MISSISSIPPI RICE
VARIETY TRIALS, 2019

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MISSISSIPPI'S OFFICIAL VARIETY TRIALS

MISSISSIPPI STATE UNIVERSITY™
MS AGRICULTURAL AND
FORESTRY EXPERIMENT STATION

Mississippi Rice Variety Trials, 2019

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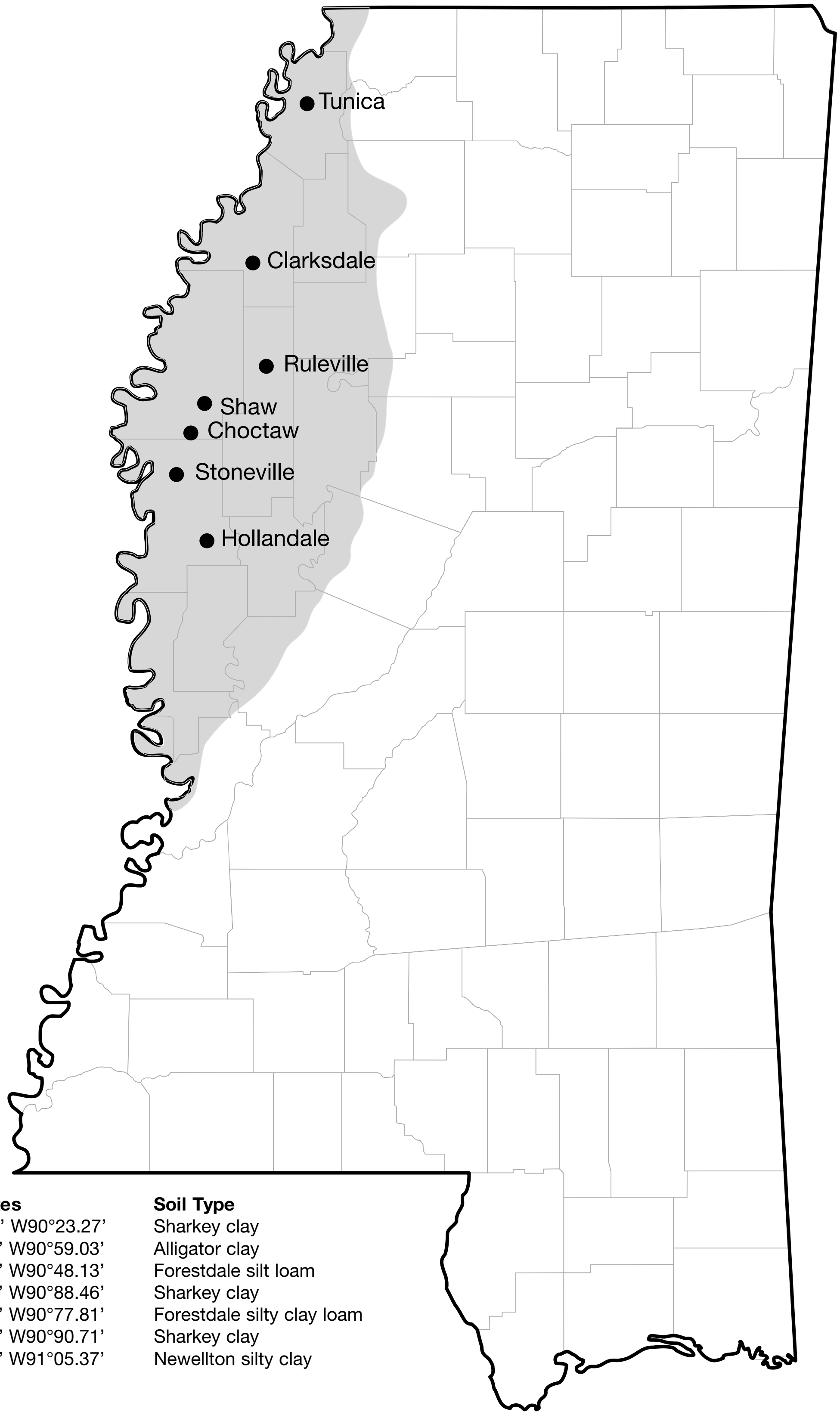
Find variety trial information online at ***mafes.msstate.edu/variety-trials***.



Location	Coordinates	Soil Type
Tunica	N34°69.85’ W90°23.27’	Sharkey clay
Clarksdale	N34°04.10’ W90°59.03’	Alligator clay
Ruleville	N33°71.98’ W90°48.13’	Forestdale silt loam
Choctaw	N33°57.73’ W90°88.46’	Sharkey clay
Shaw	N33°57.57’ W90°77.81’	Forestdale silty clay loam
Stoneville	N33°43.13’ W90°90.71’	Sharkey clay
Hollandale	N33°14.76’ W91°05.37’	Newellton silty clay

Figure 1. Locations of the 2019 Rice On-Farm Variety Trials in the Mississippi Delta.

Mississippi Rice Variety Trials, 2019

INTRODUCTION

The United States Department of Agriculture (USDA) National Agricultural Statistics Service (NASS) estimated the 2019 harvested rice area in Mississippi based on reports from rice producers to be about 116,000 acres. The USDA Farm Service Agency (FSA), on the other hand, certified the 2019 area planted to rice in the state to be 114,923 acres. This FSA estimate is about 20,091 acres or 15% less than the rice acreage in 2018 of 135,014 and about 26% less than the average rice acreage (156,400) for the preceding 5 years (2014–2018; Table 1).

The USDA NASS in December 2019 also reported the total rice production for Mississippi at 8.526 million hundredweight or 433,141 metric tons, down 16% from the 2018 production of 10.147 million hundredweight (515,491 metric tons). At the estimated November 2019 U.S. rice price of $11.80 per hundredweight, the value of Mississippi rice production for 2019 is $100.6 million. Rice yield was reported to be 7,350 pounds per acre (163 bushels per acre), up 50 pounds from 2018 and 199 pounds more than the running 10-year Mississippi average yield of 7,141 pounds (159 bushels). 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).

Fifteen counties produced rice in Mississippi during 2019 as certified by the USDA FSA (Table 2).

Table 1. USDA National Agricultural Statistics survey of harvested rice acreage in Mississippi (nearest thousand) by year, 1949–2019.

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	135,000
1959	44,000	1979	207,000	1999	323,000	2019	116,000
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	—

The top rice-producing counties were Bolivar, Tunica, Quitman, Sunflower, and Washington with 32,338, 24,090, 10,248, 9,854, and 8,319 acres planted, respectively. Only three counties planted more than 10,000 acres of rice in 2019. Bolivar and Tunica Counties have been the top two rice-producing counties for Mississippi for 9 years running (2011–2019). Nine of the 15 rice-producing counties registered a net loss in acreage during 2019, with the highest loss of 7,313 acres in Tunica County; a lot of this reduction was due to "prevented planting."

Planting progress was exceedingly slow for Mississippi in 2019, with rice planting occurring at a slower pace than the 3, 5, and 10-year averages. Rice planting started off like most years but was delayed due to wet weather conditions that occurred in most parts of the state beginning in the second week of April until late May. By the third week of May, only 60% of the Mississippi rice crop was planted, when historically, close to 90% of the rice in the state is planted by this time. For 2019, rice planting was finally completed by the third week of June.

Much of the early-planted rice struggled with the persistent wet weather, with many fields completely submerged for as long as 10 days. Some fields were salvageable, but replants were also conducted on many acres due to stand decline and when rice stretched past the point of no return. Wet soil conditions also made field work and levee construction difficult in many areas. The consistent rain did allow preemergence herbicides to remain active, and, in most cases, the crop was mostly clean at the time of flooding. After flooding, there were many instances of rice not growing properly and sulfur and nutrient deficiencies were widespread. These issues primarily arose from most of our ground being worked wet and shallow in the winter of 2018 and early 2019. Walking in many flooded rice fields felt like walking on concrete, something that is difficult to fathom in buckshot soils.

