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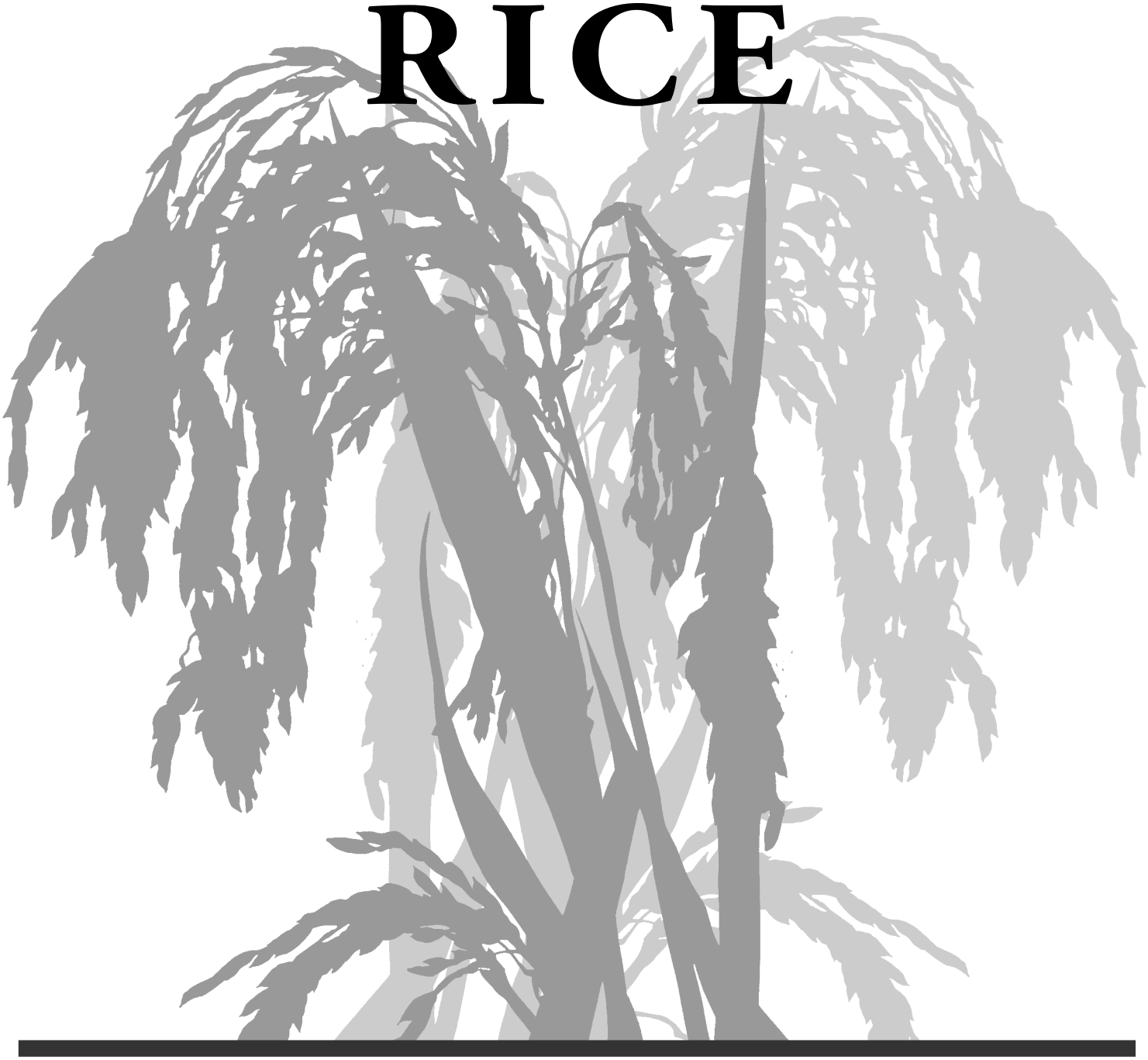
MISSISSIPPI RICE



VARIETY TRIALS, 2010

MAFES

Mississippi Agricultural & Forestry Experiment Station • George M. Hopper, Interim Director

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NOTICE TO USER

This Mississippi Agricultural and Forestry Experiment Station Information Bulletin is a summary of research conducted under project number MIS-1530 at the Delta Research and Extension Center in Stoneville, Mississippi, and several other locations shown on the map on the third page. It is intended for colleagues, cooperators, and sponsors. The interpretation of data presented in this publication may change after additional experimentation. This information is not to be construed either as a recommendation for use or as an endorsement of a specific variety or product by Mississippi State University or the Mississippi Agricultural and Forestry Experiment Station.

This report contains data generated as part of the Mississippi Agricultural and Forestry Experiment Station research program. Joint sponsorship by the Mississippi Rice Promotion Board is gratefully acknowledged.

Trade names of commercial products used in this research project are included only for clarity and understanding. All available names (i.e., trade names, chemical names, experimental product code names or numbers, etc.) of products used in this research project are listed in the tables and footnotes contained in this report.

