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H. Rouse Caffey RICE RESEARCH STATION NEWS

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1909-2017
54 released varieties

Southwest Region

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Rice Varieties for 2019

PROVISIA

The first Provisia variety, PVL01, was released by the H. Rouse Caffey Rice Research Station in 2017 and was grown commercially in 2018. The expectations for the yield of PVL01 were not high, as it is the first line developed with the Provisia technology. However, performance in 2018 exceeded what was observed in seed production fields in 2017. There were many producers who reported yields of PVL01 in the low to mid 40 barrel range (~6,500-7,000 lb/A). Similar increases in yield were observed across our breeding trials in 2018 with an average yield of PVL01 of 46 barrels (7,500 lb/A). This was an average increase of 18% compared to testing in 2015-2017. It has been documented that PVL01 is very susceptible to blast disease, and producers should plan on one to two fungicide applications, one at pre-boot and one at 50% heading. The increased yield observed in PVL01 in 2018 is likely in part due to low levels of blast that year. The ratoon capacity of PVL01 is not high with reports of a ratoon harvest between 5-10 barrels; however, some producers reported applying a ratoon application of Amistar Top to the ratoon and obtaining improved ratoon yields. Amistar Top is our only fungicide labelled for use in the ratoon crop.

The grain appearance of PVL01 is excellent with a long grain (more than 7 mm) and very low levels of chalk. The long grain of PVL01 has led to some reduced milling yields as the mills are optimized for the slightly shorter grain length of the other varieties on the market. PVL01 matures about 7-10 days later than the other varieties on the market, an attribute some producers have commented that they prefer as it helps spread out the harvest when everything is planted at the same time. The Provisia technology has provided excellent weed control of red rice and other grasses. It has also proven to be an excellent tool in cleaning up red rice fields in which the Clearfield (CL) technology is no longer effective due to outcrossing of the CL trait to weedy rice. Thus, PVL01 is an excellent option for producers who want to clean up Clearfield-resistant red rice fields and increase the yield potential of these fields in both the short and long term.

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Special Dates of Interest:

- **H. Rouse Caffey Rice Research Station Annual Field Day June 26, 2019**

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CONVENTIONAL MEDIUM GRAIN

Titan is a new conventional medium grain that was released by the University of Arkansas and is being produced by the Foundation Seed Program at the Rice Research Station. Titan was recently approved by Kellogg's and is likely to take over significant acreage from Jupiter. Across multiple years of testing, Titan consistently performs equal to or better than Jupiter for the key traits of importance. Titan offers moderate yield improvements over Jupiter, while maturing 4-7 days earlier. Titan is less prone to lodging and contains the *Piz* blast resistance gene making Titan more blast resistant than Jupiter. Milling yields have been consistently equal to or better than Jupiter, and the observed chalk levels are lower than Jupiter. Titan appears to be a solid variety that provides producers a great option in addition to Jupiter when growing medium-grain varieties.

CLEARFIELD

CL153 is the most recent CL long grain released by the LSU AgCenter. In 2018, it was the most widely grown CL variety in Louisiana. CL153 has performed very well overall the last couple of years, but there are some reports of it not performing consistently well in in some producers' fields. CL153 offers some significant advantages over CL151 and CL111. CL151 is the highest yielding CL variety on the market, but it has some limitations in that it is prone to lodging, has high levels of chalk, and is very susceptible to blast. CL153 offers excellent yield potential, consistently out-yielding CL111 and yielding very similarly to CL151. However, overall, CL153 appears to yield slightly less than CL151. CL153 provides significant advantages over CL151 in terms of grain quality and milling with much reduced levels of chalk. CL153 is also a big improvement in terms of blast resistance, as it contains the broad-spectrum blast resistance gene *Pita*. It is also much less prone to lodging compared to CL151 with a lodging rating of moderately resistant. The height of CL153 is similar to CL111 and CL151, and the maturity is the same as CL151, about 3-4 days later than CL111. Similar to CL151, CL153 is rated as susceptible to sheath blight, an improvement over CL111, which is very susceptible.

