	a	8419	cde	64.4	ab	69.5	a
	Unsprayed															
10	CL261						3.8	ab	2.1	a	9243	a-d	67.5	a	71.1	a
	Quadris	2.08	lb/gal	12	fl oz/A	Boot										
11	CL261						3.3	b	2.4	a	8972	a-d	64.7	ab	69.4	a
	Quilt Xcel	1.2	lb/gal	21	fl oz/A	Boot										
12	CL261						3.6	ab	1.4	a	8718	bcd	65	ab	69.7	a
	Stratego	2.08	lb/gal	19	fl oz/A	Boot										
13	Cheniere						3.8	ab	3.2	a	7595	de	54.2	e	68.2	a
	Unsprayed															
14	Cheniere						3.8	ab	1.7	a	6950	e	56.7	cde	69.2	a
	Quadris	2.08	lb/gal	12	fl oz/A	Boot										
15	Cheniere						3.6	ab	2.7	a	8007	de	55.2	de	68.7	a
	Quilt Xcel	1.2	lb/gal	21	fl oz/A	Boot										
16	Cheniere						4.3	ab	3.9	a	6858	e	57.9	b-e	69.1	a
	Stratego	2.08	lb/gal	19	fl oz/A	Boot										
LSD (P=.05)							0.96		1.79		1162.8		4.15		2.4	
Standard Deviation							0.75		1.4		919.3		2.49		1.44	
CV							18.66		53.67		10.04		4.07		2.06	
Replicate F							2.683		1.389		5.316		0.738		0.186	
Replicate Prob(F)							0.043		0.2525		0.001		0.4865		0.8315	
Treatment F							2.454		1.779		9.953		6.673		1.316	
Treatment Prob(F)							0.01		0.0681		0.0001		0.0001		0.2527	

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.

2010 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: CL151, 100 lb/A

Plot Size: 4 x 16 ft

Planting Method/Date: Drill seeded, Mar 12

Fertilization: Preplant 20-60-60, Mar 12; preflood 135-0-0, May 4; topdress 46-0-0, May 27

Experimental Design: Randomized complete block design with four replications

Water Management: Flushed, Mar 23, Apr 1, 9, 16, 27; flooded, May 5; drained, July 23

Herbicides: Propanil 4 qt, Apr 23; Rice Beaux 3 qt, May 4

Insecticides: Dermacor seed treatment; Karate 2 oz aerial application, May 15

Fungicides: Various

Inoculation Dates: *Rhizoctonia solani* culture grown on rice grain/hull mixture, June 1

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 16	PD + 7	11:00	92 F	2 mph	74%	60%	mod.
June 22	Boot	09:00	84 F	3 mph	83%	60%	mod.
July 2	Heading	13:00	85 F	7 mph	86%	100%	mod.

Disease Ratings: July 29

Drained: July 23

Harvest: Aug 4

Results: See Table 13

Comments: Sheath blight was severe; other diseases were light. Milling yields were high but treatment differences were not significant.

Table 13. Effect of various fungicides, rates and timings on sheath blight (SB) development and yield of CL151 rice at the Rice Research Station, Crowley, LA, 2010.

Description Part Rated Rating Date Trt No.	Treatment Name	Form Conc	Form Unit	Rate	Rate Unit	Growth Stage	SB % Till 7/29/2010		SB 0-9 7/29/2010		Yield lb/A 8/4/2010		Milling % Whole 9/7/2010		Milling % Total 9/7/2010	
1	Untreated						83.5	a	7	ab	8087	ab	63.6	a	72.6	a
2	Quilt Excel	2.2	lb/gal	17.5	fl oz/A	B	47.3	cde	4.5	e	8963	a	62.8	a	72.7	a
3	Quilt Excel	2.2	lb/gal	21	fl oz/A	B	37	e	4.8	de	8240	ab	62.6	a	72.6	a
4	Quadris	2.01	lb/gal	12	fl oz/A	B	48.5	cde	5.8	a-e	8560	ab	63.5	a	72.7	a
5	Stratego	2.01	lb/gal	19	fl oz/A	B	81	a	7.3	a	8000	ab	60.1	a	71.3	a
12	Quilt	1.1	lb/gal	28	fl oz/A	B	37.8	e	5.3	cde	8623	ab	60.4	a	71.5	a
13	Quadris	2.08	lb/gal	9	fl oz/A	B	51.3	b-e	5.5	b-e	8459	ab	64.3	a	73.2	a
14	Tilt	3.6	lb/gal	6	fl oz/A	B	76.3	ab	7	ab	7977	ab	63.5	a	73.1	a
15	Quilt Excel	2.2	lb/gal	21	fl oz/A	PD+7	85.5	a	7	ab	8447	ab	61	a	71.7	a
16	Quilt Excel	2.2	lb/gal	21	fl oz/A	H	58	a-e	5.5	b-e	7766	b	61.6	a	71.9	a
17	Quadris	2.01	lb/gal	12	fl oz/A	PD+7	71.8	abc	6.5	abc	8369	ab	62.3	a	72.5	a
18	Quadris	2.01	lb/gal	12	fl oz/A	H	63.3	a-e	6.3	a-d	7721	b	63.5	a	73	a
19	Stratego	2.01	lb/gal	19	fl oz/A	PD+7	42.3	de	5	cde	8922	a	62	a	72.6	a
20	Stratego	2.01	lb/gal	19	fl oz/A	H	67.5	a-d	6	a-e	8297	ab	60.9	a	71.9	a
LSD (P=.05)							17.97		0.98		672.1		4.63		2.1	
Standard Deviation							12.58		0.68		470.3		3.24		1.47	
CV							20.69		11.51		5.65		5.2		2.03	
Replicate F							0.235		1.055		0.768		2.654		3.285	
Replicate Prob(F)							0.8712		0.3793		0.5191		0.0619		0.0307	
Treatment F							7.43		7.076		2.66		0.68		0.724	
Treatment Prob(F)							0.0001		0.0001		0.0092		0.7694		0.7288	

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.

2010 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: CL151, 100 lb/A

Plot Size: 4 x 16 ft

Planting Method/Date: Drill seeded, Mar 12

Fertilization: Preplant 20-60-60, Mar 12; preflood 135-0-0, May 4; topdress 46-0-0, May 27

Experimental Design: Randomized complete block design with four replications

Water Management: Flushed, Mar 23, Apr 1, 9, 16, 27; flooded, May 5; drained, July 23

Herbicides: Propanil 4 qt, Apr 23; Rice Beaux 3 qt, May 4

Insecticides: Dermacor seed treatment; Karate 2 oz aerial application, May 15

Fungicides: Various

Inoculation Dates: *Rhizoctonia solani* culture grown on rice grain/hull mixture, June 1

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 24	Boot	08:30	84 F	3 mph	83%	10%	mod.

Disease Ratings: July 29

Drained: July 23

Harvest: Aug 4

Results: See Table 14

Comments: Sheath blight severity was high; other diseases were low. Milling yields were high but treatment differences were not significant.

Table 14. Effect of various fungicides, rates, and timings on sheath blight (SB) development and yield of CL151 rice at the Rice Research Station, Crowley, LA, 2010.

Description Part Rated Rating Date Trt No.	Treatment Name	Form Conc	Form Unit	Rate	Rate Unit	Growth Stage	SB % Till 7/29/2010		SB 0-9 7/29/2010		Yield lb/A 8/4/2010		Milling % Whole 9/7/2010		Milling % Total 9/7/2010	
1	Untreated						78	a	7.3	a	7340	b	63.5	a	71.6	a
2	Stratego	2.08	lb/gal	19	fl oz/A	B	35.8	b	4.5	b	8068	ab	64.4	a	71.9	a
3	Stratego Pro	4	lb/gal	8	fl oz/A	B	48.3	b	5.5	b	8130	ab	64.3	a	72	a
4	Stratego Pro	4	lb/gal	9	fl oz/A	B	43.5	b	5	b	7756	ab	64.4	a	72	a
5	Stratego Pro	4	lb/gal	8	fl oz/A	B	49	b	5.3	b	7920	ab	64.7	a	72.5	a
	Tilt	3.6	lb/gal	4	fl oz/A	B										
6	Stratego	2.08	lb/gal	19	fl oz/A	B	45.5	b	5	b	7892	ab	64	a	71.7	a
	Gem	2.8	lb/gal	2	fl oz/A	B										
7	Gem	2.8	lb/gal	4.7	fl oz/A	B	46.5	b	5	b	8207	a	63.5	a	72.2	a
8	Quilt Excel	2.08	lb/gal	21	fl oz/A	B	49.3	b	5.3	b	8251	a	64.8	a	72.2	a
9	Quadris	2.08	lb/gal	12	fl oz/A	B	39.3	b	5	b	7903	ab	64.1	a	72	a
LSD (P=.05)							15.74		0.91		521.2		1.36		0.67	
Standard Deviation							10.79		0.62		356.2		0.93		0.46	
CV							22.32		11.72		4.49		1.45		0.64	
Replicate F							1.196		0.838		0.863		8.576		4.823	
Replicate Prob(F)							0.3323		0.4862		0.4742		0.0005		0.0095	
Treatment F							4.972		6.269		2.439		0.903		1.254	
Treatment Prob(F)							0.001		0.0002		0.0451		0.5302		0.314	

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.

2010 Sheath Blight Fungicide Trial (SB4)

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, Apr 14

Fertilization: Preplant 16-48-48, Apr 13; preflood 92-0-0, May 27, applied by air; topdress 58-0-0, June 16

Experimental Design: Randomized complete block design with four replications

Water Management: Flushed, Apr 26, May 7; flooded, May 27; drained, Aug 6

Herbicides: RiceBeaux 3 qt, May 25; Clincher 20 oz, June 5

Insecticides: Dermacor seed treatment

Fungicides: Various

Inoculation Dates: *Rhizoctonia solani* culture grown on rice grain/hull mixture, June 15

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 25	PD + 7	11:00	92 F	2 mph	67%	80%	mod.
June 30	Boot	11:30	82 F	7 mph	92%	100%	mod.

Disease Ratings: Aug 13

Drained: Aug 6

Harvest: Aug 26

Results: See Table 15

Comments: Sheath blight severity was very high.

Table 15. Effect of various fungicides, rates, and timings on sheath blight (SB) development and yield of CL131 rice at the Rice Research Station, Crowley, LA. 2010.

Description Part Rated Rating Date Trt No.	Treatment Name	Form Conc	Form Unit	Rate	Rate Unit	Growth Stage	Stand pl/2 ft 5/12/2010	Height inch 5/12/2010	SB % Till 8/13/2010	SB 0-9 8/13/2010	Yield lb/A 8/26/2010	Milling % Whole 9/27/2010	Milling % Total 9/27/2010
1	Untreated Check						12 a	5 a	92.6 a	8 a	6115 b	56.6 a	70.4 a
2	Seed Treatment 108 (ST108)					ST	11 a	5 a	93 a	8 a	5808 b	55.9 a	69.8 a
3	Seed Treatment 109 (ST109)					ST	12 a	5 a	87.4 a	7.8 a	5849 b	55.9 a	69.7 a
4	Seed Treatment Quadris					ST	11 a	5 a	91 a	8 a	6272 b	57.2 a	70.2 a
5	Intregral 108	0.18	%			PD+7	13 a	5 a	88.4 a	8 a	5806 b	56.6 a	69.7 a
6	Intregral 109	0.18	%			PD+7	12 a	5 a	90.2 a	7.8 a	5987 b	56.2 a	70 a
7	Intregral 108	0.18	%			B	13 a	5 a	87.4 a	7.8 a	6494 b	55.3 a	70 a
8	Intregral 109	0.18	%			B	12 a	5 a	94 a	8 a	6072 b	55.2 a	70 a
9	Quadris	2.08	lb/gal	12	fl oz/A	B	12 a	5 a	51 b	6.2 b	7848 a	58 a	70.2 a
10	ST 108					ST	11 a	5 a	89.8 a	7.8 a	6204 b	55.4 a	70 a
	Intragal 108	0.18	%			PD+7							
11	ST 108					ST	12 a	5 a	93.6 a	8 a	6130 b	55.3 a	69.9 a
	Intregal 108	0.18	%			B							
12	ST109					ST	10 a	5 a	85.6 a	7.8 a	6149 b	56.8 a	69.5 a
	Intregal 109	0.18	%			PD+7							
13	ST109					ST	11 a	5 a	87.8 a	7.8 a	5831 b	55.7 a	70.2 a
	Intregal 109	0.18	%			B							
14	Quadris	2.08	lb/gal	12	fl oz/A	PD+7	12 a	5 a	27.4 c	5 c	7774 a	58.1 a	70.2 a
15	Intregal 108	0.18	%			PD+7 & B	12 a	5 a	91 a	8 a	6170 b	56.5 a	70 a
16	Intregal 109	0.18	%			PD+7 & B	11 a	5 a	85.2 a	7.6 a	5887 b	56.6 a	69.9 a
LSD (P=.05)							2.1	0.5	8.83	0.41	608.6	2.23	0.91
Standard Deviation							1.6	0.4	6.98	0.33	481.1	1.56	0.64
CV							14.03	7.95	8.37	4.28	7.67	2.77	0.91
Replicate F							2.18	1.927	2.025	1.063	0.995	2.719	15.062
Replicate Prob(F)							0.082	0.1175	0.1023	0.3828	0.4173	0.0556	0.0001
Treatment F							0.761	0.88	33.275	31.748	8.551	1.361	0.498
Treatment Prob(F)							0.7136	0.5892	0.0001	0.0001	0.0001	0.2082	0.9288

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.