Mississippi Rice Variety Trials, 2010

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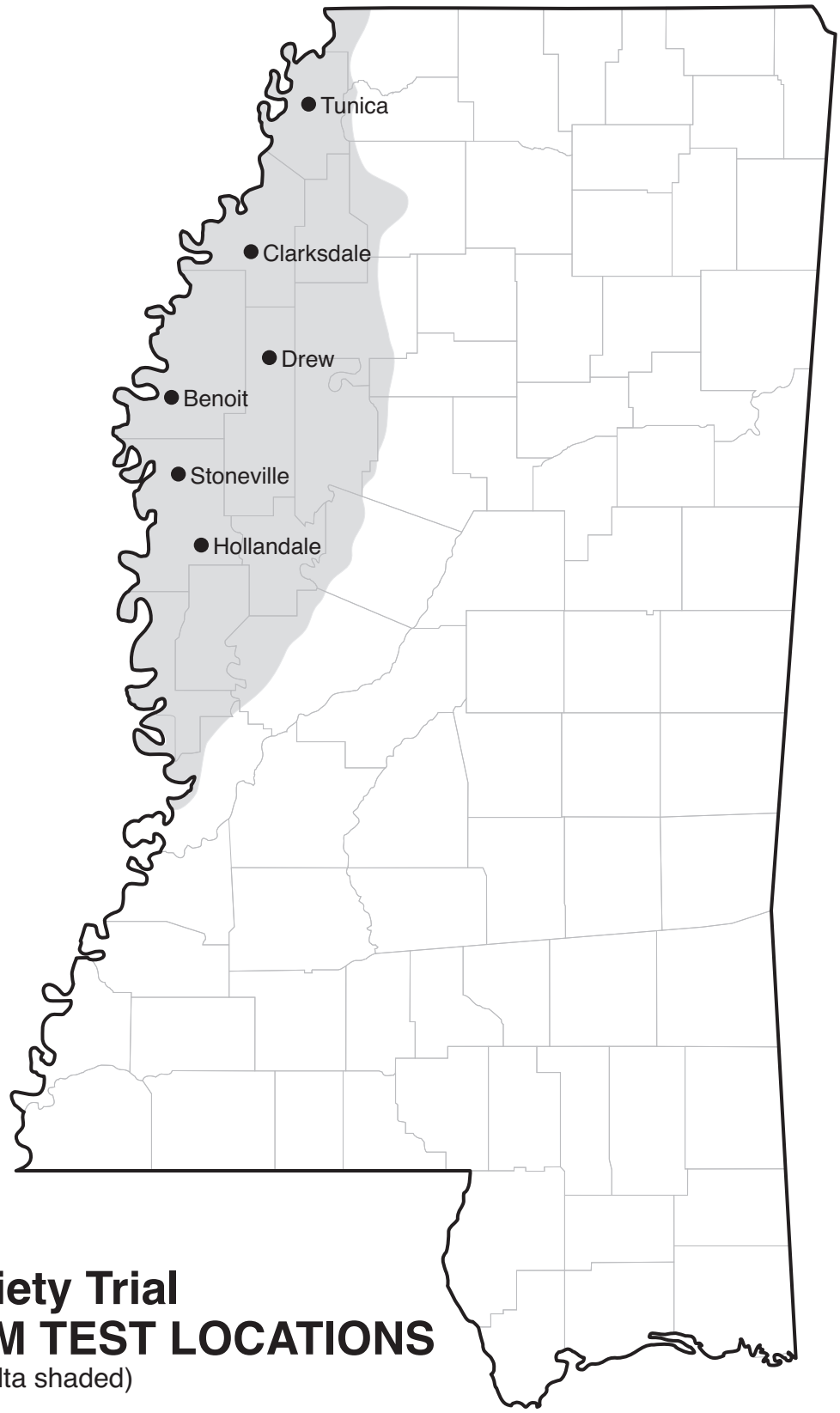
We would like to offer our sincere appreciation to the Mississippi Rice Promotion Board for financially supporting these research efforts. We also extend our thanks to the rice growers who provided their land, inputs, and willingness to endure the inconvenience these tests can cause. This report was approved for publication as MAFES Information Bulletin 459 of the Mississippi Agricultural and Forestry Experiment Station, Mississippi State University. It was published by the Office of Agricultural Communications, a unit of the Mississippi State University Division of Agriculture, Forestry, and Veterinary Medicine.



Rice Variety Trial
ON-FARM TEST LOCATIONS
(Mississippi Delta shaded)

Mississippi Rice Variety Trials, 2010

Introduction

In 2010, approximately 310,000 acres of rice were planted in the Delta counties of Mississippi. This represented a 27% increase in planted acreage from 2009 and ranked fourth in all-time highest planted acreage for Mississippi. The record planted acreage for Mississippi was 340,000 in 1981. Clearfield® varieties and hybrids were planted on approximately 60% of the total rice acreage. CL151 garnered the greatest Clearfield acreage at 30%. CL131 and CL111 were planted to approximately 8% and 3%, respectively. The percentage of hybrid rice acres in Mississippi was approximately 20%, of which the majority was planted to RiceTec Clearfield® hybrids such as CLXL745 and CLXL729. Cocodrie accounted for approximately 30% of the planted acreage, whereas Cheniere, Sabine, and Bowman were planted to approximately 7%, 2%, and 1%, respectively.

2010 was almost diametrically opposite of 2009. Rice planting began in earnest the last week of March. By the week that ended April 10, 45% of the crop had been planted. Furthermore, more than 95% of the crop was planted by May 8. In addition to very timely planting, accumulated heat units allowed for rapid stand establishment and seedling growth. Approximately 50% of the rice planted reached the heading stage before July 10. By the end of July, 95% of the planted acreage had reached the heading stage. Rice harvest began as early as the first week of August and was in full swing by August 15. Harvest weather was warm and dry, thus harvest proceeded at a record pace.

There is never a perfect year, and as good as things looked and sounded for 2010, excessive heat in late July and August took its toll on a large percentage of our rice acreage. In Stoneville, the first seven days of August averaged 103°F as the high and 77°F as the low. Additionally, 11 of the first 15 days of August reached highs above 100°F. Excessive day and night temperatures during pollination caused sterility and greatly reduced the yield potential on a considerable amount of acreage. Furthermore, it contributed to lower milling quality on rice that was maturing. Irrigation costs due to the heat and drought conditions were extremely high for most producers. Cash price for rice at harvest was the lowest in several years. Therefore, the bottom line for rice in 2010 will not be something to boast about for many rice producers. USDA yield prediction for Mississippi as of October was 6,500 pounds per acre (144 bushels per acre), which is down from 6,700 pounds per acre harvested in 2009.

The purposes for conducting on-farm rice variety trials are multiple. Advanced experimental lines are evaluated under various production environments, which gives the breeding program necessary information to select lines for release as public varieties. Specific information includes lodging, yield and milling performance, and insect and disease susceptibility. By placing these trials at multiple locations throughout the Delta, rice lines and varieties are exposed to conditions and practices common to commercial production that cannot always be reproduced at the experiment station. In addition to providing the breeder and agronomist worthwhile information, growers are provided with side-by-side comparisons of the currently available rice varieties and hybrids. This information can be used to guide variety selection in the following year. Variety selection is one of the most important decisions a grower makes in production planning. Growers should attempt to select varieties that offer the best combination of yield and quality, while also considering the variety's susceptibility to yield-limiting factors. Furthermore, breeders and agronomists use the variety trials as an educational tool for research and extension staff, farmers, private consultants, and industry personnel. These trials are often used to give interested parties the "first look" at new or potential releases from Mississippi State University and other rice-breeding institutions, as well as private industry.

Test Procedures

A total of 42 entries including named varieties, hybrids, and experimental lines were planted at five "on-farm" locations and at the Delta Research and Extension Center. Of the 42 entries, 20 were included in this report. Of these 20 entries, seven were conventional publically released long-grain varieties, six were Clearfield inbred varieties, one was a conventional medium grain, one was a Clearfield medium grain, and one was Clearfield hybrid. Four advanced experimental lines were also reported. Individual plots consisted of eight drill rows — 15 feet long, spaced 8 inches apart. Varieties and experimental lines were planted at 90 pounds of seed per acre, and the hybrid was planted at 35 pounds of seed per acre. Seeds were planted approximately 1.25 inches deep into stale seedbeds at all locations. All entries were replicated three times at each location. Three on-farm locations (Drew, Hollandale, and Tunica) received all agricultural inputs based on the whole field. Due to other experiments being conducted in the same field, the Benoit, Clarksdale, and Stoneville sites received only one application of urea at the rate of 150 pounds of N per acre immediately before flood establishment. Herbicide, insecticide, and fungicide applications were made according to the needs of the field at all locations. All management applications are included in Tables 1-6 (Note: Readers who may be less familiar with pesticide formulations and application rates may wish to refer to pesticide product label information available on the Web or to the *2010 Weed Control Guidelines for Mississippi* [MSU-ES/MAFES Pub. No. 1532]).

