MISSISSIPPI RICE
VARIETY TRIALS, 2017

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MISSISSIPPI'S OFFICIAL VARIETY TRIALS

MISSISSIPPI STATE UNIVERSITY™
MS AGRICULTURAL AND
FORESTRY EXPERIMENT STATION

Mississippi Rice Variety Trials, 2017

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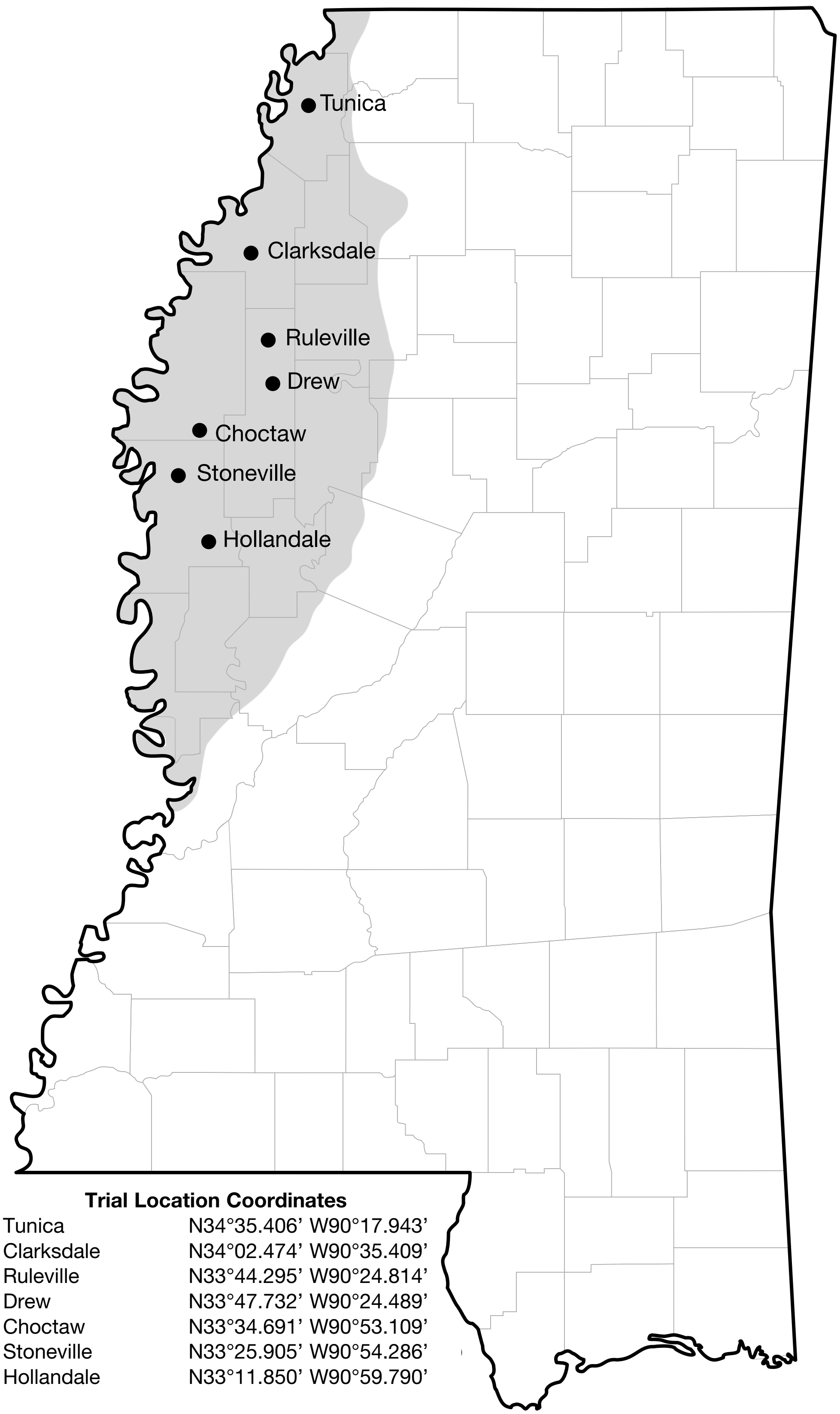
Find variety trial information online at ***mafes.msstate.edu/variety-trials***.



Trial Location Coordinates

Tunica	N34°35.406' W90°17.943'
Clarksdale	N34°02.474' W90°35.409'
Ruleville	N33°44.295' W90°24.814'
Drew	N33°47.732' W90°24.489'
Choctaw	N33°34.691' W90°53.109'
Stoneville	N33°25.905' W90°54.286'
Hollandale	N33°11.850' W90°59.790'

Figure 1. Locations of the 2017 Rice On-Farm Variety Trials in the Mississippi Delta.

Mississippi Rice Variety Trials, 2017

INTRODUCTION

The USDA National Agricultural Statistics Service (NASS) in September 2017 estimated the harvested rice area in Mississippi to be 118,000 acres. In November 2017, however, the USDA Farm Service Agency (FSA) certified the 2017 area planted to rice in the state to be 114,568 acres. The FSA estimate is almost 80,000 acres or 41% less than the rice acreage in 2016 (194,000 acres) and 27% less than the average rice acreage (157,000 acres) for the preceding 5 years (Table 1).

In September 2017, NASS also forecasted the total rice production for Mississippi at 8.5 million hundredweight (431,819 metric tons), down 39% from the 2017 production of 13.9 million hundredweight (716,152 metric tons). At the October 2017 world rice price of $9.73 (U.S. dollars) per hundredweight, the value of Mississippi rice production for 2017 was $82.7 million. Rice yield, on the other hand, was forecasted to be 7,200 pounds per acre (160 bushels per acre), up 20 pounds from 2016 and 110 pounds more than the running 10-year Mississippi average yield of 7,091 pounds (158 bushels per acre). The record for statewide average yield, set in 2014, remains at 7,420 pounds per acre (165 bushels per acre or 8,316 kilograms per hectare).

Sixteen Mississippi counties produced the rice in the state during 2017 as certified by the FSA (Table 2). Leading rice producers were Bolivar, Tunica, and Quitman Counties with 27,431, 27,286, and 10,763 acres planted, respectively. The other 13 counties that produced rice during the year had less than 10,000 acres planted. Bolivar, Tunica, and Quitman Counties were

Table 1. USDA National Agricultural Statistics survey of harvested rice acreage in Mississippi (nearest thousand) by year, 1949–2017.

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	124,000
1954	77,000	1974	108,000	1994	313,000	2014	190,000
1955	52,000	1975	171,000	1995	288,000	2015	149,000
1956	44,000	1976	144,000	1996	208,000	2016	194,000
1957	31,000	1977	111,000	1997	238,000	2017	118,000
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	—

also the top-three rice producers in 2016. However, Bolivar County also had the largest reduction in rice acreage in 2017—20,408 acres, followed by Sunflower County (12,101 acres) and Quitman County (9,751 acres). Practically all rice-growing countries had less rice acreage in 2017 than 2016.

Planting progress was rapid, with 80% of the state's crop sown in April. This planting pace exceeded the 3-, 5-, and 10-year historical averages, resulting in most areas of the state being planted on time. The first 3 weeks of May were met with rain, resulting in the remainder of the rice crop being sown between the last week of May and second week of June.

The continual rainfall received over the Mississippi Delta area during early May hampered levee construction on much of the early-planted rice, and, in some cases, levees could not be pulled. Consequently, the fields were converted to row rice. The continual wet weather delayed N fertilization on the earliest planted fields, but it aided in allowing residual herbicides to remain active. In general, insect and disease pressures were average to below average during most of the year, with the exception of rice water weevil. In many areas, rice water weevil numbers were great and yield limiting. MSU entomologist Jeff Gore showed water weevil numbers at levels ranging from 5 to 30 per soil core, with the bulk of samples hovering around 15 to 20 during 2017. MSU data suggests one weevil per core could reduce yield by a bushel per acre.

