

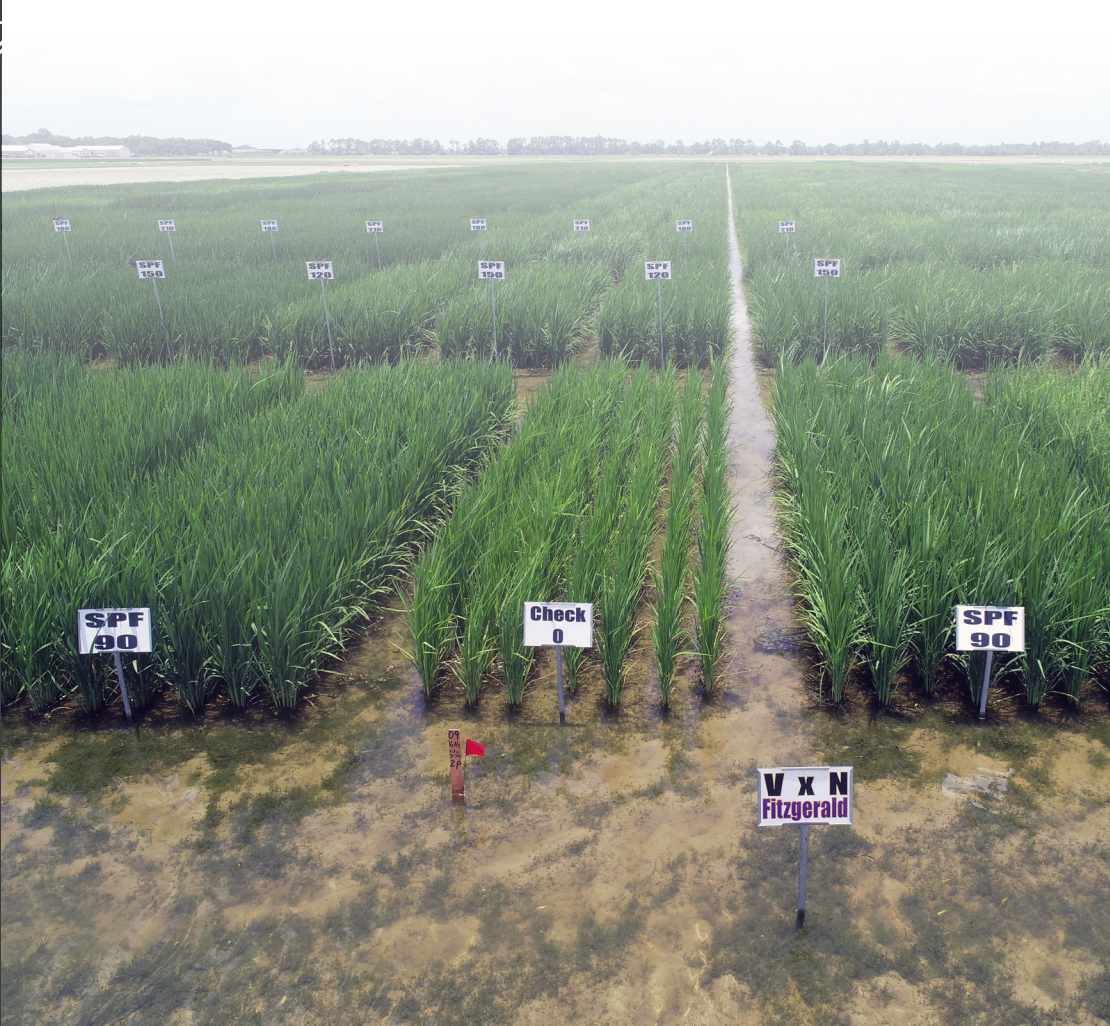


2025 ANNUAL REPORT

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Checkoff Funds Support Research for Louisiana Rice Farmers



Rice fields at the H. Rouse Caffey Rice Research Station where researchers are trying new management strategies. See story, Page 6. Photo by Manoch Kongchum