The great positive attributes of the 2019 growing season were the mild temperatures and excellent harvest weather. Excluding the extremely late-planted rice and areas in northern Mississippi, most of our rice was harvested before rainy weather arrived again in October. These conditions have resulted in the state average yields being higher in 2019 compared to previous years, which should hopefully keep growers' excitement high and lead to increased rice acres in 2020.

Table 2. USDA Farm Service Agency certified rice acres planted by county in Mississippi, 2009–2019.

County	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Adams	240	0	0	192	0	0	0	157	0	157	0
Attala	0	0	10	0	0	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	34,659	32,338
Carroll	205	0	0	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	9,970	5,768
DeSoto	859	1,156	335	553	1,190	2,316	99	1,896	1,261	1,605	586
Grenada	171	321	328	282	282	0	893	402	143	0	55
Holmes	1,485	1,448	234	141	121	203	195	655	0	1,036	126
Humphreys	3,656	8,241	1,996	1,955	1,475	3,426	2,576	5,695	3,874	4,264	4,089
Issaquena	783	2,702	880	890	1,115	483	345	764	427	435	0
Jackson	55	35	0	0	0	0	0	0	0	0	0
Lee	10	11	8	10	3	3	0	3	0	0	0
Leflore	17,107	20,144	6,754	5,328	3,905	6,000	5,059	7,734	1,770	5,035	3,150
Panola	4,777	6,446	5,383	5,901	5,523	10,188	5,966	9,668	8,458	7,343	7,411
Quitman	11,031	20,170	6,360	8,440	8,766	15,565	12,220	20,515	10,763	10,311	10,248
Sharkey	1,951	5,390	855	306	433	857	789	1,123	282	647	0
Sunflower	38,227	45,676	19,351	14,253	13,635	25,241	15,612	19,944	7,843	12,458	9,854
Tallahatchie	14,081	19,314	6,267	6,460	6,964	12,859	7,142	12,330	7,083	6,803	7,890
Tate	905	994	869	828	934	1,082	955	1,123	822	797	935
Tunica	23,913	27,041	23,167	21,696	24,603	28,608	25,833	34,812	27,286	31,403	24,090
Washington	29,507	35,736	18,854	14,687	11,480	15,690	13,027	12,135	8,442	8,091	8,319
Yazoo	1,841	1,907	2,273	765	0	867	914	1,571	893	0	64
Total	237898	302019	156107	126440	122272	185543	143697	191251	114564.7	135014	114923

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 their target growing environments. In the case of elite breeding lines, based on their performance in these multi-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 to 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, 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 MSU Delta Research and Extension Center, thus there is a great value to on-farm evaluations from a research and development perspective. In return, growers are afforded the opportunity to evaluate the current varieties and hybrids in commercial circulation, side-by-side 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 their chosen varieties or hybrids accordingly.

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 grain-quality data for implementing "identity preserved" strategies that are gaining importance for improving overall rice grain quality. Rice research and Extension specialists can use 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 from MSU and other participating rice-breeding programs, including from the private industry.

TEST PROCEDURES

For 2019, the rice On-Farm Variety Trials consisted of 36 entries including five hybrids, 16 Clearfield® or Provisia® purelines (six released varieties and nine elite experimental lines), and 15 conventional purelines (seven released varieties and eight elite experimental lines). All hybrids were provided by RiceTec with two of them featuring their new FullPage® (FP) herbicide technology. HorizonAg, on the other hand, provided all the Clearfield® and Provisia® purelines, and the conventional pureline released varieties came from the public breeding programs of Mississippi (2), Arkansas (2), Louisiana (2), and Texas (1). The trials were conducted in seven locations from north to south of the Mississippi Delta, namely, in Tunica, Clarksdale, Ruleville, Shaw, 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 Extension Publication 1532, *Weed Control Guidelines for Mississippi 2019,* which is available in print and online (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 a 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.** Due to harvest-plot-combine-related errors, the yield data for the Choctaw location is not reported. 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 procedure was 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. Coefficient of variation 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 2020, preliminary results of the 2019 rice-variety trials were immediately processed and made available online in mid-November 2019 via the Mississippi Agricultural and Forestry Experiment Station Variety Trials website (http://mafes.msstate.edu/variety-trials/includes/crops/rice.asp). Hard copies of the preliminary results were also distributed to rice producers attending the Delta Rice Producers Meeting in Cleveland, Mississippi, in November 2019.

Complete details on the performance of each entry at each of the seven test locations are presented in **Tables 3-9**. Unlike the 2018 trials, which were planted in a span of 7 weeks (March 26 to May 14) due to wet weather occurring during this period, the 2019 trials were planted in a narrower time span of about 4 weeks (April 1 to May 1). The Stoneville trial 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 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 only one (Hollandale) of the seven locations where four entries (all hybrids) had between 25% and 75% lodging. None of the Clearfield®, Provisia®, and conventional pureline entries lodged in any of the seven locations. As in the previous years, significant black-bird damage occurred in Stoneville.

The average rice yield across entries and locations for the 2019 trials was 225 bushels per acre, up 4 bushels from the 2018 average and up 5 bushels from the running 10-year variety trial overall yield average (2010–2019). However, this amount was still 17 bushels per acre less than the highest recorded average trial yield of 242 bushels in 2014. This yield trend in the trials closely mirrors Mississippi statewide yield trends from USDA NASS data. Location yield averages ranged from 180 bushels per acre for Stoneville to 261 bushels for

Hollandale. Shaw (240 bushels per acre) and Clarksdale (232 bushels per acre) were the second and third highest-yielding sites. These location rankings are different than in the previous year, when the top three highest-yielding sites were Tutwiler (near Clarksdale), Cleveland (closest to Shaw), and Tunica. On the other hand, the Stoneville site has consistently been the lowest-yielding location during the last 4 years (2016–2019) with an average yield of 162 bushels per acre during the period across entries. The primary reason for this low yield is the moderate to heavy black-bird damage that is experienced every year in Stoneville.

The CV values for yield were all acceptable and ranged from 5.1% (Shaw) to 10.5% (Ruleville). Total milling yields across locations tended to be normal for most entries, but substantial differences among the trial entries were observed for whole milled rice, ranging from 50.4 to 64.9% and averaging 56.9%. 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 new entry RT7521FP developed by RiceTec Inc. gave the highest yield of 291 bushels per acre. It outyielded the four other hybrid entries, including the high-yielding conventional RiceTec hybrid XP753 (previously designated in previous Mississippi variety trial reports as XL753), which was the third highest-yielding in 2019. XP753 had been the highest-yielding hybrid in these trials during the last 6 years with an average yield across locations of 297 bushels per acre in 2018, 296 bushels in 2017, 274 bushels in 2016, 275 bushels in 2015, 306 bushels in 2014, and 278 bushels in 2013—an average yield of 288 bushels per acre for this 6-year period. Its yield superiority over other hybrids and conventional pureline entries has been consistent over the years. In 2019, however, its yield of 261 bushels per acre was surpassed by RT7521FP and RT7801 (265 bushels). Historically, hybrids have yielded, on average, about 21% (46 bushels per acre) higher than pure line varieties, both for Clearfield® and conventional types, in Mississippi rice variety trials. For 2019, this hybrid yield advantage was, on average, 18% over Clearfield® and 22% over conventional variety types. However, considering the fact that the plot border effect is greater on hybrids as compared to purelines, the actual field yield differences may be expected to be closer when comparing the highest-yielding hybrid to the highest-yielding purelines.

