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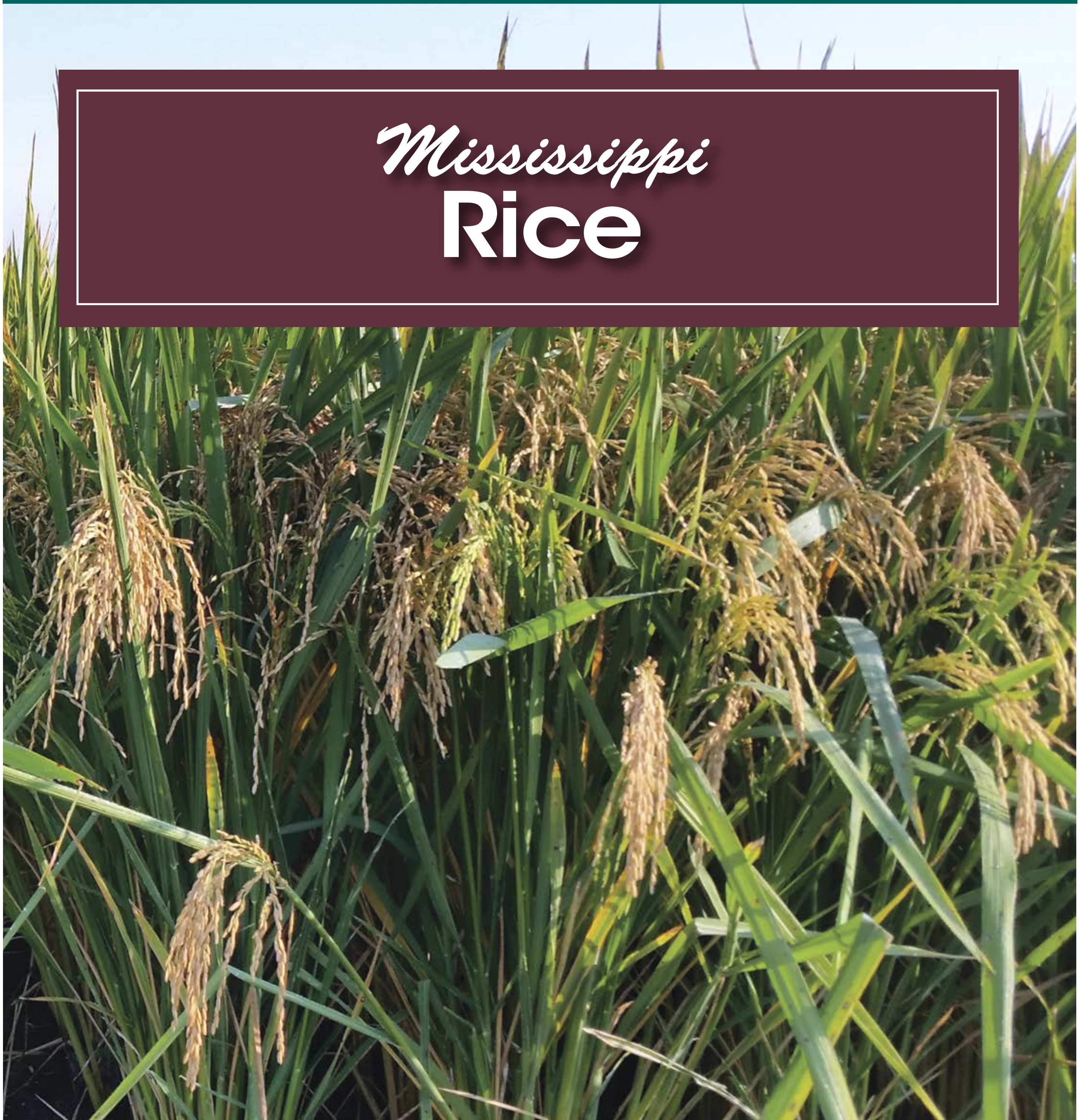
Mississippi Rice



VARIETY TRIALS, 2015

Mississippi's Official Variety Trials

MAFES

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

Mississippi State University • Mark E. Keenum, President • Gregory A Bohach, Vice President

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. 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, 2015

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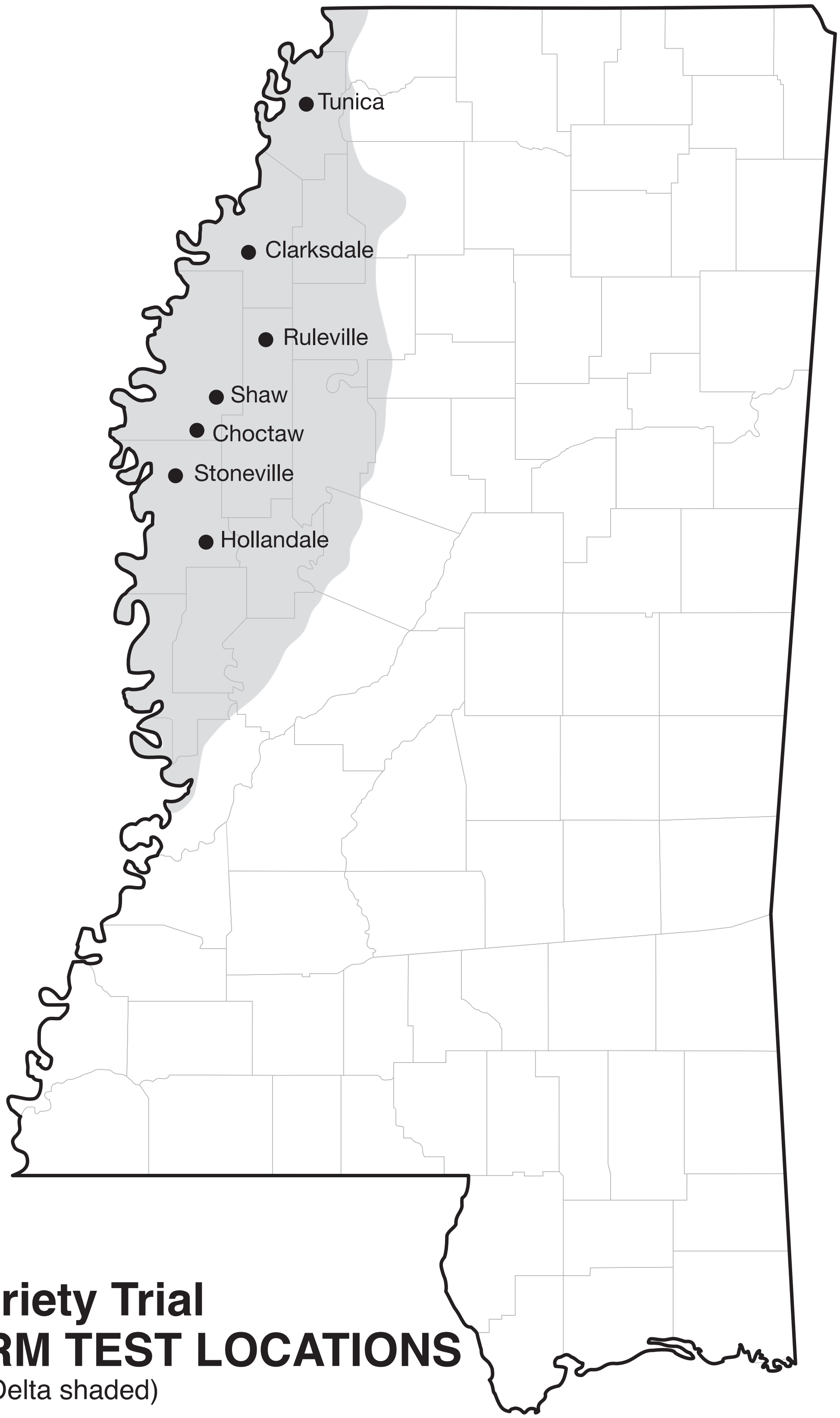
Find variety trial information online at ***mafes.msstate.edu/variety-trials***.



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

Mississippi Rice Variety Trials, 2015

INTRODUCTION

The U.S. Department of Agriculture Farm Service Agency (FSA) reported in November 2015 that Mississippi's rice production area for during 2015 was 143,700 acres. While this amount represents a decrease of 42,800 acres (23%) compared with the 186,500 rice acres in 2014, it is still 21,000 acres (17%) more than the 2013 acreage of 122,700. Also in November 2015, the USDA National Agricultural Statistics Service forecasted Mississippi to produce 10.8 million hundredweight of rice (490,000 metric tons), down 23 percent from the 2014 production of 14.1 million hundredweight (640,000 metric tons). Average yield statewide for 2015 was forecasted at 7,200 pounds per acre, down 220 pounds from the record-breaking 2014 yield of 7,420 pounds per acre (165 bushels per acre or 8,316 kg per hectare) that had surpassed the previous Mississippi yield record of 7,350 pounds per acre set in 2007.

Historically, the 2015 acreage is about 31 percent below the Mississippi running 10-year average acreage of 189,000 (Table 1). However, it is still about 21,000 acres more than the lowest acreage that Mississippi growers planted to rice during the last 10 years: 122,700 acres in 2013. Similar to 2014, rice during 2015 was planted in 17 counties, primarily in the Mississippi

Table 1. United States Department of Agriculture historical survey data of rice acreage in Mississippi (nearest thousand) by year, 1949–2015.