LSU AgCenter boosts rice industry with breakthrough variety development

By Olivia McClure

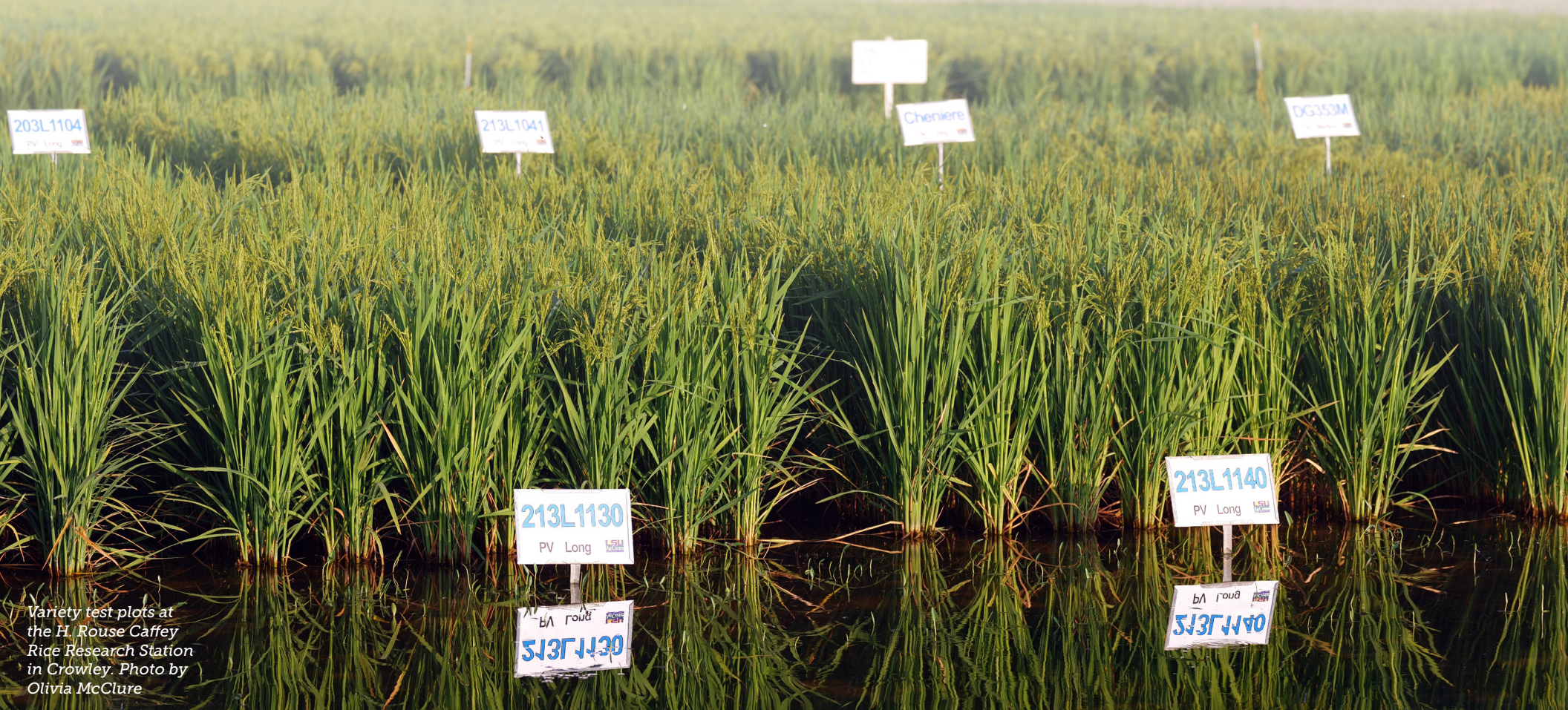
For more than a century, the LSU AgCenter H. Rouse Caffey Rice Research Station has carried out a straightforward mission: to enhance the profitability and sustainability of the Louisiana rice industry.

One of the biggest components of this charge is developing new varieties that produce higher yields and better quality rice. The station has notched dozens of breakthrough releases over the years, and its scientists are always on the hunt for the next best variety. They breed traditional long-grain, medium-grain

and specialty-type rices as well as varieties meant to be used as part of the Clearfield and Provisia weed control systems.