Another recently released CL line is CLJ01, which is the first Jazzman-type CL variety. Jazzman varieties are a specialty type that offer a long, aromatic grain with a low amylose and low gelatinzation temperature. CLJ01 is a significant yield improvement over Jazzman-2 with yields consistently 10-20% greater. CLJ01 also has excellent grain quality with extremely low chalk and excellent milling. CLJ01 has the lowest level of chalk among any variety we have tested. The level of aroma is strong when cooked, and the 2AP concentration is lower than Jazzman-2 but similar to Jazzman. CLJ01 is a few days later maturing than CL153 and Jazzman-2 and is a semidwarf with a plant height of 37 inches. It is moderately resistant to lodging, blast, and Cercospora and moderately susceptible to sheath blight and bacterial panicle blight. Being a specialty-type variety, it has been grown on limited acres, but the performance thus far suggests that this variety is a very good option for producers growing Jazzman-type varieties.

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Seed Treatments for Stand Establishment

Planting time is approaching quickly and the weather will be warming soon so it is time to think about planting rice. After the choice of variety is made, the main concern is establishing a good stand. Adequate rice stands provide yield potential and competition against weeds. With the increasing cost of hybrid and private varieties, and the trend to lower planting rates to reduce costs and lower foliar disease pressure, seed treatments are an important investment toward insuring adequate and vigorous stands. Seed treatments also provide other advantages including protection from insect damage and disease development later in the year. Several seed treatments are available to help establish stands but they can be expensive. At the same time, decreasing profit margins mandate establishing a stand the first time to avoid replanting.

Rice seed treatment fungicides protect seeds and seedlings from fungi in the soil that either attack the endosperm, which depletes the food supply of the seedling, or directly attack and kill the seedling. In research plots over the last 20+ years, fungicides have increased stands by a 20-25 percent under cool, wet conditions. When planting conditions are favorable for stand establishment, they have less effect on stands. Rice also has the ability to compensate for thin stands by tillering, and yield increases are not always achieved.

Gibberellic acid seed treatment has proven more useful in drill-seeded rice than in water-seeded rice. Faster emergence, better stands, and taller seedlings are the primary benefits. The greatest benefits are realized in three main situations:

1. **When germination and emergence are expected to occur under adverse environmental conditions (planting early – before April 15 in south Louisiana and before May 1 in north Louisiana).**
2. **When planting deeper into adequate soil moisture to minimize flushing for germination (planting between 0.5 to 1.5 inches deep).**
3. **When seed is limited due to costs or availability (planting at less than 60 lb/A).**

Gibberellic acid and fungicides can have the same effect, helping the rice seedling become established at which time they become resistant to seed and seedling diseases.

Zinc seed treatments help but do not always eliminate Zinc deficiency in early planted rice. If conditions become too unfavorable (cold), the amount and availability of seed-applied zinc is too small and foliar zinc applications may still be necessary. As the weather warms, Zinc seed treatments become less valuable.

Insecticidal seed treatments control numerous rice insects, especially the rice water weevil. Earlier planted rice is affected less by insects so earlier planted rice will benefit less from insecticidal treatments. One major benefit of insecticide seed treatments is that the control of the rice water weevil eliminates the need to drain fields to control this insect. This, in turn, reduces the possibility of rice blast which is favored by upland (drained) conditions besides reducing nitrogen loss, weed pressure, and water costs. Blast susceptible rice varieties should be treated with an insecticide seed treatment to reduce the risk of disease development due to draining.

Bird repellent seed treatments are very effective in reducing depredation by bird feeding. They are expensive but can be a good investment early in the year, especially in areas where flocks of seed eating birds congregate. Later in the year their value decreases as bird populations decrease due to migration.