Year	Acres	Year	Acres	Year	Acres	Year	Acres
1949	5,000	1969	60,000	1989	235,000	2009	243,000
1950	7,000	1970	51,000	1990	250,000	2010	303,000
1951	26,000	1971	51,000	1991	220,000	2011	157,000
1952	40,000	1972	51,000	1992	275,000	2012	129,000
1953	51,000	1973	62,000	1993	245,000	2013	123,000
1954	77,000	1974	108,000	1994	313,000	2014	186,000
1955	52,000	1975	171,000	1995	288,000	2015	144,000
1956	44,000	1976	144,000	1996	208,000	2016	—
1957	31,000	1977	111,000	1997	238,000	2017	—
1958	39,000	1978	215,000	1998	268,000	2018	—
1959	44,000	1979	207,000	1999	323,000	2019	—
1960	44,000	1980	240,000	2000	218,000	2020	—
1961	44,000	1981	337,000	2001	253,000	2021	—
1962	49,000	1982	245,000	2002	253,000	2022	—
1963	49,000	1983	161,000	2003	234,000	2023	—
1964	49,000	1984	190,000	2004	234,000	2024	—
1965	50,000	1985	188,000	2005	263,000	2025	—
1966	55,000	1986	198,000	2006	189,000	2026	—
1967	55,000	1987	198,000	2007	189,000	2027	—
1968	67,000	1988	260,000	2008	229,000	2028	—

Delta. Bolivar County (42,139 acres), Tunica County (25,833 acres), Sunflower County (15,612 acres), Washington County (13,027), and Quitman County (12,220) were the top rice producers. These five counties also had the largest rice acreages during 2014. Table 2 provides the complete list of FSA-certified acres planted to rice in Mississippi from 2009–15.

Planting progress occurred intermittently between periods of rainfall for most of the state and at a much more rapid pace than in 2014, when record rainfall in April delayed planting in many areas. This year, as of April 15, only 30% of the total rice crop was planted; however, by May 19, 93% of the rice acres were planted. This planting pace exceeded the 3-, 5-, and 10-year historical averages, resulting in most areas of the state being planted on time. The exception was in the far northwest corner of the Delta, where rainfall delayed planting on many farms into early to mid-June.

Insect pest issues in 2015 were fairly average with respect to rice water weevil and armyworm. Rice stinkbug infestations were large for the first 10–20% of the crop that headed, with many calls from seasoned rice producers and consultants suggesting it was the worst pressure they have experienced. As more rice headed, infestations declined to a more manageable level. Disease pest pressure in 2015 was less than that experienced during 2014 primarily due to environment. Late-season disease complexes took a toll on a limited number of acres. Particularly, panicle blast caused significant yield decreases in susceptible varieties in the central rice-growing areas of Mississippi.

The greatest concern during 2015 and one that definitely contributed to yield reductions in the state was excessive heat coinciding with rice flowering and pollination. Stoneville weather data collected throughout the growing season showed that between July 11 and July 30, daytime maximum air temperatures never fell below 95°F. This period was followed by two days of lower temperatures, but from August 2 through August 12, daytime temperatures stayed above 94°F. Much of the early-planted rice headed in this period and experienced some degree of heat-induced sterility. Great harvest weather allowed for probably the most timely and uninterrupted harvest we have ever experienced. When all was said and done, 2015 shaped up to be an average year yieldwise in comparison with the two previous crops, which achieved record yields.

Table 2. United States Department of Agriculture Farm Service Agency certified rice acres planted by county in Mississippi, 2009–2015.

County	2009	2010	2011	2012	2013	2014	2015
Adams	240	0	0	192	0	0	0
Attala	0	0	10	0	0	0	0
Bolivar	72,333	80,255	50,813	34,956	33,734	47,702	42,139
Carroll	205	0	0	0	0	0	0
Coahoma	14,761	25,032	11,370	8,797	8,109	14,453	9,933
DeSoto	859	1,156	335	553	1,190	2,316	99
Grenada	171	321	328	282	282	0	893
Holmes	1,485	1,448	234	141	121	203	195
Humphreys	3,656	8,241	1,996	1,955	1,475	3,426	2,576
Issaquena	783	2,702	880	890	1,115	483	345
Jackson	55	35	0	0	0	0	0
Lee	10	11	8	10	3	3	0
Leflore	17,107	20,144	6,754	5,328	3,905	6,000	5,059
Panola	4,777	6,446	5,383	5,901	5,523	10,188	5,966
Quitman	11,031	20,170	6,360	8,440	8,766	15,565	12,220
Sharkey	1,951	5,390	855	306	433	857	789
Sunflower	38,227	45,676	19,351	14,253	13,635	25,241	15,612
Tallahatchie	14,081	19,314	6,267	6,460	6,964	12,859	7,142
Tate	905	994	869	828	934	1,082	955
Tunica	23,913	27,041	23,167	21,696	24,603	28,608	25,833
Washington	29,507	35,736	18,854	14,687	11,480	15,690	13,027
Yazoo	1,841	1,907	2,273	765	0	867	914
Total	237,898	302,019	156,107	126,440	122,272	185,543	143,697

ON-FARM VARIETY TRIALS

On-farm varietal evaluation is a vital step in the variety development process for many crops, including rice. Conducting variety trials under producers' field conditions helps identify the released varieties or hybrids, as well as elite experimental breeding lines, that are best suited to specific growing environments, including niche markets. It also helps determine which specific entries are widely adapted to and/or have consistent performance across varying growing conditions. This information not only helps in future breeding, but also is important for proper release variety deployment. It is typical in on-farm variety trials for standard varieties and hybrids, new releases, and elite experimental lines to be evaluated in the target population of environments to which they will be released. In the case of elite breeding lines, based on their performance in these multilocation tests, the most promising are selected for nomination and possible release as new varieties. The information collected on these lines includes yield and milling performance, insect and disease susceptibility, tolerance to environmental stresses, vigor, and lodging scores. The data collected become the basis for making crossing, line advancement, and release decisions for the breeding lines being tested.

With the inclusion of released varieties from Mississippi and the U.S. Midsouth as entries in the on-farm trials, the testing process also helps local rice producers determine the most suitable released variety to plant on their respective farms based on the test locations. By placing these trials at multiple key locations throughout the Mississippi Delta, we expose varieties, hybrids, and elite lines to the prevalent growing conditions and practices that are commonly used in commercial production in the state. Many of these growing conditions and management practices cannot be reproduced at the Delta Branch Experiment Station in Stoneville, which makes on-farm evaluations even more valuable from the research and development perspective. In return, growers are afforded the opportunity to evaluate side-by-side the current varieties and hybrids in commercial circulation, under their own management conditions. Ultimately, this process helps them in deciding which variety or hybrid to use on their farms the following year and in placing advanced seed orders for the chosen varieties accordingly from Mississippi seed producers/companies.

Variety selection is one of the most important decisions a grower makes in crop production planning. Growers should attempt to select varieties that offer the best combination of yield and quality factors, while also considering the variety's susceptibility to both biological and environmental factors that could limit yield potential. As grain quality is increasingly becoming more important for improving U.S. rice competitiveness, including the further expansion of the U.S. rice export market, producers will benefit from having grain quality data for the commercial varieties evaluated in the variety trials. Millers, consolidators, and traders may also use this grain quality data for use in implementing "identity preservation" strategies that are also becoming important for increasing the quality of U.S. rice. Rice researchers and extension specialists, on the other hand, can use the variety trials as an educational platform for demonstrating the merits of on-farm evaluation to other scientific or technical staff, growers, private consultants, rice industry personnel, students, and the general public. Through these trials, interested parties can have a first look at new or potential releases not only from Mississippi State University, but also from other participating rice-breeding programs, including from the private industry.

TEST PROCEDURES

For 2015, the Rice On-Farm Variety Trials consisted of 29 entries, including four hybrids (two Clearfield® and two conventional types), 14 named varieties (four Clearfield® types and 10 publicly released conventional varieties), and 11 elite breeding lines (three Clearfield® and eight conventional types). The trials were conducted in seven locations from the north to the south of the Mississippi Delta: Tunica, Clarksdale, Ruleville, Shaw, Choctaw, Stoneville, and Hollandale (**see map**). Individual plots consisted of eight drilled rows, 15 feet in length, spaced 8 inches apart. Varieties and experimental lines were planted at a seeding rate of 85 pounds of seed per acre, while the hybrids were planted at 25 pounds of seed per acre. Seeds were mechanically drilled approximately 1.25 inches deep into stale seedbeds at all locations. All entries were replicated three times at each location using a randomized complete block experimental design. Crop management practices for each location, as well as the stresses encountered, are presented in **Tables 3-9.** (Readers who may be less familiar with pesticide formulations and application rates may wish to refer to pesticide product label information available on the Internet or to the "2016 Weed Control Guidelines for Mississippi" publication available in print and online [MSU-ES/MAFES Pub. No. 1532; http://msucares.com/pubs/publications/p1532.pdf]).