Among the 15 Clearfield®/Provisia® type pureline entries, RU1804147 (an experimental breeding line) and CL272 (a medium-grain released variety) gave the highest yields—both with 234 bushels per acre. These were followed very closely by two upcoming Clearfield® releases (the long-grain CLL15 at 233 bushels and the medium-grain CLM04 at 232 bushels, both from Arkansas) and the Mississippi-bred long-grain Clearfield® potential release RU1504197 with Cheniere-type cereal chemistry at 231 bushels. RU1504197 was among the top five highest-yielding entries (at 226 bushels) in the 2018 trials. Another Mississippi-bred line (RU1704055) that was the highest-yielding among all Clearfield® entries in 2017 (231 bushels) and among the top-five in 2018 (220 bushels) was the seventh highest-yielding entry this year (229 bushels). The highest-yielding Clearfield® long-grain released variety in 2019 was the Mississippi-bred CL163 at 225 bushels, followed by CL153 (217 bushels). CL153 had been the highest-yielding Clearfield® released long-grain variety entry in these trials in 2017 (223 bushels) and 2018 (220 bushels).

Among conventional purelines, the top-yielding entry in 2019 was the recently released variety Diamond from Arkansas with 233 bushels per acre. Closely following Diamond, however, were another released variety Lakast (232 bushels) and a potential Mississippi released variety RU1604193 (229 bushels). RU1604193 has the Pita gene for broad-spectrum blast resistance and was also the second highest-yielding entry in the 2018 on-farm trials. Rounding out the top-five in 2019 were the Mississippi-bred experimental line RU1804179 and released variety Thad (223 bushels). The experimental line RU1704077, which topped these in on-farm trials in 2018 with a 228-bushel average yield, was ranked eighth this year at 218 bushels. In 2017, RU1704077 was also among the highest-yielding entries (tied with Rex, the most popular conventional pureline variety in Mississippi, at 227 bushels). Diamond, on the other hand, which topped this year's test as well as the 2017 trials, only ranked ninth of 16 conventional entries in the 2018 trials (220 bushels), followed by Thad (the second highest-yielding in 2017 at 216 bushels). Diamond and Thad were also the top two conventional pureline entries in terms of yield in 2016. Lakast, on the other hand, which was second highest-yielding this year, was tied for second in 2018 (tied with Rex) and 2017 (tied with Thad at 233 bushels in 2017). Rex, which ranked second at 227 bushels in 2018 and fifth in 2017, tied with RU1704077 as the eighth highest-yielding conventional entry in 2019.

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 about to be entered in the multistate Rice Uniform (hence, RU) Regional Research Nursery (URRN). This URRN 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. RU1404122).*

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. Based on the average yield performance in 20 trials conducted during the past 3 years (2016, 2017, and 2018), where all the above-mentioned top-yielding conventional released varieties were entered, Lakast had the highest yield at 231 bushels per acre, followed by Diamond (229 bushels) and Thad and Rex (tied at 224 bushels). In comparison, Mermentau, a variety from Louisiana that was once popular among Mississippi producers, yielded an average of 204 bushels in the same trials. The Texas-bred variety Sabine, which is used in the rice-processing industry, yielded only 189 bushels—about 16% lower yielding than Thad, a comparable variety.

Among the Clearfield® released varieties, the best performer during the past 3 years (2017, 2018, and 2019) has been CL153. However, several breeding lines still under development have consistently outyielded CL153 during the period. Among these promising Clearfield® experimental lines that outyielded all other released Clearfield® varieties is RU1504197, which had the fourth highest yield in 2019 among Clearfield® trial entries. This line also ranked third in 2018 at 226 bushels per acre and performed well in 2017 (223 bushels). This line outyielded all released long-grain Clearfield® varieties included in the tests in all 3 years. RU1504197 is similar to Thad and CL163 in terms of having high amylose content but is similar to the formerly popular variety Cheniere in terms of cooking quality. The potential release of this elite breeding line is still being explored based on its performance in other tests for traits, such as grain quality.

Milling traits varied substantially among the test entries, and high-yielding entries did not necessarily have the best grain quality characteristics. Aside from these trait considerations for variety selection, performance stability over different environments and across years also needs to be taken into account. Certain varieties such as Cheniere have been relatively stable over many years and thus have been popular in Mississippi and the Midsouth in the past. Rex 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 per acre less nitrogen 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 and Mermentau have not performed as well as the varieties earlier mentioned, though they have done well in Mississippi in the past. Sabine 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 RiceTec's Inc. hybrids using the new FullPage® (FP) technology that provides growers with new generation IMI herbicide tolerance to control red rice, the best option (still based on 1 year's trials) is RT7521FP, which topped all entries regardless of type for yield this year. For conventional hybrid rice production, XP753 remains the best option based on several years' tests, but a new conventional hybrid RT7801 also did well this year. There were no Clearfield® hybrids included in the 2019 trials. Detailed additional information for the production of conventional, FullPage® and Clearfield® hybrid rice is available at RiceTec Inc.

Among Clearfield® pureline released varieties, offered exclusively by HorizonAg, several new hybrids outperformed CL153, which was the best-performing, long-grain Clearfield® pureline type in 2018, 2017, and 2016. These were two medium grains (CL272 and CLM04) and two long grains (CLL15 and CL163). Other long-grain varietal options include CL151, CL172, and CL163, based also on 2017 and 2016 variety trial data. Clearfield® rice should be used as a tool with careful attention given to stewardship so that the technology can last into the future. Stewardship should encompass minimizing the potential for outcrossing of red rice and Clearfield® rice. Stewardship should also include the addition of postemergence and residual herbicides for grass control so that selection pressure that could break down herbicide resistance is minimized. It should 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. The new Provisia® line of varieties coming up, including PVL01, which was tested in these trials for the second time in 2019, promises to be a useful companion technology to extend the usefulness of Clearfield® rice system for controlling red rice. However, it is important to follow the technology recommendations, such as being out of rice for a year when switching from Clearfield® to Provisia® varieties.

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 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 a 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® or Provisia® 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 (33°57'73"N, 90°88'46"W), 2019.[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											
XP753	—	60.0	71.1	5.4	—	42.3	42.3	87	0	1	27.2
RT7801	—	53.1	68.5	4.8	—	39.5	43.8	93	0	1	29.7
RT7321FP	—	57.3	69.8	5.8	—	42.4	44.5	86	0	1	27.7
RT7301	—	59.4	70.6	9.6	—	42.4	41.0	86	0	1	26.5
RT7521FP	—	62.9	68.0	6.1	—	41.7	46.8	88	0	1	28.5
Clearfield/Provisia											
CL151	—	60.9	70.2	7.7	—	42.8	40.5	86	0	1	33.1
CL153	—	63.7	71.2	3.9	—	43.0	40.5	88	0	1	29.3
CL163	—	57.5	68.2	7.6	—	42.3	40.0	86	0	1	29.9
CL272	—	65.6	70.6	6.1	—	43.3	42.0	91	0	1	31.4
CLL15	—	59.0	68.6	5.5	—	41.9	38.0	86	0	1	31.5
CLM04	—	65.3	69.5	5.2	—	43.2	44.0	91	0	1	30.4
CLJ01	—	66.2	72.2	6.7	—	42.2	38.0	89	0	1	31.2
RU1504197	—	56.5	67.5	9.2	—	44.0	40.3	88	0	1	32.1
RU1604197	—	55.3	67.7	11.1	—	41.6	42.3	90	0	1	31.7
RU1704055	—	49.0	67.2	8.0	—	39.8	41.5	89	0	1	39.7
RU1704122	—	51.0	69.1	7.5	—	41.6	40.3	89	0	1	34.4
RU1704198	—	58.3	68.7	6.2	—	41.9	38.3	87	0	1	30.1
RU1804107	—	56.8	68.4	8.8	—	41.7	39.0	90	0	1	35.8
RU1804123	—	53.2	66.6	8.9	—	43.2	40.5	87	0	1	31.0
RU1804147	—	53.4	65.2	10.3	—	43.2	45.3	87	0	1	31.4
PVL01	—	59.4	70.9	3.9	—	40.9	40.3	93	0	1	28.2
Conventional											
Cheniere	—	61.3	72.6	4.5	—	42.3	38.0	88	0	1	25.5
Diamond	—	57.8	70.1	4.6	—	44.1	47.0	92	0	1	34.0
LaKast	—	55.2	69.4	4.9	—	43.5	47.0	87	0	1	31.0
Mermentau	—	61.4	70.6	5.8	—	43.0	41.0	88	0	1	24.6
Rex	—	58.6	67.6	7.7	—	42.8	41.8	87	0	1	32.9
Sabine	—	61.8	70.3	4.5	—	43.8	38.8	86	0	1	25.6
Thad	—	56.5	68.4	5.0	—	43.8	41.3	86	0	1	32.9
RU1604193	—	61.9	71.7	1.8	—	44.3	46.5	91	0	1	30.9
RU1704077	—	56.5	67.4	5.6	—	44.9	40.3	87	0	1	32.4
RU1804063	—	56.1	68.4	8.8	—	42.5	37.0	85	0	1	30.0
RU1804067	—	56.5	67.5	7.4	—	43.7	40.3	86	0	1	31.4
RU1804071	—	56.1	68.1	3.7	—	43.5	41.0	88	0	1	31.4
RU1804179	—	52.5	68.8	10.3	—	41.3	42.3	88	0	1	34.5
RU1804187	—	57.7	69.1	5.4	—	43.1	41.0	88	0	1	36.5
RU1804214	—	59.2	69.9	3.8	—	42.9	39.5	89	0	1	33.0