Agronomic and disease data were collected at appropriate times during the growing season. Sheath blight and lodging ratings were obtained on a plot-by-plot basis. Each plot was entirely harvested with a small-plot combine equipped with a computerized weigh system and moisture meter. Due to differences in maturity, the majority of the entries at each location had to achieve appropriate harvest moisture before the test was harvested. Average harvest grain moisture for each entry is reported in Tables 1-6. Subsamples of each entry were collected at harvest. Those subsamples were used to conduct milling, bushel weight, and 1,000-seed-weight analyses. Replicated research has shown that the border effect for plot grain yields is 10% greater for inbred varieties and 15% greater for hybrids. Plot yields for entries should be compared in a relative manner rather than looking at just reported yield potential alone.

All relevant data were subjected to analysis of variance procedures using SAS statistical software. The least significant difference test at the 5% significance level was used to differentiate between entries. If yields of two entries reported in Tables 1-6 were greater than the LSD value reported, the entries are statistically different. In addition, a coefficient of variation (CV) was calculated for each test. This measurement is an indication of the level of precision of each test. Lower CV values indicate greater reliability of the test. The LSD and CV values are reported in the footnotes of Tables 1-6 and 8. Statistical analyses included all 42 entries, but only 20 entries are reported.

Results

The performance of each variety in the six individual test locations is presented in Tables 1-6. On-Farm Variety Trials were planted over a range of about one month. The Bolivar County and Hollandale locations were planted on March 31 and April 1, respectively. Drew was planted on April 10. Tunica and Clarksdale were planted on April 14. Stoneville rounded out the planting on April 28. All trial locations were good to excellent with respect to uniformity and yield potential. Multiple rain and wind storms were encountered at Hollandale near harvest time, which contributed to severe lodging of some entries. Five of the six locations received a fungicide that is efficacious on sheath blight. Furthermore, environmental conditions were not optimum for sheath blight to limit yield potential. With the optimum planting dates, uniformity of rice stands, and minimal yield-limiting problems during the growing season, average rice yields for individual tests were similar across all locations. The range was 190 bushels per acre at Tunica to 212 bushels per acre at Drew. This equated to a 10% difference between the low and high. The CVs for yield ranged from 5% to 9%, which is very respectable for these types of experiments. Milling yields were acceptable for most entries; however, milling was down compared with 2009. Extreme heat, especially during the nighttime, most likely contributed to lower milling.

Table 7 provides a six-location summary of grain yields for the 20 entries. CLXL745 produced the greatest yield at 268 bushels per acre, which was a 15% yield advantage compared with the top three Clearfield inbred varieties. Based on information presented earlier regarding the boarder effect, growers should expect about a 10% yield advantage when growing Clearfield hybrids compared with Clearfield varieties such as CL111 and CL151. Clearfield varieties accounted for three of the top five entries when ranked by

yield. Remarkable yield gains have been made in Clearfield inbred varieties. Growers who planted Clearfield varieties a few years ago expected to obtain yields that were 10% or more less than conventional varieties.

Rex, reported as RU0804083 in 2008 and 2009, received approval for release by MAFES in February 2010. Foundation seed was produced in Verona in 2010. Rex continued to perform well, ranging from an average of 201 bushels per acre at Tunica to 224 bushels per acre at Drew. Over the last three years, the yield average for Rex is 214 bushels per acre, which is 10 bushels per acre greater than Cocodrie over the same period. Rex has been stable over four years of on-farm testing. Evidence of this is shown in Table 10, where the average high and average low are different by only 3.5%.

CL162 was also approved by MAFES in February 2010 to be submitted to BASF for potential release. In 2009, it was tested as 06 CFP 952. CL162 head rows were produced in Puerto Rico during the winter of 2009-2010. The seed was planted as breeder seed increase in 2010. A licensing agreement is pending with MSU and BASF. Upon finalizing that agreement, registered and limited certified seed will be available for 2011 production. CL162 performed well with an average yield of 199 bushels per acre, and it has a two-year average of 203 bushels per acre. CL111 and CL151 averaged 216 and 223 bushels per acre, respectively, for the same period. CL131 has a two-year average of 179 bushels per acre. Lodging was observed at a rate of 3% on a whole-plot basis for CL162 at two locations. CL151 lodged at all six locations and ranged from a low of 7% to a high of 83%. Milling for CL162 averaged 57/69 compared with 58/69 for CL151. CL131, which is considered a standard for high milling, averaged 62/70.

Table 10 provides agronomic, yield, and milling data from select rice varieties that have been included in on-farm tests for multiple years. Variety selection should include emphasis on performance stability over many environments. Varieties such as Cocodrie and Wells have been relatively stable over many years, thus they have been popular varieties in Mississippi and the Midsouth for several years. As stated earlier, Rex appears to be a stable variety as it has performed that way for four years of testing.

Variety and hybrid reactions to common diseases and straighthead disorder are listed in Table 11. Decisions about the use of fungicides should be made considering a variety's susceptibility to a particular disease, the potential for the disease to cause economic loss, and the efficacy of fungicides available to combat or prevent the disease.

Nitrogen fertilization rate guidelines are in Table 12. These guidelines were generated from multiyear, multisite N-response studies conducted for newly released cultivars. A combination of current economics, individual cultivars' susceptibility to lodging, and yield potential are included in determining the rate guidelines. Year after year, coarse-textured soils — commonly referred to as silt loams — require approximately 30 pounds of nitrogen per acre less than fine-textured or clay soils. By applying less N on silt loam soils, disease and lodging incidence are subject to decrease without sacrificing yield and quality.

Suggested conventional varieties for Mississippi rice growers are Bowman, Cocodrie, Cheniere, Rex, Templeton, and Wells. Sabine is often grown on limited acreage by contract. XL723 is a good choice for conventional hybrid rice production. For growers who need to use the Clearfield technology to control red rice, CL111, CL131, CL142-AR, CL151, CL162, and CL181-AR varieties will be available in 2011. CL111 has been evaluated for only two years in Mississippi. CL142-AR and CL181-AR have been evaluated for only one year (2010) in Mississippi. Clearfield hybrid rice cultivars, solely offered by RiceTec, Inc., have demonstrated excellent yield potential. Unbiased testing of CLXL745 has been minimal. Information for production of Clearfield hybrid rice is offered by RiceTec, Inc. Seed costs for Clearfield rice have increased substantially in recent years. Clearfield rice should be used as a tool with careful attention given to stewardship so that the technology can last into the future. Stewardship should encompass minimizing the potential for outcrossing of red rice and Clearfield rice. Stewardship should also include addition of residual and contact herbicides for grass control so that selection pressure is minimized. Incidences of suspected Newpath-resistant barnyardgrass have increased in the last few years. Outcrossing and grass resistance place this very important technology in jeopardy.