One of the greatest advantages of the 2017 growing season was the mild temperatures observed throughout the Midsouth during the traditional dog days of summer. Our rice field day was held on August 2, and temperatures never reached 90 degrees. During the timeframe, when most of the rice was flowering, daytime temperatures hovered around 90 degrees, with nighttime temperatures less than 72 degrees. These lower-than-normal temperatures resulted in excellent pollination and grain filling for the majority of Mississippi's rice crop. State average yields are expected to be greater in 2017 than in previous years and should carry over excitement for increased rice acres in Mississippi during 2018.

Table 2. USDA Farm Service Agency certified rice acres planted by county in Mississippi, 2009–2017.

County	2009	2010	2011	2012	2013	2014	2015	2016	2017
Adams	240	0	0	192	0	0	0	157	0
Attala	0	0	10	0	0	0	0	0	0
Bolivar	72,333	80,255	50,813	34,956	33,734	47,702	42,139	47,839	27,431
Carroll	205	0	0	0	0	0	0	0	0
Coahoma	14,761	25,032	11,370	8,797	8,109	14,453	9,933	12,885	7,788
DeSoto	859	1,156	335	553	1,190	2,316	99	1,896	1,261
Grenada	171	321	328	282	282	0	893	402	143
Holmes	1,485	1,448	234	141	121	203	195	655	0
Humphreys	3,656	8,241	1,996	1,955	1,475	3,426	2,576	5,695	3,874
Issaquena	783	2,702	880	890	1,115	483	345	764	427
Jackson	55	35	0	0	0	0	0	0	0
Lee	10	11	8	10	3	3	0	3	0
Leflore	17,107	20,144	6,754	5,328	3,905	6,000	5,059	7,734	1,770
Panola	4,777	6,446	5,383	5,901	5,523	10,188	5,966	9,668	8,458
Quitman	11,031	20,170	6,360	8,440	8,766	15,565	12,220	20,515	10,763
Sharkey	1,951	5,390	855	306	433	857	789	1,123	282
Sunflower	38,227	45,676	19,351	14,253	13,635	25,241	15,612	19,944	7,843
Tallahatchie	14,081	19,314	6,267	6,460	6,964	12,859	7,142	12,330	7,083
Tate	905	994	869	828	934	1,082	955	1,123	822
Tunica	23,913	27,041	23,167	21,696	24,603	28,608	25,833	34,812	27,286
Washington	29,507	35,736	18,854	14,687	11,480	15,690	13,027	12,135	8,442
Yazoo	1,841	1,907	2,273	765	0	867	914	1,571	893
Total	237,898	302,019	156,107	126,440	122,272	185,543	143,697	191,251	114,565

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 deployment of released varieties.

It is typical in on-farm variety trials for standard varieties and hybrids, new releases, and elite experimental lines to be evaluated in the population of environments to which they are targeted for release. Based on the performance of elite breeding lines in these multiple-environment tests, the most promising are selected for possible release as new varieties. The information collected on these lines include yield and milling performance, insect and disease susceptibility, tolerance to environmental stresses, and vigor and lodging scores. However, apart from using the data generated for line advancement decisions, they could also be used to recycle yet-imperfect lines back into the hybridization program.

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 varieties to plant on their respective farms based on the test locations. By placing these trials at multiple key locations throughout the Mississippi Delta, varieties, hybrids, and elite lines are exposed to the prevalent growing conditions and practices that are commonly used in commercial production in Mississippi. Many of these growing conditions and management practices cannot be reproduced at the Stoneville Experiment Station, thus giving great value to the on-farm evaluations 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 decide which variety or hybrid to use on their farms the following year, and it allows them to place advanced seed orders for the chosen varieties accordingly with the seed suppliers for the Mississippi rice industry.

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 tolerance or susceptibility to both biological and environmental factors that could limit yield potential. As grain quality is becoming more important for improving U.S. rice global competitiveness, 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 data in implementing strategies for "identity-preserved" varieties, which are gaining importance for improving overall grain quality.

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, policy makers, and the general public. Through these trials, interested parties are afforded 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 2017, the Rice On-Farm Variety Trials consisted of 34 entries, including five hybrids (two Clearfield® and three conventional types), 12 Clearfield® purelines (five released varieties and seven elite experimental lines) and 17 conventional purelines (11 released varieties and six elite experimental lines). All hybrids were provided by RiceTec, all Clearfield® purelines by HorizonAg, and all conventional pureline released varieties from the public breeding programs of Mississippi (three), Arkansas (five), Louisiana (two), and Texas (one).

Trials were conducted in seven locations from north to south of the Mississippi Delta, in Tunica, Clarksdale, Ruleville, Drew (Brooks), Choctaw, Stoneville, and Hollandale (**Figure 1**). Individual plots consisted of eight drilled rows that were 15 feet in length and 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 *2017 Weed Control Guidelines for Mississippi* available in print and online (MSU Extension Service Publication 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. The entire 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 have achieved the appropriate harvest moisture level prior to the test being 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 Version 9.4 statistical software. The Least Significant Difference (LSD) test at the 5% significance level may be used to determine 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 2018, preliminary results of the 2017 rice variety trials were immediately processed and made available online as early as October 7, 2017, via the Mississippi Agricultural and Forestry Experiment Station Variety Trials (http://mafes.msstate.edu/variety-trials/includes/crops/rice.asp) and the Mississippi Crop Situation (http://www.mississippi-crops.com/2017/10/07/2017-mississippi-rice-variety-trial-data-preliminary-results/) websites. Hard copies of the preliminary results were also distributed to rice producers attending the Delta Rice Producers Meeting in Cleveland, Mississippi, on November 14, 2017.

Complete details on the performance of each entry at each of the seven test locations are presented in **Tables 3-9**. As in 2016, planting times during 2017 spanned a narrow window of only 3 weeks (March 22 to April 13). The Stoneville trial was the only trial planted on a branch 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 in four of the seven locations, with the most lodging occurring in Hollandale (19 entries) and Drew (10 entries). Only one entry each lodged in Tunica and Choctaw. On the other hand, as in the previous year, significant bird damage occurred in Stoneville.

The average rice yield across entries and locations for the 2017 trials was 228 bushels per acre, up 23 bushels per acre from the 2016 average of 205 bushels and 14 bushels more than the 214-bushel running 10-year variety trial overall average (2007–16). However, this amount was still 14 bushels less than the highest recorded average trial yield in 2014. This yield trend in the trials closely mirrors Mississippi statewide yield trends based on the NASS data. Location yield averages ranged from 150 bushels per acre for Stoneville to 250 bushels per acre for Ruleville. Choctaw and Clarksdale had average yields very close to that of Ruleville at 249 and 248 bushels, respectively.

Stoneville, on the other hand, was also the lowest-yielding location in 2016 at 140 bushels per acre. The coefficient of variation or CV values for yield ranged from 6% to 15%, with all locations except Stoneville having CV values of 10% or less. The lowest-yielding site, Stoneville, also had the highest CV of 15%, a reflection of the heavy bird damage that occurred this year in the site. Total milling yields tended to be normal for most entries, but substantial differences among the trial entries were observed for whole milled rice.

The grain yield summary data for all entries at each location are provided in **Table 10.** Moreover, summary data for all other measured parameters averaged over the seven locations are provided in **Table 11**.

Among hybrid entries, the conventional hybrid rice XL753 developed by RiceTec again topped this year's test, also across all entries, with an average yield across locations of 296 bushels per acre. The same hybrid has been the highest-yielding entry in the variety trials during the preceding 4 years with average yields of 274 bushels per acre in 2016, 275 bushels in 2015, 306 bushels in 2014, and 278 bushels in 2013. Its yield superiority over other hybrid and conventional pureline entries, both released and experimental, has been consistent over the years.