[1]**Planting date:** April 2. **Emergence:** April 22. **Herbicides:** 21.3 fl oz/A Command, 12.8 fl oz/A MSO, 2 fl oz/A Sharpen, and 1 qt/A Gramoxone SL 2.0 on April 2; 21 fl oz/A Facet L and 0.65 oz/A Regiment on May 25; 0.65 oz/A Regiment on June 17. **Fertilizer:** 99.95 lb/A DAP/ammonium sulfate on April 23; 153.82 lb/A 46-0-0 on May 27; 102.69 lb/A 46-0-0 on June 10; 102.87 lb/A 46-0-0 on June 18; 103.25 lb/A 46-0-0 on June 28. **Insecticide:** 3.6 fl oz/A Ravage on July 22. **Fungicide:** 17 fl oz/A Stratego on July 9. **Flood date:** June 1. **Drain date:** August 9. **Harvested:** August 29.

[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 (34°04’10”N, 90°59’03”W), 2019.[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											
XP753	287	54.0	69.5	9.0	11.6	40.9	40.0	86.0	0	1	26.4
RT7801	247	50.4	66.5	7.2	13.6	39.3	41.0	90.0	0	1	31.6
RT7321FP	250	51.4	68.0	9.8	11.6	40.8	42.5	84.0	0	1	26.8
RT7301	228	52.3	69.4	14.5	11.8	41.9	36.3	86.0	0	1	27.5
RT7521FP	283	55.0	67.2	9.0	12.5	38.9	44.3	85.5	0	1	27.4
Clearfield/Provisia											
CL151	185	57.8	68.9	11.4	17.4	42.7	35.0	82.0	0	1	26.2
CL153	188	61.8	69.7	7.4	16.4	43.1	37.5	86.5	0	1	27.3
CL163	254	58.9	67.7	11.1	12.4	42.1	38.8	86.0	0	1	28.4
CL272	239	57.0	69.8	5.3	12.6	43.7	37.5	84.0	0	1	26.7
CLL15	229	58.2	63.9	8.9	12.7	42.4	34.3	83.0	0	1	28.1
CLM04	236	64.7	69.3	3.5	15.2	45.2	39.8	88.0	0	1	26.7
CLJ01	202	66.7	71.1	5.0	12.3	42.3	34.3	83.0	0	1	27.2
RU1504197	244	58.6	67.7	11.4	12.7	44.3	36.8	86.5	0	1	24.7
RU1604197	227	58.1	68.0	11.9	13.9	43.9	38.8	89.0	0	1	28.4
RU1704055	233	53.9	66.2	7.0	14.8	39.3	42.0	90.0	0	1	32.6
RU1704122	224	51.9	67.4	9.6	13.0	41.2	35.8	86.0	0	1	30.6
RU1704198	232	57.2	67.9	8.4	12.5	42.1	33.5	88.0	0	1	26.6
RU1804107	213	55.7	66.3	12.1	14.6	41.2	35.0	88.5	0	1	26.0
RU1804123	224	56.4	66.3	13.7	12.7	43.3	35.3	84.5	0	1	25.3
RU1804147	245	59.0	67.3	9.4	12.8	44.1	38.3	87.5	0	1	31.7
PVL01	220	59.6	69.9	4.0	12.3	40.3	38.8	89.5	0	1	30.8
Conventional											
Cheniere	196	63.1	71.7	4.8	12.5	43.0	34.8	87.5	0	1	28.6
Diamond	237	53.3	69.1	2.6	13.0	44.3	42.3	87.5	0	1	30.6
LaKast	257	53.5	68.0	6.7	12.2	43.7	41.0	84.0	0	1	29.9
Mermentau	194	63.0	69.9	6.6	12.7	43.0	36.0	88.0	0	1	28.0
Rex	250	60.2	67.7	7.9	13.1	43.3	40.0	87.5	0	1	30.0
Sabine	197	58.3	69.2	3.4	12.4	45.0	36.3	88.0	0	1	28.2
Thad	256	59.9	67.8	3.5	14.0	45.4	38.8	90.0	0	1	25.4
RU1604193	228	64.0	71.4	1.4	12.9	44.6	42.5	90.0	0	1	27.5
RU1704077	223	55.2	68.3	6.3	12.4	45.0	41.0	86.0	0	1	29.9
RU1804063	251	56.4	67.5	8.8	12.2	42.8	34.0	82.5	0	1	31.7
RU1804067	233	58.0	36.5	9.6	13.1	43.6	38.0	87.5	0	1	30.9
RU1804071	237	60.0	68.3	3.1	12.5	44.2	36.5	88.5	0	1	29.4
RU1804179	255	51.4	68.2	11.3	12.4	41.9	41.5	87.5	0	1	33.2
RU1804187	218	60.1	69.1	5.7	12.6	43.7	37.0	87.5	0	1	28.0
RU1804214	235	58.7	69.3	4.6	12.1	43.5	35.0	91.5	0	1	32.6