Agronomic and crop phenology data were collected at appropriate times during the growing season. Lodging ratings were obtained on a plot-by-plot basis. Each plot was harvested with a small-plot combine equipped with a computerized weighing system and moisture meter. Due to differences in maturity, the majority of the entries at each location were required to achieve the appropriate harvest moisture level before the test was harvested. Average harvest grain moisture levels for each entry are reported in **Tables 3-9**. Subsamples of each entry were collected at harvest, and these were used for measuring milling-related traits, chalkiness, bushel weight, and 1,000-seed weight parameters. For yield, previous replicated research has shown that the border effect common in small-plot research could result in increases in grain yield estimates of 10% for inbred varieties and 15% for hybrids. Therefore, the plot yields reported for the test entries should be compared in a relative manner rather than just through the absolute values for the reported yield potential.

Analysis of variance procedures were conducted for all relevant data gathered from the trials using SAS statistical software. The least significant difference (LSD) test at the 5% significance level may be used to calculate significant differences between entries. If the value of the yield difference between any two trial entries at a location, as computed from the yields reported in **Tables 3-9**, is greater than the LSD value for that particular location, the entries are deemed to be statistically different from each other. In addition, a coefficient of variation (CV) was calculated for each test. This measure is an indication of the variability or "noise" in the trial, and thus the level of precision of each test. Lower CV values indicate greater reliability of the test. CV values of 10% or less are generally considered to be optimum for plant breeding trials, and CV values above 25% are considered unacceptable. The LSD and CV values for yield in these tests are reported in the footnotes of **Tables 3-9** and are included for the other measured variables in **Table 11**.

RESULTS

To assist Mississippi rice producers in their variety selection process for 2016, preliminary results of the 2105 rice variety trials were immediately processed and made available online as early as October 1, 2015, via the Mississippi Crops Situation and Mississippi Agricultural and Forestry Experiment Station websites:
http://www.mississippi-crops.com/category/by-crop/rice/
http://www.mafes.msstate.edu/variety-trials/includes/crops/rice.asp

Complete details on the performance of each entry at each of the seven test locations are presented in **Tables 3-9**. Planting times for the seven trials spanned about 5 weeks, starting from March 31 for both the Choctaw and Hollandale locations to May 6 for the Stoneville trial, which was the only trial planted on an experiment station. In general, plant stands were excellent, with uniform emergence and optimum plant density for all the locations. Among the diseases reported to have occurred at some point in the growing season were leaf blast, panicle blast, and sheath blight. However, none of these factors occurred to a level that was economically damaging, or that completely wiped out any test entry. Lodging was reported at four of the seven locations, with the most lodging occurring in Tunica and Choctaw. Bird damage occurred to some degree in Stoneville.

As in the past 2 years, the rice yields obtained from the 2015 trials were in the high category. The overall average yield across sites and entries was 220 bushels per acre or 22 bushels lower than the 2014 grand average yield of 242 bushels per acre. This decrease in overall average yield for the on-farm trials roughly mirrors the slight decrease expected in 2015 Mississippi yields based on the USDA NASS November 2015 forecast. The site yield averages ranged from 171 bushels per acre at Tunica to 270 bushels at Hollandale. This is the second straight year for Hollandale to be the highest yielding location for the trials. The CVs for yield ranged from 6–14%, which is respectable for yield tests. Total milling yields tended to be normal for most entries, but substantial differences among the trial entries were observed for whole milled rice.

A summary for grain yield for all entries at each location is provided in **Table 10.** Furthermore, yield and all other measured variables averaged over the seven locations are provided in **Table 11**. The conventional hybrid

XL753, developed by RiceTec, Inc., topped the entries in terms of yield this year at 275 bushels per acre. The same hybrid was the highest yielding entry in both the 2014 (306 bushels) and 2013 (278 bushels) on-farm trials and has thus consistently demonstrated a yield advantage over the conventional pure line cultivar and experimental line entries. Following XL753 in terms of yield performance were three other hybrids, all developed by RiceTec. These were the conventional type hybrid XL760 and the two Clearfield® type hybrids CLXL729 and CLXL745.

Historically, hybrids have had at least 20% better performance than pure lines or conventional varieties in Mississippi. During 2015, however, several entries produced yields that were within 80% or higher as compared to XL753. These entries included the released conventional varieties Lakast and Rex and the Clearfield® variety CL151. Moreover, five experimental lines also (three conventional and two Clearfield® types) had yields that were 80% or more of that for XL753. These were RU1404154, RU1404122, and RU1104077 for the conventional types and CLx2134 and CLMedium for the Clearfield® types. The elite line RU1104077 is being considered for varietal release by Mississippi State University. Considering the fact that the plot border effect is greater on hybrids as compared to pure lines, actual field yields may be expected to be very similar when comparing the highest yielding hybrid to the highest yielding pure line. In this year's tests, the MSU-bred Rex had the second highest yield (238 bushels per acre) among conventional varieties. While it yielded about 7 bushels lower than Lakast, its whole milled rice yield was significantly better than Lakast (61% versus 55%). During 2013, Rex became the most popular conventional pure-line in Mississippi, occupying roughly 15% of the state's total rice area. Rex's continued good performance in these on-farm trials should help in further increasing the acreage occupied by Rex in the future.

Entries that begin with "RU" (rice uniform) designations are elite breeding lines that have performed well in the sequential, multistage, yield evaluation conducted by the MSU rice-breeding program. They have usually been entered or are currently entered in the multistate Uniform Regional Rice Nursery (URRN). This system is conducted by public breeding institutions in the U.S. to evaluate elite lines in other rice-growing states while sharing elite materials among U.S. breeders. The entries represent the best lines from different breeding programs and are typically at the final stages of testing. Entries from Mississippi in the URRN have the number "4" as the first of the last four digits of the RU designation (e.g. RU110**4**077).

For conventional experimental lines, RU1104077 (**Figure 1**) has performed well already for multiple years and is being considered for varietal release in the near future. For 2015, this line was the fifth-highest yielding among conventional types at 219.4 bushels per acre, which, as in 2014, was comparable to Rex, based on farm tests. This line provides a good combination of grain yield, agronomics, and grain quality. RU1104077 has the "Newrex" cooking profile that makes it superior to almost all other commercially grown cultivars for parboiled rice. In 2015, in preparation for possible release, breeder seed produced by the breeding program during 2014 were provided to the Mississippi Agricultural and Forestry Experiment Station Foundation Seed unit for foundation seed production in Verona. This step will make possible the registered/certified seed production for growers use as early as 2016.

Two other conventional-variety, elite-line entries produced yields that were comparable to that of Rex and were also within 80% of the yield of the top-yielding hybrid entry. These were RU1404154 (232 bushels per acre) and RU1404122 (230 bushels), which were tested for the first time in the on-farm variety trial and will be tested again in 2016. RU1404122 showed excellent

Figure 1. RU1104077 is an MSU-developed elite breeding line that is in the final stages of the variety release process.

milling traits in this year's tests, with 73% milling recovery and 64% whole milled rice, both among the highest values obtained in this year's test.

For Clearfield® conventional types, two advanced lines developed by the Louisiana State University breeding program (CLx2134 and CLMedium) had yields of 232 bushels per acre and were within 80% of the overall highest yielding entry, XL753. Moreover, this yield level was only about 14% lower than that of the highest yielding Clearfield® hybrid, CLXL729 (265 bushels per acre). The yields of these two new experimental Clearfield® lines were also comparable with the yield of the highest-yielding, conventional-type, commercial Clearfield® variety (CL151) entered in the trials with an average yield of 230 bushels per acre.

Table 12 provides the agronomic, yield, and milling data for select rice varieties that have been included in on-farm tests for the last few years. Substantial variation was observed among the test entries for the milling traits, and several high-yielding entries did not necessarily have the best grain quality characteristics among those tested. For example, among conventional varieties, Rex had significantly higher whole milled rice yield than Lakast, which was the highest yielding variety. The total yield of Rex, however, was still lower but still comparable to that of Lakast. Aside from these trait considerations for variety selection, performance stability over many environments and years also need to be examined. Varieties such as Cocodrie and Cheniere have been relatively stable over many years, so they have been popular varieties in Mississippi and the Midsouth. As stated earlier, Rex has also shown tremendous stability over multiple locations both in Mississippi and other states in the Southern U.S. Rice Belt.

Variety and hybrid reactions to common diseases and straight head disorder are found in **Table 13**. 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 efficacy of fungicides that are available to combat or prevent the respective disease.

Nitrogen fertilization rate guidelines are provided in **Table 14**. These guidelines were generated from multiyear, multisite N response studies conducted for newly released varieties. A combination of current economics, individual varieties' susceptibility to lodging, and yield potential are considered in determining the rate guidelines. Annually, 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.