Following XL753 in terms of yield performance was XL760, another conventional hybrid that also was the second-highest-yielding hybrid entry in 2016 and 2015. RT 7311CL was the highest-yielding Clearfield® type hybrid entry—average of 285 bushels per acre across locations. Historically, hybrids have yielded, on average, about 21% higher than pureline varieties, both for Clearfield® and conventional types, in Mississippi rice variety trials. Considering the fact that the plot border effect is greater on hybrids, the actual field yield differences may be expected to be closer when comparing the highest-yielding hybrid to the highest-yielding purelines.

Among the 12 Clearfield-type pureline entries, the top three were all experimental breeding lines still under development—RU1704055, RU1504083, and RU1604197, which had average yields of 231, 228, and 226 bushels per acre, respectively. The experimental entry RU1504083 was also the second-highest-yielding Clearfield® type pureline entry in 2016. The highest-yielding Clearfield® released variety was CL153 at 223 bushels per acre or 8 bushels (4%) less than the top-yielding entry for this varietal type.

Among conventional purelines, the top-yielding entry was the Arkansas-developed Diamond variety with 235 bushels per acre. However, this was followed closely by the Mississippi variety Thad and the Arkansas variety Lakast, which both yielded 233 bushels per acre. Diamond and Thad were also the top two conventional pureline entries in terms of yield in 2016, while Lakast was ranked fifth. Rex, the most popular conventional pureline variety in Mississippi, was the fifth highest yielding in 2017, mirroring its 2016 yield performance when it was ranked fourth among conventional pureline entries. The most promising line under development for this varietal type was RU1504114, yielding fourth at 231 bushels per acre.

In this year's tests, the MSU-bred variety Thad (233 bushels per acre) was again the second-highest-yielding entry, closely following Diamond (235 bushels per acre), a long-grain variety from Arkansas released in 2016. Thad also ranked second in 2016 in terms of yield (220 bushels per acre), also after Diamond (229 bushels). The popular Mississippi variety Rex, on the other hand, was the seventh-highest-yielding variety this year (227 bushels per acre) and fourth-highest-yielding (213 bushels) among conventional varieties in 2016.

Entries that begin with RU designations are elite experimental 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 evaluation 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 digit of the last four digits of the RU designation (e.g., RU140**4**122).

Among the Clearfield-type experimental lines that performed well in 2017 were RU1504083 (231 bushels per acre) and RU1504197 (223 bushels per acre), outyielding all other released Clearfield® varieties included in the test. Notably, these same two lines also outyielded all Clearfield® variety entries in the 2016 variety trials—RU1504083 (209 bushels per acre) and RU1504197 (197 bushels). RU1504083 has the typical southern U.S. long-grain rice chemistry profile of intermediate amylose content, while RU1504197 is similar to Thad and CL163 in terms of having high amylose content. The potential release of these two elite breeding lines will be explored based on their performance in other tests.

Table 12 shows the agronomic, yield, and milling data for select rice varieties that have been included in on-farm tests for the last 3 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. Aside from these trait considerations for variety selection, performance stability over many environments and years also needs to be taken into account. Varieties such as Cocodrie and Cheniere have been relatively stable over many years and thus have been popular varieties in Mississippi and the Midsouth in the past. Rex, on the other hand, has also shown good stability over multiple locations both in Mississippi and other rice-growing states in the Midsouth.

Variety and hybrid reactions to common diseases and straight head disorder are listed 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 multi-year, multisite N response studies conducted for newly released varieties. A combination of current economics, individual varieties' susceptibility to lodging, and yield potential are included 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 this year's variety trials results and taking into consideration previous years' performance, the conventional varieties suggested for Mississippi rice growers are Diamond, Thad, Lakast, and Rex. The conventional varieties Cheniere, Bowman, and Mermentau have not performed as well, though they have done well in Mississippi in the past. Sabine, on the other hand, is often grown on limited acreage by contract, primarily due to its high amylose content and related cereal chemistry characteristics desired by the rice-processing industry. The recent release of Thad and CL163, both high-amylose varieties with excellent grain qualities, provides more varietal options to the U.S. rice-processing industry, as well as U.S. rice export markets requiring high-amylose rice.

For conventional hybrid rice production, XL753 remains the best option, followed by XL760. For growers who need to utilize the Clearfield® technology to control red rice, RT 7311CL offered by RiceTec is the best option based on this year's variety trial results. Information for production of Clearfield® hybrid rice is available at RiceTec.

Among Clearfield® pureline released varieties, offered exclusively by HorizonAg, CL153 was the best performer this year and was also the best performing long-grain Clearfield® pureline type in 2016. Other long-grain options include CL151, CL172, and CL163 based on 2017 and 2016 variety trial data. 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 that could break down herbicide resistance is minimized. It must be noted that 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 is well known to rice producers, no pureline variety or hybrid is perfect for all cropping conditions at all times. Each cropping year may bring about recurring or new biological and/or environmental factors with the potential to negatively impact varietal performance and, ultimately, a rice producer's bottom line. Breeders must therefore continue to develop new strains that not only satisfy the needs of both producers and end-users. The breeding program must cater to the needs of rice growers who are faced with an ever-changing production landscape.

At the same time, it must also take into account the varying needs of millers, the food industry, and consumers who continually demand higher quality rice for consumption and/or processing. The best of these new strains must perform well under farm conditions before they can be released. Each new variety release would be expected to have qualities or characteristics that add value to end-users. Ultimately, varietal performance over time and in different environments, in addition to economics, should be considered when choosing which variety to plant among the many available options. This is where the regular conduct of on-farm trials derives great value for rice producers.

For varieties with high yield potential, producers should consider risks such as lodging and disease incidence and plan to manage for those yield-limiting factors to derive maximum benefit. Planting several pureline varieties or hybrids, both Clearfield® and conventional types, may help mitigate the risks associated with rice production in large production areas such as commonly found in Mississippi.