[1]**Planting date:** April 30. **Emergence:** May 10. **Herbicides:** 1 pt/8 A Command on May 2; 3 qt/A RiceBeaux, 1 qt/A Facet L, and 1 qt/A Prowl on May 23. **Fertilizer:** 100 lb/A urea on May 24; 100 lb/A urea on June 12; 100 lb/A urea on July 5; 100 lb/A urea on July 12. **Insecticide:** 1-40 Lambda on August 6. **Fungicide:** 17 oz/A Stratego on July 21. **Flood date:** June 12. **Harvested:** September 11. **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 experimental lines grown on Newellton silty clay soil near Hollandale, Mississippi (33°14'76"N, 91°05'37"W), 2019.[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											
XP753	291	51.8	70.7	9.8	12.1	39.1	41.5	69	37.5	2	29.4
RT7801	273	56.8	69.3	5.1	12.9	38.0	41.8	79	75	2	29.1
RT7321FP	289	45.4	67.9	12.2	11.7	38.4	42.3	74	25	2	27.8
RT7301	293	51.6	69.9	12.3	12.3	40.6	38.0	74	0	1	29.6
RT7521FP	311	56.9	68.4	8.0	11.7	39.4	44.0	75	25	2	28.5
Clearfield/Provisia											
CL151	249	61.4	69.9	8.1	12.4	41.8	37.8	75	0	1	29.7
CL153	273	63.9	70.9	5.5	12.2	41.9	39.0	77	0	1	31.1
CL163	250	60.5	69.3	9.9	12.0	41.4	38.5	77	0	1	33.7
CL272	269	66.8	71.4	4.8	12.7	43.4	39.0	79	0	1	27.7
CLL15	264	57.2	69.3	9.8	12.2	40.9	35.3	75	0	1	30.2
CLM04	251	67.6	70.1	4.3	16.4	44.4	41.3	81	0	1	25.6
CLJ01	223	65.1	71.4	5.7	11.6	41.0	37.8	71	0	1	32.2
RU1504197	275	60.8	69.5	10.2	12.6	43.2	38.8	78	0	1	30.6
RU1604197	260	54.3	68.9	19.4	12.8	42.7	41.0	77	0	1	32.7
RU1704055	269	53.9	68.1	9.9	12.2	38.9	40.3	78	0	1	38.1
RU1704122	266	51.6	69.0	9.2	11.6	40.4	38.0	76	0	1	34.3
RU1704198	261	51.5	69.0	10.5	11.6	41.0	35.3	76	0	1	31.6
RU1804107	290	57.5	69.1	11.3	12.4	41.2	38.0	79	0	1	35.7
RU1804123	270	54.1	67.3	11.9	11.9	41.5	38.8	75	0	1	32.4
RU1804147	263	55.8	67.7	13.3	12.0	42.0	40.3	75	0	1	35.5
PVL01	226	58.3	71.2	3.6	11.8	40.1	38.0	78	0	1	32.7
Conventional											
Cheniere	223	63.1	73.1	4.3	11.8	40.8	37.8	77	0	1	33.9
Diamond	246	57.9	70.3	3.9	12.2	43.6	41.8	78	0	1	35.9
LaKast	241	56.3	69.2	5.6	12.1	42.9	40.0	77	0	1	38.2
Mermentau	241	65.2	70.9	6.1	12.5	42.0	37.8	75	0	1	35.6
Rex	257	61.6	68.5	8.8	12.1	42.4	39.5	77	0	1	37.6
Sabine	235	61.7	70.1	3.6	12.1	42.8	36.5	76	0	1	33.4
Thad	266	55.0	68.4	6.4	12.4	44.2	38.3	76	0	1	33.0
RU1604193	273	63.1	71.9	2.9	12.1	43.5	45.0	78	0	1	33.6
RU1704077	234	55.9	68.2	6.4	12.8	44.1	40.8	75	0	1	34.5
RU1804063	262	53.9	68.2	11.6	11.8	41.7	36.3	76	0	1	34.3
RU1804067	263	58.2	67.8	8.2	12.0	42.4	37.3	77	0	1	33.7
RU1804071	259	58.9	68.6	2.5	12.0	42.5	39.8	77	0	1	34.5
RU1804179	273	53.5	69.7	14.3	12.0	40.4	39.5	77	0	1	34.8
RU1804187	257	58.3	70.0	8.6	12.1	41.5	38.0	76	0	1	33.8
RU1804214	264	56.2	69.7	4.4	12.1	42.4	36.8	77	0	1	34.9

[1]**Planting date:** April 22. **Emergence:** May 1. **Harvested:** August 28. **LSD = A difference of 27 bu/A is required for one variety to differ from another at the 5% probability level. C.V. = 6.4%**
[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 6. Performance of rice varieties, hybrids, and experimental lines grown on Forrestdale silt loam soil near Ruleville, Mississippi (33°71’98”N, 90°48’13”W), 2019.[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											
XP753	255	49.0	69.9	9.5	12.7	42.3	40.5	78	0	1	28.9
RT7801	241	52.8	67.3	5.0	12.5	40.3	45.0	87	0	1	32.4
RT7321FP	241	46.7	69.0	8.5	12.7	42.2	42.0	77	0	1	30.1
RT7301	241	44.7	70.2	8.7	13.8	43.2	39.5	78	0	1	28.4
RT7521FP	333	59.8	68.8	8.7	11.4	41.6	44.5	84	0	1	28.3
Clearfield/Provisia											
CL151	212	59.8	69.3	6.3	13.3	44.0	37.5	82	0	1	27.0
CL153	202	63.2	69.8	2.9	14.3	43.8	37.5	84	0	1	30.0
CL163	209	60.4	69.1	4.8	12.5	44.2	38.5	82	0	1	32.1
CL272	239	55.9	69.1	7.3	12.8	44.3	39.8	88	0	1	29.7
CLL15	233	58.2	69.3	7.2	13.6	42.6	35.0	80	0	1	34.5
CLM04	246	62.9	69.2	6.3	14.8	44.6	41.8	88	0	1	29.1
CLJ01	188	64.0	70.4	5.4	14.2	43.0	35.3	84	0	1	27.7
RU1504197	217	59.1	69.5	5.5	14.7	45.3	38.3	84	0	1	26.1
RU1604197	224	53.5	67.9	13.5	13.6	43.6	38.8	85	0	1	29.4
RU1704055	210	56.8	67.8	5.0	12.0	41.6	38.5	85	0	1	33.0
RU1704122	194	55.0	69.0	4.2	12.2	42.6	37.3	82	0	1	26.6
RU1704198	216	55.1	69.0	5.5	12.3	43.6	34.3	80	0	1	31.2
RU1804107	206	54.5	67.7	9.8	15.4	42.3	36.3	87	0	1	34.7
RU1804123	225	57.5	67.5	5.7	13.1	43.4	41.5	81	0	1	30.2
RU1804147	214	57.0	67.2	7.1	13.2	44.1	39.8	82	0	1	30.5
PVL01	229	59.6	69.8	3.4	11.8	41.0	38.0	87	0	1	25.8
Conventional											
Cheniere	201	62.6	72.1	3.7	12.4	43.8	35.5	84	0	1	24.7
Diamond	213	52.5	69.2	4.0	13.0	44.6	42.8	85	0	1	29.4
LaKast	212	54.3	69.3	3.6	12.5	44.1	42.5	82	0	1	33.4
Mermentau	188	63.3	69.8	7.2	12.9	43.9	38.3	81	0	1	31.7
Rex	189	61.9	67.9	3.1	12.3	44.0	39.5	84	0	1	31.8
Sabine	178	62.0	70.2	2.9	14.6	44.7	35.8	83	0	1	30.1
Thad	189	50.6	68.0	2.3	12.7	45.9	37.5	81	0	1	29.5
RU1604193	201	59.5	71.2	3.0	12.5	44.8	41.8	85	0	1	27.5
RU1704077	190	47.3	66.8	3.5	13.5	45.6	40.8	82	0	1	31.2
RU1804063	193	54.2	68.1	9.9	14.1	44.2	35.5	79	0	1	31.4
RU1804067	192	58.7	68.2	6.0	13.0	45.1	37.5	80	0	1	32.0
RU1804071	179	57.4	68.4	3.8	13.7	44.6	38.5	85	0	1	28.9
RU1804179	190	47.3	69.2	7.5	11.7	42.6	38.5	82	0	1	32.8
RU1804187	213	51.2	67.5	6.0	9.2	22.8	38.0	80	0	1	28.1
RU1804214	201	54.1	69.0	2.7	13.6	44.7	36.0	83	0	1	26.0