“We’ve done some calculations and a lot of historical analysis, and it’s shown that, on average over the last 100 years, the breeding program’s yields have increased just below 1% per year,” said Adam Famoso, station director and rice breeder. “When we look at a variety like CLLI9, which was released just this year, and compare it to the varieties we had 10 years ago, it’s a very

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Variety test plots at the H. Rouse Caffey Rice Research Station in Crowley. Photo by Olivia McClure

Change essential to success

Very few things in life are consistent. That, in my experience, is even more true in rice farming. Our checkoff system, however, may be one of those exceptions. For decades now, our collective investment as rice farmers has yielded us greater research and promotion returns than we would have seen otherwise. I believe we have had another successful year in keeping this part of your balance sheet as a consistently sound investment.

The importance of contributing towards this collective investment, however, is changing. It is becoming more important by the year that we maintain every rice farmer possible in this family of growers that contributes \$0.05 per hundredweight to rice research and \$0.03 to rice promotion. Just like on our farms, that \$0.08 total can't go as far as it used to in buying power.

Inflation has been more than a buzzword this year. It has been a profit-robbing reality. Costs have gone up while yields haven't seen the same great leap. Couple that with a volatile market and stagnated farm safety net public policies, and it creates a challenging time to be in the rice business.

That only makes our checkoff system more important. By contributing a minor amount collectively, we can improve our yields, savings and market access more than on a farm-by-farm basis.

Yield improvements certainly start with variety selection. That is why our board continues to prioritize the LSU AgCenter's rice variety development program as our flagship investment of your checkoff dollars.

For example, CLL19 was commercially available for the first time in 2024 and has demonstrated an overall improvement in yield and stability over previous releases. Two new specialty type varieties were increased for release in 2024: Fitzgerald is a Jazzman, and CLH03 is a high amylose type. These varieties offer increased yield and stability over previous varieties in these segments, helping our industry adapt to market and consumer demand.

A new conventional medium grain, tentatively named Venus, is in seed production with a planned commercial launch in 2026. This variety has demonstrated consistent yield improvements over

Jupiter and Titan and has excellent agronomic and milling characteristics.

Research programs in pathology, entomology, weed science and other agronomic practices have also made strides in screening products and production methods for us this past year. The board used the June meeting to pose questions from the cropping season to the LSU AgCenter researchers to provide timely answers in planning 2025 proposals.

From those discussions, we know disease and the lack of disease control options are a big concern. In 2024, one of the major diseases was Cercospora on rice stems and heads. LSU AgCenter pathologists began research on Cercospora symptoms in 2022, after observing that more significant damage was done by symptoms on the stem and head, rather than the narrow brown leaf spot symptoms that have been the focus of pathology research. There are still questions, but great progress has been made in understanding these symptoms thanks to your checkoff investment, both financially and through grower input.

The board is also trying to lead the way in getting the information produced by your checkoff back to you. We have initiated more use of social media. We are also working to implement more updates with our extension network so you can see the results your checkoff dollars are producing. You can help us in this effort by liking or subscribing to the Louisiana Rice Research Board's social media platforms.

Ultimately, our checkoff system hasn't changed. It is still providing Louisiana rice farmers with a high return on a small investment. Our challenge is to make sure that the same investment, with less buying power, is giving you more of a return than ever. Who is better at answering that challenge than a group of farmers? Because that sounds like the same challenge we all face every day — to do more with less.

You can help us by keeping your checkoff dollars in the checkoff system, by sharing feedback with board members and by consuming the information offered through social media and producer meetings.

John Denison, Chairman
Louisiana Rice Research Board



Serving as the 2024-2025 Louisiana Rice Research Board are bottom row from left, Alan Lawson, John Denison and Ross Thibodeaux. Top row from left, Lester Cannon, Kim Frey, Brian Wild, Connor Popeck, Eric Savant and Dustin Watkins. Not pictured are Dylan Benoit, Seth Brown, Charles "Michael" Costello Jr., David LaCour, Hunter Luquette and Charles Schultz. Photo by Frankie Gould

Rice Research Board Members

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Rice harvest started fast but faded late

By Craig Gautreaux

It was a tale of two crops this year for Louisiana rice farmers. Rice planted and harvested early had excellent yields. The ones that were planted and harvested later, not so much.