2010 Sheath Blight Fungicide Trial (SB5)

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, Apr 14

Fertilization: Preplant 16-48-48, Apr 13; preflood 92-0-0, May 27 applied by air; topdress 58-0-0, June 16

Experimental Design: Randomized complete block design with four replications

Water Management: Flushed, Apr 26, May 7; flooded, May 27; drained, Aug 6

Herbicides: RiceBeaux 3 qt, May 25; Clincher 20 oz, June 5

Insecticides: Dermacor seed treatment

Fungicides: Various

Inoculation Dates: *Rhizoctonia solani* culture grown on rice grain/hull mixture, June 15

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 30	Boot	09:00	78 F	6 mph	94%	100%	mod.

Disease Ratings: Aug 16

Drained: Aug 6

Harvest: Aug 26

Results: See Table 16

Comments: Sheath blight severity was very high.

Table 16. Effect of various fungicides, rates, and timings on sheath blight (SB) development and yield of CL131 rice at the Rice Research Station, Crowley, LA, 2010.

Description							SB		SB		Yield		Milling		Milling	
Part Rated							% Till		0-9		lb/A		% Whole		% Total	
Rating Date							8/16/2010		8/16/2010		8/26/2010		10/8/2010		10/8/2010	
Trt No.	Treatment Name	Form Conc	Form Unit	Rate	Rate Unit	Growth Stage										
1	Unsprayed Check						96.3	a	8.8	a	6582	b	42.6	a	68.7	a
2	Quadris	2.08	lb/gal	9	fl oz/A	B	56.5	def	6.8	de	7725	a	48.4	a	69	a
3	Quadris	2.08	lb/gal	12	fl oz/A	B	41.8	f	6.3	def	7812	a	48.7	a	69	a
4	Stratego	2.08	lb/gal	16	fl oz/A	B	85.5	abc	8	abc	7612	a	42.6	a	69.3	a
5	Stratego	2.08	lb/gal	19	fl oz/A	B	89.8	ab	8.3	ab	7448	a	41.7	a	67.3	a
6	Stratego	2.08	lb/gal	21	fl oz/A	B	90.3	ab	8.3	ab	7411	a	46.3	a	67.9	a
7	Quilt	1.66	lb/gal	21	fl oz/A	B	66.3	cd	7	cde	7777	a	46.9	a	68.2	a
8	Quilt	1.66	lb/gal	28	fl oz/A	B	71.3	bcd	7.3	bcd	7813	a	46.8	a	67.6	a
9	Quilt Xcel	2.2	lb/gal	17.5	fl oz/A	B	64.5	de	6.8	de	7765	a	50.3	a	67.8	a
10	Quilt Xcel	2.2	lb/gal	28	fl oz/A	B	39.3	f	5.5	f	7855	a	50.6	a	67.6	a
11	Stratego	2.08	lb/gal	19	fl oz/A	B	85.3	abc	8	abc	7826	a	48	a	69.1	a
	Quadris	2.08	lb/gal	2	fl oz/A	B										
12	Stratego	2.08	lb/gal	19	fl oz/A	B	70	bcd	7	cde	7771	a	48.1	a	69.2	a
	Gem	4.17	lb/gal	1	fl oz/A	B										
13	Quilt Xcel	2.2	lb/gal	14	fl oz/A	B	72.3	bcd	7.3	bcd	7610	a	48.7	a	69	a
	Tilt	3.6	lb/gal	2	fl oz/A	B										
14	Quilt Xcel	2.2	lb/gal	16	fl oz/A	B	62.8	de	7	cde	7954	a	50.5	a	69.5	a
	Tilt	3.6	lb/gal	1.4	fl oz/A	B										
15	Quilt	2.2	lb/gal	21	fl oz/A	B	51.5	def	6.5	de	8056	a	52	a	69.2	a
	Quadris	2.08	lb/gal	3	fl oz/A	B										
16	Quadris	2.08	lb/gal	9	fl oz/A	B	45.8	ef	6	ef	8088	a	48.3	a	69.5	a
	Tilt	3.6	lb/gal	6	fl oz/A	B										
LSD (P=.05)							13.41		0.72		431.3		8.01		2.19	
Standard Deviation							9.38		0.5		301.8		3.76		1.03	
CV							13.79		7.01		3.92		7.91		1.5	
Replicate F							5.283		0.912		12.069		6.747		2.278	
Replicate Prob(F)							0.0033		0.443		0.0001		0.0202		0.152	
Treatment F							14.72		12.845		5.375		1.285		1.079	
Treatment Prob(F)							0.0001		0.0001		0.0001		0.3165		0.4424	

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.

2010 Blast Trial (Blast 1)

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: M201, 100 lb/A

Plot Size: 4 x 16 ft

Planting Method/Date: Drill seeded, May 12

Fertilization: Preplant 16-48-48, May 11; preflood 120-0-0, June 10; topdress 46-0-0, July 8

Water Management: Flushed, May 26; flooded, June 11; drained to induce blast, June 23; reflooded, June 29; drained, Aug 16

Herbicides: RiceShot 3 qt, May 24; Tank mix - RiceBeaux 4 qt + Permit 1.43 oz, June 10

Insecticides: Dermacor seed treatment

Fungicides: Various (Gem, Quadris, Quilt Xcel, Stratego Pro, Tilt, 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
July 15	Boot	09:30	87 F	3 mph	80%	40%	mod.
July 19	Heading	09:00	85 F	3 mph	84%	100%	heavy

Disease Ratings: Aug 6

Drained: Aug 16

Harvest: Aug 26

Results: See Table 17

Comments: Blast severity was high.

Table 17. Effect of various fungicides, rates, and timings on blast development and yield of M201 rice at the Rice Research Station Crowley, LA, 2010.

Description Part Rated Rating Date Trt No.	 Treatment Name	 Form Conc	 Form Unit	 Rate	 Rate Unit	 Growth Stage	RNB % 8/6/2010		Yield lb/A 8/26/2010		Milling % Whole 9/20/2010		Milling % Total 9/20/2010	
1	Untreated						64.5	a	3594	b	48.5	a	64.3	a
2	Stratego	2.08	lb/gal	19	fl oz/A	H	34.8	bc	5065	a	51.5	a	65.4	a
3	Stratego PRO	4.16	lb/gal	8	fl oz/A	H	23.3	bc	4793	a	48.5	a	64.2	a
4	Stratego PRO	4.16	lb/gal	9	fl oz/A	H	26	bc	4634	a	49	a	64.2	a
5	Stratego PRO	4.16	lb/gal	8	fl oz/A	H	15.3	bc	4991	a	51.8	a	65.2	a
	Tilt	3.6	lb/gal	4	fl oz/A	H								
6	Stratego	2.08	lb/gal	19	fl oz/A	H	23.5	bc	4952	a	49.6	a	65.4	a
	GEM	4.16	lb/gal	2	fl oz/A	H								
7	GEM	4.16	lb/gal	4.7	fl oz/A	H	42.3	b	4800	a	51.1	a	65.1	a
8	Quilt Excel	2.08	lb/gal	21	fl oz/A	H	20.8	bc	5244	a	49.9	a	64.6	a
9	Quadris	2.08	lb/gal	12	fl oz/A	H	21.8	bc	4921	a	49.8	a	64.6	a
10	Quadris	2.08	lb/gal	9	fl oz/A	B & H	12.5	c	4866	a	52.8	a	65.5	a
11	Quilt Excel	2.08	lb/gal	17.5	fl oz/A	B & H	9.3	c	5213	a	55.6	a	66.7	a
12	Stratego	2.08	lb/gal	14	fl oz/A	B & H	9	c	5394	a	52.5	a	65.6	a
LSD (P=.05)							17.72		865.6		6		2.28	
Standard Deviation							12.27		599.5		4.15		1.58	
CV							48.65		12.3		8.17		2.42	
Replicate F							0.187		4.497		1.233		0.917	
Replicate Prob(F)							0.9042		0.0094		0.3133		0.4436	
Treatment F							6.62		2.318		1.022		0.857	
Treatment Prob(F)							0.0001		0.0307		0.4494		0.5877	

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.

2010 Blast Trial (Blast 2)

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 with 10% mixture of M201, 100 lb/A

Plot Size: 4 x 16 ft

Planting Method/Date: Drill seeded, May 12

Fertilization: Preplant 16-48-48, May 11; preflood 120-0-0, June 10; topdress 46-0-0, July 8

Water Management: Flushed, May 26; flooded, June 11; drained to induce blast, June 23; reflooded, June 29; drained, Aug 16

Herbicides: RiceShot 3 qt, May 24; Tank mix - RiceBeaux 4 qt + Permit 1.43 oz, June 10

Insecticides: Dermacor seed treatment

Fungicides: Various (Gem, Quadris, Quilt Xcel, Stratego Pro, Tilt, 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
July 15	Boot	09:30	87 F	3 mph	80%	40%	mod.
July 23	Heading	10:30	89 F	3 mph	71%	50%	slight

Disease Ratings: N/A

Drained: Aug 16

Harvest: Aug 26

Results: See Table 18

Comments: No disease developed.

Table 18. Effect of various fungicides, rates, and timings on blast development and yield of CL151 rice at the Rice Research Station Crowley, LA, 2010.

Description Part Rated Rating Date Trt No.	Treatment Name	Form Conc	Form Unit	Rate	Rate Unit	Growth Stage	Yield lb/A 8/26/2010		Milling % Whole 10/4/2010		Milling % Total 10/4/2010	
1	Untreated						6923	a	52.8	a	66.5	a
2	Stratego	2.08	lb/gal	19	fl oz/A	H	7860	a	55	a	67.8	a
3	Stratego PRO	4.16	lb/gal	8	fl oz/A	H	7637	a	52.7	a	67.2	a
4	Stratego PRO	4.16	lb/gal	9	fl oz/A	H	7690	a	53.6	a	67.8	a
5	Stratego PRO	4.16	lb/gal	8	fl oz/A	H	8142	a	53.2	a	67.2	a
	Tilt	3.6	lb/gal	4	fl oz/A	H						
6	Stratego	2.08	lb/gal	19	fl oz/A	H	8185	a	55.7	a	68	a
	GEM	4.16	lb/gal	2	fl oz/A	H						
7	GEM	4.16	lb/gal	4.7	fl oz/A	H	7753	a	53.3	a	67.1	a
8	Quilt Excel	2.08	lb/gal	21	fl oz/A	H	7826	a	55.3	a	67.8	a
9	Quadris	2.08	lb/gal	12	fl oz/A	H	7884	a	53.2	a	66.7	a
10	Quadris	2.08	lb/gal	9	fl oz/A	B & H	7600	a	55.3	a	67.9	a
11	Quilt Excel	2.08	lb/gal	17.5	fl oz/A	B & H	7463	a	53.8	a	67.3	a
12	Stratego	2.08	lb/gal	14	fl oz/A	B & H	8137	a	55.2	a	67.6	a
LSD (P=.05)							802.1		2.47		1.03	
Standard Deviation							555.5		1.71		0.72	
CV							7.16		3.16		1.06	
Replicate F							0.638		0.996		2.822	
Replicate Prob(F)							0.5961		0.4067		0.0539	
Treatment F							1.571		1.706		1.749	
Treatment Prob(F)							0.1552		0.1156		0.1053	

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.