[1]**Planting date:** April 2. **Emergence:** April 22. **Herbicides:** 1 pt/A Command on April 6; 1 pt/A Command, 1 qt/A Facet, and 1 pt/A Agri-Dex on April 16; 0.75 oz/A Permit and 1 pt/A Agri-Dex on May 28. **Fertilizer:** 50 lb/A DAP and 100 lb/A of potash on April 31; 200 lb/A 41-0-0-4 on May 17; 100 lb/A 41-0-0-4 on June 1; 75 lb/A 41-0-0-4 on June 12 . **Insecticide:** Warrior on July 3. **Fungicide:** 17 oz/A Quilt on July 3. **Harvested:** August 30. **LSD = A difference of 27 bu/A is required for one variety to differ from another at the 5% probability level. C.V. = 7.9%**
[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 7. Performance of rice varieties, hybrids, and experimental lines grown on Forrestdale silty clay loam soil near Shaw, Mississippi (33°57’57”N, 90°77’81”W), 2019.[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											
XP753	309	56.5	71.0	5.2	11.8	41.5	43.3	92	0	1	31.5
RT7801	316	56.8	69.2	6.8	12.8	39.7	44.3	96	0	1	33.9
RT7321FP	306	52.9	69.6	5.9	11.6	41.7	46.5	89	0	1	33.5
RT7301	301	52.5	69.6	10.6	12.1	42.3	41.3	91	0	1	31.3
RT7521FP	321	58.6	69.5	5.6	11.4	40.6	46.3	90	0	1	30.9
Clearfield/Provisia											
CL151	228	60.3	69.4	6.7	12.2	42.1	38.0	92	0	1	30.4
CL153	226	62.8	70.0	4.7	12.5	43.2	37.5	92	0	1	33.3
CL163	238	58.9	68.8	9.1	11.7	40.1	39.0	94	0	1	31.0
CL272	252	50.1	67.8	4.4	12.0	44.0	39.8	93	0	1	31.9
CLL15	226	60.1	69.7	6.2	12.6	42.3	36.5	88	0	1	34.7
CLM04	263	59.7	68.1	4.1	12.8	45.5	40.5	94	0	1	30.7
CLJ01	194	65.7	71.0	7.2	11.9	42.3	35.0	93	0	1	29.2
RU1504197	244	56.5	67.9	11.8	11.9	43.4	39.3	93	0	1	32.8
RU1604197	251	58.0	68.3	15.1	13.2	43.4	41.0	91	0	1	32.6
RU1704055	246	51.9	66.5	9.0	12.1	39.9	40.3	93	0	1	37.7
RU1704122	217	54.9	69.6	7.6	11.5	41.1	38.3	91	0	1	35.4
RU1704198	216	57.8	69.2	7.7	11.9	41.6	37.0	91	0	1	34.3
RU1804107	232	56.1	67.9	10.8	12.7	41.7	37.5	92	0	1	35.1
RU1804123	239	57.3	67.5	9.3	12.0	43.1	39.5	90	0	1	33.4
RU1804147	252	57.2	67.0	8.6	12.0	42.4	42.3	92	0	1	34.1
PVL01	207	55.6	69.3	6.6	12.2	38.4	38.0	96	0	1	34.0
Conventional											
Cheniere	223	64.2	72.6	4.8	12.0	41.3	34.3	90	0	1	29.8
Diamond	257	51.5	68.5	5.6	12.1	43.9	44.8	94	0	1	36.0
LaKast	241	55.8	69.8	5.3	11.8	43.0	44.8	92	0	1	36.2
Mermentau	196	65.1	71.2	3.8	12.3	44.0	36.5	91	0	1	32.1
Rex	218	60.8	68.0	6.5	12.0	43.4	40.3	92	0	1	38.2
Sabine	177	63.2	70.2	3.9	12.4	44.2	37.3	92	0	1	33.3
Thad	235	53.3	67.9	4.7	12.1	44.6	38.5	90	0	1	32.2
RU1604193	258	57.7	70.2	1.9	12.3	44.7	44.8	95	0	1	34.4
RU1704077	222	51.7	67.1	5.8	12.1	45.2	40.0	88	0	1	34.1
RU1804063	222	52.8	67.9	7.3	11.7	40.3	39.0	88	0	1	34.7
RU1804067	240	57.7	67.5	7.3	12.1	44.1	39.5	91	0	1	35.5
RU1804071	223	54.9	67.6	2.7	12.0	43.6	38.8	93	0	1	39.5
RU1804179	227	48.9	68.5	11.0	11.6	40.3	40.5	93	0	1	35.8
RU1804187	201	52.6	68.3	7.7	11.6	27.7	39.8	92	0	1	37.6
RU1804214	216	55.2	68.6	4.3	12.1	43.6	35.5	92	0	1	39.8

[1] **Planting date:** April 1. **Emergence:** April 22. **Herbicides:** 6.67 fl oz/A Section Three, 1.33 pt/A Shredder 2,4-D, and 1 qt/A Cornerstone 5 Plus on February 13; 32 fl oz/A Envy Six Max on April 1; 32 fl oz/A Facet L, 2.4 pt/A pendimethalin, and 1 oz/A Halo Max 75 on May 7. **Fertilizer:** 200 lb/A 46-0-0 on June 4, 100 lb/A 46-0-0 on June 17, and 100 lb/A 46-0-0 on July 17. **Harvested:** September 3. **LSD = A difference of 20 bu/A is required for one variety to differ from another at the 5% probability level. C.V. = 5.1%**

[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 (34°43'13"N, 90°90'71"W), 2019.[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											
XP753	159	54.6	66.2	13.2	15.2	39.4	43.3	78	0	1	27.1
RT7801	214	50.3	65.6	9.3	22.6	38.9	45.3	85	0	1	31.4
RT7321FP	132	50.3	65.7	11.3	13.8	34.6	44.3	75	0	1	31.0
RT7301	184	53.6	67.4	16.6	16.0	40.6	40.0	79	0	1	27.2
RT7521FP	208	51.8	65.1	12.8	15.8	39.3	46.3	78	0	1	26.7
Clearfield/Provisia											
CL151	157	60.0	68.2	16.3	19.6	42.2	38.5	79	0	1	29.7
CL153	188	58.7	67.2	7.0	18.4	42.0	39.0	80	0	1	27.4
CL163	187	58.4	66.6	12.3	19.5	43.1	42.0	84	0	1	32.3
CL272	195	63.5	68.7	7.1	20.6	43.8	40.8	83	0	1	24.7
CLL15	192	56.5	65.9	11.8	19.9	40.4	38.0	81	0	1	24.7
CLM04	182	65.5	68.8	5.5	22.7	45.4	42.3	84	0	1	28.6
CLJ01	156	63.4	69.0	7.7	17.8	41.3	37.5	79	0	1	28.3
RU1504197	192	53.1	63.8	10.9	20.4	43.1	37.8	82	0	1	22.2
RU1604197	179	51.8	64.3	15.6	23.8	43.0	43.0	85	0	1	29.6
RU1704055	199	47.3	63.8	8.4	23.2	39.7	42.5	85	0	1	31.1
RU1704122	168	49.7	64.9	10.3	19.0	40.0	37.8	82	0	1	29.4
RU1704198	196	52.6	65.5	11.5	19.1	41.0	38.5	83	0	1	24.3
RU1804107	203	53.3	63.7	18.5	20.6	40.6	39.3	83	0	1	27.6
RU1804123	196	56.4	65.6	9.5	19.8	41.8	40.0	81	0	1	23.0
RU1804147	200	58.0	67.6	12.8	20.1	43.5	41.0	83	0	1	29.8
PVL01	139	53.1	67.7	4.6	21.2	39.4	38.8	84	0	1	30.3
Conventional											
Cheniere	147	53.9	68.1	6.3	16.9	42.3	35.8	79	0	1	23.4
Diamond	181	50.3	66.8	4.7	21.1	44.2	44.3	84	0	1	29.2
LaKast	197	51.9	66.0	9.3	18.0	42.5	41.3	80	0	1	27.1
Mermentau	142	57.2	63.8	10.0	19.7	40.9	39.5	78	0	1	25.2
Rex	185	59.2	66.6	11.6	21.0	42.6	39.5	82	0	1	29.5
Sabine	154	59.1	66.7	5.3	20.9	43.5	39.8	83	0	1	29.1
Thad	186	57.3	66.7	6.3	21.9	44.9	43.0	85	0	1	26.8
RU1604193	192	56.6	66.9	3.3	20.3	44.2	44.8	85	0	1	27.6
RU1704077	190	54.5	64.4	7.7	20.3	44.3	43.3	81	0	1	26.4
RU1804063	181	55.6	65.1	12.4	17.5	42.0	38.5	80	0	1	27.0
RU1804067	190	53.6	64.6	9.6	20.7	43.0	41.3	84	0	1	27.8
RU1804071	179	50.2	65.4	4.3	19.1	43.7	40.3	83	0	1	27.4
RU1804179	185	55.6	67.8	15.5	18.6	41.5	43.8	82	0	1	29.7
RU1804187	160	58.6	67.2	6.4	19.2	43.2	41.8	82	0	1	27.2
RU1804214	173	57.8	66.1	7.4	18.2	43.1	38.3	81	0	1	29.5