As has been demonstrated in previous years, no variety or hybrid is perfect. Each variety that is released has qualities or characteristics that add value to the marketplace. Varietal performance over time and in different environments should be considered when choosing which to plant. For varieties with high yield potential, consider risks such as lodging and disease and plan to manage for those yield-limiting factors. Multiple varieties, both Clearfield and conventional, are recommended for average-sized rice farms to further spread the risks associated with rice production.

Table 1. Performance of rice cultivars and lines grown on Sharkey clay soil near Tunica, Tunica County, Mississippi, 2010.[1]

Entry	Yield[2]	Milled head rice	Whole milled rice	Total milled rice	Harvest moisture	Bushel weight	Plant height	50% heading[3]	Maturity[3]	Lodging	1000 seed weight[4]	Sheath blight[5]
	bu/A	*lb/A*	*%*	*%*	*%*	*lb*	*in*	*days*	*days*	*%*	*g*	*%*
Bowman	180	4617	57	69	19.4	44	38	90	118	0	27	0
Catahoula	185	4662	56	71	14.3	43	37	79	113	0	24	0
Cheniere	177	5018	63	72	14.7	43	35	81	113	0	22	0
Cocodrie	225	6176	61	70	14.6	43	36	79	113	2	24	0
CL111	215	5805	60	70	13.9	42	37	76	112	0	24	0
CL131	163	4548	62	70	14.1	42	33	82	114	0	22	0
CL142-AR	234	5792	55	70	16.3	44	41	84	115	2	26	0
CL151	221	5470	55	69	14.4	42	37	79	114	60	23	0
CL162	207	5310	57	70	15.1	41	40	77	114	3	25	0
CL181-AR	197	5142	58	69	16.5	42	36	84	115	0	26	0
CL261[6]	173	5138	66	69	16.5	44	37	81	113	0	24	0
CLXL745	263	7101	60	71	13.1	40	41	72	114	0	25	0
Neptune[6]	196	5733	65	71	17.4	44	33	87	115	0	29	0
Rex	201	5427	60	69	14.2	42	37	80	113	0	27	0
Taggart	200	4320	48	70	15.6	43	40	84	115	0	27	0
Templeton	183	4529	55	69	14.4	43	39	83	113	0	22	0
6004	201	5337	59	69	14.4	42	36	79	114	0	26	0
10OFVT238	193	3821	44	68	15.5	45	37	87	114	10	22	0
10OFVT241	197	5408	61	71	14.6	42	38	84	113	0	25	0
RU0802051	180	4698	58	67	15.1	41	38	78	113	0	20	0

[1]**Planting date:** April 14. **Emerged:** April 23. **Herbicides:** RicePro® @ 1 gal/A + Permit® @ 0.5 oz/A + Crop Oil Concentrate @ 1 pt/A on May 19. **Fertilizer:** urea @ 260 lb/A on May 20; Ammonium sulfate @ 100 lb/A on May 30; urea @ 130 lb/A on June 9. **Permanent Flood**: May 26. **Fungicides:** Stratego® @ 17 oz/A + NIS 0.25% on July 7. **Drained Field:** August 2**. Harvested:** August 24. **A difference of 28 bu/A is required for one variety to differ from another at the 5% probability level. C.V. = 9%.**

[2]Rough rice at 12% moisture.

[3]Days after emergence.

[4]Weight of 1,000 kernels.

[5]Sheath blight rating using average percent of plants infected on a plot basis.

[6]Medium grain.

Table 2. Performance of rice cultivars and lines grown on Alligator clay soil near Clarksdale, Coahoma County, Mississippi, 2010.[1]

Entry	Yield[2]	Milled head rice	Whole milled rice	Total milled rice	Harvest moisture	Bushel weight	Plant height	50% heading[3]	Maturity[3]	Lodging	1000 seed weight[4]	Sheath blight[5]
	bu/A	*lb/A*	*%*	*%*	*%*	*lb*	*in*	*days*	*days*	*%*	*g*	*%*
Bowman	200	5220	58	68	16.2	44	38	87	113	0	25	0
Catahoula	217	5859	60	70	13.9	43	42	85	111	0	25	0
Cheniere	203	5481	60	70	14.6	43	40	83	111	0	22	0
Cocodrie	216	5638	58	66	14.1	42	42	81	110	10	24	0
CL111	221	5669	57	67	13.2	42	41	82	108	0	25	0
CL131	165	4307	58	66	13.6	41	38	84	111	0	22	0
CL142-AR	201	4251	47	65	14.4	43	44	84	111	0	26	0
CL151	232	6055	58	69	14.2	42	40	80	110	33	23	0
CL162	190	4788	56	67	14.7	42	42	79	109	0	25	0
CL181-AR	138	3105	50	62	14.7	40	38	86	110	0	23	0
CL261[6]	166	4482	60	66	14.9	44	41	81	109	0	25	0
CLXL745	286	7465	58	70	12.9	40	43	79	110	2	25	0
Neptune[6]	222	6394	64	68	15.8	44	39	87	111	0	28	0
Rex	224	5746	57	67	14.2	42	42	81	109	0	26	0
Taggart	218	4022	41	67	14.3	43	45	86	112	0	26	0
Templeton	197	4344	49	66	14.6	43	44	87	112	0	21	0
6004	218	5690	58	68	13.9	42	39	83	110	0	26	0
10OFVT238	232	4489	43	66	14.2	41	42	83	109	0	23	0
10OFVT241	199	5015	56	69	14.3	41	42	82	111	0	26	0
RU0802051	185	3996	48	59	14.1	39	41	85	111	0	20	0

[1]**Planting date:** April 14. **Emergence:** April 23. **Herbicides:** Facet®@ 0.5 lb/A on May 14; Bolero®@ 3 pt/A + Regiment®@ 0.4 fl oz/A + Dyneamic @ 4 oz/A on April 10. **Fertilizer:** urea @ 326 lb/A of on May 19 (applied by MSU). **Insecticides**: Karate®@ 1.7 oz/A on July 26. **Fungicides**: Quadris®@ 6 oz/A on June 26; Stratego®@ 12 oz/A on July 12. **Permanent Flood:** May 19. **Drained field**: August 4. **Harvested:** August 24. **A difference of 18 bu/A is required for one variety to differ from another at the 5% probability level. C.V. = 6%.**
[2]Rough rice at 12% moisture.
[3]Days after emergence.
[4]Weight of 1,000 kernels.
[5]Sheath blight rating using average percent of plants infected on a plot basis.
[6]Medium grain.