Based on past results and this year's on-farm trials, the suggested conventional varieties for Mississippi rice growers are Bowman, Cocodrie, Cheniere, Rex, Taggart, Mermentau, and Lakast. Sabine is often grown on limited acreage by contract. XL753 and XL760 are good choices for conventional hybrid rice production. For growers who need to utilize the Clearfield® technology to control red rice, CL111, CL151, CL152, CL163, and CL172 are the pure line options. Clearfield® hybrids, solely offered by RiceTec, have demonstrated excellent yield potential; however, CLXL745 has not been stable across multiple locations and years. CLXL729 has been available for many years and still performs exceptionally well in Mississippi. Information for production of Clearfield® hybrid rice is offered by RiceTec. Seed costs for Clearfield® rice have increased in recent years. Clearfield® rice should be used as a tool with careful attention given to stewardship so 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 postemergence and residual herbicides for grass control so that selection pressure is minimized. Incidences of ALS-resistant (Newpath®, Beyond®) barnyardgrass and sedges have increased in the last few years. Outcrossing and grass resistance jeopardize this important technology.

As in previous years, no variety or hybrid proved to be perfect. Breeders continue to develop new strains that not only satisfy the needs of growers, millers/processions, and consumers, but also possess traits that allow the variety to perform well in an ever-changing environment. Nevertheless, each new variety release would be expected to have qualities or characteristics that add value to the marketplace. Ultimately, varietal performance over time and in different environments, in addition to economics, should be considered when choosing among the many variety options. This is where the regular conduct of on-farm trials provides great value for rice producers. For varieties with high yield potential, producers should consider risks, such as lodging and disease, and plan to manage for those yield-limiting factors to gain maximum benefit. Planting several varieties, both Clearfield® and conventional, may be needed in large rice farms to mitigate the risks associated with rice production.

Table 3. Performance of rice varieties, hybrids, and lines grown on Sharkey clay soil near Choctaw, Mississippi, 2015.[1]

Entry	Yield[2]	Whole milled rice	Total milled rice	Chalk[3]	Harvest moisture	Bushel weight	Plant height	50% heading[4]	Lodging[5]	Lodging score[6]	1,000 seed weight[7]
	bu/A	*%*	*%*	*%*	*%*	*lb*	*in*	*days*	*%*	*(1-5)*	*g*
Conventional											
Antonio	256.3	59.1	71.2	10.2	14.9	44.7	38	90	0	1	23.6
Bowman	216.5	57.9	69.2	6.9	18.0	46.0	39	95	0	1	24.4
Cheniere	237.8	62.6	73.0	5.5	14.8	44.2	35	93	0	1	21.5
Cocodrie	255.2	59.5	70.7	9.6	15.3	44.1	38	91	0	1	22.1
Lakast	280.7	46.7	69.0	7.1	14.6	43.6	41	91	9	2	26.2
Mermentau	227.8	61.0	70.0	11.8	18.0	44.3	37	92	0	1	22.0
Rex	254.9	59.2	68.0	6.6	16.0	44.2	44	92	0	1	27.1
RoyJ	233.1	56.5	71.2	5.3	17.6	44.8	42	96	0	1	23.6
Sabine	215.5	62.6	70.4	3.7	16.2	45.6	37	94	0	1	23.5
Taggart	282.6	49.7	69.6	6.7	15.4	45.3	45	95	0	1	25.8
RU1104077	256.3	58.6	68.8	4.4	16.5	46.5	38	94	8	2	24.4
XL753	243.5	54.7	69.2	8.8	15.8	40.1	45	94	52	3	23.5
XL760	295.7	50.8	71.1	9.8	14.3	41.8	42	90	20	2	25.8
RU1304154	252.5	58.0	68.9	8.1	15.0	44.1	37	93	0	1	24.0
RU1204197	252.0	54.7	67.7	8.8	15.5	43.6	37	91	0	1	23.2
RU1404122	232.8	59.9	71.8	6.3	17.6	44.3	39	94	15	2	21.4
RU1404154	241.4	55.5	67.9	6.1	17.5	45.4	36	92	0	1	24.9
RU1404156	230.6	49.7	70.3	6.2	14.7	44.0	36	92	5	1	24.2
RU1404194	235.9	62.8	71.8	4.7	15.4	46.9	42	94	30	2	19.2
RU1404198	242.8	61.1	71.2	5.5	15.0	43.5	40	93	0	1	27.5
Clearfield											
CL111	243.1	54.2	70.0	9.8	14.3	43.3	39	89	37	3	24.2
CL151	237.9	53.6	70.0	11.0	14.5	43.5	38	89	43	4	24.0
CL152	241.2	54.3	68.8	8.6	15.7	43.1	38	91	0	1	20.5
CL172	231.7	60.1	70.5	3.9	16.6	44.4	35	90	0	1	24.1
CLMedium	256.9	57.5	69.5	10.7	16.4	44.6	39	93	0	1	24.6
CLXL729	279.9	53.6	69.3	9.7	14.2	40.7	40	91	35	2	25.3
CLXL745	233.7	51.7	70.9	7.0	14.7	40.5	43	88	92	4	26.4
CLx2134	263.6	59.4	70.3	5.3	14.6	43.2	36	91	15	2	23.2
RU1204156	224.5	64.0	71.1	5.1	17.1	44.9	38	98	0	1	21.7

[1]**Planting date:** March 31. **Emergence:** April 11–15. **Herbicides:** Sharpen at 2 oz/A, Command 4 EC at 21 oz/A, and Invade at 1%/A on April 5; and Stam at 64 oz/A, Prowl at 32 oz/A, and Facet L at 32 oz/A on May 5. **Fertilizer:** 100 lb/A DAP/AMS on April 22, 150 lb/A urea on May 12, 100 lb/A urea on May 28, and 100 lb/A of urea on June 18. **Insecticide:** Karate at 1.8 oz/A on July 14. **Fungicide:** Stratego at 14 oz/A on July 6. **Permanent flood:** May 17. **Drained field:** July 28. **Harvested:** August 18. **LSD = A difference of 27 bu/A is required for one variety to differ from another at the 5% probability level. C.V. = 8.9%.**

[2]Rough rice at 12% moisture.

[3]Winseedle chalk measurement.

[4]Days after emergence.

[5]Percent of plot that was lodged.

[6]Severity of lodging: 1=plants totally erect, 5=plants completely on ground.

[7]Weight of 1,000 kernels.

Table 4. Performance of rice varieties, hybrids, and lines grown on Dowling soil near Clarksdale, Mississippi, 2015.[1]

Entry	Yield[2]	Whole milled rice	Total milled rice	Chalk[3]	Harvest moisture	Bushel weight	Plant height	50% heading[4]	Lodging[5]	Lodging score[6]	1,000 seed weight[7]
	bu/A	*%*	*%*	*%*	*%*	*lb*	*in*	*days*	*%*	*(1-5)*	*g*
Conventional											
Antonio	226.7	63.0	72.0	6.9	14.0	45.1	40	89	0	1	25.3
Bowman	216.2	61.7	70.8	2.5	16.2	46.1	41	96	0	1	26.6
Cheniere	201.2	65.8	73.8	2.6	14.5	44.0	39	92	0	1	22.6
Cocodrie	218.7	64.9	72.5	7.7	15.2	44.8	41	91	0	1	23.6
Lakast	252.2	47.8	69.6	6.1	14.2	45.4	44	89	0	1	27.5
Mermentau	197.8	64.5	71.4	6.2	17.3	44.0	42	92	0	1	22.9
Rex	241.6	60.7	68.6	5.8	14.6	45.0	43	90	0	1	28.7
RoyJ	195.8	59.9	72.0	2.4	16.8	44.8	44	99	0	1	22.7
Sabine	183.2	64.7	70.8	3.1	14.9	45.6	41	92	0	1	23.9
Taggart	237.7	56.1	70.5	4.3	16.2	45.6	47	91	0	1	27.0
RU1104077	241.0	59.3	69.6	3.4	14.3	46.4	40	93	0	1	25.9
XL753	247.9	49.0	70.8	9.1	12.9	42.3	44	89	0	1	26.0
XL760	280.4	59.4	69.8	5.4	14.7	41.0	48	93	0	1	24.5
RU1304154	207.6	63.2	71.0	7.0	14.8	44.8	42	95	0	1	25.1
RU1204197	224.3	61.0	70.4	5.8	15.1	45.3	43	92	0	1	25.2
RU1404122	236.8	64.3	72.8	3.1	15.8	44.5	41	92	0	1	22.1
RU1404154	240.0	59.4	68.9	4.1	15.0	46.5	38	90	0	1	27.3
RU1404156	230.5	51.2	70.8	5.0	14.2	44.7	40	89	0	1	24.8
RU1404194	231.0	66.1	71.9	2.2	16.0	47.2	44	94	0	1	19.7
RU1404198	211.9	59.7	70.3	4.8	14.5	42.9	43	92	0	1	27.8
Clearfield											
CL111	210.3	55.9	70.2	6.9	12.5	44.0	40	86	0	1	25.3
CL151	228.4	56.2	70.3	8.9	13.6	44.3	39	88	0	1	24.6
CL152	219.4	55.4	69.0	7.1	14.0	44.0	39	92	0	1	21.3
CL172	232.0	61.9	71.1	3.7	14.9	44.9	39	92	0	1	25.2
CLMedium	253.8	57.2	69.8	6.6	15.4	46.1	41	90	0	1	28.2
CLXL729	281.6	53.8	68.9	8.5	12.6	41.1	43	90	0	1	26.0
CLXL745	253.7	56.2	70.6	6.8	13.1	41.5	45	85	0	1	26.9
CLx2134	239.5	60.3	70.5	3.4	13.9	44.2	41	88	0	1	24.8
RU1204156	218.7	63.6	71.1	3.7	15.5	44.0	40	97	0	1	22.9

[1]**Planting date:** April 9. **Emergence:** April 19–23. **Herbicides:** Facet at 0.4 lb/A and Prowl at 1 qt/A on April 21, Ricebeaux at 1 gal/A and Command at 1.7 pt/A on May 8, and Ricestar at 21 oz/A and Facet L at 15 oz/A on May 22. **Fertilizer:** 50 lb/A AMS and 50 lb/A DAP on April 22, 250 lb/A 41-0-0-4 (Agrotain) on May 23, 75 lb/A urea on June 16, and 75 lb/A urea on June 26. **Permanent flood:** May 27. **Drained field:** August 17. **Harvested:** August 31. **LSD = A difference of 35 bu/A is required for one variety to differ from another at the 5% probability level. C.V. = 9.3%.**

[2]Rough rice at 12% moisture.