2010 Seed Treatment 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: Cocodrie, 75 lb/A

Planting Method/Date: Drill seeded, Apr 14

Plot Size: 4 x 16 ft

Fertilization: Preplant 16-48-48, Apr 13; preflood 92-0-0, May 27 applied by air; topdress 58-0-0, June 16

Experimental Design: Randomized complete block design with four replications

Water Management: Flushed, Apr 26, May 7; flooded, May 27; drained, Aug 6

Herbicides: RiceBeaux 3 qt, May 25; Clincher 20 oz, June 5

Insecticides: None

Inoculation Dates: N/A

Disease Ratings: Stands and plant heights, May 6

Drained: Aug 6

Harvest: Aug 24

Results: See Table 19

Comments: Temperatures were warm; disease pressure was very low with little damage.

Table 19. Effects of various seed treatments on rice stand and yield on Cocodrie rice at the Rice Research Station, Crowley, LA, 2010.

Description Part Rated Rating Date Trt No.	Treatment Name	Form Conc	Form Unit	Rate	Rate Unit	Growth Stage	Stand pl/2 ft 5/6/2010	Height (in) 5/6/2010	Yield (lb/A) 8/24/2010
1	Untreated						12.8 a	4.2 a	7939 a
2	Apron	3	lb/gal	2.6	g ai/cwt	Seed	13.8 a	4.4 a	8412 a
	Maxim	4	lb/gal	0.6	g ai/cwt	Seed			
3	Apron	3	lb/gal	2.6	g ai/cwt	Seed	14.1 a	3.9 a	8079 a
	Maxim	4	lb/gal	0.6	g ai/cwt	Seed			
	Dynasty	0.83	lb/gal	0.45	g ai/cwt	Seed			
4	Exp	3	lb/gal	68	g ai/cwt	Seed	14.1 a	4.5 a	8626 a
5	Apron	3	lb/gal	2.6	g ai/cwt	Seed	13.1 a	4.1 a	8236 a
	Maxim	4	lb/gal	0.6	g ai/cwt	Seed			
	Dynasty	0.83	lb/gal	0.45	g ai/cwt	Seed			
6	Apron	3	lb/gal	2.6	g ai/cwt	Seed	13.9 a	4.4 a	9068 a
	Maxim	4	lb/gal	0.6	g ai/cwt	Seed			
	Dynasty	0.83	lb/gal	0.45	g ai/cwt	Seed			
	Cruiser	5	lb/gal	61	g ai/cwt	Seed			
LSD (P=.05)							1.7	0.79	1692.3
Standard Deviation							1.13	0.52	1123.1
CV							8.3	12.31	13.38
Replicate F							8.664	1.853	2.089
Replicate Prob(F)							0.0014	0.181	0.1447
Treatment F							0.973	0.731	0.533
Treatment Prob(F)							0.4654	0.6113	0.7483

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.

2010 Bacterial Panicle Blight Infectivity Titration

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: Bengal, CL151, Trenasse, Jupiter, 100 lb/A

Plot Size: 3-6 foot rows

Planting Method/Date: Drill seeded, Mar 12

Fertilization: Preplant 20-60-60, Mar 12; preflood 135-0-0, May 4; topdress 46-0-0, May 27

Experimental Design: Randomized complete block design with five replications

Water Management: Flushed, Mar 23, Apr 1, 9, 16, 27; flooded, May 5; drained, July 23

Herbicides: Propanil 4 qt, Apr 23; Rice Beaux 3 qt, May 4

Insecticides: Dermacor seed treatment; Karate 2 oz aerial application, May 15

Fungicides: None

Inoculation Dates: 0, 10^5, 10^6,10^7, and10^8 CFU's/ml applied at late boot and early heading

Application Equipment: CO_2 backpack sprayer, 1-tip wand

Disease Ratings: July 29

Drained: July 23

Harvest: NA

Results: Table 20

Comments: Bacterial panicle blight was moderate in severity.

Table 20. Effect of bacterial panicle blight pathogen concentration on damage to different rice varieties. Rice Research Station, Crowley, LA. 2010.

Description		BPB		BPB
Part Rated		0-9		0-9
Rating Date		7/30/2010		2/15/2010
		Field		Greenhouse
Trt No.	Treatment Name			
1	Trenasse Unsprayed	1	d	0
2	Trenasse 10X5	2	cd	N/A
3	Trenasse 10X6	2.8	cd	2
4	Trenasse 10X7	2.8	cd	5
5	Trenasse 10X8	7.2	a	7
6	Bengal Unsprayed	1.8	cd	0
7	Bengal 10X5	2.6	cd	N/A
8	Bengal 10X6	3	cd	4
9	Bengal 10X7	2.2	cd	4
10	Bengal 10X8	4.2	bc	5
11	Neptune Unsprayed	1	d	0
12	Neptune 10X5	0.8	d	N/A
13	Neptune 10X6	1	d	5
14	Neptune 10X7	1.2	d	5
15	Neptune 10X8	3.2	cd	4
16	Jupiter Unsprayed	1.6	cd	0
17	Jupiter 10X5	1.4	d	3
18	Jupiter 10X6	1.2	d	4
19	Jupiter 10X7	1.8	cd	3
20	Jupiter 10X8	2.2	cd	3
21	CL151 Unsprayed	3	cd	0
22	CL151 10X5	3.2	cd	N/A
23	CL151 10X6	3.2	cd	3
24	CL151 10X7	3.2	cd	5
25	CL151 10X8	5.6	b	7
LSD (P=.05)		1.46		
Standard Deviation		1.17		
CV		46.24		
Replicate F		1.396		
Replicate Prob(F)		0.241		
Treatment F		8.183		
Treatment Prob(F)		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.

RICE PRODUCTION ECONOMICS RESEARCH IN 2010

Michael E. Salassi

Rice enterprise production cost budget projections for 2010 were developed in the fall of 2009 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 63.0 cwt/A for water- and drill-planted rice. Variable production costs ranged from $9.46 to $10.88/cwt for water-planted rice and from $8.52 to $9.97/cwt for drill-planted rice at the base yield level of 63.0 cwt/A. Cost differences were influenced by the 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 $0.81 to $0.99/cwt change in variable cost for water-planted rice and a $0.72 to $0.88/cwt change in variable cost for drill-planted rice. Total projected rice production costs for 2010 ranged from $10.45 to $12.51/cwt for water-planted rice and from $9.69 to $11.06/cwt for drill-planted rice at the base yield level of 63.0 cwt/A.

The Projected 2010 Rice Farm Cash Flow Model was developed to assist producers in planning for the 2010 crop year. The model is an Excel spreadsheet that allows rice producers to enter projected acreage, yield, market price, and production cost data for 2010 to estimate net returns above variable production costs. It also allows an easy evaluation of the effect of changing the percentage 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 initiated 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 on a commercial farm in Evangeline Parish. Samples were taken from lodged and standing rice for the variety CL151 in Evangeline Parish and varieties CL111 and Catahoula on 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 2011 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, 2010.

	Yield Level in cwt/A				
	-10%	**-5%**	**Base**	**+5%**	**+10%**
Crop Description	**56.7**	**59.9**	**63.0**	**66.2**	**69.3**
	Variable Rice Production Costs				
	---$/cwt---				
Southwest Louisiana:					
(1) Water Planted – Tenant Operator:					
(a) Conventional Variety:					
(i) Conventional Tillage:					
- In Rotation	10.49	10.01	9.57	9.18	8.82
- Fallow Land	10.79	10.29	9.83	9.43	9.05
(ii) Stale Seedbed:					
- In Rotation	10.37	9.89	9.46	9.07	8.71
- Fallow Land	10.67	10.17	9.73	9.32	8.96
(b) Clearfield Variety:					
(i) Conventional Tillage:					
- In Rotation	11.65	11.11	10.62	10.17	9.76
- Fallow Land	11.95	11.39	10.88	10.42	10.00
(ii) Stale Seedbed:					
- In Rotation	11.53	10.99	10.50	10.06	9.66
- Fallow Land	11.83	11.27	10.77	10.32	9.91
(2) Drill Planted – Tenant Operator:					
(a) Conventional Variety:					
(i) Conventional Tillage:					
- In Rotation	9.33	8.90	8.52	8.17	7.86
(ii) Stale Seedbed:					
- In Rotation	9.61	9.17	8.77	8.42	8.09
(b) Clearfield Variety:					
(i) Conventional Tillage:					
- In Rotation	10.53	10.04	9.60	9.20	8.84
(ii) Stale Seedbed:					
- In Rotation	10.94	10.43	9.97	9.56	9.18
	Total Rice Production Costs				
	---$/cwt---				
Southwest Louisiana:					
(1) Water Planted – Tenant Operator:					
(a) Conventional Variety:					
(i) Conventional Tillage:					
- In Rotation	11.99	11.42	10.91	10.45	10.04
- Fallow Land	12.60	12.01	11.47	10.98	10.54
(ii) Stale Seedbed:					
- In Rotation	11.47	10.93	10.45	10.01	9.61
- Fallow Land	12.09	11.52	11.01	10.54	10.12
(b) Clearfield Variety:					
(i) Conventional Tillage:					
- In Rotation	13.15	12.52	11.96	11.45	10.98
- Fallow Land	13.76	13.11	12.51	11.98	11.49
(ii) Stale Seedbed:					
- In Rotation	12.63	12.03	11.49	11.00	10.56
- Fallow Land	13.25	12.62	12.05	11.54	11.07
(2) Drill Planted – Tenant Operator:					
(a) Conventional Variety:					
(i) Conventional Tillage:					
- In Rotation	10.63	10.14	9.69	9.29	8.92
(ii) Stale Seedbed:					
- In Rotation	10.86	10.35	9.90	9.49	9.11
(b) Clearfield Variety:					
(i) Conventional Tillage:					
- In Rotation	11.68	11.13	10.64	10.19	9.78
(ii) Stale Seedbed:					
- In Rotation	12.15	11.58	11.06	10.59	10.17

Table 2. Required Breakeven Yield Increases for Clearfield Hybrid Rice to Cover Additional Production Costs.

	CLXL729		CLXL745	
Change in Production Cost for Hybrid Rice	**Main Crop Only**	**Main Crop Plus Ratoon**	**Main Crop Only**	**Main Crop Plus Ratoon**
Seed	68.90	68.90	84.90	84.90
Nitrogen – Main crop	13.50	13.50	13.50	13.50
Nitrogen – Ratoon crop	--	9.00	--	9.00
Fungicide	(9.50)	(9.50)	(9.50)	(9.50)
Total Change	$72.90	$81.90	$88.90	$97.90
Required Breakeven Yield Increase (lb/A) – Owner/Cash Rent				
@ $12.00/cwt	718	806	875	964
@ $13.00/cwt	653	734	797	877
@ $14.00/cwt	600	674	731	805
@ $15.00/cwt	554	622	676	744
Required Breakeven Yield Increase (lb/A) – Share Rent (70/30)				
@ $12.00/cwt	1,025	1,152	1,250	1,377
@ $13.00/cwt	933	1,048	1,138	1,253
@ $14.00/cwt	856	962	1,044	1,150
@ $15.00/cwt	791	889	965	1,063

Table 3. Impact of Downed Rice on Milling Yield and Estimated Market Price.

Location (variety)	Crop Condition	Whole Yield	Broken Yield	Total Milling Yield	Estimated Price[1]
(1) Evangeline Parish (CL151)	Lodged[2]	39.56	29.39	68.95	$12.44
	Standing	53.69	15.52	69.21	$13.78
(2) Evangeline Parish (CL151)	Lodged[3]	52.90	15.70	68.60	$13.63
	Lodged[4]	44.15	24.63	68.79	$12.84
	Standing	56.49	13.86	70.36	$14.18
(3) Rice Research Station (CL111)	Lodged[5]	17.19	51.47	68.63	$10.32
	Standing	51.74	17.75	69.49	$13.63
(4) Rice Research Station (Catahoula)	Lodged[6]	23.30	46.53	69.83	$11.04
	Standing	41.24	27.88	69.12	$12.62

[1] Based on a $14.00/cwt rough rice market price for 55/70.
[2] Lodged 5-7 days prior to sample, not in water.
[3] Lodged few days, not in water.
[4] Lodged several days, in water.
[5] Lodged 1 week prior to field drainage, down 24 days prior to sampling.
[6] Lodged 1 day after field drainage, down 12 days prior to sampling.