Table 3. Performance of rice varieties, hybrids, and experimental lines grown on Sharkey clay soil near Choctaw, Mississippi (N33°34.391' W90°53.063), 2017.[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*
Hybrids											
RT 7812	272	65.0	71.7	4.4	18.1	40.3	45.0	106	0	1	24.2
CLXL729	287	63.5	70.9	6.8	12.3	39.8	46.3	102	0	1	26.2
RT 7311 CL	303	59.7	70.3	9.9	13.1	39.2	44.8	101	0	1	25.0
XL753	333	61.3	72.3	7.4	12.2	40.7	43.5	100	0	1	25.7
XL760	324	59.7	68.9	7.7	13.4	38.7	48.0	101	0	1	24.7
Clearfield											
CL151	277	63.8	70.9	9.1	15.0	42.0	42.0	100	0	1	23.5
CL153	276	64.2	70.6	4.5	13.4	41.3	41.0	100	0	1	24.5
CL163	230	60.7	68.6	8.2	13.8	41.5	42.0	101	0	1	25.6
CL172	230	62.7	70.7	3.3	15.5	42.9	40.0	100	0	1	24.7
CL 272	246	66.1	69.7	7.3	16.3	43.1	42.5	104	0	1	25.6
RU1504083	234	56.4	68.1	16.9	13.2	41.2	36.0	99	0	1	26.1
RU1504122	249	61.9	70.6	8.7	15.4	42.9	41.0	101	0	1	23.8
RU1504197	248	61.2	69.4	7.2	13.1	44.1	37.8	100	0	1	23.2
RU1604197	237	58.0	68.2	10.3	19.7	42.7	43.8	103	0	1	25.8
RU1604198	262	61.1	70.6	7.6	14.6	42.5	41.8	101	0	1	23.1
RU1704083	223	66.5	72.3	5.1	12.2	43.9	36.5	103	0	1	23.5
RU1704055	242	53.5	68.9	7.2	17.0	38.8	43.8	104	0	1	25.8
Conventional											
Bowman	199	63.4	70.4	2.7	14.8	43.9	39.8	102	0	1	26.0
Cheniere	220	63.6	72.6	6.2	13.5	42.6	39.3	101	0	1	22.3
Diamond	220	53.0	68.8	6.9	15.0	41.6	40.5	100	0	1	24.3
LaKast	261	53.3	69.1	5.7	12.8	42.5	44.0	100	0	1	25.4
Mermentau	237	61.9	70.1	6.7	16.1	41.5	41.3	100	0	1	22.9
Rex	250	60.7	68.0	8.1	14.4	43.2	42.8	103	0	1	27.8
RoyJ	183	59.4	70.9	3.3	16.0	42.9	42.8	107	0	1	24.6
Sabine	235	65.6	70.7	3.1	13.1	44.0	42.5	103	0	1	24.1
Taggart	222	56.7	69.8	2.8	15.3	43.6	45.5	103	0	1	27.4
Thad	218	60.5	69.1	5.5	13.9	44.7	39.5	99	13	2	25.6
Titan	269	64.6	68.8	6.6	16.8	45.4	42.8	98	0	1	28.0
RU1504114	263	62.8	72.3	3.8	14.3	43.9	49.8	101	0	1	22.7
RU1604155	227	58.1	69.3	10.9	13.0	42.0	43.3	99	0	1	25.4
RU1604191	256	63.2	67.4	4.9	13.1	43.1	46.0	102	0	1	21.5
RU1604193	246	61.3	71.5	3.2	14.5	43.7	48.5	104	0	1	24.8
RU1704100	229	56.4	70.2	3.6	15.4	43.9	47.5	104	0	1	27.6
RU1704077	255	60.7	69.4	8.9	14.2	43.6	42.0	98	0	1	27.4

[1]**Planting date:** March 29. **Emergence:** April 5. **Herbicides:** Sharpen at 2 oz/A, Invade at 12.8 oz/A, Command at 16 oz/A, and Roundup at 1 qt/A on March 29; and Facet L at 16 oz/A and Regiment at 0.6 oz/A on May 15. **Fertilizer:** 126 lb/A urea on April 15, 155 lb/A urea on May 16, 102 lb/A urea on May 31, 100 lb/A urea on June 15, and 100 lb/A urea on June 21. **Insecticide:** Karate Z at 2 oz/A on July 18. **Fungicide:** Stratego at 17 oz/A on July 7. **Harvested:** August 22. **LSD = A difference of 23 bu/A is required for one variety to differ from another at the 5% probability level. C.V. = 5.7%.**

[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 4. Performance of rice varieties, hybrids, and experimental lines grown on Alligator clay soil near Clarksdale, Mississippi (N34°02.172' W90°36.118'), 2017.[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*
Hybrids											
RT 7812	312	48.3	70.0	5.2	12.6	39.4	41.5	94	0	1	25.0
CLXL729	277	50.3	69.7	12.3	12.1	40.2	39.0	88	0	1	24.9
RT 7311 CL	326	50.5	70.0	16.6	12.1	39.0	41.3	87	0	1	24.4
XL753	301	38.6	70.8	13.1	12.2	40.8	39.0	88	0	1	25.1
XL760	337	52.1	68.4	9.8	12.5	39.6	44.0	93	0	1	24.1
Clearfield											
CL151	251	56.8	71.2	11.5	13.0	43.9	35.5	90	0	1	24.1
CL153	247	57.7	71.2	3.8	12.8	44.6	33.8	92	0	1	24.4
CL163	224	58.5	71.1	13.8	12.7	43.3	35.8	89	0	1	25.1
CL172	209	56.4	70.8	2.1	13.4	44.7	33.8	91	0	1	25.1
CL 272	260	58.6	68.8	2.5	13.4	45.5	37.8	97	0	1	26.5
RU1504083	262	51.1	68.4	19.9	13.0	43.9	33.0	89	0	1	25.4
RU1504122	242	53.3	70.3	8.9	13.2	42.5	35.3	91	0	1	23.1
RU1504197	218	54.0	70.4	4.1	13.2	45.7	33.5	90	0	1	23.7
RU1604197	235	53.1	68.1	13.5	13.8	43.5	38.0	92	0	1	24.9
RU1604198	247	57.2	71.2	8.6	13.1	43.0	36.3	92	0	1	22.1
RU1704083	173	60.7	71.6	3.2	13.4	45.5	30.3	92	0	1	24.4
RU1704055	248	55.0	69.1	5.2	13.2	42.3	36.3	91	0	1	26.0
Conventional											
Bowman	214	56.0	69.9	2.1	13.1	45.3	34.5	90	0	1	26.0
Cheniere	230	63.9	72.4	4.7	12.8	43.7	34.0	90	0	1	22.7
Diamond	255	49.1	70.3	6.8	12.8	42.4	38.8	91	0	1	24.9
LaKast	260	51.7	71.1	6.1	12.7	42.0	42.0	91	0	1	26.1
Mermentau	224	60.8	71.1	5.9	12.8	44.3	34.8	88	0	1	22.8
Rex	241	59.5	68.4	7.6	13.1	44.6	38.3	91	0	1	28.2
RoyJ	224	56.0	71.9	3.0	13.0	43.2	39.8	93	0	1	24.9
Sabine	202	57.6	71.4	2.3	13.2	45.6	34.3	91	0	1	24.1
Taggart	234	56.7	71.4	3.9	12.9	44.4	42.8	92	0	1	27.0
Thad	246	53.5	69.6	4.0	13.0	46.2	35.5	91	0	1	26.0
Titan	285	56.1	68.8	4.1	13.2	46.2	40.5	88	0	1	26.9
RU1504114	246	60.8	71.6	3.5	13.0	45.7	44.5	91	0	1	23.1
RU1604155	262	49.3	68.7	11.1	12.8	44.0	38.5	86	0	1	23.9
RU1604191	258	51.5	72.4	4.5	12.8	44.2	39.0	91	0	1	21.9
RU1604193	221	55.1	71.2	4.8	12.9	44.6	40.0	90	0	1	24.5
RU1704100	211	48.4	70.9	3.3	12.8	44.8	42.8	92	0	1	27.1
RU1704077	263	48.3	69.7	7.3	13.0	45.9	41.0	89	0	1	27.8

[1]**Planting date:** April 10. **Emergence:** April 17. **Herbicides:** Paraquat at 1 qt/A and Command at 1 gal/10A on April 1; and Ricebeaux at 1 gal/A, Facet at 1/3 lb/A, and Prowl at 1 qt/A on April 10. **Fertilizer:** 100 lb/A 12-40-0-10-1 on April 1, 75 lb/A urea on May 6, 100 lb/A urea on May 11, 75 lb/A urea on May 16, and 100 lb/A urea on May 19. **Harvested:** August 28. **LSD = A difference of 30 bu/A is required for one variety to differ from another at the 5% probability level. C.V. = 7.4%.**