Table 3. Performance of rice cultivars and lines grown on Forestdale silty clay loam soil near Drew, Sunflower County, Mississippi, 2010.[1]

Entry	Yield[2]	Milled head rice	Whole milled rice	Total milled rice	Harvest moisture	Bushel weight	Plant height	50% heading[3]	Maturity[3]	Lodging	1000 seed weight[4]	Sheath blight[5]
	bu/A	*lb/A*	*%*	*%*	*%*	*lb*	*in*	*days*	*days*	*%*	*g*	*%*
Bowman	224	6149	61	69	17.3	45	39	86	111	0	26	0
Catahoula	231	6861	66	73	15.6	44	39	83	107	0	25	0
Cheniere	229	6286	61	71	15.5	43	40	82	108	0	22	0
Cocodrie	238	6747	63	71	15.3	44	40	78	108	0	24	0
CL111	243	6998	64	70	15.3	43	39	79	106	0	26	0
CL131	195	5792	66	70	15.1	43	42	80	107	0	23	0
CL142-AR	259	7110	61	72	16.6	45	39	81	107	0	28	0
CL151	262	7310	62	70	16.0	43	39	79	107	20	24	0
CL162	213	5847	61	70	15.8	43	42	78	107	0	26	0
CL181-AR	224	6149	61	69	16.2	43	40	82	108	0	25	0
CL261[6]	192	5702	66	69	17.1	44	41	82	107	0	25	0
CLXL745	309	8760	63	72	14.2	40	37	75	107	0	26	0
Neptune[6]	229	6904	67	70	17.4	44	40	88	110	0	28	0
Rex	207	5775	62	68	15.5	43	39	79	107	0	27	0
Taggart	232	5220	50	70	16.3	44	39	87	108	0	28	0
Templeton	226	5899	58	70	15.2	44	38	85	109	0	22	0
6004	209	5737	61	69	15.4	43	38	80	108	0	27	0
10OFVT238	218	4905	50	70	15.2	46	38	84	106	0	23	0
10OFVT241	196	5204	59	69	15.2	42	38	85	107	0	27	0
RU0802051	226	6000	59	67	16.1	42	40	84	108	0	21	0

[1]**Planting date:** April 10. **Emergence:** April 19. **Herbicides:** Roundup®@1 qt/A + Command®@ 1 pt/A on April 12; SuperWham®@ 2 qt/A + Facet®@ 0.5 lb/A on April 28; Blazer®@ 0.5 pt/A on June 18. **Fertilizer:** DAP @ 50 lb/A + ammonium sulfate @ 50 lb/A on April 28; urea @ 115 lb/A + Agrotain on May 17, May 26, June 8, and June 15. **Insecticides:** Cruiser Max® seed treatment; Karate Z @ 1.8 oz/A on July 13. **Fungicide:** Quilt®@ 17.5 oz/A on June 30. **Permanent Flood:** May 19. **Drained field:** August 1**. Harvested:** August 18. **A difference of 20 bu/A is required for one variety to differ from another at the 5% probability level. C.V. = 6%**

[2]Rough rice at 12% moisture.

[3]Days after emergence.

[4]Weight of 1,000 kernels.

[5]Sheath blight rating using average percent of plants infected on a plot basis.

[6]Medium grain.

Table 4. Performance of rice cultivars and lines grown on Sharkey clay soil near Benoit, Bolivar County, Mississippi, 2010.[1]

Entry	Yield[2]	Milled head rice	Whole milled rice	Total milled rice	Harvest moisture	Bushel weight	Plant height	50% heading[3]	Maturity[3]	Lodging	1000 seed weight[4]	Sheath blight[5]
	bu/A	*lb/A*	*%*	*%*	*%*	*lb*	*in*	*days*	*days*	*%*	*g*	*%*
Bowman	205	5627	61	70	16.5	44	40	86	117	0	27	0
Catahoula	213	6039	63	72	14.1	43	41	85	111	0	25	0
Cheniere	217	5957	61	71	13.9	43	39	83	113	0	23	0
Cocodrie	241	6724	62	70	14.0	44	40	82	112	0	24	0
CL111	236	6691	63	71	13.2	43	42	81	111	0	26	0
CL131	186	5357	64	71	13.8	42	37	82	112	0	23	0
CL142-AR	235	5605	53	70	15.2	45	45	83	111	0	28	0
CL151	238	6640	62	71	14.4	43	41	81	112	37	25	0
CL162	207	5589	60	70	14.6	42	44	81	113	0	27	0
CL181-AR	212	5438	57	68	15.8	43	37	85	114	0	25	0
CL261[6]	197	5940	67	71	15.3	45	42	84	112	0	25	0
CLXL745	290	7439	57	72	11.1	39	46	77	111	0	27	0
Neptune[6]	205	6181	67	70	19.4	45	37	91	115	0	28	0
Rex	206	5655	61	68	14.3	42	43	81	112	0	28	0
Taggart	203	4111	45	70	13.9	44	44	88	113	0	27	0
Templeton	191	5071	59	71	13.9	44	43	86	112	0	23	0
6004	194	5500	63	69	13.7	42	41	81	110	0	27	0
10OFVT238	213	4888	51	70	14.3	46	38	86	111	0	24	0
10OFVT241	205	5720	62	71	14.1	42	39	87	110	0	27	0
RU0802051	217	5859	60	68	15.2	43	41	85	112	0	23	0

[1]**Planting date**: March 31. **Emerged**: April 14. **Herbicides**: Command 3ME® @ 1.3 pt/A on April 2; Facet 75DF® @ 0.25 lb/A + Aim EC® @ 0.75 oz/A + Regiment® @ 0.65 dry oz/A on May 6. **Insecticides:** Karate® with Zeon @ 1.8 oz/A on May 6; Karate® with Zeon @ 2 oz/A on July 7. **Fertilizer:** urea @ 326 lb/A of on May 7. **Permanent flood**: May 11. **Fungicides**: Stratego® @ 14 oz/A on July 1. **Drained field**: July 29. **Harvested**: August 12. **A difference of 19 bu/acre is required for one variety to differ from another at the 5% significance level. C.V. = 6%.**

[2]Rough rice at 12% moisture.

[3]Days after emergence.

[4]Weight of 1,000 kernels.

[5]Sheath blight rating using average percent of plants infected on a plot basis.

[6]Medium grain.