RICE INSECTS RESEARCH

RICE INSECT CONTROL STUDIES, 2010

OVERVIEW OF PROGRAM

M. Stout, N. Hummel, J. Hamm, 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. Work done in small plots and in commercial fields suggests that statewide yield losses from the rice water weevil would approach 10% if effective insecticides 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 2010, 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 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 insecticides for efficacy against the rice water weevil. Data from these evaluations are used to justify registration of new insecticides and to develop recommendations for the effective use of insecticides in commercial rice fields. Over the past three years, two new insecticidal seed treatments – Dermacor X-100 (active ingredient, chlorantraniliprole, DuPont Crop Protection) and Cruiser Maxx (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, NipsitInside (active ingredient, clothianidin, Valent U.S.A. Corporation), is likely to be introduced for rice water weevil management in the next few years. 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. Continuing research with these seed treatments addressed the issue of whether they will remain effective when used in rice seeded at low rates (e.g., with hybrid varieties planted at 20 to 30 pounds of seed per acre). Results in 2010 suggest that efficacies of the seed treatments may be compromised at low seeding rates unless per seed insecticide rates are increased, but further confirmation of this is needed.

With the availability of these insecticidal seed treatments in dry-seeded rice, the focus of our insecticide evaluation efforts has shifted to identifying foliar and granular insecticides that can be used as alternatives to pyrethroids in water-seeded rice against the rice water weevil. Results in 2010 continued to show that the neonicotinoids dinotefuran (granular formulation) and clothianidin (SC formulation, foliar application) may be viable alternatives to pyrethroids in water-seeded rice, particularly when weevil populations are not high. Also, Demacor-treated seeds sown directly into a flood provided very good control of weevil larvae.

All insecticides that are being considered for registration are being evaluated for compatibility with crawfish production in collaboration with Dr. McClain's project. 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 pyrethroids. In particular, in 2010, a small-plot field experiment using crawfish placed in cages in insecticide-treated and control plots indicated that the new insecticides have very little short-term impact on crawfish mortality, especially when applied as a seed treatment.

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 these lines. Other lines and varieties have shown tolerance, the ability to withstand severe infestations of weevil larvae without severe yield losses. A small-plot field experiment suggested that tolerance to weevil feeding may be related to tillering capacity of rice.

Over the past decade, the Entomology Project has demonstrated that several cultural practices, such as early planting, delayed flooding, and shallow flooding, can reduce the impacts of rice water weevils. However, we do not know yet how these cultural measures for weevil management interact with plant resistance and use of insecticides. Experiments were initiated in 2010 to investigate combinations of cultural practices, resistant varieties, and insecticides for weevil management.

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 is in need of 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. 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 an effective treatment against sugarcane borers.

The extension entomology program focused on three 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 2010, it had been viewed more than 12,000 times from more than 115 countries. The rice water weevil demonstration test was repeated for a third year. Demonstration sites were located on 10 commercial farms across the rice producing parishes of Louisiana. The test compared two seed treatments (CruiserMaxx and Dermacor X-100) with a pyrethroid (if needed based on scouting for rice water weevil adults) and an untreated check. Overall, Dermacor X-100 provided the best level of weevil control, followed by a pyrethroid (Karate pre, Karate pre + MustangMax on fertilizer post, or Karate post) and CruiserMaxx. The online Louisiana rice pest identification guide was launched in November 2010. The purpose of the Guide website is to provide rice farmers with an online tool to identify damaging pests. The guide is available to anyone with Internet access, making this resource more widely available than traditional paper guides. The online guide represents the first web site-based delivery method of rice pest identification through an online interactive key. Photographs of typical symptoms of pest damage to rice crops are presented, and through a process of elimination, users are able to identify the likely pest. Links to the Louisiana Pest Management Guide and rice pest scouting videos are available in appropriate sections of the web site to provide additional information. The guide can be accessed at the following link: www.lsuagcenter.com/ricepestguide.

COMPARISON OF CLOTHIANIDIN AND OTHER SEED TREATMENTS AGAINST THE RICE WATER WEEVIL IN DRILL-SEEDED RICE, 2010

M.J. Stout, J.C. Hamm, M.J. Frey, and N. Hummel

Clothianidin is a neonciotinoid insecticide that has been evaluated for efficacy against the rice water weevil in small-plot trials over the past several years. In 2010, a drill-seeded experiment was conducted to evaluate two formulations/use patterns of clothianidin against the rice water weevil. One formulation/use pattern of clothianidin was a preflood foliar application of Belay 2.13 SC (Valent U.S.A.); the other was a seed treatment of NipsitInside 5.0 FS (Valent U.S.A.). Four separate NipsitInside treatments were included, each with different combinations of fungicides and gibberellic acid. The rate for all NipsitInside treatments was 1.9 fl oz/100 lb of seed. For comparison, the following treatments were included: a Dermacor X-100 seed treatment (Dupont), two Cruiser Maxx seed treatments (Syngenta), and a preflood Karate foliar treatment (Syngenta).

Location: Rice Research Station, Crowley, LA

Variety/Seeding Rate: Cocodrie, 90 lb/A. When applicable, seed was treated by Valent.

Plot Size: 4.1 x 18 ft (7 rows at 7-in spacing)

Planting Method/Date: Drill-seeded, 24 March 2010

Agronomic Practices: Standard for drill-seeded rice

Water Management: Permanent flood, 28 April (4-leaf stage)

Experimental Design: Randomized complete block, 10 treatments, four replicates

Treatments

Note: Where indicated, treatment rates for Release, Apron XL, and Maxim 4FS were 0.440 oz pw/cwt, 0.320 fl oz/cwt, and 0.080 fl oz/cwt, respectively. Foliar treatments of Belay and Karate were made by backpack sprayer with water at 15 gal/A as a carrier

1. **Untreated check**; Release treatment only
2. **Dermacor** @ 2.0 fl oz/cwt + Release + Apron + Maxim
3. **Cruiser "A"** treatment @ 3.3 fl oz/cwt + Apron + Maxim
4. **Cruiser "B"** treatment @ 3.3 fl oz/cwt + Release + Apron + Maxim
5. **NipsitInside "A"** treatment@ 1.9 fl oz/cwt + Apron + Maxim
6. **NipsitInside "B"** treatment @ 1.9 fl oz/cwt + Release + Apron + Maxim
7. **NipsitInside "C"** treatment @ 1.9 fl oz/cwt + V-10212 (identity of compound proprietary) + Release + Apron + Maxim
8. **NipsitInside "D"** treatment @ 1.9 fl oz/cwt + Trilex + V10209 (identity of compound proprietary) + Release
9. **Belay 2.13 SC** @ 4.5 fl oz/A, application made 2 hours before flood
10. **Karate Z 2.08 SL** @ 0.03 lb ai/A, application made 2 hours before flood

Sampling: Stand counts (# of plants/ft^2) were taken on 26 April. Two 1 ft^2 counts were made per plot. Three core samples were taken from each plot on 20 May (22 dpf [days postflood]) and 1 June (34 dpf).

Harvested: 28 July 2010 (four rows only harvested)

Data Analysis: A mean number of larvae per core sample was calculated for each plot at each sampling date by averaging numbers of larvae from the three core samples. Treatment effects on mean numbers of larvae per core were analyzed by PROC MIXED in SAS with treatment as fixed effect and block as a random effect (Tukey mean separation). Plot yields (kg of seed per four rows of each seven-row plot) were adjusted to 12% moisture and analyzed by mixed-model ANOVA as for core samples.

Results:

Weevils

The first core samples were taken 22 dpf. All of the treatments, with the exception of Karate Z, significantly reduced the number of weevils per core sample when compared with untreated plots ($F_{9,27} = 4.38$, $P = 0.001$; Figure 1). The two formulations of clothianidin (Belay, NipsitInside) and two thiamethoxam (Cruiser) treatments provided very good control of weevils at this sampling date, and no weevil larvae were found in the Dermacor treatments. At the second core sampling date (34 dpf), the numbers of weevils per core were highest in the untreated and Karate Z-treated plots. Numbers of weevils in the Belay treatment, the Cruiser treatments, and the Nipsit treatments were significantly lower than numbers of weevils in the untreated plots. Dermacor again provided the best control on the second sampling date, with an average of less than 1 weevil per core sample. These results demonstrate that both formulations/use patterns of clothianidin hold potential for effective control of rice water weevils in drill-seeded rice: efficacy of the preflood Belay treatment was similar to, or better than, the efficacy of the preflood Karate treatments, and the efficacy of the NipsitInside treatments was comparable with the efficacy of the Cruiser treatments.

Stand Counts and Plot Yields

The insecticide treatments used in this study had no significant effect on stand counts ($F_{9,27} = 0.51$, $P = 0.85$; Table 1) or plot yield ($F_{9,27} = 2.13$, $P = 0.06$; see Table 1); although, yields were numerically higher in all treated plots than in untreated plots.

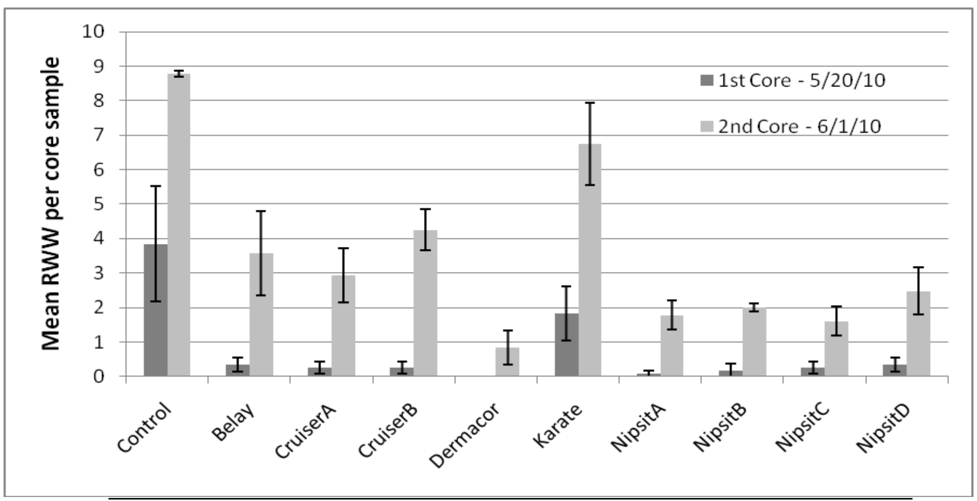


Table 1. Partial plot yields (kg/4 rows, adjusted to 12% moisture) and stand counts for comparison of insecticides for rice water weevil control, Crowley, LA. 2010.

Treatment	**Adjusted Yield** (kg/4 rows)	**Stand Count** (plants/ft^2)
Untreated	3.25 ± 0.09 a	29.75 ± 2.45 a
Dermacor	3.63 ±0.06 a	30.38 ± 2.05 a
CruiserA	3.39 ± 0.09 a	32.5 ± 2.56 a
CruiserB	3.71 ± 0.07 a	32.88 ± 2.02 a
NipsitInsideA	3.7 ± 0.05 a	32.5 ± 2 a
NipsitInsideB	3.57 ± 0.07 a	30.75 ± 1.33 a
NipsitInsideC	3.65 ± 0.13 a	28.75 ± 1.85 a
NipsitInsideD	3.52 ± 0.19 a	30.38 ± 1.18 a
Belay	3.58 ±0.14 a	31.63 ± 1.91 a
Karate Z	3.42 ± 0.03 a	32.63 ± 2 a

EVALUATION OF FOLIAR INSECTICIDES AGAINST THE RICE STINK BUG, 2010

M.J. Stout, J.C. Hamm, M.J. Frey, and N. Hummel

There is a need for the continued evaluation of insecticides for efficacy against the rice stink bug because of the impending loss of organophosphate insecticides from the rice market and because of concerns about the development of resistance to pyrethroid insecticides in rice stink bug populations. Several trials are conducted every season to evaluate possible alternatives to currently registered insecticides for stink bug control. The following report describes one such trial in which the efficacies of Tenchu, Centric, and two rates of Endigo were compared with the efficacy of Karate (currently used pyrethroid). Tenchu is a soluble granule formulation of the neonicotinoid dinotefuran, Centric is a wettable granule formulation of the neonicotinoid thiamethoxam, and Endigo is a mixture of lambda-cyhalothrin (the active ingredient in Karate) and thiamethoxam (the ratio of thiamethoxam:lambda in Endigo is approximately 1.3:1).