[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 5. Performance of rice varieties, hybrids, and experimental lines grown on Alligator clay soil near Drew, Mississippi (N33°47.732' W90°24.489'), 2017.[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*
Hybrids											
RT 7812	279	58.3	72.6	6.6	11.8	41.8	46.5	96	33	2	24.8
CLXL729	235	54.7	70.4	7.4	11.6	40.3	44.3	93	0	1	24.8
RT 7311 CL	260	45.4	70.7	14.0	11.6	40.2	45.5	90	0	1	24.7
XL753	272	39.2	72.3	9.7	11.6	41.6	42.0	92	0	1	25.6
XL760	275	54.6	71.1	8.4	11.8	40.2	46.8	94	0	1	23.8
Clearfield											
CL151	180	55.4	71.5	10.5	12.4	42.9	38.3	93	43	3	24.3
CL153	176	57.5	71.6	5.0	12.3	42.3	38.5	93	30	2	24.4
CL163	133	58.1	71.0	7.8	12.6	29.1	42.0	93	100	5	24.6
CL172	211	60.6	71.6	3.8	12.3	43.4	39.0	94	0	1	24.0
CL 272	213	58.7	71.1	6.6	12.1	44.8	36.3	96	0	1	24.5
RU1504083	202	49.4	70.8	15.8	11.9	43.1	34.3	93	0	1	24.3
RU1504122	218	53.6	71.3	10.9	12.2	43.1	39.3	94	13	2	23.1
RU1504197	214	59.0	71.9	6.9	12.3	44.6	38.3	95	0	1	24.0
RU1604197	228	55.7	71.2	13.6	12.6	43.8	41.3	96	0	1	23.8
RU1604198	218	52.2	71.6	10.9	11.9	42.3	39.5	94	0	1	21.7
RU1704083	160	61.4	72.7	6.7	12.0	43.4	35.5	96	0	1	23.3
RU1704055	227	55.4	70.6	10.7	11.7	40.2	41.8	96	0	1	25.5
Conventional											
Bowman	205	56.4	71.4	5.8	12.1	40.2	39.0	95	0	1	26.2
Cheniere	192	62.1	73.7	7.9	11.9	42.1	36.0	95	0	1	22.2
Diamond	248	54.3	71.0	6.4	12.0	43.1	43.8	93	0	1	23.1
LaKast	196	53.3	71.4	5.1	12.3	43.7	42.8	92	0	1	25.4
Mermentau	204	62.6	70.9	8.8	12.1	43.0	38.8	93	0	1	22.9
Rex	211	58.3	69.9	9.7	12.3	43.7	43.3	94	0	1	27.5
RoyJ	219	56.0	72.6	5.3	12.0	43.0	43.8	96	0	1	23.3
Sabine	178	61.2	71.8	4.7	12.3	43.7	40.0	95	0	1	23.9
Taggart	209	54.1	72.1	3.1	12.5	44.2	46.8	96	27	2	25.3
Thad	200	50.7	70.9	5.4	12.3	44.9	40.5	95	0	1	26.4
Titan	225	51.0	70.2	6.3	12.5	45.5	40.8	91	0	1	26.6
RU1504114	218	62.3	73.1	5.4	14.2	44.1	46.8	95	97	5	23.0
RU1604155	201	47.2	70.9	10.5	12.0	41.2	43.8	91	40	3	23.8
RU1604191	166	57.4	73.5	6.7	12.4	39.7	43.5	93	97	5	21.7
RU1604193	233	58.7	73.2	3.7	12.5	43.9	47.8	96	17	2	24.8
RU1704100	217	50.0	72.2	4.8	12.3	44.4	45.3	96	0	1	26.5
RU1704077	209	53.3	69.2	7.7	12.1	44.6	43.8	95	0	1	26.5

[1]**Planting date:** April 12. **Emergence:** April 19. **Herbicides:** Glyphosate at 1.5 qt/A and Command at 1 gal/5.5A on April 15; and 2,4-D at 4 oz/A and Aim at 1 oz/A on May 30. **Fertilizer:** 50 lb/A urea on May 15, 200 lb/A urea on May 30 and 100 lb/A urea on June 30. **Permanent flood:** May 30. **Drained field:** August 20. **Harvested:** September 20. **LSD = A difference of 22 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 experimental lines grown on Sharkey clay soil near Hollandale, Mississippi (N33°07.704' W90°54.890'), 2017.[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*
Hybrids											
RT 7812	266	47.9	72.5	5.0	13.3	41.2	46.5	96	80	3	23.9
CLXL729	261	49.7	71.1	6.9	12.2	41.0	45.0	94	90	4	24.7
RT 7311 CL	309	47.1	72.1	12.6	11.9	41.1	44.5	93	85	3	24.7
XL753	323	41.5	72.8	9.2	11.7	42.2	46.0	93	12.5	2	25.0
XL760	279	47.5	71.6	9.5	12.2	40.9	47.3	94	87.5	4	23.3
Clearfield											
CL151	211	42.9	71.9	13.0	14.0	43.5	35.8	93	45	3	22.2
CL153	244	49.1	72.3	8.4	12.5	43.8	39.8	94	18	2	22.3
CL163	190	44.4	70.5	12.2	13.0	42.2	41.5	95	98	4	24.2
CL172	250	58.2	71.7	4.5	12.1	44.1	40.8	94	0	1	24.8
CL 272	254	52.1	69.3	7.2	12.2	43.2	40.3	96	0	1	23.4
RU1504083	240	37.7	69.5	21.5	12.1	43.4	37.3	92	0	1	25.0
RU1504122	223	47.1	72.3	11.9	13.8	43.6	38.8	94	28	3	22.2
RU1504197	243	51.6	70.8	11.2	12.4	44.7	39.8	95	0	1	22.3
RU1604197	271	53.0	71.1	16.0	12.7	44.2	44.0	96	0	1	22.5
RU1604198	186	41.6	71.5	13.5	16.9	42.8	39.5	95	58	3	21.5
RU1704083	171	49.9	71.9	9.6	12.0	43.7	35.3	95	0	1	23.6
RU1704055	257	48.6	69.7	8.6	12.2	40.8	43.8	96	48	3	24.2
Conventional											
Bowman	242	47.8	71.0	8.0	12.3	44.9	40.5	95	0	1	25.4
Cheniere	206	54.3	73.6	8.2	12.0	42.5	37.0	95	45	3	21.3
Diamond	269	50.8	71.4	7.5	12.0	43.8	43.8	95	0	1	23.8
LaKast	229	46.0	71.4	7.6	14.7	43.5	44.0	94	90	4	24.5
Mermentau	236	61.4	71.8	10.9	12.5	44.0	41.8	92	0	1	22.5
Rex	260	55.7	69.9	7.6	12.6	44.6	42.8	93	0	1	26.7
RoyJ	246	54.4	72.8	3.9	12.7	44.0	43.5	96	0	1	23.3
Sabine	211	51.5	72.1	7.4	12.3	44.6	41.0	92	0	1	24.2
Taggart	265	50.1	72.1	6.4	12.1	44.6	46.5	94	13	2	24.4
Thad	244	41.0	70.4	9.7	12.5	45.8	40.3	92	30	2	25.9
Titan	181	33.8	70.8	7.5	12.8	45.5	42.5	91	93	4	26.2
RU1504114	222	51.0	72.6	8.9	12.8	45.4	47.5	94	88	3	22.9
RU1604155	209	41.1	71.3	12.8	13.3	36.0	42.5	91	75	3	23.8
RU1604191	197	51.2	74.0	7.9	12.8	44.0	43.8	93	90	4	19.9
RU1604193	253	54.7	73.1	3.4	12.3	44.8	47.3	96	18	2	22.5
RU1704100	266	48.6	72.3	4.7	12.3	44.8	48.0	95	0	1	25.6
RU1704077	230	40.5	70.1	12.2	12.5	45.6	42.8	92	0	1	26.0