Table 5. Performance of rice cultivars and lines grown on Tunica clay soil near Stoneville, Washington County, Mississippi, 2010.[1]

Entry	Yield[2]	Milled head rice	Whole milled rice	Total milled rice	Harvest moisture	Bushel weight	Plant height	50% heading[3]	Maturity[3]	Lodging	1000 seed weight[4]	Sheath blight[5]
	bu/A	*lb/A*	*%*	*%*	*%*	*lb*	*in*	*days*	*days*	*%*	*g*	*%*
Bowman	190	5216	61	69	17.3	45	43	86	114	0	27	0
Catahoula	190	4617	54	70	15.5	43	42	82	107	0	24	0
Cheniere	186	4938	59	69	15.9	42	39	81	110	0	22	0
Cocodrie	213	5655	59	69	14.7	43	41	79	106	0	24	0
CL111	223	5820	58	67	14.4	42	45	77	104	0	24	0
CL131	186	5022	60	68	14.4	41	38	78	107	0	22	0
CL142-AR	228	3488	34	46	15.7	29	49	80	106	0	26	0
CL151	216	5346	55	67	15.5	41	42	77	106	7	23	0
CL162	197	4787	54	67	15.0	42	46	78	108	0	25	0
CL181-AR	196	4763	54	67	17.2	43	39	82	111	0	26	0
CL261[6]	189	5358	63	69	15.6	43	44	77	106	0	24	0
CLXL745	244	6478	59	67	14.3	38	48	72	108	13	25	0
Neptune[6]	219	6406	65	70	16.6	44	39	84	111	0	29	0
Rex	209	5267	56	66	14.9	41	46	78	106	0	27	0
Taggart	208	4118	44	68	14.6	43	46	82	105	0	27	0
Templeton	203	4111	45	68	14.9	43	45	81	106	0	22	0
6004	211	5317	56	66	14.5	40	43	78	107	0	26	0
10OFVT238	214	4045	42	67	15.1	45	44	82	105	0	23	0
10OFVT241	189	4678	55	69	15.2	42	42	81	107	0	27	0
RU0802051	219	5223	53	65	16.1	42	43	80	110	0	22	0

[1]**Planting date:** April 28. **Emergence:** May 6. **Herbicides:** Mad Dog Plus @ 1 qt/A + Command® @ 1 pt/A on April 29; Prowl H2O @ 1 qt/A + Facet®@ 0.4 lb/A + Basagran® @ 1 qt/A + Permit®@ 0.75oz/A on May 11; Arrosolo®@ 1 gal/A and Permit®@ 0.5 oz/A on May 26. **Fertilizer:** urea @ 326 lb/A on May 27. **Permanent Flood:** May 28. **Insecticide:** Karate @ 2 oz/A on May 26. **Drained field**: August 20. **Harvested:** September 2. **A difference of 16 bu/A is required for one variety to differ from another at the 5% probability level. C.V. = 5%.**
[2]Rough rice at 12% moisture.
[3]Days from emergence.
[4]Weight of 1,000 kernels.
[5]Sheath blight rating using average percent of plants infected on a plot basis.
[6]Medium grain.

Table 6. Performance of rice cultivars and lines grown on Tunica clay soil near Hollandale, Washington County, Mississippi, 2010.[1]

Entry	Yield[2]	Milled head rice	Whole milled rice	Total milled rice	Harvest moisture	Bushel weight	Plant height	50% heading[3]	Maturity[3]	Lodging	1000 seed weight[4]	Sheath blight[5]
	bu/A	*lb/A*	*%*	*%*	*%*	*lb*	*in*	*days*	*days*	*%*	*g*	*%*
Bowman	188	5161	61	70	19.1	45	41	97	121	0	24	0
Catahoula	242	6316	58	72	15.0	44	41	88	117	0	23	0
Cheniere	204	5783	63	72	16.9	43	42	91	118	0	21	0
Cocodrie	232	6264	60	70	15.2	43	42	87	117	0	22	0
CL111	206	5469	59	71	15.4	42	40	83	115	20	23	0
CL131	189	5358	63	72	14.2	42	43	88	116	0	21	0
CL142-AR	229	5462	53	72	16.9	44	40	90	116	0	26	0
CL151	182	4668	57	71	19.2	42	42	86	116	83	22	0
CL162	182	4423	54	71	16.8	42	42	83	116	3	24	0
CL181-AR	180	4860	60	69	17.7	43	43	94	118	0	23	0
CL261[6]	168	4990	66	71	19.4	43	45	87	116	22	23	0
CLXL745	218	5199	53	72	15.8	40	41	81	117	72	24	0
Neptune[6]	164	4871	66	72	18.9	45	43	96	117	0	26	0
Rex	221	5868	59	69	15.9	42	46	85	115	0	25	0
Taggart	241	5097	47	70	17.4	43	41	98	121	0	26	0
Templeton	225	5873	58	71	16.5	44	41	95	118	0	21	0
6004	197	5142	58	69	16.5	40	43	87	117	13	24	0
10OFVT238	207	3912	42	69	16.2	46	44	92	115	7	22	0
10OFVT241	199	5373	60	71	16.1	43	42	91	116	2	25	0
RU0802051	215	5418	56	67	17.0	41	41	88	116	0	20	0

[1]**Planting date**: April 1. **Emerged**: April 9. **Herbicides**: Command® @ 1.6 pt/A on April 3; Aim® @ 0.75 oz/A + Permit® @ 0.5 oz/A on May 16; Clincher® @ 15 fl. oz/A on May 26; Blazer® @ 0.5 pt/A on June 24. **Fertilizer**: DAP @ 50 lb/A + ammonium sulfate @ 50 lb/A on April 19; Agrotain-treated urea @ 125 lb/A preflood on May 17; urea @ 100 lb/A on May 28; urea @ 100 lb/A on June 4; and urea @ 100 lb/A on June 11. **Date flushed**: April 19. **Permanent flood**: May 18. **Insecticides**: Province® @ 3.7 oz/A on May 16 and July 14. **Fungicide**: Stratego® @ 14 oz/A on June 29. **Drained field**: August 2. **Harvested**: August 20. **A difference of 25 bu/A is required for one variety to differ from another at the 5% probability level. C.V. = 8%**

[2]Rough rice at 12% moisture

[3]Days after emergence.

[4]Weight of 1,000 kernels.

[5]Sheath blight rating using average percent of plants infected on a plot basis.

[6]Medium grain.

Table 7. Average rough rice yields of varieties, hybrids, and lines evaluated in on-farm trials at six locations, 2010.