Although seed treatments will not always ensure an adequate plant stand, their benefits usually exceed their costs when needed. These materials are used for ensuring stand maintenance and avoiding problems later in the season but seldom increase yields greatly. Rice producers are encouraged to evaluate the conditions present at planting to determine which seed treatments are necessary and which can be eliminated to reduce costs.

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Treated Seed

The 2018 Rice Season in Louisiana

Record grain yields were last achieved in Louisiana during the 2014 growing season when we were blessed with very favorable weather conditions. Until 2018, each crop since 2014 had been successively lower yielding than the year before. Louisiana saw constant rainfall and cloudy conditions nearly the entire rice growth period in 2015. In 2016, record flooding occurred when over 24 inches of rainfall was recorded in a 36-hour period during harvest in some areas in southwest Louisiana. The 2017 season saw more flooding, albeit earlier in the season, and poor growing conditions throughout the remainder of the season. I would say Louisiana was due for a good year. Fortunately, Louisiana had more favorable growing conditions in 2018 and near record yields were obtained, but there were many agronomic challenges along the way.

Louisiana planted just over 434,000 acres in 2018. Planting was spread out more evenly than normal from the period beginning in late February through March, mainly due to wet soil conditions caused by frequent, but not excessive, rainfall. The Rice Variety by Parish Survey conducted annually by extension agents indicated that Louisiana planted approximately 89% long grain, 10% medium grain, and 1% special purpose rice varieties. The top planted rice varieties and hybrids included CL153 (19.5%), CL111 (14%), Cheniere (11.9%), Mermentau (10.5%), CLXL745 (9.7%), Jupiter (5.8%) and XP753 (4.9%). Clearfield seed technology in both inbred and hybrid rice varieties made up approximately 59% of the acres. The new Provisia herbicide technology was available for the first time in 2018 in a variety named PVL01 and it was planted on approximately 10,000 acres or 2.3% of the total acreage.

The first real challenge of 2018 was cool weather. Most of March and the first few weeks of April were cooler than normal. In fact, we even had a daily low temperature in the third week of April that reached into the mid-30s. Cold damage, delayed growth and development, and short and stunted plants were common early on.

Rice stressed by cold weather also tended to be more susceptible to herbicide damage with many of our commonly used early-season rice herbicides. The rice herbicide Loyant was available to growers for the first time in 2018. Loyant is a unique herbicide in that it is an auxin and it has activity on broadleaves, sedges, and even some grasses. It was used on many acres during its first year of availability and we learned a lot about the herbicide. First, it is only effective on small grasses and is not effective in controlling the larger grass problems. However, it is very effective in controlling soybeans and several drift issues with the herbicide were recorded. Rice can also be damaged by the herbicide when used on recently land-leveled fields or when other rice stresses (like cold stress) are present. Hybrid rice also seemed to be more susceptible to the damage than conventional rice.

The weather turned hot almost overnight in late April, almost like a light switch was turned on. Hot dry weather was prevalent throughout the remainder of the season until very late. Preflood nitrogen fertilizer applications were easily made in 2018 making the fertilizer efficiency higher than in most years. The drought-like conditions made the rice move quickly and favorable for high yields due to the lower disease potential. The only real problem were growers who could not keep up with the flood due to lower irrigation capacities.

The winter preceding the 2018 planting season was colder than normal and the sentiment going into the season was that the insect and disease pressure would be lessened to some degree. Disease potential was low due to the drought conditions and few blast issues were reported. Sheath blight did move in late with some of our more susceptible varieties. Insect pressure from stink bugs and the rice water weevil were not overly excessive in 2018.