[1]**Planting date:** April 13. **Emergence:** April 20. **Herbicides:** Roundup at 1 gal/6A, Command at 1 gal/6A, and Sharpen at 2 oz/A on April 15; Superwham at 1 gal/A on May 18; and Regiment at 0.53 oz/A and Facet L at 21 oz/A on June 2. **Fertilizer:** 100 lb/A ammonium sulfate on May 10, 100 lb/A Agrotain-treated urea on June 3, 100 lb/A urea on June 11, 100 lb/A urea on June 20, and 100 lb/A urea on June 27. **Insecticide:** Karate Z at 1 gal/65A on July 29. **Fungicide:** Stratego at 14 oz/A on July 12. **Permanent flood:** June 3. **Drained field:** August 15. **Harvested:** September 18–19. **LSD = A difference of 41 bu/A is required for one variety to differ from another at the 5% probability level. C.V. = 10.4%.**

[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 7. Performance of rice varieties, hybrids, and experimental lines grown on Alligator clay soil near Ruleville, Mississippi (N33°44.252' W90°24.707'), 2017.[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
Hybrids											
RT 7812	300	66.5	72.9	5.6	15.7	41.2	44.8	98	0	1	25.3
CLXL729	307	64.5	72.3	7.1	12.7	40.4	42.8	96	0	1	25.7
RT 7311 CL	326	66.2	73.4	13.9	13.3	40.4	43.0	95	0	1	25.8
XL753	327	61.2	73.8	9.1	12.6	41.6	42.8	97	0	1	26.6
XL760	309	64.7	72.8	8.2	13.9	39.8	46.3	98	0	1	24.7
Clearfield											
CL151	232	65.2	71.2	7.7	13.6	42.7	39.0	95	0	1	23.3
CL153	249	63.5	70.2	6.2	13.0	41.8	38.3	97	0	1	22.8
CL163	272	67.9	73.4	5.3	14.2	42.5	42.0	97	0	1	24.3
CL172	252	67.3	72.7	5.4	15.1	37.3	37.8	97	0	1	24.0
CL 272	256	57.1	70.5	4.7	13.1	43.6	41.3	98	0	1	23.4
RU1504083	249	55.6	72.4	20.8	13.0	41.7	34.8	95	0	1	24.2
RU1504122	218	64.9	72.4	8.2	14.4	42.0	38.3	96	0	1	21.2
RU1504197	264	64.1	71.9	10.1	13.5	43.7	38.5	97	0	1	22.6
RU1604197	223	64.8	72.6	8.3	18.5	42.8	40.5	98	0	1	24.3
RU1604198	239	60.2	71.6	12.7	13.5	41.4	39.5	97	0	1	21.0
RU1704083	199	64.9	72.8	5.3	12.8	43.5	34.8	98	0	1	22.8
RU1704055	247	60.7	71.6	8.2	12.8	39.3	42.3	98	0	1	24.9
Conventional											
Bowman	220	65.0	72.3	4.3	14.6	44.0	38.8	98	0	1	26.0
Cheniere	203	67.6	74.3	5.8	13.2	41.4	37.0	98	0	1	21.4
Diamond	232	64.1	72.4	5.8	15.5	41.9	43.0	97	0	1	23.5
LaKast	267	62.1	72.7	6.7	12.9	42.7	45.3	96	0	1	25.4
Mermentau	220	66.4	72.7	12.1	15.1	42.5	39.5	95	0	1	21.5
Rex	235	64.1	71.1	8.0	16.7	43.0	42.3	98	0	1	25.8
RoyJ	239	65.4	73.3	2.8	16.6	42.5	42.0	98	0	1	24.3
Sabine	234	67.3	72.8	4.4	13.8	43.6	39.3	97	0	1	23.0
Taggart	247	63.9	72.9	4.7	18.9	41.1	47.5	98	0	1	26.3
Thad	269	62.2	71.1	6.7	14.9	45.1	40.3	98	0	1	25.6
Titan	260	64.1	70.9	3.7	17.3	45.4	42.8	95	0	1	27.0
RU1504114	243	66.4	74.1	5.4	15.9	44.0	49.0	98	0	1	22.7
RU1604155	223	62.6	72.3	8.4	14.2	42.4	40.3	95	0	1	23.6
RU1604191	220	68.6	74.6	6.8	15.0	42.8	46.5	97	0	1	24.2
RU1604193	236	68.5	73.6	2.4	15.3	43.8	44.8	98	0	1	28.0
RU1704100	224	61.9	71.9	5.9	17.4	44.2	45.0	98	0	1	27.0
RU1704077	252	62.6	70.7	7.9	14.6	44.6	44.0	97	0	1	20.9

[1]**Planting date:** April 10. **Emergence:** April 17. **Herbicides:** Roundup at 1 qt/A and Command at 1 gal/10A on April 13; Command at 1 gal/10A, Facet at 1 qt/A, and Agridex at 1 qt/A on May 2; Grasp at 2 oz/A, Facet at 24 oz/A, and Agridex at 1 qt/A on May 22. **Fertilizer:** 100 lb/A ammonium sulfate, 50 lb/A DAP, and 50 lb/A potash on May 2; 200 lb urea on May 19; 75 lb urea on June 10. **Insecticide:** Karate at 1 gal/70A on July 18 and Karate at 1 gal/70A on July 29. **Fungicide:** Quilt at 17 oz/A and Penetrator at 1 gal/16A on July 11. **Permanent flood:** May 25. **Drained field:** August 7. **Harvested:** August 29. **LSD = A difference of 33 bu/A is required for one variety to differ from another at the 5% probability level. C.V. = 8.1%.**

[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 experimental lines grown on Sharkey clay soil near Stoneville, Mississippi (N33°25.891' W90°54.144'), 2017.[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*
Hybrids											
RT 7812	231	61.1	70.1	3.7	12.9	40.5	43.0	108	0	1	24.4
CLXL729	155	54.4	65.7	12.5	11.2	38.5	40.5	100	0	1	23.4
RT 7311 CL	177	52.4	67.6	16.0	11.4	37.8	41.5	98	0	1	23.4
XL753	175	54.3	68.2	13.0	11.4	39.5	40.5	100	0	1	23.9
XL760	169	53.3	67.0	14.4	11.9	38.1	43.5	100	0	1	23.2
Clearfield											
CL151	141	58.1	68.2	13.1	12.5	42.3	36.0	100	0	1	21.9
CL153	120	58.2	67.2	10.7	11.6	40.9	34.8	98	0	1	23.2
CL163	107	61.8	64.2	10.6	11.0	40.3	37.0	97	0	1	24.7
CL172	170	61.6	69.9	4.2	11.8	43.7	35.0	100	0	1	24.1
CL 272	128	61.6	67.8	5.7	12.2	44.2	37.8	103	0	1	25.7
RU1504083	172	55.5	66.0	21.8	11.9	42.3	34.0	101	0	1	25.3
RU1504122	125	56.7	69.4	12.8	12.5	42.7	35.0	100	0	1	22.3
RU1504197	137	59.3	69.3	4.3	12.2	44.7	35.5	101	0	1	23.3
RU1604197	163	54.4	67.7	11.7	15.7	44.3	39.8	105	0	1	25.9
RU1604198	126	55.6	68.9	12.2	12.2	42.0	35.5	102	0	1	22.2
RU1704083	128	60.3	69.9	11.4	11.4	43.4	31.5	102	0	1	23.3
RU1704055	157	47.1	67.6	5.9	12.4	40.6	38.5	106	0	1	24.6
Conventional											
Bowman	157	62.4	69.7	3.4	12.3	45.2	36.5	104	0	1	26.8
Cheniere	139	58.6	70.9	5.3	11.5	41.7	33.5	99	0	1	21.7
Diamond	160	53.2	68.9	7.8	12.3	43.9	40.8	102	0	1	24.0
LaKast	144	49.2	68.0	8.8	12.0	43.6	39.3	103	0	1	25.1
Mermentau	124	59.0	69.1	13.9	12.0	42.1	35.5	100	0	1	23.1
Rex	170	57.0	67.1	7.6	12.1	43.8	40.8	104	0	1	28.1
RoyJ	146	59.2	71.1	3.4	14.5	43.7	41.3	112	0	1	24.3
Sabine	136	61.3	67.7	5.2	12.5	44.2	38.5	105	0	1	23.8
Taggart	123	51.8	69.5	8.6	12.3	44.2	44.3	106	0	1	27.3
Thad	184	59.3	68.7	6.8	11.9	45.0	38.3	102	0	1	25.2
Titan	164	60.8	65.9	5.7	12.1	45.6	36.8	97	0	1	27.2
RU1504114	158	62.7	71.6	6.4	11.9	44.7	44.8	104	0	1	22.5
RU1604155	132	58.4	68.9	11.0	11.8	22.8	39.3	99	0	1	24.2
RU1604191	158	59.6	71.2	6.7	11.6	24.2	39.8	100	0	1	21.4
RU1604193	137	60.2	71.1	8.0	12.0	44.2	40.3	105	0	1	25.5
RU1704100	141	48.9	68.7	6.3	12.2	44.5	43.0	106	0	1	26.8
RU1704077	143	54.7	66.4	9.6	12.1	44.6	38.3	99	0	1	26.7