[3]Winseedle chalk measurement.

[4]Days after emergence.

[5]Percent of plot that was lodged.

[6]Severity of lodging: 1=plants totally erect, 5=plants completely on ground.

[7]Weight of 1,000 kernels.

Table 5. Performance of rice varieties, hybrids, and lines grown on Sharkey clay soil near Hollandale, Mississippi, 2015.[1]

Entry	Yield[2]	Whole milled rice	Total milled rice	Chalk[3]	Harvest moisture	Bushel weight	Plant height	50% heading[4]	Lodging[5]	Lodging score[6]	1,000 seed weight[7]
	bu/A	*%*	*%*	*%*	*%*	*lb*	*in*	*days*	*%*	*(1-5)*	*g*
Conventional											
Antonio	266.2	61.3	71.0	9.3	19.6	43.7	41	91	0	1	23.9
Bowman	236.4	61.0	69.8	4.1	23.0	44.9	42	98	0	1	23.1
Cheniere	240.7	64.5	72.8	4.3	20.2	44.6	39	93	0	1	21.6
Cocodrie	269.9	61.7	70.9	9.5	20.4	43.8	42	93	0	1	22.7
Lakast	288.2	51.3	69.3	9.5	19.8	43.6	43	93	0	1	24.6
Mermentau	237.0	61.1	69.8	9.9	21.8	42.9	44	93	0	1	22.3
Rex	279.7	58.9	67.7	9.4	21.3	42.5	43	92	0	1	26.1
RoyJ	228.9	55.3	69.8	5.4	23.6	43.4	44	100	0	1	22.5
Sabine	225.2	65.1	70.5	4.4	20.7	44.9	40	91	0	1	23.3
Taggart	261.5	56.8	69.6	8.2	22.7	44.6	44	96	0	1	26.5
RU1104077	259.4	59.0	69.0	3.6	19.6	45.5	40	92	0	1	24.6
XL753	356.3	62.9	72.4	8.2	17.2	41.6	45	89	0	1	24.2
XL760	348.1	57.9	69.7	9.3	19.5	39.9	48	92	0	1	23.7
RU1304154	277.2	57.4	68.6	10.0	18.9	43.0	42	92	0	1	24.0
RU1204197	274.7	57.1	68.6	10.3	21.0	42.7	44	91	0	1	23.5
RU1404122	281.2	64.6	72.6	7.4	21.5	43.5	41	94	0	1	21.4
RU1404154	263.9	57.9	68.5	6.5	21.6	44.3	40	91	0	1	24.1
RU1404156	263.2	59.0	71.3	5.7	19.7	43.2	40	93	0	1	23.4
RU1404194	251.7	65.2	71.9	4.8	23.2	46.0	44	95	0	1	18.8
RU1404198	277.2	65.5	71.6	5.4	20.3	42.2	42	93	0	1	25.8
Clearfield											
CL111	237.5	61.8	70.8	10.3	18.8	42.4	41	83	27	3	23.2
CL151	282.4	63.2	70.7	12.1	19.6	43.6	42	92	35	2	23.9
CL152	225.3	59.9	69.8	8.8	21.0	41.7	41	92	2	1	19.7
CL172	241.0	63.8	71.1	4.5	20.2	44.2	39	91	0	1	23.1
CLMedium	269.2	66.6	70.2	9.7	21.0	44.3	42	95	0	1	25.3
CLXL729	325.2	62.0	70.4	9.2	18.0	40.0	44	90	8	2	24.4
CLXL745	351.3	65.0	72.6	7.8	18.0	40.6	48	87	5	2	25.5
CLx2134	280.4	62.7	70.0	5.8	19.6	42.8	42	92	0	1	22.6
RU1204156	224.7	63.5	70.4	6.5	22.4	44.1	41	98	0	1	21.7

[1]**Planting date:** March 31. **Emergence:** April 10–13. **Herbicides:** Roundup at 1 qt/A, 2,4-D at 1 qt/A, and SelectMax at 16 oz/A on February 17; Command at 1.6 pt/A and Sharpen at 2 oz/A on March 31; Super Wham at 1 gal/A and Facet L at 21 oz/A on April 30; and Regiment at 0.6 oz/A and Facet L at 21 oz/A on May 23. **Fertilizer:** AMS/DAP at 100 lb/A on May 5, Agrotain treated urea at 100 lb/A on May 25, 100 lb/A of urea on June 1, 100 lb/A urea on June 9, and 100 lb/A urea on June 16. **Insecticide:** Karate Z at 1.65 oz/A on July 18. **Permanent flood:** May 29. **Drained field:** August 4. **Harvested:** August 19. **LSD = A difference of 27 bu/A is required for one variety to differ from another at the 5% probability level. C.V. = 6.2%.**

[2]Rough rice at 12% moisture.

[3]Winseedle chalk measurement.

[4]Days after emergence.

[5]Percent of plot that was lodged.

[6]Severity of lodging: 1=plants totally erect, 5=plants completely on ground.

[7]Weight of 1,000 kernels.

Table 6. Performance of rice varieties, hybrids, and lines grown on Alligator silty clay soil near Ruleville, Mississippi, 2015.[1]

Entry	Yield[2]	Whole milled rice	Total milled rice	Chalk[3]	Harvest moisture	Bushel weight	Plant height	50% heading[4]	Lodging[5]	Lodging score[6]	1,000 seed weight[7]
	bu/A	*%*	*%*	*%*	*%*	*lb*	*in*	*days*	*%*	*(1-5)*	*g*
Conventional											
Antonio	212.0	67.2	73.2	7.3	16.5	44.3	42	92	0	1	23.6
Bowman	221.3	63.0	70.7	3.8	17.3	44.9	45	94	0	1	24.2
Cheniere	215.8	67.3	74.1	3.7	15.4	44.0	39	93	0	1	22.1
Cocodrie	216.7	66.7	72.9	9.6	16.2	44.5	42	92	0	1	22.6
Lakast	250.1	53.6	70.8	8.6	14.6	44.1	43	93	0	1	25.2
Mermentau	192.8	65.5	71.6	8.0	17.4	43.9	40	92	0	1	21.9
Rex	250.8	62.7	69.7	9.7	16.1	44.4	46	93	0	1	26.1
RoyJ	214.1	61.9	71.7	3.4	18.6	43.3	47	100	0	1	22.3
Sabine	193.8	66.6	71.5	3.4	16.1	45.1	41	93	0	1	23.1
Taggart	232.0	56.6	70.7	6.2	16.0	44.8	46	95	0	1	25.8
RU1104077	258.4	61.9	70.0	4.1	15.3	46.0	41	93	0	1	23.9
XL753	323.8	53.5	71.9	12.4	14.4	41.8	43	89	0	1	25.7
XL760	300.1	58.2	71.3	10.7	14.5	40.3	48	92	0	1	24.6
RU1304154	206.7	64.9	72.0	9.6	15.3	44.5	38	92	0	1	24.6
RU1204197	202.4	64.2	71.3	9.8	15.6	45.6	42	94	0	1	23.6
RU1404122	256.9	65.1	72.5	4.6	15.6	44.2	40	95	0	1	22.1
RU1404154	237.6	63.3	69.9	4.9	16.8	45.6	38	91	0	1	25.2
RU1404156	247.5	58.1	71.1	4.4	14.8	44.2	42	93	0	1	23.8
RU1404194	195.7	66.5	72.3	2.6	16.4	46.4	43	98	0	1	19.2
RU1404198	244.8	65.3	72.2	6.7	15.4	43.1	42	95	0	1	26.4
Clearfield											
CL111	231.4	62.8	72.0	10.2	14.5	43.8	41	89	0	1	23.4
CL151	250.1	62.6	71.7	13.5	15.0	43.7	39	89	0	1	22.7
CL152	216.5	60.3	70.8	7.8	15.6	43.7	37	93	0	1	20.7
CL172	240.8	65.0	71.8	4.8	15.8	44.7	38	93	0	1	23.3
CLMedium	257.9	62.1	70.0	8.7	17.0	44.6	43	92	0	1	25.5
CLXL729	294.9	55.4	69.8	10.8	13.9	40.3	43	90	0	1	24.7
CLXL745	287.6	59.1	72.1	10.4	13.7	40.7	43	89	0	1	26.1
CLx2134	233.3	65.5	72.0	5.2	15.1	43.9	38	91	0	1	23.2
RU1204156	205.3	65.4	71.6	5.0	15.1	44.3	38	97	0	1	22.6