[1]**Planting date:** May 1. **Emergence:** May 14. **Herbicides:** Command at 1.3 pt/A and Gramoxone at 40 oz/A on May 1; Facet at 28 oz/A, Stam at 4 qt/A, and Permit at 1.3 oz/A on June 4. **Insecticide:** N/A. **Fungicide:** N/A. **Fertilizer:** 150 lb/A urea on June 4. **Harvested:** September 2. **LSD = A difference of 19 bu/A is required for one variety to differ from another at the 5% probability level. C.V. = 6.4%**
[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 experimental lines grown on Sharkey clay soil near Tunica, Mississippi (34°69'85"N, 90°23'27"W), 2019.[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											
XP753	265	50.7	69.3	9.3	11.9	41.6	43.0	82.0	0	1	30.3
RT7801	300	55.2	67.3	4.8	18.3	39.8	47.3	89.5	0	1	32.2
RT7321FP	265	49.1	68.2	8.6	12.0	41.7	45.3	84.0	0	1	32.6
RT7301	250	49.6	68.6	9.2	12.4	41.8	41.8	85.5	0	1	32.6
RT7521FP	287	53.9	66.6	9.9	12.5	40.5	46.5	84.5	0	1	29.2
Clearfield/Provisia											
CL151	222	58.5	69.1	9.5	12.4	43.1	40.0	82	0	1	30.7
CL153	225	60.5	69.0	5.7	12.3	42.9	40.5	83	0	1	31.4
CL163	209	59.2	67.8	8.5	12.4	42.5	41.3	84	0	1	29.7
CL272	208	54.7	68.0	7.9	14.2	43.9	42.3	84	0	1	29.6
CLL15	254	60.2	69.1	6.6	13.8	42.7	37.8	86	0	1	33.6
CLM04	212	60.9	67.4	5.7	17.9	45.3	42.3	86	0	1	27.7
CLJ01	201	63.5	70.1	6.2	12.2	38.6	39.3	82	0	1	29.1
RU1504197	213	58.7	66.8	6.3	15.6	43.9	41.3	87	0	1	27.3
RU1604197	211	59.2	68.3	10.1	17.8	43.8	43.8	87	0	1	29.6
RU1704055	218	53.2	65.8	6.0	18.7	39.6	42.0	85	0	1	32.6
RU1704122	240	52.2	67.4	9.3	12.5	41.1	40.5	82	0	1	28.4
RU1704198	214	58.3	68.6	5.7	12.2	42.4	36.5	82	0	1	30.4
RU1804107	228	53.7	65.6	15.7	14.2	41.3	39.3	84	0	1	33.0
RU1804123	229	56.7	67.0	10.5	12.8	42.5	40.3	83	0	1	27.9
RU1804147	231	58.3	67.4	9.4	12.8	44.0	43.3	85	0	1	33.9
PVL01	201	61.0	69.8	3.3	16.5	39.4	41.3	88	0	1	30.3
Conventional											
Cheniere	203	62.8	71.2	5.2	12.7	43.1	37.8	85	0	1	28.7
Diamond	262	53.5	68.9	4.0	13.5	44.6	49.3	89	0	1	31.7
LaKast	247	54.9	68.8	5.2	12.5	43.4	45.0	82	0	1	32.4
Mermentau	204	62.8	69.4	7.6	14.2	43.9	42.8	83	0	1	29.5
Rex	209	58.7	66.9	7.1	12.6	43.1	41.0	85	0	1	33.3
Sabine	174	62.2	68.5	4.1	15.4	44.2	41.3	86	0	1	29.7
Thad	207	56.6	66.9	4.2	14.4	45.2	40.8	87	0	1	29.4
RU1604193	223	59.8	69.8	2.6	15.0	44.8	46.0	89	0	1	30.5
RU1704077	252	46.5	65.4	7.4	13.4	45.1	44.8	83	0	1	32.2
RU1804063	192	53.6	67.4	12.5	12.3	42.6	36.5	82	0	1	30.6
RU1804067	216	56.6	66.3	8.0	13.7	43.9	39.5	86	0	1	30.1
RU1804071	205	59.8	68.0	4.1	14.1	44.8	40.5	90	0	1	29.9
RU1804179	228	48.4	66.7	7.9	13.0	41.3	44.8	85	0	1	31.1
RU1804187	201	58.3	68.4	5.9	14.5	42.8	39.0	85	0	1	29.2
RU1804214	229	55.5	68.2	4.8	12.7	43.8	37.3	86	0	1	27.4

[1]**Planting date:** April 30. **Emergence:** May 10. **Herbicides:** Command at 1 gal/8 A and glyphosate at 1 qt/A on May 1; Facet at 0.66 oz/A on May 30. **Fertilizer:** 100 lb/A of DAP/ammonium sulfate on May 2; 260 lb/A urea on May 31; 100 lb/A urea on July 2. **Insecticide:** Mustang Max at 1 gal/35 A on August 7. **Fungicide:** Stratego at 17 oz/A on July 17. **Drain date:** August 22. **Harvested:** September 11. **LSD = A difference of 31 bu/A is required for one variety to differ from another at the 5% probability level. C.V. = 8.3%**

[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 10. Average rough rice yields of varieties, hybrids, and experimental lines evaluated in on-farm trials at six locations, 2019.