According to Ronnie Levy, LSU AgCenter rice specialist, the season started strong with producers getting into their fields early and getting a lot of rice planted in early March. A wet, cold spell shut down planting, and it was nearly a month before farmers got back into their fields. The rice that was planted late suffered from higher incidences of disease pressure during the growing season, leading to lower yields.

"We saw yields drop anywhere from 10% to 15% comparing early planted and harvested rice to late planted and harvested rice," Levy said. "In some places, the yield loss was even higher."

Even a portion of the early planted rice suffered. Levy said wet conditions returned towards the end of the early harvest, causing a reduction in yield and milling quality.

Because of the wet conditions during this portion of the harvest, the ratoon crop in some fields did not achieve its full potential. The conditions also delayed the harvest, shortening the window of growth of the second crop.

What has helped the second crop is excellent growing conditions for most of September and all of October. Above-average temperatures and sunny days have improved the yields of the second crop.

"We're seeing yields from the mid-teens (barrels) to the low 20s," Levy said. "Not quite as good as last year but still a good second crop."

By the end of October, much of southwest Louisiana was experiencing severe drought conditions. Levy said farmers took advantage of the dry weather to get their fields prepped for next year.

"Nearly all the fields that will be used for rice production next year are ready to go right now," he said.

Levy said this will allow producers to get off to an early start next year if the weather allows.

Louisiana rice fields continue to be predominately long-grain varieties.

"We don't grow a lot of medium-grain to begin with, but there was even less this past year," Levy said. "The prices this year are lower than last year for their rice crop and a good ratoon crop may help keep rice profitable."

The LSU AgCenter H. Rouse Caffey Rice Research Station has been instrumental in developing new rice varieties that are favored by growers across the country. A recent release, Avant, has had success in commercial fields.

"Avant did really well, especially if it was planted early," Levy said. "Another plus is that it has ratooned very well."

Many rice farmers will turn their rice fields into crawfish ponds after harvesting their second crop. The question many ask is whether harvesting a second crop will cause a reduction in crawfish production.