[1]**Planting date:** March 22. **Emergence:** March 29. **Herbicides:** Command at 1 pt/A and Roundup at 22 oz/A on March 23; and Stam at 3 qt/A, Facet at 42 oz/A, and Permit at 0.67 oz/A on May 2. **Fertilizer:** 150 lb/A urea on May 10. **Permanent flood:** May 11. **Harvested:** August 19. **LSD = A difference of 36 bu/A is required for one variety to differ from another at the 5% probability level. C.V. = 14.8%.**

[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 experimental lines grown on Keyespoint silty clay soil near Tunica, Mississippi (N34°34.556' W90°17.952'), 2017.[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*
Hybrids											
RT 7812	313	68.5	73.6	7.2	18.5	41.5	43.0	104	0	1	26.1
CLXL729	317	62.8	72.5	15.7	12.7	39.7	42.8	96	0	1	25.8
RT 7311 CL	306	61.6	72.8	15.8	12.8	40.4	41.3	99	0	1	26.6
XL753	343	59.3	72.6	14.5	12.8	40.7	41.3	95	0	1	25.3
XL760	322	62.4	71.9	11.6	13.1	39.5	45.0	100	0	1	25.5
Clearfield											
CL151	231	61.5	71.5	14.2	14.0	42.1	38.8	96	20	2	23.2
CL153	248	66.7	72.9	8.2	14.5	41.5	41.0	102	0	1	23.0
CL163	211	66.7	72.1	8.2	14.4	42.0	39.3	103	0	1	25.1
CL172	201	67.8	73.1	8.5	17.2	43.1	39.0	102	0	1	24.1
CL 272	112	60.8	70.0	8.4	15.5	40.9	37.3	96	0	1	25.8
RU1504083	239	50.7	69.9	20.9	12.9	41.6	36.3	91	0	1	25.3
RU1504122	240	64.6	72.4	10.6	15.4	42.4	39.0	99	0	1	23.2
RU1504197	241	64.4	71.5	9.0	16.6	43.1	40.0	99	0	1	22.2
RU1604197	224	62.8	70.9	11.9	20.6	42.8	41.5	104	0	1	25.4
RU1604198	245	60.2	71.7	14.7	13.8	41.6	39.5	95	0	1	23.1
RU1704083	188	64.2	73.4	9.7	12.9	43.3	35.3	99	0	1	23.4
RU1704055	241	59.5	70.3	7.6	14.4	39.9	41.5	99	0	1	25.5
Conventional											
Bowman	197	65.1	71.2	6.1	15.8	43.6	37.0	98	0	1	25.8
Cheniere	217	65.9	74.0	12.2	13.8	40.8	37.5	97	0	1	22.0
Diamond	258	57.5	71.4	9.7	13.6	43.0	42.3	95	0	1	24.3
LaKast	277	56.2	71.7	8.1	13.1	43.0	45.5	93	0	1	25.5
Mermentau	249	66.1	72.1	21.5	14.6	42.5	40.0	99	0	1	23.7
Rex	224	64.3	70.3	7.2	16.0	43.1	42.0	100	0	1	27.5
RoyJ	240	65.0	72.9	4.3	16.8	43.2	43.3	101	0	1	24.0
Sabine	212	66.7	71.7	5.2	14.4	43.7	38.8	97	0	1	23.6
Taggart	216	64.2	71.9	6.0	17.9	44.0	45.0	104	0	1	26.8
Thad	267	59.9	70.5	7.3	13.4	44.8	39.0	95	0	1	25.9
Titan	230	62.1	69.6	7.4	16.6	45.4	40.5	91	0	1	27.8
RU1504114	267	66.3	73.3	7.0	13.3	44.7	47.3	98	0	1	22.0
RU1604155	246	55.9	70.7	14.2	13.1	42.1	42.8	96	0	1	24.0
RU1604191	255	66.3	74.1	10.9	13.3	43.5	43.5	100	0	1	21.5
RU1604193	235	67.9	73.5	5.5	16.1	43.8	43.8	100	0	1	24.0
RU1704100	229	60.4	71.7	6.4	18.0	43.9	45.8	103	0	1	27.8
RU1704077	247	56.6	69.0	12.4	15.2	44.4	43.3	94	0	1	26.9

[1]**Planting date:** March 28. **Emergence:** April 4. **Herbicides:** Roundup at 1 qt/A and Command at 1 gal/8A on March 27; Facet L at 32 oz/A and COC at 1 qt/A on May 3; and Clincher at 15 oz/A and MSO at 1 qt/A on May 31. **Fertilizer:** 292 lb/A 41-0-0-4 on May 4, 100 lb/A TSP on June 7, and 100 lb/A urea on June 14. **Insecticide:** Ravage at 1 gal/35A on July 12. **Drained field:** August 7. **Harvested:** August 29. **LSD = A difference of 31 bu/A is required for one variety to differ from another at the 5% probability level. C.V. = 7.7%.**

[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 experimental lines evaluated in on-farm trials at seven locations, 2017.									
Entry	**Drew**	**Choctaw**	**Clarksdale**	**Hollandale**	**Ruleville**	**Stoneville**	**Tunica**	**Average**	**Stability[1]**
	bu/A	*bu/A*	*bu/A*	*bu/A*	*bu/A*	*bu/A*	*bu/A*	*bu/A*	
				Hybrids					
RT 7812	279	272	312	266	300	231	313	282	10
CLXL729	235	287	277	261	307	155	317	263	21
RT 7311 CL	260	303	326	309	326	177	306	287	19
XL753	272	333	301	323	327	175	343	296	20
XL760	275	324	337	279	309	169	322	288	20
				Clearfield					
CL151	180	277	251	211	232	141	231	218	21
CL153	176	276	247	244	249	120	248	223	25
CL163	133	230	224	190	272	107	211	195	30
CL172	211	230	209	250	252	170	201	217	13
CL 272	213	246	260	254	256	128	112	210	30
RU1504083	202	234	262	240	249	172	239	228	13
RU1504122	218	249	242	223	218	125	240	216	19
RU1504197	214	248	218	243	264	137	241	223	19
RU1604197	228	237	235	271	223	163	224	226	14
RU1604198	218	262	247	186	239	126	245	217	22
RU1704083	160	223	173	171	199	128	188	177	17
RU1704055	227	242	248	257	247	157	241	231	15
				Conventional					
Bowman	205	199	214	242	220	157	197	205	13
Cheniere	192	220	230	206	203	139	217	201	15
Diamond	248	220	255	269	232	160	258	235	16
LaKast	196	261	260	229	267	144	277	233	21
Mermentau	204	237	224	236	220	124	249	213	20
Rex	211	250	241	260	235	170	224	227	13
RoyJ	219	183	224	246	239	146	240	214	17
Sabine	178	235	202	211	234	136	212	201	17
Taggart	209	222	234	265	247	123	216	216	21
Thad	200	218	246	244	269	184	267	233	14
Titan	225	269	285	181	260	164	230	230	20
RU1504114	218	263	246	222	243	158	267	231	16
RU1604155	201	227	262	209	223	132	246	214	19
RU1604191	166	256	258	197	220	158	255	216	20
RU1604193	233	246	221	253	236	137	235	223	18
RU1704100	217	229	211	266	224	141	229	216	17
RU1704077	209	255	263	230	252	143	247	228	18
Mean	213	249	248	240	250	150	244	228	
LSD	22	23	30	41	33	36	31	27	
CV	6%	6%	7%	10%	8%	15%	8%	19%	
Planting date	April 12	March 29	April 10	April 13	April 10	March 22	March 28		
Emergence date	April 19	April 5	April 17	April 20	April 17	March 29	April 4		

[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 experimental lines grown at seven on-farm locations, 2017.