Entry	Clarksdale	Hollandale	Ruleville	Shaw	Stoneville	Tunica	Average	Stability[1]
	bu/A	*bu/A*	*bu/A*	*bu/A*	*bu/A*	*bu/A*	*bu/A*	
				Hybrids				
XP753	287	291	255	309	159	265	261	21
RT7801	247	273	241	316	214	300	265	15
RT7321FP	250	289	241	306	132	265	247	25
RT7301	228	293	241	301	184	250	249	17
RT7521FP	283	311	333	321	208	287	291	15
				Clearfield/Provisia				
CL151	185	249	212	228	157	222	209	16
CL153	188	273	202	226	188	225	217	15
CL163	254	250	209	238	187	209	225	12
CL272	239	269	239	252	195	208	234	12
CLL15	229	264	233	226	192	254	233	11
CLM04	236	251	246	263	182	212	232	13
CLJ01	202	223	188	194	156	201	194	11
RU1504197	244	275	217	244	192	213	231	13
RU1604197	227	260	224	251	179	211	225	13
RU1704055	233	269	210	246	199	218	229	11
RU1704122	224	266	194	217	168	240	218	16
RU1704198	232	261	216	216	196	214	222	10
RU1804107	213	290	206	232	203	228	228	14
RU1804123	224	270	225	239	196	229	230	10
RU1804147	245	263	214	252	200	231	234	10
PVL01	220	226	229	207	139	201	203	16
				Conventional				
Cheniere	196	223	201	223	147	203	199	14
Diamond	237	246	213	257	181	262	233	13
LaKast	257	241	212	241	197	247	232	10
Mermentau	194	241	188	196	142	204	194	16
Rex	250	257	189	218	185	209	218	14
Sabine	197	235	178	177	154	174	186	15
Thad	256	266	189	235	186	207	223	15
RU1604193	228	273	201	258	192	223	229	14
RU1704077	223	234	190	222	190	252	218	11
RU1804063	251	262	193	222	181	192	217	16
RU1804067	233	263	192	240	190	216	222	13
RU1804071	237	259	179	223	179	205	214	15
RU1804179	255	273	190	227	185	228	226	15
RU1804187	218	257	213	201	160	201	208	15
RU1804214	235	264	201	216	173	229	220	14
Mean	232	261	214	240	180	226	225	
LSD	35	27	37	20	19	31		
CV	9.3%	6.4%	10.6%	5.1%	6.4%	8.3%		
Planting date	April 30	April 22	April 2	April 1	May 1	April 30		
Emergence date	May 10	May 1	April 22	April 22	May 14	May 10		

[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, 2019.

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													
XP753	RT	261	53.8	69.7	8.8	12.6	41.0	42.0	82	5	1	28.7	15827
RT7801	RT	265	53.6	67.6	6.1	15.4	39.3	44.0	88	11	1	31.5	14426
RT7321FP	RT	247	50.4	68.3	8.9	12.2	40.2	44.0	81	4	1	29.9	15169
RT7301	RT	249	52.0	69.4	11.7	13.1	41.8	40.0	83	0	1	29.0	15647
RT7521FP	RT	291	57.0	67.6	8.6	12.6	40.3	46.0	83	4	1	28.5	15930
Clearfield/Provisia													
CL151	LA-HA	209	59.8	69.3	9.4	14.6	42.6	38.0	82	0	1	29.5	15367
CL153	LA-HA	217	62.1	69.7	5.3	14.3	42.8	39.0	84	0	1	30.0	15148
CL163	MS-HA	225	59.1	68.2	9.0	13.4	42.2	40.0	84	0	1	31.0	14638
CL272	LA-HA	234	59.1	69.3	6.1	14.1	43.7	40.0	86	0	1	28.8	15756
CLL15	AR-HA	233	58.5	68.0	8.0	14.1	41.9	36.0	83	0	1	31.0	14625
CLM04	AR-HA	232	63.8	68.9	4.9	16.6	44.8	42.0	87	0	1	28.4	15986
CLJ01	LA-HA	194	64.9	70.7	6.3	13.3	41.5	37.0	83	0	1	29.3	15510
RU1504197	MS	231	57.6	67.5	9.3	14.7	43.9	39.0	85	0	1	28.0	16231
RU1604197	MS	225	55.7	67.6	13.8	15.9	43.1	41.2	86	0	1	30.6	14850
RU1704055	MS	229	52.3	66.5	7.6	15.5	39.8	41.0	86	0	1	35.0	12982
RU1704122	MS	218	52.3	68.0	8.3	13.3	41.1	38.0	84	0	1	31.3	14505
RU1704198	MS	222	55.8	68.3	7.9	13.3	41.9	36.0	84	0	1	29.8	15242
RU1804107	MS	228	55.3	66.9	12.4	15.0	41.4	38.0	86	0	1	32.6	13945
RU1804123	MS	230	55.9	66.8	9.9	13.7	42.7	39.0	83	0	1	29.0	15640
RU1804147	MS	234	57.0	67.0	10.1	13.8	43.3	41.0	84	0	1	32.4	14006
PVL01	LA	202	58.1	69.8	4.2	14.4	39.9	39.0	88	0	1	30.3	14983
Conventional													
Cheniere	LA	199	61.6	71.6	4.8	13.0	42.4	36.0	84	0	1	27.8	16331
Diamond	AR	233	53.8	69.0	4.2	14.2	44.2	45.0	87	0	1	32.4	14012
LaKast	AR	232	54.5	68.6	5.8	13.2	43.3	43.0	83	0	1	32.6	13926
Mermentau	LA	194	62.5	69.3	6.7	14.0	42.9	39.0	83	0	1	29.5	15375
Rex	MS	218	60.1	67.6	7.5	13.9	43.1	40.0	85	0	1	33.3	13622
Sabine	TX	186	61.1	69.3	4.0	14.6	44.0	38.0	85	0	1	29.9	15177
Thad	MS	223	55.6	67.7	4.6	14.6	44.8	40.0	85	0	1	29.9	15191
RU1604193	MS	229	60.4	70.4	2.4	14.2	44.4	44.0	87	0	1	30.3	14991
RU1704077	MS	218	52.5	66.8	6.1	14.1	44.9	41.5	83	0	1	31.5	14400
RU1804063	MS	217	54.6	67.5	10.2	13.3	42.3	37.0	82	0	1	31.4	14465
RU1804067	MS	222	57.0	62.6	8.0	14.1	43.7	39.0	84	0	1	31.6	14354
RU1804071	MS	214	56.7	67.7	3.4	13.9	43.8	39.0	86	0	1	31.6	14380
RU1804179	MS	226	51.1	68.4	11.1	13.2	41.3	42.0	85	0	1	33.1	13704
RU1804187	MS	208	56.7	68.5	6.5	13.2	37.8	39.0	84	0	1	30.9	14696
RU1804214	MS	220	56.7	68.7	4.6	13.5	43.4	37.0	85	0	1	31.9	14238
Mean		225	57	68	7	14	41	40	82	5	1	31	14869
LSD		22.4	2.3	2.3	1.7	2.0	1.8	1.5	3.9	4.8	0.1		
CV		15.2	5.4	4.5	30.7	21.9	5.6	5.0	6.1				

[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.

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						
Cheniere	LA	193	60.3	72.1	6.3	40.3	37	88	7	1	25.2	18195
Diamond	AR	229	52.7	69.2	6.6	41.9	43	89	2	1	27.9	16509
Lakast	AR	231	52.2	69.4	6.3	41.6	43	87	8	1	29.0	15821
Mermentau	LA	204	61.3	69.9	10.1	41.0	39	86	0	1	26.4	17380
Rex	MS	224	58.3	68.0	8.3	41.7	41	88	0	1	30.1	15193
Sabine	TX	189	59.3	70.1	5.5	42.2	39	88	0	1	27.1	16924
Thad	MS	224	54.7	68.6	5.4	43.3	39	89	2	1	27.5	16567
XP753	RT	285	50.0	70.6	10.8	39.6	43	85	7	1	26.9	16914
						Clearfield						
CL151	LA-HA	206	56	70	11.4	40.9	39	86	17	2	26.5	17282
CL163	MS-HA	208	58	69	9.8	39.6	40	89	17	2	27.8	16447
CL153	LA-HA	220	59	70	6.2	40.8	38	87	5	1	26.6	17217

Table 12. Average agronomic and milling performance of varieties and hybrids grown at 21 on-farm locations from 2017–19.[1]

[1]Data presented are the averages of 21 total sites that served as the On-Farm Variety Trials for 2017–19. 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
CL151[3]	90-135	0-45	90	45
CL152	120-150	45	120	45
CL153	120-150	30-60	90-120	30-60
CL163	120-150	45	120	45
CL172	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	120-140	30-45	90-120	30-45
Mermentau	120-150	30-60	90-120	30-60
PVL01	120-150	30-60	90-120	30-60
PVL02[4]	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.

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