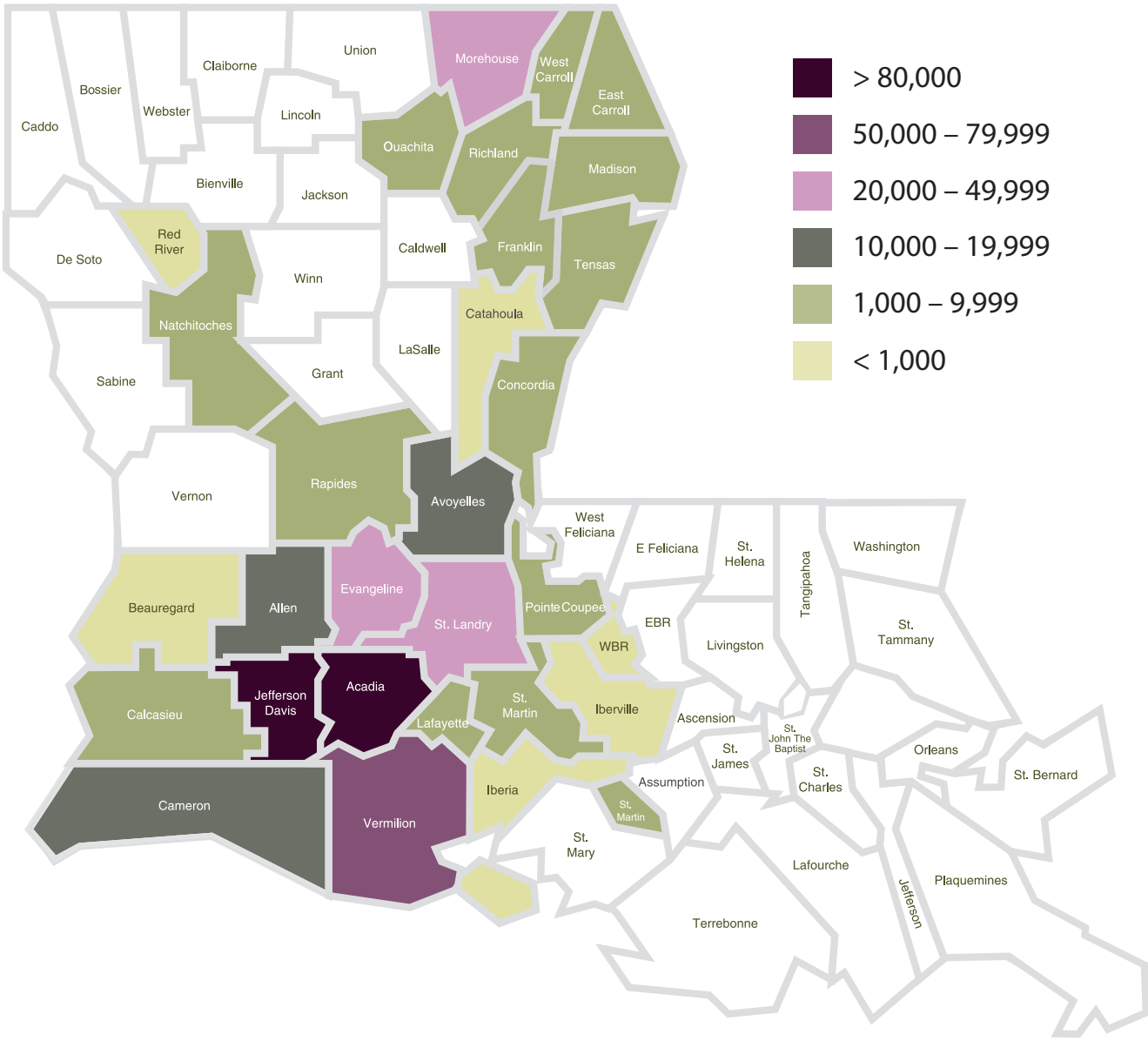
The answer is complicated and involves economics, which invokes another question: How much crawfish production does a farmer lose from second cropping, but does the second crop yield make up for the crawfish loss?

As already mentioned, it's complicated. Most farmers are deciding to go ahead and cut their second crop because this year's second crop looks good, which makes the decision easier. Most farmers will not pass up on this revenue stream. And it makes sound economic sense.

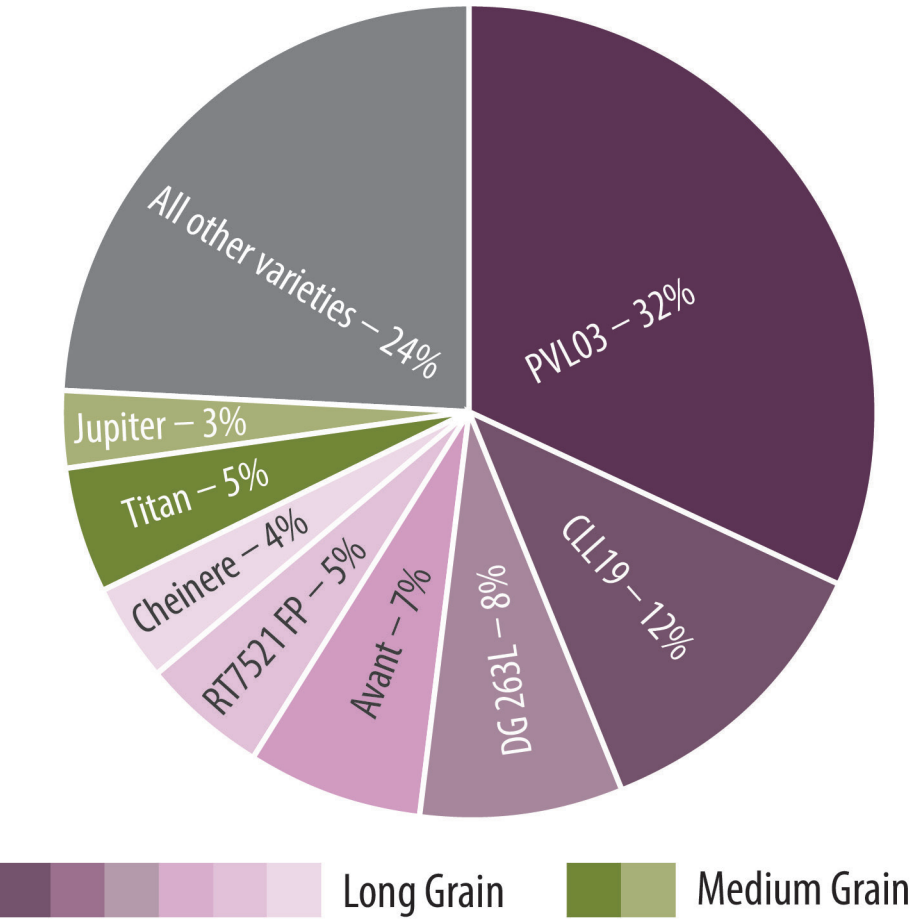
While nearly 80% of the rice acreage is in south Louisiana, there is a significant amount in northeast Louisiana. This year, the two areas had similar growing seasons that led to similar results.