Location: Rice Research Station, Crowley, LA

Variety/Seeding Rate: CL151, ~ 90 lb/A

Plot Size: 4.1 x 18 ft (7 rows at 7-in spacing)

Planting Method/Date: Drill seeded, 21 April 2010

Agronomic Practices: Standard for drill-seeded rice

Water Management: Permanent flood, 28 May 2010 (rice plants in tillering stage)

Experimental Design: Randomized complete block, six treatments, four replicates

Treatments:

1. Untreated control
2. Karate Z @ 0.04 lb ai/A
3. Endigo ZC (low rate) @ 81.3 g ai/ha (0.07 lb/A of total ai)
4. Endigo ZC (high rate) @ 99.3 g ai/ha (0.09 lb/A of total ai)
5. Centric 40WG @ 98.0 g ai/ha
6. Tenchu @ 126 g ai/A

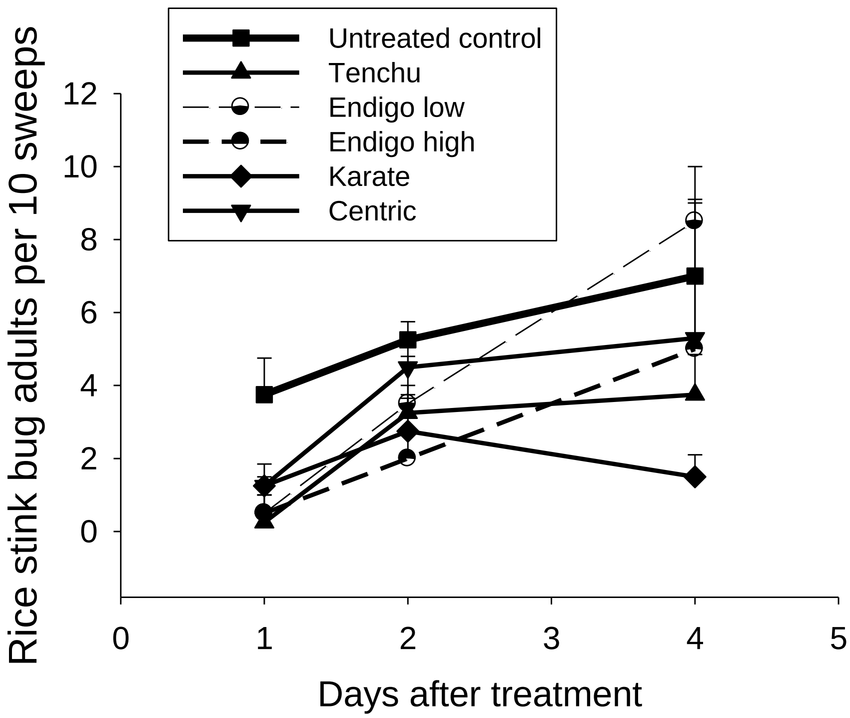
Treatments were made by a CO_2-powered backpack sprayer with water as a carrier, calibrated to deliver 15 gallons of water per acre. Applications were made to headed rice with greater-than-threshold populations of rice stink bugs.

Sampling: Sweep net, 10 sweeps per plot

Sampling Dates: Pre-treatment sweeps made on 20 July determined that stink bug densities (~5 stink bugs per 10 sweeps) exceeded treatment thresholds. Applications of insecticides were made between 7:15 a.m. and 7:45 a.m. on 21 July. Sweep-net sampling was conducted 1, 2, and 5 d after applications.

Data Analysis: Treatment effects on stink bug counts (numbers of rice stink bug adults and nymphs per 10 sweeps) were analyzed by PROC MIXED in SAS with treatment as fixed effect and block as a random effect (Tukey mean separation).

Results: At the first sampling date (1 d after treatments), the overall effect of insecticide treatment on stink bug densities was statistically significant ($F_{5,15} = 4.82$, $P = 0.008$). All treatments reduced densities of stink bugs in plots by at least 67% on this sampling date, with stink bug densities lowest in plots treated with Endigo (both rates) and Tenchu. At 2 days after treatment, stink bug densities in treated plots did not differ significantly from stink bug densities in untreated plots ($F_{5,15} = 1.84$, $P = 0.17$). On the third sampling date (4 days after treatment), a significant treatment effect was again found ($F_{5,15} = 3.28$, $P = 0.03$). On this sampling date, densities of stink bugs were lowest in Karate-treated plots, highest in untreated plots and plots treated with the low rate of Endigo, and intermediate in plots of all other treatments. These data show that the pyrethroid alternatives tested in this experiment provide control of rice stink bugs roughly comparable with that provided by Karate. No evidence for longer residual activities for the alternative products was found.



RICE WATER WEEVIL MANAGEMENT DEMONSTRATION IN COMMERCIAL RICE FIELDS IN LOUISIANA, 2010

N. Hummel, M. Stout, A. Mészáros, J. Beuzelin, D. Burns, B. Courville, G. Daniels, V. Deshotel, K. Fontenot, M. Frey, and S. Gauthier

The rice water weevil (RWW) is the most important invertebrate pest of the rice production system in the state of Louisiana. In 2010, the extension entomology program at LSU AgCenter focused on RWW management in a series of demonstration test locations. Commercial farms were located in Acadia, Concordia, Evangeline, Jefferson Davis, St. Landry, Tensas, and Vermilion 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 RWW in rice fields.

Locations: Demo tests were located on 10 commercial farms in the following parishes: Acadia, Concordia, Evangeline, Jefferson Davis, St. Landry, Tensas, and Vermilion.

Variety/Seeding Rate: Varied depending on location (all seed treatments were applied by a certified treater). The following varieties were included in the test: CL111, CL151, CL161, CL261, CL171AR, CLXL729, CLXL745, and Catahoula. The seeding rates varied from approximately 22 to 70 lb/A.

Plot Size: Commercial fields - acreage varied across locations, ranging from 8- to 30-acre fields

Planting Method: Drill-seeded

Agronomic Practices: Standard for drill-seeded rice

Water Management: Permanent flood at the discretion of the farmer

Experimental Design: One replicate per farm. All seed treatments were present at all locations.

Treatments:

1. Untreated Control (Check)
2. Dermacor^{TM} X-100 (0.025 mg ai/seed*)
3. CruiserMaxx (3.3 fl oz/100 lb seed)
4. Pyrethroid (one of the following, depending on scouting for the presence of RWW adults pre- and post-flood) at five of the demonstration test locations.
    a. Karate Z (2.56 fl oz/A) preflood
    b. Karate Z (2.56 fl oz/A) preflood followed by Mustang EW on fertilizer (4.3 fl oz/A) 7 days post-flood
    c. Mustang EW on fertilizer (4.3 fl oz/A) 1 day post-flood

Sampling: 10 root/soil core samples per field

Sampling Dates: 4 weeks after application of flood

Harvested: Varied depending on location

Data Analysis: Average number of RWW larvae per core was calculated for each site. Data were analyzed in SAS using a generalized linear mixed model with a Poisson distribution (SAS Proc GLIMMIX).

Results: A few trends broke out in the dataset. In Acadia and Jefferson Davis parishes, we had a relatively light infestation with weevils, except at one location (Lawson Farm) where we had about 10 larvae per core in the untreated check. In Vermilion Parish, we had low to moderate infestations. In Concordia Parish we had an average of 10 larvae per core in the untreated check. In Evangeline Parish, we had a relatively severe infestation, with untreated counts averaging from 10.8 RWW larvae per core at the LaHaye Farm to 15 larvae per core at the Morein Farm site. Our highest population was in St. Landry Parish where we had an average of 21.9 larvae per core in the untreated check. In Tensas Parish (our most northern location), we had an extremely light infestation with zero larvae per core in the untreated check and the highest count of 0.15 larvae per core in the Dermacor X-100-treated cut. Interestingly at this location, we had a fairly severe infestation in the 2008 production season. The graph that follows summarizes the average number of RWW larvae per core when we analyzed the entire dataset.

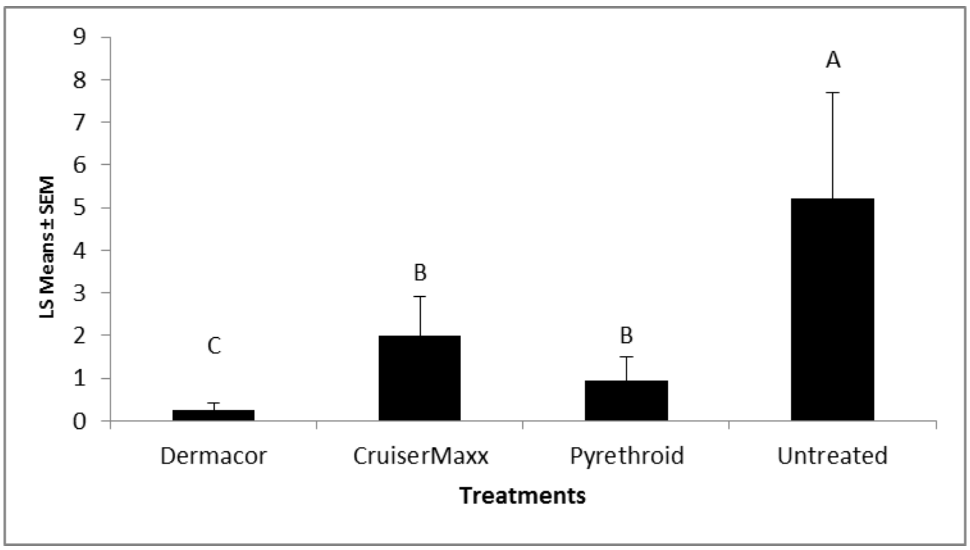


Figure 1. Average number of RWW larvae per core including 10 locations. Farm and cut (within farm* treatment) were random effects. F=22.93; df=3,34.62; P<0.0001; bars followed by the same letter are not significantly different (LSD, $P\geq0.05$).

Comments: Overall, Dermacor X-100 provided the best level of weevil control, followed by pyrethroid (Karate pre, Karate pre + MustangMax on fertilizer post, or Karate post) and CruiserMaxx. Dermacor X-100 provided significantly better control than the other two treatments. There was no significant difference in the core sample average between the pyrethroid and the CruiserMaxx seed treatment. Unfortunately, the results from the Hybrid test plots (25 lb or less seeding rate) did not provide any more clarity about the ability of CruiserMaxx to provide effective RWW control at the low seeding rates. We plan to repeat the demonstration test again next season, particularly focusing on the low seeding rate question.

COASTAL EROSION CONTROL RESEARCH

AERIAL SEEDING OF POLYC15 SMOOTH CORDGRASS USING TWO AERIAL APPLICATORS: A FIXED-WING AIRPLANE AND AN AIRBOAT

H.S. Utomo

Aerial planting offers speed, ease, and versatility of getting into remote areas inaccessible by land vehicles or boats. Successful aerial seeding will provide economical means to conduct large-scale planting for erosion control, habitat restoration, or rejuvenation of coastal plant habitat following the destruction from the hurricanes or massive die-back or brown marsh events.

Coastal marsh environments are very dynamic, creating a set of challenges in aerial seeding. Stand establishment in which the seedling is strong enough to anchor itself into the soil is the crucial period determining successful direct seeding. Under favorable conditions, smooth cordgrass seedlings need 2 to 4 weeks after germination to produce a root system. During this period, seeds or seedlings that are in a relatively calm environment (such as suspended within a thin layer of mud or biomass inside soil crevices protected from wave actions, or on moist land that has temporal low energy waves) will have a better chance to survive and produce vegetation.

The objectives of direct seeding were to 1) evaluate the outcome of aerial seeding using natural untreated smooth cordgrass seed; 2) characterize the vegetation that resulted from aerial seeding; 3) identify crucial environmental conditions affecting seedling establishment; and 4) develop methods to improve the success rates of aerial seeding, including altering seed properties to increase seed adaptability to buffer coastal micro-environment variables.

<u>Seed Source</u>:

The seed used in the aerial study was harvested in mid-November of 2009 from crossing plots of PolyC15 lines that were grown in freshwater environments at the Rice Research Station near Crowley, La.

PolyC15 is a synthetic experimental variety of smooth cordgrass composed of 15 genetically different lines selected for characteristics that will enhance coastal restoration efforts. Most importantly, these lines have the trait for high rates of seed production. The synthetic experimental variety PolyC15 can be cultivated in a wide range of salinity from freshwater to sea water to produce large amounts of seed.

Sixty pounds of cleaned seed were used. The average germination rate of PolyC15 seed was 70%. Prior to loading onto the airplane, PolyC15 seed was mixed with clay absorbent as a spreader (Figure A).

<u>Direct Seeding</u>:

Direct seeding was conducted with a commercial fixed-wing airplane and an airboat.

<u>Locations</u>:

Aerial seeding using an airplane was conducted in Bayou DuPont, a marsh-created site near Belle Chase (Plaquemines Parish, see Google Map on Figure B for further details). This was a newly created marsh built by pumping the sediments from the bottom of Mississippi River about 8 miles away.

Aerial seeding using an airboat was conducted in the Lake Pontchartrain site within the Big Branch Marsh National Wildlife Refuge, near Lacombe, La.