[1]**Planting date:** April 8. **Emergence:** April 17–21. **Herbicides:** Roundup at 1 qt/A and 2,4-D at 1.5 pt/A on February 6; Command at 1.1 pt/A and Facet at 32 oz/A on April 20; and Permit at 0.75 oz/A, Agridex at 1 pt/A, and Asset at 11 oz/A on May 21. **Fertilizer:** 150 lb/A AMS and 20 lb/A Hydra Hume on May 1, 200 lb/A urea on May 14, 100 lb/A AMS on May 29, 75 lb/A urea on June 11, and 3 gal/A Delstar litter on July 10. **Insecticide:** Karate at 1.7 oz/A on July 25. **Fungicide:** Quilt at 14 oz/A on July 10. **Permanent flood:** May 20. **Drained field:** August 14. **Harvested:** August 27. **LSD = A difference of 22 bu/A is required for one variety to differ from another at the 5% probability level. C.V. = 5.6%.**

[2]Rough rice at 12% moisture.

[3]Winseedle chalk measurement.

[4]Days after emergence.

[5]Percent of plot that was lodged.

[6]Severity of lodging: 1=plants totally erect, 5=plants completely on ground.

[7]Weight of 1,000 kernels.

Table 7. Performance of rice varieties, hybrids, and lines grown on Forestdale silty clay soil near Shaw, Mississippi, 2015.[1]

Entry	Yield[2]	Whole milled rice	Total milled rice	Chalk[3]	Harvest moisture	Bushel weight	Plant height	50% heading[4]	Lodging[5]	Lodging score[6]	1,000 seed weight[7]
	bu/A	*%*	*%*	*%*	*%*	*lb*	*in*	*days*	*%*	*(1-5)*	*g*
Conventional											
Antonio	212.0	65.3	73.6	5.1	16.1	42.6	37	87	0	1	22.0
Bowman	146.8	58.8	71.4	2.6	23.4	38.1	38	98	0	1	22.9
Cheniere	200.8	68.1	75.0	2.0	15.3	41.7	38	90	2	2	20.0
Cocodrie	201.3	65.8	73.4	4.7	16.1	42.8	39	88	0	1	22.2
Lakast	248.6	63.8	73.4	2.1	16.8	43.9	43	90	0	1	25.6
Mermentau	200.3	66.6	72.9	2.6	17.4	42.9	39	89	0	1	21.9
Rex	236.8	64.6	71.5	5.0	18.4	43.6	41	93	0	1	27.1
RoyJ	111.7	58.8	72.3	2.1	28.7	42.0	43	103	0	1	22.4
Sabine	162.6	66.4	73.1	1.9	18.9	44.1	40	93	0	1	22.7
Taggart	212.4	60.1	72.5	2.3	21.5	44.4	44	100	0	1	26.4
RU1104077	171.5	60.9	71.7	1.6	21.9	44.6	38	99	0	1	23.5
XL753	260.5	64.9	74.1	3.9	16.7	42.2	43	93	0	1	23.9
XL760	247.4	63.9	73.1	3.0	21.2	40.6	50	100	18	2	24.5
RU1304154	214.6	63.5	72.0	4.0	15.5	43.7	40	87	0	1	23.0
RU1204197	208.0	62.8	71.9	4.3	16.3	42.6	42	86	0	1	23.8
RU1404122	205.3	67.4	74.4	1.5	18.8	43.4	40	93	0	1	21.9
RU1404154	225.9	60.9	70.3	3.8	17.9	43.4	39	90	0	1	23.5
RU1404156	202.1	63.8	73.3	2.4	17.2	42.8	41	93	0	1	23.3
RU1404194	182.0	65.9	73.3	1.2	19.6	45.4	43	97	0	1	19.1
RU1404198	180.2	67.5	74.2	2.6	22.2	43.2	41	99	0	1	26.5
Clearfield											
CL111	212.5	61.9	72.1	4.5	14.9	42.8	38	87	0	1	23.4
CL151	223.1	65.9	73.4	4.0	16.0	42.9	39	89	0	1	22.5
CL152	214.6	68.0	73.8	2.4	17.2	42.6	39	95	0	1	19.9
CL172	197.6	66.4	73.6	1.9	19.1	43.6	39	93	0	1	22.8
CLMedium	215.0	62.3	71.2	4.4	16.9	44.9	34	88	0	1	24.7
CLXL729	270.7	64.7	72.6	5.5	15.6	40.1	43	91	0	1	24.3
CLXL745	231.3	65.5	73.9	4.1	16.6	40.5	44	90	7	2	25.1
CLx2134	231.6	64.4	72.4	2.8	15.4	43.1	38	89	0	1	22.2
RU1204156	200.1	66.4	73.2	2.2	16.6	42.9	39	96	0	1	21.1

[1]**Planting date:** April 30. **Emergence:** May 5–10. **Seed treatment:** CruiserMaxx at 23.4 lb/A. **Herbicides:** Command 3ME at 1 pt/A, Sharpen 1.5 oz/A, and Roundup at 32 oz/A on May 5; Framework 3.3 EC at 2.4 pt/A, Halomax 75 at 0.75 oz/A, QuinStar at 0.67 oz/A, and Stam at 3 gal/A on May 20; and Clincher SF at 15 oz/A on July 11. **Fertilizer:** 99.1 lb/A urea on June 10, 95 lb/A urea on June 22, 99.3 lb/A urea on June 29, 86 lb/A 18-46-0 on July 1, and 95.86 lb/A urea on July 23. **Permanent flood:** June 18. **Drained field:** August 28. **Harvested:** September 14. **LSD = A difference of 23 bu/A is required for one variety to differ from another at the 5% probability level. C.V. = 6.6%.**

[2]Rough rice at 12% moisture.

[3]Winseedle chalk measurement.

[4]Days after emergence.

[5]Percent of plot that was lodged.

[6]Severity of lodging: 1=plants totally erect, 5=plants completely on ground.

[7]Weight of 1,000 kernels.

Table 8. Performance of rice varieties, hybrids, and lines grown on Sharkey clay soil near Stoneville, Mississippi, 2015.[1]

Entry	Yield[2]	Whole milled rice	Total milled rice	Chalk[3]	Harvest moisture	Bushel weight	Plant height	50% heading[4]	Lodging[5]	Lodging score[6]	1,000 seed weight[7]
	bu/A	*%*	*%*	*%*	*%*	*lb*	*in*	*days*	*%*	*(1-5)*	*g*
Conventional											
Antonio	151.5	62.2	72.1	4.5	17.4	43.7	42	91	0	1	22.9
Bowman	179.9	62.2	70.5	2.2	21.2	45.1	43	102	0	1	24.0
Cheniere	174.9	66.2	73.4	1.8	18.9	43.9	40	97	0	1	21.3
Cocodrie	160.4	63.6	72.4	4.4	16.6	44.3	46	94	0	1	22.4
Lakast	189.4	59.1	70.7	3.4	16.1	44.8	47	94	0	1	25.1
Mermentau	182.8	65.6	71.8	4.5	18.0	43.9	42	93	0	1	22.8
Rex	193.3	63.1	69.8	4.1	17.1	45.3	45	95	0	1	28.0
RoyJ	142.7	58.5	70.1	2.3	26.7	43.5	45	104	0	1	22.6
Sabine	133.6	63.4	70.9	1.9	20.5	45.1	41	98	0	1	23.9
Taggart	201.5	61.0	70.9	2.9	19.4	45.3	48	102	0	1	26.6
RU1104077	195.2	62.1	70.0	1.9	20.1	45.8	42	101	0	1	24.7
XL753	201.8	54.4	71.1	6.0	14.4	42.3	45	93	0	1	24.7
XL760	229.9	60.1	70.4	3.4	17.0	41.8	52	98	0	1	24.5
RU1304154	166.8	63.4	71.3	4.3	17.0	44.5	44	93	0	1	24.4
RU1204197	149.3	60.8	70.9	5.0	15.7	43.8	43	91	0	1	23.8
RU1404122	192.8	65.1	72.7	2.3	19.4	44.7	43	98	0	1	22.6
RU1404154	220.3	60.2	69.3	3.6	19.3	43.9	41	94	0	1	23.2
RU1404156	171.5	56.3	71.5	2.6	15.8	44.7	41	95	0	1	24.4
RU1404194	162.5	66.3	72.3	1.7	20.1	46.3	44	98	0	1	20.5
RU1404198	178.0	61.7	71.1	2.8	18.9	43.5	44	100	0	1	27.0
Clearfield											
CL111	147.9	61.3	71.7	7.0	15.2	43.8	42	91	0	1	23.7
CL151	191.0	64.3	71.9	4.9	17.7	44.6	42	95	0	1	23.2
CL152	190.3	66.4	71.9	2.7	20.0	43.9	43	101	0	1	20.8
CL172	168.5	64.8	71.5	2.0	19.0	45.0	39	97	0	1	24.0
CLMedium	181.0	59.8	70.5	3.4	16.2	46.6	42	91	0	1	26.9
CLXL729	169.3	56.9	69.7	5.3	14.0	40.5	47	94	0	1	24.7
CLXL745	176.1	57.0	70.7	5.9	14.8	40.9	47	91	0	1	25.3
CLx2134	183.0	64.5	71.9	2.9	17.3	44.0	42	94	0	1	23.3
RU1204156	188.8	65.2	72.1	3.4	22.4	44.7	43	99	0	1	22.2

[1]**Planting date:** May 6. **Emergence:** May 12–17. **Herbicides:** Gramoxone at 2 pt/A and Command at 1 pt/A on May 8; Gramoxone at 2 pt/A, Facet at 43 oz/A, and Command at 1 pt/A on June 18; and Rice Shot at 4 qt/A, Facet at 43 oz/A, and Permit at 0.67 oz/A on June 22. **Fertilizer:** 180 lb/A urea on June 22. **Permanent flood:** June 24. **Drained field:** September 15. **Harvested:** September 22. **LSD = A difference of 25 bu/A is required for one variety to differ from another at the 5% probability level. C.V. = 8.4%.**

[2]Rough rice at 12% moisture.