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.*
Hybrids													
RT 7812	RT	282	59.3	71.9	5.4	14.5	40.9	44	101	19	2	24.8	18272
CLXL729	RT	263	57.1	70.3	9.8	12.1	40.0	43	96	12	1	25.1	18108
RT 7311 CL	RT	285	54.7	71.0	14.1	12.3	39.7	43	95	11	1	24.9	18228
XL753	RT	296	50.7	71.8	10.8	12.1	41.0	42	95	2	1	25.3	17965
XL760	RT	288	56.3	70.2	10.0	12.7	39.5	46	98	12	1	24.2	18783
Clearfield													
CL151	LA-HA	218	57.7	70.9	11.3	13.5	42.7	38	95	17	2	23.2	19575
CL153	LA-HA	223	59.5	70.8	6.7	12.9	42.3	38	97	8	1	23.5	19325
CL163	MS-HA	195	59.7	70.1	9.4	13.1	40.1	40	97	33	2	24.8	18322
CL172	AR-HA	217	62.1	71.5	4.5	13.9	42.7	38	97	0	1	24.4	18607
CL 272	LA-HA	210	59.3	69.6	6.1	13.5	43.6	39	99	0	1	25.0	18191
RU1504083	MS	228	50.9	69.3	19.6	12.6	42.4	35	94	0	1	25.1	18110
RU1504122	MS	216	57.4	71.2	10.3	13.8	42.7	38	97	6	1	22.7	20006
RU1504197	MS	223	59.1	70.7	7.5	13.3	44.4	38	97	0	1	23.0	19709
RU1604197	MS	226	57.4	69.9	12.2	16.2	43.4	41	100	0	1	24.6	18434
RU1604198	MS	217	55.4	71.0	11.5	13.7	42.2	39	97	8	1	22.1	20570
RU1704083	MS	177	61.1	72.1	7.3	12.4	43.8	34	98	0	1	23.4	19366
RU1704055	MS	231	54.3	69.7	7.6	13.4	40.2	41	99	6	1	25.2	18016
Conventional													
Bowman	MS	205	59.4	70.8	4.6	13.6	43.8	38	98	0	1	26.0	17457
Cheniere	LA	201	62.3	73.0	7.2	12.7	42.1	36	96	6	1	21.9	20745
Diamond	AR	235	54.5	70.6	7.3	13.3	42.8	42	96	0	1	23.9	18962
LaKast	AR	233	53.1	70.8	6.9	12.9	43.0	43	96	12	1	25.3	17919
Mermentau	LA	213	62.6	71.1	11.4	13.6	42.8	39	96	0	1	22.8	19950
Rex	MS	227	59.9	69.2	8.0	13.9	43.7	42	98	0	1	27.3	16604
RoyJ	AR	214	59.3	72.2	3.7	14.5	43.2	42	101	0	1	24.1	18861
Sabine	TX	201	61.6	71.2	4.6	13.1	44.2	39	98	0	1	23.8	19087
Taggart	AR	216	56.8	71.4	5.1	14.5	43.7	45	100	7	1	26.3	17239
Thad	MS	233	55.3	70.0	6.5	13.1	45.2	39	96	6	1	25.8	17607
Titan	AR	230	56.1	69.3	5.9	14.5	45.5	41	93	12	1	27.1	16762
RU1504114	MS	231	61.7	72.6	5.8	13.6	44.6	47	98	31	2	22.7	20032
RU1604155	MS	214	53.2	70.3	11.2	12.9	38.6	41	94	18	2	24.1	18856
RU1604191	MS	216	59.7	72.4	6.9	13.0	40.2	43	97	31	2	21.2	21392
RU1604193	MS	223	60.9	72.4	4.4	13.7	44.1	45	99	6	1	24.3	18683
RU1704100	MS	216	53.5	71.1	5.0	14.3	44.3	45	100	0	1	27.0	16788
RU1704077	MS	227	53.8	69.2	9.4	13.3	44.8	42	95	0	1	26.8	16916
Mean		227	58	71	8	13	43	41	97	8	1	24	18631
LSD		26.6	4.9	1.2	2.0	1.2	2.2	1.8	4.0	16.5	0.6	0.7	
CV		19.3	11.4	2.3	34.0	14.2	6.8	5.9	5.0			3.6	

[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 experimental lines grown at on-farm locations from 2015–17.[1]

Entry	Origin[2]	Yield[3]	Whole milled rice	Total milled rice	Chalk	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												
Bowman	MS	199	60.2	70.5	3.8	43.9	40	95	2	1	24.7	18509
Cheniere	LA	197	63.8	73.2	4.7	42.5	38	92	3	1	21.3	21327
Lakast	AR	229	52.6	70.4	6.4	43.1	43	91	5	1	25.0	18134
Mermentau	LA	199	62.8	70.9	9.1	42.4	40	91	0	1	22.1	20547
Rex	MS	226	59.8	69.1	7.6	43.2	42	92	1	1	26.5	17186
RoyJ	AR	192	58.4	71.7	3.5	42.8	43	97	0	1	22.7	20001
Sabine	TX	184	62.6	71.0	4.0	43.8	40	92	0	1	23.2	19549
Thad	MS	224	58.1	69.9	4.8	45.1	40	93	1	1	24.7	18428
Taggart	AR	218	55.8	70.8	4.9	44.0	46	96	3	1	25.8	17590
XL753	RT	280	53.9	71.7	9.1	40.8	43	90	4	1	24.5	18579
XL 760	RT	277	57.1	70.3	8.5	40.7	47	93	9	1	23.8	19068
Clearfield												
CL151	LA-HA	210	59	71	10.1	42.3	39	89	18	1.8	22.8	19915
CL 172	AR-HA	202	62	71	3.8	43.1	38	92	1	1.0	23.4	19438

[1]Data presented are the averages of 21 total sites that served as the On-Farm Variety Trials for 2015–17. 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 in the Midsouth.[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
Cheniere	120-150	30-60	90-120	30-60
CL111	120	45	90-120	45
CL151[3]	90-135	0-45	90	45
CL152	120-150	45	120	45
CL153[4]	120-150	30-60	90-120	30-60
CL163[4]	120-150	45	120	45
CL172[4]	120-150	30-60	90-120	30-60
Cocodrie	120-150	30-60	90-120	30-60
Diamond	120-150	30-60	90-120	30-60
Lakast[4]	120-140	30-45	90-120	30-45
Mermentau	120-150	30-60	90-120	30-60
Rex	120-150	45	120	45
Sabine	120-150	30-60	90-120	30-60
Thad	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]Limited data for both clay and silt loam soils. Recommendations are subject to change with further testing.