<u>Soil Conditions</u>:

Mix of clay to clay sandy soil (Bayou DuPont); Sandy loam (Lake Pontchartrain)

Time of Application:

March 31, 2010 (airplane application in Bayou DuPont; Figure C); May 21, 2010 (airboat application in the Lake Pontchartrain)

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 1,000-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 using an airboat were conducted using only a single seeding rate of 20 lb/A in a 60 x 10-ft plot at three sites (one plot/site).

Description of Conditions:

Bayou DuPont site – Seed observation and count were conducted immediately following the aerial application. Seed was distributed homogeneously (Figure D), with an average density of 10, 22, and 32 viable seeds/ft^2 that were correspondingly close to the seeding rates of 10, 20, and 30 lb/A. A large number of native birds fed on the exposed seed. Two weeks after aerial seeding, it was discovered that the conditions on the seeded area changed drastically. At planting, the seeded area was mostly wet, but had changed into dry areas with less inundated land fractions. This was due to the de-watering process as the pumping project drew to a close. The speed of de-watering occurred much faster than anyone in the project expected, while the rate of land compaction happened slower than anticipated. The breaches across the dike that were intended to stimulate the movement of intertidal water in and out of the created marsh did not work yet due to the slow rates of land compaction.

Vegetation Formation:

Primarily due to these conditions, about 90% of the seed was not visible in most parts of the seeded area. However, where the seed had fallen into areas where moisture remained, the germination rate was good, and a large number of seedlings in these areas appeared to be well established and growing very well (Figure E). Three weeks after aerial seeding, these seedlings had grown to the two-leaf stage (Figure F). Due to the problems described above, it was not possible to evaluate the effect of seeding rates. Therefore, the observation was focused on the formation of vegetation. In general, the resulting vegetation was patchy composed of small clumps that cumulatively accounted for only about 15% of the total area originally seeded. The quality of vegetation varied from robust vegetation found in the intertidal zones to very stunted and short vegetation found in the higher elevation areas generally not considered as its natural habitat.

Beside this patchiness, solid and well developed vegetation was found in the middle block of the aerial strips, measuring approximately 250 x 50 ft. This block represented the area where moisture was present all the time. The resulting vegetation was composed of various plant types, indicated by distinctive differences in plant stature, leaf shape and coloration, stem color, and plant height. Based on the observation conducted in the mid-October 2010, the average density was 12 stems/ft^2. In early November 2010, they produced seed (Figures G and H).

Results of Direct Seeding Using an Airboat:

Figures I and J show the conditions at the Lake Pontchartrain site in the Big Branch Marsh NWR near Lacombe when direct seeding was conducted. In both Sites 1 and 2, half of the plot received an additional treatment to bury the seed by running the airboat over the seeded area. Successful vegetation was formed in Sites 1 and 2 but not in Site 3. It is not clear at this point what has caused crop failure in Site 3, but it could be due to the differences in site conditions. Sites 1 and 2 were located on the levee with sandy loam soil type, while Site 3 was on natural soil bumps, 2 to 6 ft in diameter, that was composed of clay with some organic materials that had developed into rough and hard surfaces after a long weathering process. Additionally, the lack of extra treatment (burying seed) that was only conducted in Sites 1 and 2 might also contribute to the failure in Site 3.

Excellent vegetation composed of dense vegetation of smooth cordgrass plants with average stem density of 11 stems/ft^2 was formed in the two experimental plots just 4 months after direct seeding. This study demonstrates that full and dense vegetation cover can be produced relatively fast using direct aerial seeding. Figure K shows smooth cordgrass vegetation from direct seeding in Site 2 taken in mid-October 2010. Seed from this population was collected in mid-November 2010. Beside some failures described in this report, the overall results of direct seeding, using both airplane and airboat, were very encouraging.

<u>Future Improvement</u>:

The aerial seeding studies conducted in 2010 have helped identify some critical research areas for improving the efficiency of direct seeding. Weather conditions (temperature, rain, wave actions, etc.) certainly played an important role. Selecting a time window where these conditions are favorable for aerial seeding would be crucial. Another area would be to improve the precision of generating vegetation into the targeted areas by reducing volatility of seed. Enhancement of seed physical and physiological characteristics will be important research in order to give the seed a better chance against variable micro-climate, soil conditions, and intertidal wave actions. Various seed modification techniques, such as tablet, pelleting, and coating, will need to be evaluated. To reduce seed predation by native birds, seed will be treated with non-toxic bird repellents.

ACKNOWLEDGEMENT

This research is supported in part by the Louisiana Sea Grant Office and a USDA NIFA Special Grant.

Figure A. Aerial seeding preparation - PolyC15 seed was mixed with clay absorbent as a spreader the day before seeding.

B. Google Map of aerial seeding application shown in red, yellow, and blue lines in a marsh-created site at Bayou DuPont, near Belle Chase, in Plaquemines Parish, LA.

C. Aerial application using a fixed wing airplane in Bayou DuPont.

D. Seed distribution at Bayou DuPont site following aerial seeding.

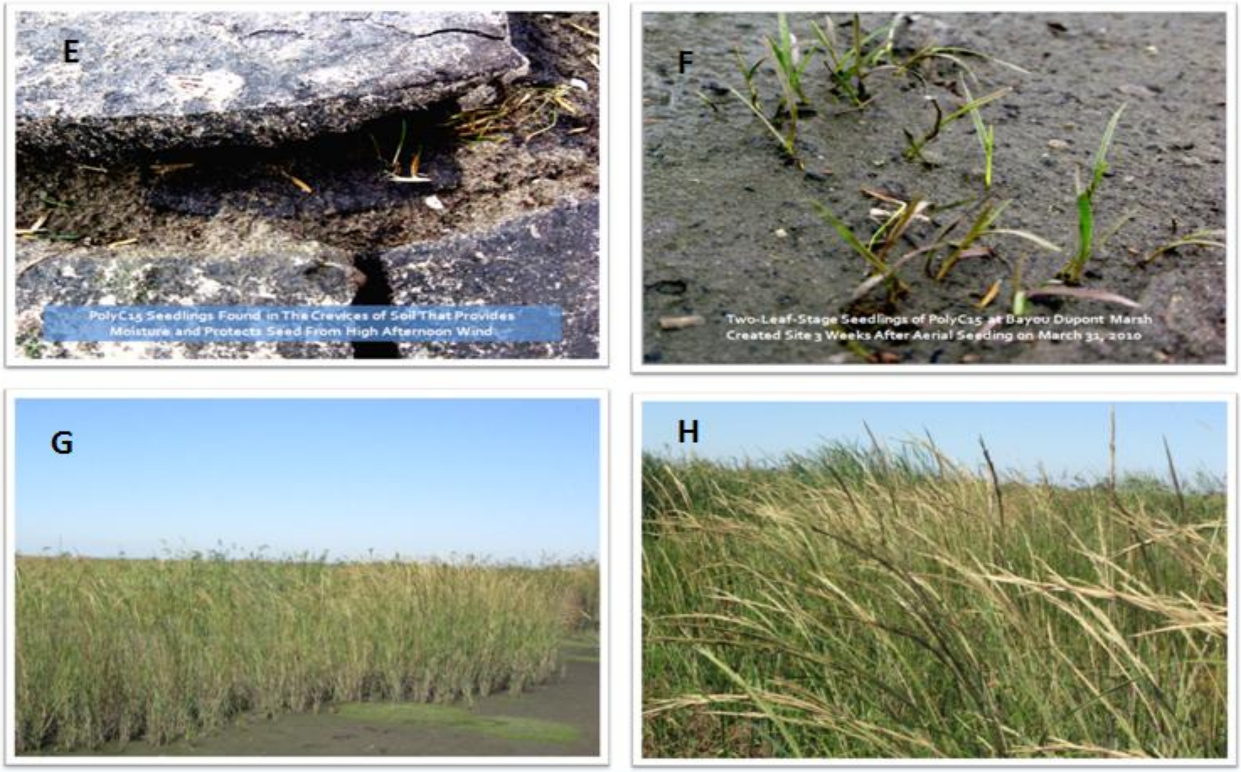


Figure E. Seedling formation 2 weeks after aerial seeding.
F. Seedlings that reached two-leaf growth stage 3 weeks after aerial seeding.
G. Resulting vegetation at Bayou DuPont site 6 months after aerial seeding.
H. Production of seed from PolyC15 vegetation 7 months after aerial seeding.

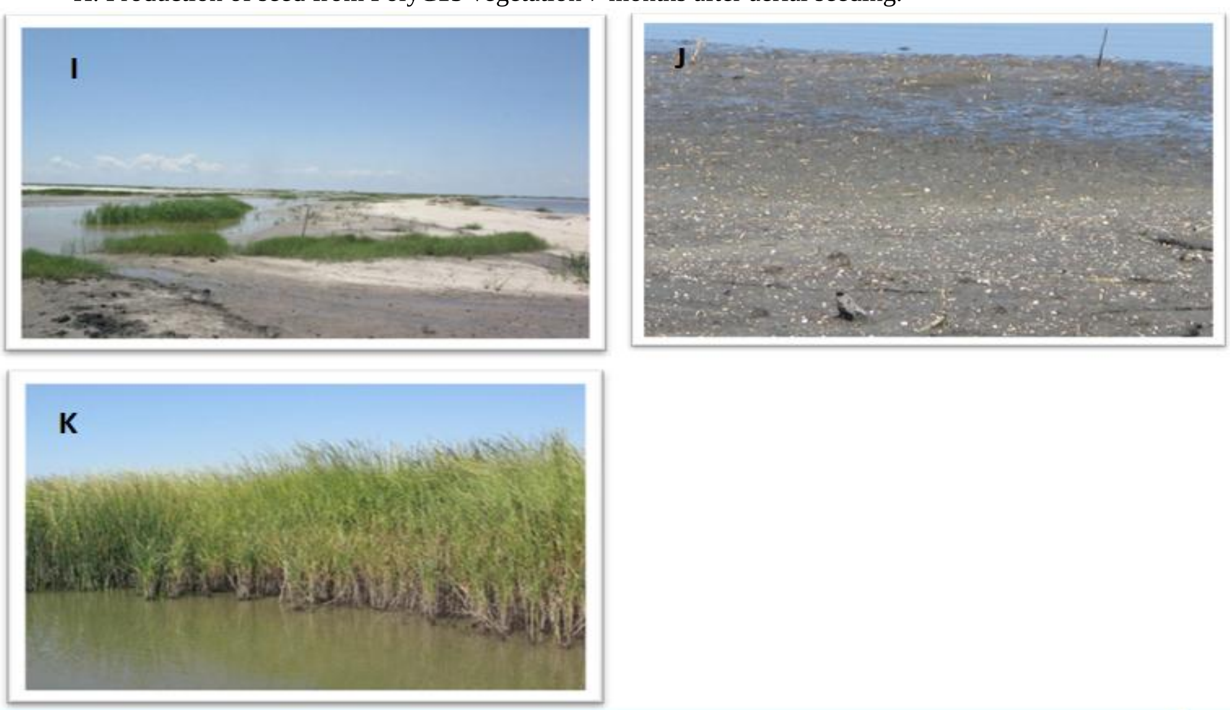


Figure I. Conditions at the Lake Pontchartrain site, the Big Branch Marsh NWR, Lacombe, LA, on May 21, 2010, when direct seeding was conducted using an airboat.
J. Seed spread following direct airboat seeding.
K. PolyC15 smooth cordgrass vegetation formed after 6½ months following direct airboat seeding.

LOUISIANA RICE RESEARCH VERIFICATION PROGRAM - 2010[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, 105 fields had been included in the verification program. In 2010, the program included three 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 8,026 lb/A (178.4 bu/A or 49.5 bbl/A) at 12% moisture. The second crop was harvested in Jefferson Davis Parish, adding another 724 lb/A to the total for a final average of 8,750 lb/A (194.4 bu/A or 54.0 bbl/A). This yield exceeded that of the parishes participating in the program by 2,418 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 2011, it is anticipated that the program will be expanded to about five fields in order to provide more training to the agents who are relatively new to rice and to cover a larger portion of the state's rice-growing parishes.