The new Provisia variety PVL01 did better than expected in 2018. We knew going into the season that the variety was lower yielding than all other commonly grown varieties and hybrids. We also knew that the technology would enable farmers to clean up Newpath-resistant red rice and weedy rice while still making decent yields, and even higher yields in fields that previously had excessive outcross populations. We also learned that the cold weather stress also increased the herbicide damage from the Provisia herbicide; however, the control of red rice was excellent. Due to blast susceptibility, two fungicide applications were applied on the variety. While blast was controlled, sheath blight did become a problem in some fields that received two fungicide applications. Part of the problem is the very leafy canopy of the variety which shielded the fungicide from reaching into the canopy. Nonetheless, the variety probably averaged in the low 40-barrel range in south Louisiana which I would label a huge success.

The 2018 rice did not set a record, however, it will be remembered as one of our highest yielding seasons in Louisiana.

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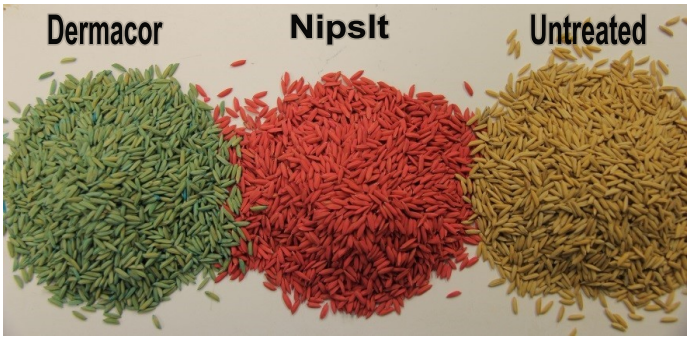
Cold and wet conditions early in the season stunted and stressed rice.

Insect Pest Management Starts Before Planting

It will be months before insects, populations emerge from overwintering sites and begin attacking rice, but in today's industry, rice farmers need to consider pest management strategies well before rice is planted. Insecticidal seed treatments have revolutionized how insect pests, including the rice water weevil, stem borers, and others,are managed. Seed treatment options and associated costs have been increasing in recent years, but insecticides typically pay for themselves through protection of yields. Unlike the less consistent fungicides and micronutrient seed treatments, insecticidal seed treatments have been shown to provide a return on investment in approximately 80% of fields in South Louisiana in which they are used. This is due to the widespread prevalence of yield-damaging weevil infestations. For the 2019 season, farmers have four products available to choose from.



Three products have been available for several years and these have been extensively tested by LSU AgCenter researchers. Dermacor X100 (chlorantraniliprole) is the most effective product available for controlling rice water weevil and is the only seed treatment which provides control of rice stem borers. Two neonicotinoid seed treatments are also available, Cruiser (thiamethoxam) and NipsIt Inside (clothianidin). These products can also provide good weevil control, but yield-reducing infestations may still occur under high pest pressure. The neonicotinoids don't have activity against caterpillar pests, including stem borers and armyworms, but they are effective against colaspis, chinch bugs, and minor pests, including aphids and thrips. The neonicotinoid seed treatments are applied at variable rates per acre depending on seeding rates, and weevil control declines when planted at less than 40 pounds of seed per acre. RiceTec's hybrid seed will be treated with Dermacor X100 in Louisiana and Texas which will maintain a high level of weevil and stem borer control, even at low seeding rates.

The newest seed treatment, available for the first time this year, is a Syngenta product, Fortenza. Fortenza's active ingredient, cyantraniliprole, is in the same class of insecticides as Dermacor X100's chlorantraniliprole. Fortenza was evaluated in four separate trials conducted at the H. Rouse Caffey Rice Research Station from 2015–2018. Results indicate the product provides improved weevil control over neonicotinoid seed treatments. Efficacy of Fortenza when used alone still lags behind that of Dermacor, but when used in combination with Cruiser weevil control is comparable. Fortenza doesn't provide control of stem borers, which tend to infest mid- to late-season rice. Efficacy against colaspis, armyworms, and other sporadic early season pests in Louisiana was not assessed as these pests were not present in sufficient numbers.