[3]Winseedle chalk measurement.

[4]Days after emergence.

[5]Percent of plot that was lodged.

[6]Severity of lodging: 1=plants totally erect, 5=plants completely on ground.

[7]Weight of 1,000 kernels.

Table 9. Performance of rice varieties, hybrids, and lines grown on Sharkey clay soil near Tunica, Mississippi, 2015.[1]

Entry	Yield[2]	Whole milled rice	Total milled rice	Chalk[3]	Harvest moisture	Bushel weight	Plant height	50% heading[4]	Lodging[5]	Lodging score[6]	1,000 seed weight[7]
	bu/A	*%*	*%*	*%*	*%*	*lb*	*in*	*days*	*%*	*(1-5)*	*g*
Conventional											
Antonio	174.8	67.2	73.8	1.8	14.2	43.4	40	92	0	1	21.8
Bowman	127.9	60.9	70.7	1.2	17.0	45.0	40	94	0	1	21.3
Cheniere	172.3	67.2	74.2	1.1	14.4	43.1	39	91	0	1	19.7
Cocodrie	173.7	66.7	73.5	2.4	14.0	43.5	39	92	0	1	21.4
Lakast	209.0	63.5	74.6	2.4	14.5	43.7	43	92	12	2	23.9
Mermentau	176.1	66.4	72.5	1.5	15.2	44.0	41	95	0	1	20.4
Rex	209.4	63.2	71.1	2.9	13.9	43.1	41	94	0	1	24.7
RoyJ	82.0	63.5	72.5	0.7	19.9	43.1	45	100	0	1	21.5
Sabine	132.8	61.4	71.9	2.0	14.9	44.6	40	93	0	1	22.5
Taggart	92.0	61.9	72.2	1.3	18.1	44.3	44	101	0	1	24.3
RU1104077	154.4	59.0	70.3	1.1	16.1	45.5	38	93	0	1	21.9
XL753	290.7	57.0	74.4	2.9	14.0	41.9	46	90	20	2	22.6
XL760	187.7	62.0	71.0	2.1	16.2	40.0	49	99	7	2	22.5
RU1304154	164.5	66.6	72.8	1.5	14.3	44.3	43	93	10	1	22.6
RU1204197	187.9	66.9	73.6	2.1	13.7	43.7	43	93	20	3	23.0
RU1404122	207.0	64.8	74.1	1.6	14.8	43.9	43	97	5	1	20.6
RU1404154	195.2	62.5	71.0	3.1	14.3	41.9	38	92	17	2	21.0
RU1404156	169.3	55.6	73.4	1.1	14.2	43.0	41	93	3	1	21.5
RU1404194	60.4	63.3	72.0	0.7	14.8	44.9	40	99	0	1	17.4
RU1404198	122.4	62.7	72.8	1.9	15.2	42.6	42	100	0	1	23.5
Clearfield											
CL111	184.1	61.4	72.1	3.4	13.7	42.6	39	87	7	2	23.2
CL151	196.8	59.9	72.8	3.7	13.9	41.8	39	90	25	2	21.8
CL152	162.5	62.7	71.0	2.2	14.4	41.9	40	94	0	1	19.0
CL172	131.2	65.3	72.9	1.4	15.8	44.2	39	94	0	1	22.7
CLMedium	188.9	51.4	70.9	3.1	14.7	44.0	42	89	0	1	22.6
CLXL729	234.7	60.9	73.6	2.6	14.3	41.1	45	96	53	3	23.3
CLXL745	232.8	57.2	74.5	2.0	13.8	41.2	44	92	60	4	24.0
CLx2134	191.6	64.5	72.5	2.5	14.0	42.3	41	88	5	1	21.5
RU1204156	134.8	65.1	72.3	1.7	15.5	43.5	41	97	0	1	20.2

[1] **Planting date:** May 4. **Emergence:** May 10-15. **Herbicides:** Command at 0.167 gal/A and glyphosate at 1 qt/A on May 6; Facet 0.5 lb/A and Aim 1 oz/A on June 8. **Fertilizer:** 292 lb/A 41-0-0-4 on June 10; and 100 lb/A urea on July 15. **Insecticide:** Mustang Max at 0.029 gal/A on August 5. **Permanent flood:** June 22. **Drained field:** August 28. **Harvested:** September 24. **LSD = A difference of 38 bu/A is required for one variety to differ from another at the 5% probability level. C.V. = 13.7%.**

[2] Rough rice at 12% moisture.

[3] Winseedle chalk measurement.

[4] Days after emergence.

[5] Percent of plot that was lodged.

[6] Severity of lodging: 1=plants totally erect, 5=plants completely on ground.

[7] Weight of 1,000 kernels.

Table 10. Average rough rice yields of varieties, hybrids, and lines evaluated in on-farm trials at seven locations, 2015.

Entry	Choctaw	Clarksdale	Ruleville	Hollandale	Shaw	Stoneville	Tunica	Average	Stability[1]
	bu/A	*bu/A*	*bu/A*	*bu/A*	*bu/A*	*bu/A*	*bu/A*	*bu/A*	
Conventional									
Antonio	256.3	226.7	212.0	266.2	212.0	151.5	174.8	214	19
Bowman	216.5	216.2	221.3	236.4	146.8	179.9	127.9	192	22
Cheniere	237.8	201.2	215.8	240.7	200.8	174.9	172.3	206	13
Cocodrie	255.2	218.7	216.7	269.9	201.3	160.4	173.7	214	19
Lakast	280.7	252.2	250.1	288.2	248.6	189.4	209.0	245	15
Mermentau	227.8	197.8	192.8	237.0	200.3	182.8	176.1	202	11
Rex	254.9	241.6	250.8	279.7	236.8	193.3	209.4	238	12
RoyJ	233.1	195.8	214.1	228.9	111.7	142.7	82.0	173	35
Sabine	215.5	183.2	193.8	225.2	162.6	133.6	132.8	178	21
Taggart	282.6	237.7	232.0	261.5	212.4	201.5	92.0	217	28
RU1104077	256.3	241.0	258.4	259.4	171.5	195.2	154.4	219	20
XL753	243.5	247.9	323.8	356.3	260.5	201.8	290.7	275	19
XL760	295.7	280.4	300.1	348.1	247.4	229.9	187.7	270	20
RU1304154	252.5	207.6	206.7	277.2	214.6	166.8	164.5	213	19
RU1204197	252.0	224.3	202.4	274.7	208.0	149.3	187.9	214	19
RU1404122	232.8	236.8	256.9	281.2	205.3	192.8	207.0	230	14
RU1404154	241.4	240.0	237.6	263.9	225.9	220.3	195.2	232	9
RU1404156	230.6	230.5	247.5	263.2	202.1	171.5	169.3	216	17
RU1404194	235.9	231.0	195.7	251.7	182.0	162.5	60.4	188	34
RU1404198	242.8	211.9	244.8	277.2	180.2	178.0	122.4	208	25
Clearfield									
CL111	243.1	210.3	231.4	237.5	212.5	147.9	184.1	210	16
CL151	237.9	228.4	250.1	282.4	223.1	191.0	196.8	230	14
CL152	241.2	219.4	216.5	225.3	214.6	190.3	162.5	210	12
CL172	231.7	232.0	240.8	241.0	197.6	168.5	131.2	206	21
CLMedium	256.9	253.8	257.9	269.2	215.0	181.0	188.9	232	16
CLXL729	279.9	281.6	294.9	325.2	270.7	169.3	234.7	265	19
CLXL745	233.7	253.7	287.6	351.3	231.3	176.1	232.8	252	22
CLx2134	263.6	239.5	233.3	280.4	231.6	183.0	191.6	232	15
RU1204156	224.5	218.7	205.3	224.7	200.1	188.8	134.8	200	16
Mean	247	230	238	270	208	178	171	220	
LSD	36	35	22	27	23	25	38	26	
CV (%)	8.9	9.3	5.6	6.2	6.6	8.4	13.7	19.4	
Planting Date	March 31	April 9	April 8	March 31	April 30	May 6	May 4		
Emergence date	April 11-15	April 19-23	April 17-21	April 10-13	May 5-10	May 12-17	May 10-15		

[1]Stability is calculated by dividing the standard deviation by the mean and multiplying by 100. The lower the number, the more stable it is across multiple locations.