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[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. 2010 Louisiana Rice Research Verification Program Parishes

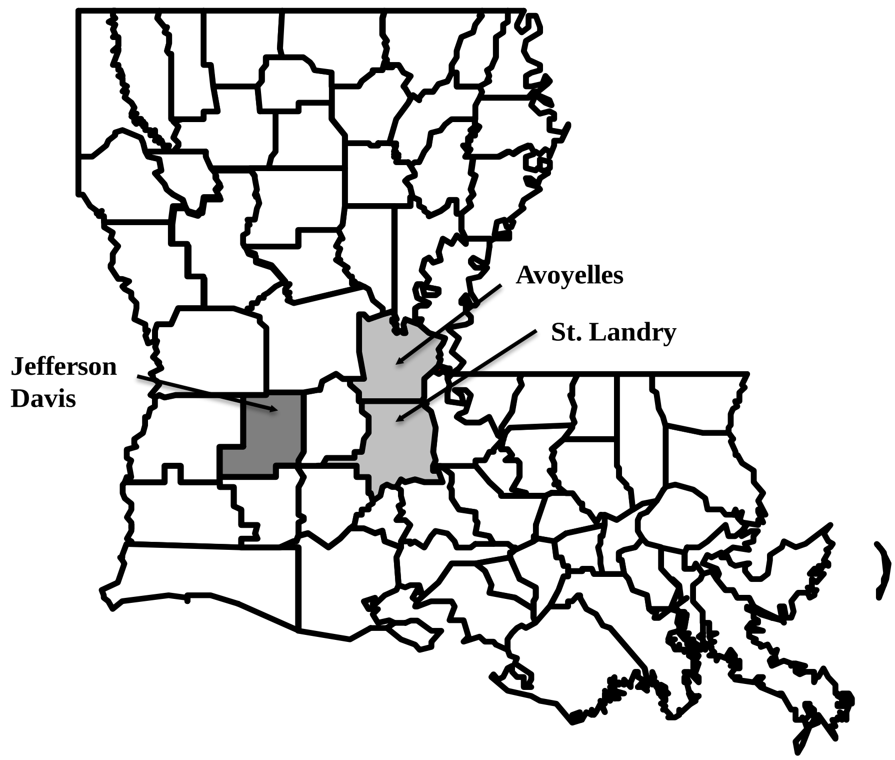

Table 1. 2010 Louisiana Rice Research Verification Program Yield Summary.

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			
Avoyelles	41.8	80.57	0.0	80.57	3,367.83	3,367.83	65.47	14283	835,659
Jefferson Davis	35.8	87.38	18.72	109.41	3,128.20	3,916.88	64.80	82612	1,089,720
St. Landry	31.3	71.71	0.0	71.71	2,244.52	2,244.52	64.80	28961	1,714,414
TOTAL	**108.9**	**80.26**	**0.00**	**87.50**				**125856**	**1,6435707**
						Verif Avg	**Parish Avg**		**Difference**
Average yield (cwt/A)						**87.50**	**64.88**		**22.62**

[1]Average Parish Yield (1st and 2nd Crop): cwt/A.

Table 2. 2009 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]
Avoyelles	Cocodrie	80.57	57.78/70.15	379.09	4.71	628.04
Jefferson Davis	CLXL 745	109.41	58.8/72.58	590.82	5.40	776.81
St. Landry	CL111	71.71	52.51/69.69	423.63	5.91	472.74

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 $12.50/cwt.

AVOYELLES PARISH

The field in Avoyelles Parish was near the location of the 2009 verification field. Knowledge of the high pH of these soils and experience from 2009 led to the use of a homogenized fertilizer containing nitrogen, phosphorus, sulfur, and zinc. This may have been the most critical decision in this field this year. In the past, rice planted on the high pH soils of Red River origin often exhibited phosphorus and/or zinc deficiency in spite of high soil test values for these nutrients. In some cases, diammonium phosphate was applied early in the season and was followed by zinc chelate then ammonium sulfate at midseason. Based on the absence of the traditional problems encountered, it is assumed this product satisfied these needs.

Glyphosate and Command were applied at planting. Command was flushed from an area surrounding each water outlet, resulting in some grass emergence in these areas. One gallon of propanil plus 2/3 pint of Command was applied at the 2- to 3-leaf stage of growth. One week later the field was still very clean, which would have been an ideal time to flood, but rice plants were too small. Permanent flood was established a week later without additional herbicide. The areas near the water outlets had to be treated again with Facet. The rest of the field was left alone.

In addition to the homogenized fertilizer, 250 pounds of urea per acre were applied just ahead of permanent flood establishment. Even though the grower was concerned about algae bloom (scumming) and an algal bloom did occur, it was actually a benefit to the crop because rice plants were above the algae and it provided shade to suppress emerging weeds. At internode elongation (green ring) the field was topdressed with 125 pounds of urea per acre.

Careful scouting of the field revealed no disease pressure, but because the field was a seed rice field and as a preventative to Cercospora and the smuts, 6 ounces of propiconazole per acre were recommended. Instead, the grower applied a mixture of 21 ounces of Quilt plus 4 ounces of Quadris. He indicated this fungicide had been purchased prior to planting under a program.

Rice stink bugs were detected prior to heading. After discussing alternative insecticides, the grower indicated he wanted to use methyl parathion to break the cycle of using pyrethroids and to save a few dollars. A recommendation of 1.5 pints of methyl parathion per acre to be applied at 50% heading was left with the grower. Nine days following application, stink bug numbers were again high and adjacent fields were being sprayed so the verification field was sprayed again with another 1.5 pints of methyl parathion per acre. In about one week, stink bug numbers were up again. This time a pyrethroid was recommended. This kept the field clean up to harvest.

The field was drained August 3. Between that day and harvest, 9.4 inches of rain fell in a single event. At least 2 feet of water stood in the field on August 19. The farmer switched his combine from tires to tracks and changed headers to be able to harvest the crop. About 30% of the field was completely lodged at harvest, requiring the combine to run in one direction only in those areas. In spite of the difficult growing season and harvest conditions, the grower harvested 85.63 cwt (52.9 bbls or 190.3 bu) per acre green which adjusted to 12% moisture was 80.57 cwt (49.7 bbls or 179 bu) per acre.

AVOYELLES PARISH

Cooperator: Stewart Lyles
Agent: Rob Ferguson and Trent Clark
Field Size: 41.8 Acres

Cultural Practices

Variety: Cocodrie
Method of Planting: Drill
Water Management: Delayed Flood

Seeding Rate: 70 lb
Date of Planting: 4/9/10
Date of Emergence: 4/20/10

Growth and Development

Stage	Observation Date	DD50 Date
Green Ring	6/6	5/22
PD	6/22	6/2
50% Heading	7/14	6/26
Drain for Harvest	8/3	
Harvest	8/23	7/31

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	80.57	58/70	379.09	4.70	628.04
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 $12.50/cwt.

Fertilization

Date	Source	Rate (lb/A)	N (lb/A)	P (lb/A)	K (lb/A)
4/13	Micro essentials[1]	150	12	40	0
5/18	Urea	250	115	0	0
6/8	Urea	125	58		
	Total		185	40	0

[1]Includes 10 lb of S and 1 lb of Zn per acre

Weed Management

Weeds Present	Date of Treatment Decision	Recommendation
Various	4/7	Glyphosate
Sprangletop, foxtail, barnyardgrass, signalgrass, dayflower, Texasweed	4/30	10.7 oz Command + 1 gal Propanil
Spot treatment for grass	5/25	Facet

Disease Management

Diseases Present	Date of Treatment Decision	Recommendation
Preventative, smuts and Cercospora	7/5	21 oz Quilt + 4 oz Quardris

Insect Management

Insects Present	Date of Treatment Decision	Recommendation
Rice Water Weevil	At seed purchase	Dermacor
Rice Stink Bug	7/10	1.5 pt methyl parathion
Rice Stink Bug	7/19	1.5 pt methyl parathion
Rice Stink Bug	7/27	1.6 oz Karate

JEFFERSON DAVIS PARISH

Though the field in Jefferson Davis Parish was listed officially as being in Jefferson Davis, the majority of the field was actually in Allen Parish because the farm is on the parish line. The farmer's shop and residence were in Jefferson Davis Parish.

This was the only field planted to a hybrid rice variety. The grower chose CLXL 745, which he planted on March 23 by broadcasting dry seed into a prepared seedbed at 25 pounds per acre. With the aid of .22 inches of rain and soil moisture at planting, seedling emergence was noted on April 3.

A recommendation of 2.4 pints of pendimethalin + 4 ounces of Newpath was made on April 6. This was followed by an application of 250 pounds of 7-24-24-6S-.6Zn and the field was flushed. Pendimethalin was recommended as a preventative, with sprangletop as the target species.

When rice plants were in the 1- to 2-leaf stage, heavy rice water weevil scarring of the leaves was noted, but no weevils could be found. Scarring continued to be observed until rice was in the 1- to 2-tiller stage and still no weevils could be found. Jointvetch and a few other weeds were present at the time of permanent flood establishment. A recommendation of .5 ounces of Permit plus 4 ounces of Newpath plus 1.6 ounces of Karate was made. The field was then fertilized with 200 pounds of urea per acre and the permanent flood established. The uneven surface of the field caused some areas of the field to remain exposed or barely flooded to prevent other areas from being flooded too deeply.

After establishing the permanent flood, a heavy rice water weevil population was observed. A second application of Karate was made. Rice water weevil numbers increased again, but no insecticide application was recommended because the plants were then large enough to tolerate feeding. At green ring, the field was topdressed with 135 pounds of urea per acre.

At late boot, no disease had been discovered. Based on the absence of disease and the disease reaction profile of this variety, a recommendation of 6 ounces of propiconazole was made as a preventative to Cercospora and the smuts. In spite of this recommendation, the grower used 19 ounces of Stratego. It was also applied a little earlier than would have been recommended.

Uneven emergence and growth led to uneven heading. Rice stink bugs converged on the portions of the field where heading was taking place. Karate was applied at 1.6 ounces per acre on June 24.

Harvest started on August 9 and was completed on the August 10. Yield was 94.56 cwt (58.4 bbls or 210 bu) per acre at 15.6% moisture, which adjusted to 12% moisture was 90.69 cwt (56.0 bbls or 201.5 bu) per acre.

An application of 160 pounds of urea was made, the field was flooded, and 1.5 pints of 2,4-D were applied post flood for second crop production.

The second crop was harvested on October 21 and yielded a somewhat disappointing 20.8 cwt (12.8 bbls or 46.2 bu) per acre at 20.8% moisture, which adjusted to 12% was 18.72 cwt (11.6 bbls or 41.6 bu) per acre. The total yield of first and second crop combined was 115.36 cwt (71.2 bbls or 256.3 bu) per acre green. Adjusted to 12% moisture, the total was 109.41 cwt (67.6 bbls or 243.1bu) per acre.

JEFFERSON DAVIS PARISH

Cooperator: Charles and Ross Bruchhaus
Agent: Barrett Courville
Field Size: 35.8 acres

Cultural Practices

Variety: CLXL 745
Method of Planting: Broadcast dry
Water Management: Delayed Flood
Seeding Rate: 25 lb/A
Date of Planting: 3/23/10
Date of Emergence: 4/3/10

Growth and Development

Stage	Observation Date	DD50 Date
Green Ring	5/21	NA
PD	6/1	NA
50% Heading	6/20	NA
Drain for Harvest	7/16	
Harvest	8/10	NA

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	87.38	59/73	536.44	6.14	555.81
2nd Crop	18.72	--	54.38	2.90	179.62

[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 $12.50/cwt.

Fertilization

Date	Source	Rate (lb/A)	N (lb/A)	P (lb/A)	K (lb/A)
4/6	7-24-24-6S-.6Zn	250	17.5*	60	60
4/26	39-0-0	200	78	0	0
6/4	Urea	135	62	0	0
Total			157.5	0	0

*This N was not considered in the total N.

Weed Management

Weeds Present	Date of Treatment Decision	Recommendation
Various	2/6/10	1 lb Glyphosate
Preventative	4/6/10	2.4 pt Prowl + 4.0 oz Newpath
Jointvetch and others	4/26/10	0.5 oz Permit + 4.0 oz Newpath
Jointvetch and others – 2nd crop	8/10/10	1.5 pt 2,4-D

Disease Management

Diseases Present	Date of Treatment Decision	Recommendation
Preventative	6/14/10	19 oz Stratego

Insect Management

Insects Present	Date of Treatment Decision	Recommendation
Rice Water Weevil	4/26/10	1.6 oz Karate Z
Rice Stink Bug	6/24/10	2.13 oz Karate Z

ST. LANDRY PARISH

The field selected in St. Landry Parish had been laser leveled in the summer and fall of 2009. Natural vegetative cover consisting mostly of the stubble of warm season annual grasses and cool season broadleaf weeds was present at planting. The variety planted was CL111. A mixture of glyphosate and Command was applied then the field was flushed. When the plants were in the 1- to 2-leaf stage, 4 ounces of Newpath was sprayed then 100 pounds of ammonium sulfate plus 100 pounds of potassium was spread and the field flushed. When the plants were large enough to be flooded, a second 4-ounce application of Newpath was made along with 1.25 ounces of Londax to suppress alligatorweed and narrow leaf aster and control Texasweed. Urea at the rate of 230 pounds was applied ahead of the flood.