Entry	Tunica	Clarksdale	Drew	Benoit	Stoneville	Hollandale	Average
	bu/A	*bu/A*	*bu/A*	*bu/A*	*bu/A*	*bu/A*	*bu/A*
Bowman	180	200	224	205	190	188	198
Catahoula	185	217	231	213	190	242	213
Cheniere	177	203	229	217	186	204	203
Cocodrie	225	216	238	241	213	232	228
CL111	215	221	243	236	223	206	224
CL131	163	165	195	186	186	189	181
CL142-AR	234	201	259	235	228	229	231
CL151	221	232	262	238	216	182	225
CL162	207	190	213	207	197	182	199
CL181-AR	197	138	224	212	196	180	191
CL261[1]	173	166	192	197	189	168	181
CLXL745	263	286	309	290	244	218	268
Neptune[1]	196	222	229	205	219	164	206
Rex	201	224	207	206	209	221	211
Taggart	200	218	232	203	208	241	217
Templeton	183	197	226	191	203	225	204
6004	201	218	209	194	211	197	205
10OFVT238	193	232	218	213	214	207	213
10OFVT241	197	199	196	205	189	199	197
RU0802051	180	185	226	217	219	215	207
Mean	190	193	212	202	193	196	198
LSD	28	18	20	19	16	25	21
CV	9	6	6	6	5	8	7
Planting Date	April 14	April 14	April 10	March 31	April 28	April 1	—
Emergence date	April 23	April 23	April 19	April 14	May 6	April 9	—

[1]Medium grain.

Table 8. Annual and average grain yields and agronomic characteristics of long-grain commercial varieties grown in the Uniform Regional Rice Nursery 1990–2010.

Variety[1]	Origin[2]	Grain yield[3]			Years	Milling yield		Plant	50%	Lodging
		2010	3-yr. avg.	Avg.	in test	Total	Whole	height	heading	
		bu/A	*bu/A*	*bu/A*	*no.*	*%*	*%*	*in*	*days*	*%*
Bowman	MS	195	208	210	7	67	51	40	89	8
Catahoula	LA	209	207	196	8	68	54	40	87	6
Cheniere	LA	204	199	195	11	68	54	37	84	7
CL111	LA	206	—	—	1	64	52	42	83	2
CL142-AR	AR	192	—	—	1	65	45	45	89	2
CL151	LA	217	—	225	2	66	56	40	85	5
CL181-AR	AR	171	—	—	1	62	48	36	85	0
CL261	LA	160	—	—	1	64	56	38	83	0
Cocodrie	LA	209	198	191	16	67	55	40	82	6
Cybonnet	AR	206	185	179	11	68	56	39	85	4
Francis	AR	210	208	206	12	66	49	41	84	12
Jazzman	LA	188	189	193	7	67	59	41	88	0
JES	AR	219	—	210	2	68	59	38	87	0
Jupiter	LA	230	—	—	1	62	57	39	84	0
M206	CA	104	—	—	1	64	52	37	69	0
Neptune	LA	240	—	—	1	64	58	38	86	0
Presidio	TX	194	199	190	12	67	53	39	82	5
Rex	MS	211	197	197	3	68	59	41	85	0
Rondo	TX	230	224	213	5	66	50	42	90	23
Sabine	TX	144	175	176	10	67	51	35	87	0
Taggart	AR	205	209	204	5	68	53	46	89	0
Templeton	AR	200	192	209	7	68	54	43	88	11
Wells	AR	212	200	196	15	69	49	42	83	3

[1]Bowman and Sabine have the Rexmont cooking and processing qualities; Jazzman and JES are long-grain aromatics.
[2]Origin: AR = Arkansas, CL = Horizon Ag, LA = Louisiana, MS = Mississippi, TX = Texas.
[3]In 2002, 2004, and 2005, variable size areas of stunted plant growth and development, perhaps from chemical drifting, occurred at random in the field across the tests, affecting results and variety performance.

Table 9. Average agronomic and milling performance of varieties, hybrids, and lines grown at six on-farm locations, 2010.

Variety or line	Origin[1]	Average yield		Milling yield		Bushel weight	Plant height	50% heading[3]	Maturity[3]	Lodging	1000 seed weight[4]	Sheath blight[5]	Approximate seed/pound
		Rough rice[2]	Head rice	Total	Whole								
		bu/A	*lb/A*	*%*	*%*	*lb*	*in*	*days*	*days*	*%*	*g*	*score*	*no.*
Bowman	MS	198	5346	60	69	45	40	89	116	0	26	0	17616
Catahoula	LA	213	5655	59	71	43	41	84	111	0	24	0	18770
Cheniere	LA	203	5572	61	71	43	39	84	112	0	22	0	20697
Cocodrie	LA	227	6129	60	69	43	40	81	111	2	24	0	19302
CL111	LA HA	224	6048	60	69	42	41	80	110	3	25	0	18389
CL131	LA HA	181	5050	62	70	42	38	82	111	0	22	0	20540
CL142-AR	AR HA	231	5301	51	66	42	43	83	111	0	27	0	17117
CL151	LA HA	225	5873	58	69	42	40	81	111	40	23	0	19651
CL162	MS HA	199	5104	57	69	42	43	79	111	1	25	0	18024
CL181-AR	LA HA	191	4899	57	67	42	39	86	113	0	24	0	18705
CL261[6]	LA HA	181	5294	65	69	44	42	82	111	4	24	0	18770
CLXL745	RT	268	6874	57	71	40	43	76	111	15	25	0	18024
Neptune[6]	LA	206	6118	66	70	44	38	89	113	0	28	0	16346
Rex	MS	211	5602	59	68	42	42	81	110	0	26	0	17225
Taggart	AR	217	4492	46	69	43	43	88	112	0	26	0	17171
Templeton	AR	204	4957	54	69	44	42	86	112	0	22	0	21016
6004	MS	205	5443	59	68	41	40	81	111	2	26	0	17559
10OFVT238	MS	213	4313	45	68	46	41	86	110	3	23	0	19722
10OFVT241	MS	197	5230	59	70	42	40	85	111	0	26	0	17446
RU0802051	LA	207	5216	56	66	41	41	83	112	0	21	0	21600
Mean		198	—	58	69	—	40	84	112	3	24	—	—
LSD		13	—	2	1	—	2	2	2	8	1	—	—
CV		10	—	5	2	—	6	4	3	389	4	—	—

[1]Origin: AR = Arkansas; LA = Louisiana; LA-HA = Louisiana released and marketed by Horizon Ag, LLC.; MS = Mississippi; RT = RiceTec, Inc.; TX = Texas.
[2]Rough rice at 12% moisture. **A difference of 21 bu/acre is required for one variety to differ from another at the 5% probability level. C.V. = 7%.**
[3]Days after emergence.
[4]Weight of 1,000 kernels.
[5]Sheath blight rating using average percent of plants infected.
[6]Medium grain.