Table 11. Average agronomic and milling performance of varieties, hybrids, and lines grown at seven on-farm locations, 2015.

Entry	Origin[1]	Yield[2]	Whole milled rice	Total milled rice	Chalk[3]	Harvest moisture	Bushel weight	Plant height	50% heading[4]	Lodging[5]	Lodging[6]	1,000 seed weight[7]	Approximate seeds/pound
		bu/A	*%*	*%*	*%*	*%*	*lb*	*in*	*days*	*%*	*(1-5)*	*g*	*no.*
						Conventional							
Antonio	TX	214.2	63.6	72.4	6.4	16.1	43.9	40	90	0	1	23.3	19485
Bowman	MS	192.1	60.8	70.4	3.3	19.4	44.3	41	97	0	1	23.8	19087
Cheniere	LA	206.2	65.9	73.7	3.0	16.2	43.6	38	93	0	1	21.3	21358
Cocodrie	LA	213.7	64.1	72.3	6.9	16.3	43.9	41	91	0	1	22.4	20242
Lakast	AR	245.5	55.1	71.0	5.6	15.8	44.1	43	92	3	1	25.4	17844
Mermentau	LA	202.1	64.4	71.4	6.3	17.9	43.7	41	92	0	1	22.0	20610
Rex	MS	238.1	61.7	69.5	6.2	16.8	44.0	43	93	0	1	26.8	16922
RoyJ	AR	172.6	59.2	71.3	3.1	21.7	43.5	44	100	0	1	22.5	20165
Sabine	TX	178.1	64.3	71.3	2.9	17.5	45.0	40	93	0	1	23.3	19509
Taggart	AR	217.1	57.4	70.8	4.6	18.5	44.9	45	97	0	1	26.1	17423
RU1104077	MS	219.4	60.1	69.9	2.8	17.7	45.7	39	95	1	1	24.1	18816
XL753	RT	270.7	56.6	72.0	7.3	15.1	41.7	44	91	10	1	24.4	18628
XL760	RT	269.9	58.9	70.9	6.2	16.8	40.7	48	95	6	1	24.3	18683
RU1304154	MS	212.8	62.4	70.9	6.2	15.8	44.1	41	92	1	1	24.0	18953
RU1204197	MS	214.1	61.0	70.6	6.6	16.1	43.9	42	91	3	1	23.7	19133
RU1404122	MS	230.4	64.4	73.0	3.8	17.6	44.0	41	95	3	1	21.7	20894
RU1404154	MS	231.6	59.9	69.4	4.6	17.5	44.4	38	91	2	1	24.2	18783
RU1404156	MS	216.4	56.2	71.7	3.9	15.8	43.8	40	92	1	1	23.6	19214
RU1404194	MS	188.5	65.1	72.2	2.5	17.9	46.1	43	96	4	1	19.1	23734
RU1404198	MS	208.2	63.3	71.9	4.2	17.4	43.0	42	96	0	1	26.4	17225
						Clearfield							
CL111	LA-HA	210	59.9	71.3	7.4	14.8	43.2	40	87	10	2	23.8	19099
CL151	LA-HA	230	60.8	71.5	8.3	15.8	43.5	39	90	15	2	23.2	19533
CL152	LA-HA	210	61.0	70.7	5.6	16.9	43.0	39	94	0	1	20.3	22396
CL 172	AR-HA	206	63.9	71.8	3.2	17.3	44.4	38	93	0	1	23.6	19237
CLMedium	LA	232	59.5	70.3	6.6	16.8	45.0	40	91	0	1	25.4	17874
CLXL729	RT	264	58.2	70.6	7.4	14.7	40.5	43	91	14	2	24.7	18402
CLXL745	RT	246	58.8	72.2	6.3	15.0	40.8	45	89	23	2	25.6	17724
CLx2134	LA-HA	232	63.0	71.3	4.0	15.7	43.3	40	90	3	1	23.0	19764
RU1204156	MS	200	64.7	71.7	3.9	17.8	44.0	40	97	0	1	21.8	20853
Mean		220	61.2	71.3	5.1	17	44	41	93	3	1	23.6	19365
LSD		26	3	2	1.9	1.5	0.8	2	2	7	0.3	0.8	
CV		19.4	6.0	1.8	49.6	15.0	2.4	5.2	2.9			4.7	

[1]AR = Arkansas; LA = Louisiana; MS = Mississippi; HA = Horizon Ag, in conjunction with the respective state; RT = RiceTec, Inc.
[2]Rough rice at 12% moisture.
[3]Winseedle chalk measurement
[4]Days after emergence.
[5]Percent of plot that was lodged.
[6]Severity of lodging: 1=plants totally erect, 5=plants completely on ground.
[7]Weight of 1,000 kernels.

Table 12. Average agronomic and milling performance of varieties, hybrids, and lines grown at on-farm locations from 2013–15.[1]

Entry	Origin[2]	Yield[3]	Whole milled rice	Total milled rice	Bushel weight	Plant height	50% heading[4]	Lodging[5]	Lodging score[6]	1,000 seed weight[7]	Approx. seeds/ pound
		bu/A	*%*	*%*	*lb*	*in*	*days*	*%*	*(1-5)*	*g*	*no.*
					Conventional						
Antonio	TX	226	62	72	44.3	39	88	2	1.3	23.7	19161
Bowman	MS	218	58	70	45.0	41	92	0	1.0	25.0	18154
Cheniere	LA	229	63	73	44.2	38	90	0	1.0	21.9	20742
Cocodrie	LA	221	62	72	44.3	39	90	0	1.0	23.3	19546
Mermentau	LA	225	62	71	43.9	40	89	0	1.0	22.4	20307
Rex	MS	233	58	68	44.3	42	90	0	1.0	27.0	16796
RoyJ	AR	216	57	71	43.5	44	97	0	1.0	23.9	18993
Sabine	TX	199	62	71	45.3	39	92	1	1.0	23.6	19248
RU1104077	MS	229	56	69	45.8	40	91	0	1.1	24.8	18317
					Clearfield						
CL111	LA-HA	226	58	71	43.9	41	87	9	1.5	24.9	18278
CL151	LA-HA	245	59	71	44.0	40	89	16	1.7	23.4	19372
CL152	LA-HA	225	61	70	43.7	40	92	0	1.0	21.2	21448
CLXL745	RT	261	55	71	41.2	45	86	17	1.7	26.0	17426

[1]Data presented are the averages of 19 total sites that served as the On-Farm Variety Trials for 2013–15. Listed entries were included in all 3 years.
[2]AR = Arkansas; LA = Louisiana; MS = Mississippi; HA = Horizon Ag, in conjunction with the respective state; RT = RiceTec, Inc.
[3]Rough rice at 12% moisture.
[4]Days after emergence.
[5]Percent of plot that was lodged.
[6]Severity of lodging: 1=plants totally erect, 5=plants completely on ground.
[7]Weight of 1,000 kernels.

Table 13. 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	—
Cheniere	S	S	S	S	S	MR	MR	MS	MS	MS	VS	MR
CL111	VS	S	VS	S	S	R	MS	S	S	S	S	
CL142-AR	MS	S	S	S	S	R	MS	MS	S	S	MS	
CL151	S	VS	VS	S	S	R	VS	S	S	VS	S	—
CL152	S	MS			S		MR	MR		MS	R	
CL162	S	S	S	S	S	—	MR	VS	S	MR	R	—
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	S	S	S	S	S	MR	VS	MS	MS	VS	MS	MS
Mermentau	S	S					MS			MS		
Rex	S	VS					MR	MR		VS	VS	
RoyJ	MS	S	S	VS	S	MR	S	MR	MS	S	MR	
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	—
XL753	R	MR								MR		

[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 14. Nitrogen fertilizer rate guidelines for selected rice varieties.

Varieties	Clay soils[1]		Silt loam soils[2]	
	Preflood	Midseason	Preflood	Midseason
	lb/A	*lb/A*	*lb/A*	*lb/A*
Bowman	120-150	30-60	90-120	30-60
Bowman	120-150	30-60	90-120	30-60
Cheniere	120-150	30-60	90-120	30-60
CL111	120	45	90-120	45
CL142-AR	120	45	90-120	45
CL151[3]	90-135	0-45	90	45
CL152	120-150	45	120	45
CL163[4]	120-150	45	120	45
Cocodrie	120-150	30-60	90-120	30-60
Lakast[4]	120-150	30-60	90-120	30-60
Mermentau	120-150	30-60	90-120	30-60
Rex	120-150	45	120	45
Sabine	120-150	30-60	90-120	30-60

[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]CL151 is highly prone to lodging.

[4]Two site-years of data for both clay and silt loam soils. Recommendations are subject to change with further testing.

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