Because the seed was treated with Dermacor, no insecticide was needed to control rice water weevils.

At midseason, an additional 120 pounds of urea were applied for a total of 160 pounds of nitrogen per acre, not counting the ammonium sulfate used as a starter. The early hot dry conditions that required flushing to maintain moisture probably resulted in some loss of the nitrogen supplied by the ammonium sulfate.

When the crop was in the late boot stage, very little disease had been found. As a precaution, 6 ounces of propiconazole were applied to prevent Cercospora and the smuts. Two weeks later, a spot of heavy sheath blight pressure was found in a corner of the field. The hot dry conditions that followed kept sheath blight from becoming a major problem. Post-drain leaf scald and bacterial panicle blight began to show up as it did in many other fields at that time.

Stink bugs were found while scouting but never reached treatment levels.

When the field was almost at harvest stage and had been drained a couple of weeks, a rain system moved through the area causing extensive lodging in the field. The area considered the verification area had about 30% lodged rice while the majority of the field had even more down rice.

By the time the field was harvested, grain moisture had dropped to 14.1%. Yield was 73.46 cwt (45.5 bbls or 163 bu) per acre green, and 71.71 cwt (44.3 bbls or 159 bu) per acre when adjusted to 12% moisture.

ST. LANDRY PARISH

Cooperator: Barrett Oliver
Agent: Vincent Deshotels
Field Size: 31.3 Acres

Cultural Practices

Variety: CL111
Method of Planting: No-Till Drill
Water Management: Delayed Flood
Seeding Rate: 60 lb/A
Date of Planting: 4/1/10
Date of Emergence: 4/16/10

Growth and Development

Stage	Observation Date	DD50 Date
Green Ring	6/3	5/21
PD	6/18	5/29
50% Heading	7/13	6/18
Drain for Harvest	8/4	
Harvest	8/24	7/23

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	71.71	52/70	432.63	6.03	463.74
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 $12.50/cwt.

Fertilization

Date	Source	Rate (lb/A)	N (lb/A)	P (lb/A)	K (lb/A)
4/20	Ammonium sulfate*	100	21	0	0
4/20	Potassium	100	0	0	60
5/4/10	Urea	230	106	0	0
6/3/10	Urea	120	55	0	0
Total			161	0	0

*Not counted in total nitrogen.

Weed Management

Weeds Present	Date of Treatment Decision	Recommendation
Various		
Various	4/11	10 oz Command + 1 qt Glyphosate
Barnyardgrass	5/4	4 oz Newpath
Barnyardgrass, alligatorweed, sedges, Texasweed, aster	5/11	4 oz Newpath + 1.25 oz Londax

Disease Management

Diseases Present	Date of Treatment Decision	Recommendation
Preventative	7/3	6 oz propiconazole

Insect Management

Insects Present	Date of Treatment Decision	Recommendation
Rice Water Weevil Pre	4/1	Dermacor

Table 3. Thirteen-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**	**6272.7**

* 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	7447
St. Landry*	40.6	51.1	184.0	8282
Vermilion*	33.3	52.4	188.7	8493
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	9,9.99
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

Table 4. 1998 - 2010 Verification Yield Summary

Verification Totals			Verification Parish Totals		
Year	**Acres**	**Pounds/A**	**Acres**	**Pounds/A**	**Verification - Parish**
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
Totals	**4,973.6**		**4,172,166**		

RICE WEED MANAGEMENT

WEED MANAGEMENT IN HERBICIDE-RESISTANT/TOLERANT AND CONVENTIONAL RICE

E.P. Webster, J.B. Hensley, J.C. Fish, and N.D. Fickett

Introduction and Justification

Weed management studies conducted at the Rice Research Station and producer fields in south Louisiana in 2010 indicate that weed control in rice will continue to be more effective as new technologies and new herbicides become available to the producers. The work required 60 studies, using 2,264 research plots. Many of these studies have been conducted over two to three years, but several have one year of data and need to be repeated in order to verify the results. This project continues to work on different application methods for products in drill- and water-seeded rice, and it continues to supply data for herbicide development and aid in the expansion of current herbicide labels.

Ammonium Sulfate Additives

Several studies were established in 2010 to evaluate different ammonium sulfate formulations. Ammonium sulfate has been used in spray solutions to buffer high pH water used as a carrier to lower pH values. Water with low pH values is important when applying Roundup and other herbicides. There is evidence that shows a drop in pH will negatively impact herbicides with ALS activity. Six studies were established to evaluate the impact pH change of water has on the activity of Permit at 0.75 oz/A, Regiment at 0.5 oz/A, Grasp at 2 oz/A, Newpath at 4 oz/A, Beyond at 5 oz/A, and V-10142 at 3.2 oz/A. Water pH was adjusted from the base pH found in the water supply of 8.2 to pH values of 9, 7, and 5. No benefit or increased activity was observed by adjusting the pH value to less than 7. This work was also conducted in Mississippi, Texas, and Arkansas and similar results were observed at each location. This project will continue to study the impact of spray solution pH to better determine if adjustment is needed when ALS herbicides are used.

Newpath and Propanil Formulations and Application Timings

This project has evaluated mixtures of Newpath and propanil for several years. A 2-year study was completed in 2010 evaluating weed control and economics of the combination. Results show that Newpath at 4 oz/A plus propanil at 3 qt/A applied at the first application timing followed by Newpath at 4 oz/A applied alone in the second application increased weed control, yield and net returns over herbicide costs compared with Newpath applied alone at the two application timings or with the addition of propanil in the second application timing. Several propanil formulations were evaluated in this study, and each had a slightly different sales price. The addition of propanil in the first application of Newpath increased net returns by an average of 53%, and the addition of propanil in the second application increased returns by an average of 20% compared with a Newpath-only program.

Evaluation of RiceBeaux – A Prepackage Mixture of Propanil and Thiobencarb (Bolero)

RiceBeaux is a pre-packaged mix of propanil plus thiobencarb or Bolero. This product, widely used in 2009 and 2010, is sold at an economical price that only provides the equivalent of 2.25 qt of propanil and 2.25 pt of Bolero. This project has evaluated this product for three years. In order to obtain the residual control from the Bolero portion of this mix, a rate of 1 gal/A must be used, and it will provide 3 qt of propanil plus 3 pt of Bolero. It is also important for this product to receive a surface irrigation or rainfall soon after application to get the full benefit of the Bolero portion of the mix. In initial tolerance trials, little to no cultivar or hybrid tolerance issues were observed. In 2010, RiceBeaux was evaluated with Newpath. The 2010 study indicates an increase in control of red rice with the addition of RiceBeaux at 2.5 qt/A. Although the additional benefit of residual activity of RiceBeaux is not observed at this rate, increased red rice control would be very beneficial to the grower. This could be another tool in helping prevent red rice out-crossing by simply increasing red rice control.

Clearfield 151 and CLXL 745 Tolerance to Different Herbicides with ALS Activity

A study was established in 2010 to evaluate other herbicides with ALS activity on Clearfield rice and a Clearfield hybrid. Injury ratings and plant heights were recorded throughout the growing season, as well as yield. Newpath at 6 oz/A plus Command at 12 oz/A was applied at emergence to help maintain the area weed-free. At 10 days after the initial treatment, a different ALS herbicide was applied as an alternative to Newpath at a rate two times higher than the labeled rate. The herbicides evaluated and the crops they are currently labeled in were: Cadre at 8 oz/A (peanut), Arsenal at 6 oz/A (non-crop), Accent at 1.3 oz/A (corn), Beacon at 1.52 oz/A (corn), Resolve at 2 oz/A (corn), Certainty at 2.5 oz/A (turf), Envoke at 0.3 oz/A (cotton, turf, sugarcane), Classic at 1 oz/A (soybean), Ally XP at 2 oz/A (pasture, turf), Glean at 0.66 oz/A (wheat, pasture, turf), Python at 0.25 oz/A (soybean), FirstRate at 0.6 oz/A (soybean), Harmony SG at 1.5 oz/A (wheat, turf, burndown), Express at 0.66 oz/A (wheat, turf), Staple at 3.8 oz/A (cotton), and Scepter at 5.6 oz/A (soybean). The herbicides that caused the most injury and/or yield loss were Resolve > Ally > Beacon > Envoke > Certainty. Yield was not impacted by Envoke and Certainty but the injury was unacceptable. Accent is a herbicide that has excellent broadleaf and grass activity, especially red rice, and would have a potential fit in an ALS-resistant rice system.

Hybrid Interference with CL131

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 CLXL 745 were planted at the South Farm and maintained weed-free throughout the growing season. The rice was harvested with a production combine to better simulate actual rice production. Dr. Mark Cohn is testing the seed for dormancy. In 2011, the area will have several studies established, including rice monoculture research, rotational studies, and fallow areas to better understand what is going on in the field.

Evaluation of Experimental Herbicides

This project continues to evaluate several experimental herbicides for potential use in rice. In 2010, eleven experimental herbicides and numerous adjuvants were evaluated for potential use in rice. One herbicide has both residual and postemergence activity and may receive a federal label in the next 1 to 2 years. 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, when enough of a product is available, this project expands the research program to gain a better understanding of the herbicide and how it best fits in Louisiana rice production.

Extension Activities

This project is continuing to extend the findings from the weed management research programs in Louisiana to producers, agents, and consultants. An annual report is published every year in a timely manner in order to transfer research findings to the clientele of the state and the region. This project developed a 4-page identification key for herbicide drift in rice highlighting the four most common herbicides that can cause a problem in rice due to drift. The four herbicides were Roundup, Newpath, Beyond, and Ignite. The Weed Identification handout continues to be a popular publication, and approximately 7,000 copies have been distributed. This project did numerous on-farm calls to aid producers, agents, and consultants by making herbicide recommendations and to identify weeds, consult on herbicide failures, and identify herbicide drift problems.

This is a summary of the research that was conducted in 2010. To see the complete weed management annual report, please go to:

http://www.lsuagcenter.com/MCMS/RelatedFiles/%7B9CF8B5B7-6472-4816-A2E6-B5F272939C94%7D/2010+Annual+Report+(Eric+Webster).pdf

STATION PERSONNEL

Steve Linscombe, Professor -- Resident Coordinator

Jodie R. Gautreaux	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

Michael D. Dronet, Research Farm Maintenance Manager[1] ------------------------------- Maintenance Department
Glenn J. Schexnayder, Research Farm Maintenance Manager[2] ----------------------- 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, Assistant 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

Brian D. Broussard	Research Farm Specialist II
Joshua S. Hebert[3]	Research Farm Assistant II
Paul A. Miller	Research Farm Assistant II
Timothy C. Miller	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] Retired 02/19/2010.
[2] Appointed 01/19/2010. (Transferred from the School of Plant, Env. & Soil Sci.)
[3] Resigned 04/15/2010.

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
Weike Li	Visiting Rice Hybrid Breeder
Shane J. Theunissen	Research Associate/Specialist

Herry Utomo, Associate Professor ---------- Marker-Assisted Selection Breeding/Biotechnology

Anna L. McClain	Research Farm Specialist II
Soelistijono[4]	Visiting (3-mo) Research Associate/Specialist
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:

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

Justin B. Hensley	Post-Doctoral Researcher

[4] Resigned 02/25/2010

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

Sterling B. Blanche --Soybeans
Dean Lee Research Station
Louisiana State University Agricultural Center

Daniel Breaux ---Coastal Erosion Control
Louisiana Department of Wildlife and Fisheries
Southeast Louisiana Refuge, Lacombe, Louisiana

Jong Hyun Ham -- Rice Diseases
Department of Plant Pathology and Crop Physiology
Louisiana State University Agricultural Center

Steve A. Harrison --- Wheat, Oats, and Coastal Erosion Control
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Clayton A. Hollier ---Rice and Soybean Diseases
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Mike Materne---Coastal Erosion Control
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Louisiana State University Agricultural Center

COOPERATING PERSONNEL
(Continued)

Anthony Rivera--Rice Breeding
University of Puerto Rico Research & Extension Center
Lajas, Puerto Rico

Robert Romaire-- Aquaculture
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Cindy S. Steyer --Coastal Erosion Control
USDA-NRCS, Water Resources
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Prasanta Subudhi--Coastal Erosion Control
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Brenda Tubaña -- Rice Fertilization
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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