Farmers can also incorporate non-chemical tactics into their pest management plans. Ensuring all fields are planted within the AgCenter's recommended planting window of March 10 through April 15 in south Louisiana or April 1 through May 5 in north Louisiana will greatly improve the pest outlook. Rice planted after this window will be exposed to increased populations of rice water weevils and stem borers. Water management also influences weevil infestations. Water-seeded fields are highly susceptible to weevil infestations. Farmers should consider using Dermacor in these fields as this is the only seed treatment which is legal to apply to water-seeded rice. Flooding before the 4-5 leaf stage can exacerbate yield losses from weevils, and this practice should be avoided if insecticides aren't used.

More information on insecticidal seed treatments is available in the *Rice Varieties and Management Tips* as well as the *Louisiana Rice Production Handbook*.

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Rice Chair

The Louisiana Rice Research Board has taken the bold step of allocating $1 million for a research chair, with the possibility of increasing that amount.

"This is really a novel idea for funding research," said Dr. Don Groth, LSU AgCenter resident coordinator of the H. Rouse Caffey Rice Research Station.

Groth said the funds will generate interest and that money will be spent only on research. Currently, the chair will generate $35,000-40,000 annually.

He said a scientist at the Rice Research Station will be honored with the endowed chair, but that individual will not receive any of the funds personally.

"It will go to overall station support," Groth said, explaining that the board will be briefed on how it will be spent. "We'll keep track of what it's spent on and present that information to the board each year."

The first money generated from the chair will be received in the fall, he said.

The $1 million principal is coming from funds obtained through the Colombian Free Trade Agreement that must be used for research.

Richard Fontenot, LRRB chairman, said planning for the chair began in 2015. "The research that has come out of the LSU AgCenter over the years has certainly helped the Louisiana rice industry, but it has also supported and fed the world," Fontenot said. "This endowment has been in the works for a long time and now that it is official, I feel good knowing the rice industry will continue to benefit from world-class research that will come out of the LSU AgCenter thanks to this strengthened research program."

Dr. Rogers Leonard, LSU AgCenter associate vice president, said the chair will provide a reliable funding source for research. "This perpetual funding source will help make sure that the LSU AgCenter's world-class rice research will continue uninterrupted."

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Focus

Jessica Thornton

Jessica Thornton came to work at the H. Rouse Caffey Rice Research Station in October 2016.

After graduating from college in Texas, she was looking for work, and came knocking at the station door to see if there were any openings. Soon, she got a call about a job working for Dr. Adam Famoso, LSU AgCenter rice breeder, and a year later she was promoted to lab technician.

In March 2018, she started work full time as a research associate for Dr. Jim Oard, hybrid rice breeder.

"I am a participant in multiple projects, including keeping track of the entire seed inventory, treating the seeds, loading the cells for planting in the field and assembling all the field books."

She also makes crosses for hybrid lines, as well as planting, harvesting and keeping track of the work of five graduate students, as well as maintaining inventory of supplies.

Jessica just made a series of 150 crosses in January that will be grown in the greenhouse for the next round of crosses to be considered by Dr. Oard for planting in the field.

The hybrid program is focusing on finding the best hybrid for commercial use.

Oard said she is an asset to his program. "She's very well organized and task driven, and I'm glad to have her working on the hybrid project."

Jessica said she enjoys the work because she's not always indoors. "I like to be outside all the time, but this job makes that's possible for at least half of the year. Working in the greenhouse is a nice substitute during the off season."

Although Jessica had no experience with agriculture, she has a background in the natural world, graduating from the University of Louisiana at Lafayette with a bachelor's degree in biology. She later earned her master's degree in biology from Texas State University at San Marcos, Texas.

She credits a teacher at Lafayette High School for her interest in biology.

Jessica belongs to the Acadiana Master Naturalists, and she organized a birdwatching group.

"I want to see all the birds living in the U.S."

She said her count is currently 273 different species, limited to Texas and Louisiana, of the approximately 1,000 birds in the country.

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