Table 10. Annual and average grain yields along with agronomic and milling data averages of rice varieties grown in the Delta on-farm tests from 2003 to 2010.[1]

Variety	Grain yield [2]							3-year	Total		Milling yield [4]		Bushel	Plant	Days to [5]		Lodging	1000	Sheath	Seeds/
or line	2004	2005	2006	2007	2008	2009	2010	avg.	avg.[3]	tests	Total	Whole	weight	height	Heading	Maturity		seed weight [6]	blight [7]	pound
	bu/A	*bu/A*	*bu/A*	*bu/A*	*bu/A*	*bu/A*	*bu/A*	*bu/A*	*bu/A*	*no.*	*%*	*%*	*lb*	*in*	*no.*	*no.*	*%*	*g*	*score*	*no.*
Cocodrie	209	176	194	213	188	198	227	204	188	94	68	57	43	40	83	128	11	24	5	19517
Cheniere	212	168	190	—	190	208	203	200	196	45	69	57	43	37	87	129	14	22	5	21419
CL131	—	161	187	—	179	176	181	179	177	31	69	59	43	35	87	126	10	22	6	20504
Bowman	—	178	208	216	200	198	198	199	200	38	68	54	44	39	88	129	14	25	4	17929
Catahoula	—	—	—	202	193	182	213	196	198	24	71	57	43	39	85	124	3	24	3	19119
REX	—	—	—	212	219	212	211	214	214	18	69	58	42	41	84	123	<1	26	3	17247
CL151	—	—	—	—	194	220	225	213	213	17	70	58	42	39	84	123	35	23	2	20097
Templeton	—	—	—	—	199	209	204	204	204	17	70	58	44	42	87	122	8	22	<1	20071
CL111	—	—	—	—	—	208	224	—	216	11	71	63	43	42	83	114	2	25	2	17858
Jazzman	—	—	—	—	—	199	198	—	199	11	71	66	42	41	88	117	4	25	1	17929
Neptune[8]	—	—	—	—	—	204	206	—	205	11	71	68	44	37	91	117	<1	28	1	16200
Taggert	—	—	—	—	—	208	217	—	213	11	70	54	44	43	92	117	0	27	<1	16957
CL162	—	—	—	—	—	207	199	—	203	11	71	60	43	43	84	116	2	26	2	17823
CL142-AR	—	—	—	—	—	—	231	—	231	6	66	51	42	43	83	111	0	27	0	16800
CL181-AR	—	—	—	—	—	—	191	—	191	6	67	57	42	39	86	113	0	24	0	18900
CL261[8]	—	—	—	—	—	—	181	—	181	6	69	65	44	42	82	111	4	24	0	18900
CLXL745	—	—	—	—	—	—	268	—	268	6	71	57	40	43	76	111	15	25	0	18144
JES	—	—	—	—	—	—	216	—	216	6	68	55	39	39	87	114	16	27	0	16800

[1]Test locations were in farmers' fields extending from northern to southern Delta areas.
[2]Rough rice at 12% moisture content. Data columns for 1991–2002 were omitted, but their numbers were included in the average yield and total test numbers.
[3]Average of the three most recent years tested.
[4]Values for milling, agronomic characteristics and sheath blight are accumulated means over years of testing.
[5]Days after emergence.
[6]Weight of 1,000 kernels at 12% grain moisture content.
[7]Sheath blight scores using average percent of all plants infected on a plot basis.
[8]Medium grain.

Table 11. Reactions of rice varieties and hybrids to common diseases.[1]

Variety/ Hybrid	Sheath blight	Blast	Stem rot	Kernel smut	False smut	Brown leaf spot	Straight head	Lodging	Black sheath rot	Bacterial panicle blight	Narrow brown leaf spot	Leaf smut
Bowman	MS	S	S	S	S	R	MS	MS	MS	S	MR	—
Catahoula	S	R	S	S	S	R	S	MS	MS	MS	MR	—
Cheniere	S	S	S	S	S	MR	MR	MS	MS	MS	VS	MR
CL111	VS	S	VS	S	S	R	MS	MS	S	S	S	
CL131	VS	MS	S	S	S	R	VS	MR	S	VS	VS	—
CL151	S	VS	VS	S	S	R	VS	S	S	VS	S	—
CL161	VS	MS	S	S	S	R	MS	MS	S	S	S	MS
CL142-AR	MS	S	S	S	S	R	MS	MS	S	S	MS	
CL162	S	S	—	—	—	—	—	—	—	MR	—	—
CL171-AR	VS	S	VS	S	S	R	MS	MS	S	S	S	MR
CL181-AR	VS	S	VS	S	S	R	MS	S	S	VS	MS	
CL261	MS	MS	S	MS	S	R	S	MR	MS	S	S	
CLXL729	MS	MR	MS	MS	S	R	MR	S	MS	MR	MS	—
CLXL745	MS	MR	MS	MS	S	R	MR	S	MS	MR	MS	—
Cocodrie	MS	S	S	S	S	MR	VS	MS	MS	VS	MS	MS
Rex	S	S	S	S	S	MS	MS	MR	S	S	MS	—
Sabine	S	S	S	S	S	R	—	MR	S	S	MS	—
Taggart	MS	S	S	S	S	—	—	MS	S	S	—	—
Templeton	MS	R	S	S	S	—	—	MS	S	S	—	—
Wells	S	S	S	MS	S	MR	MR	S	—	VS	R	—
XL723	MS	MR	MS	MS	S	R	MR	S	MS	MR	MS	—

[1]Abbreviations: R = resistant, MR = moderately resistant, MS = moderately susceptible, S = susceptible, VS = very susceptible. Note: These ratings are subject to change as new or further information may become available.

Table 12. Nitrogen fertility rate guidelines.

Variety/	Clay soils[1]			Silt loam soils[2]		
Hybrid	Preflood	Midseason	Boot Split	Preflood	Midseason	Boot Split
	lb/A	*lb/A*	*lb/A*	*lb/A*	*lb/A*	*lb/A*
Bowman	120-150	30-60	0	90-120	30-60	0
Catahoula	120-150	30-60	0	90-120	30-60	0
Cheniere	120-150	30-60	0	90-120	30-60	0
CL111	120-135	45	0	90-120	45	0
CL131	120-150	30-60	0	90-120	30-60	0
CL142-AR[3]	120-135	45	0	90-120	45	0
CL151[4]	90	30-45	0	60	30-45	0
CL162[3]	120-135	45	0	90-120	45	0
CL181-AR[3]	120-135	45	0	90-120	45	0
Cocodrie	120-150	30-60	0	90-120	30-60	0
Rex	120-135	45	0	120	45	0
Sabine	120-150	30-60	0	90-120	30-60	0
Taggart	120-135	45	0	120	45	0
Templeton	120-150	45	0	120	45	0
Hybrids						
CLXL729	120-150	0	45	120	0	30
CLXL745	120-150	0	45	120	0	30
XL723	120-150	0	45	120	0	30

[1]Clay soils include soils with CEC greater than 20 $cmol_c\ kg^{-1}$.
[2]Silt loam soils include soils with CEC less than 20 $cmol_c\ kg^{-1}$.
[3]CL111 guidelines are the result of two locations for clay and silt loam in 2010 only.
[4]CL151 is highly prone to lodging.

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