One major difference between the two areas is north Louisiana grows more hybrid varieties compared to south Louisiana. While the hybrids typically have higher yields, the input costs for hybrids are much higher, primarily because of seed costs.

2024 Louisiana Rice Acreage
by Parish, All Types



2024 Louisiana Rice Acreage



Top 10 Rice Parishes

Parish	2024 Total Acreage	2023 Total Acreage
Acadia	86,992	86,788
Jeff Davis	86,773	87,282
Vermilion	65,711	63,028
Evangeline	47,575	48,848
Morehouse	36,593	35,197
St. Landry	28,257	27,457
Avoyelles	16,354	15,698
Allen	15,672	15,301
Cameron	14,987	15,382
Rapides	9,360	10,196

2024 Total Acreage: 459,960
2023 Total Acreage: 461,371

Scientist: Preemergence herbicide effective at controlling two rice weeds

By V. Todd Miller

A preemergence, grass residual herbicide is proving to be effective in controlling two of the most problematic grasses to rice with little to no crop injury, according to LSU AgCenter weed scientist Connor Webster.

Containing the active ingredient tetflupyrolimet, the herbicide was tested across multiple water management systems including a delayed flood, water-seeded pinpoint flood and row rice.

"It has a narrow spectrum, so it's not going to control all of our grasses," Webster said. "But it is going to control probably two of the most troublesome, which are barnyardgrass and Amazon sprangletop."

According to Webster, studies evaluated varietal response, optimal rate ranges across soil types, how tetflupyrolimet fits into complete herbicide programs, early season water-seeded application timings, optimal preemergence and delayed preemergence herbicide mixtures and applying tetflupyrolimet impregnated on basic fertilizer at planting.

"This is the second year of the variety trial, but we've been looking at this product since 2021," Webster said.

Tetflupyrolimet was also evaluated on cut ground in 2024 and no crop response was observed. Two on-farm trials were conducted in 2024 to evaluate its activity on Neally's sprangletop.

"It was the perfect situation to be able to evaluate this new herbicide and see how it interacts with hard cut ground, and we really didn't see any issues with that," he said.

According to Webster, another big part of the program being examined is a new herbicide that isn't a new mode of action but belongs to a mode of action that's been around for the last 30 to 40 years.

"We're evaluating another new active ingredient that down the road we'll be able to discuss in more detail, so stay tuned," he said.



Connor Webster speaks about the new FMC product, tetflupyrolimet, at the South Farm/ Acadia Parish field day with roughly 105 people in attendance. Photo by Gavin Sparks

Other research topics from this year include:

Simulated Newpath/Preface carryover in PVL03, Avant and Jupiter.

Studies were conducted to evaluate the yield effects of carryover of imazethapyr to commonly planted rice cultivars in Louisiana.

Prior to planting, low rates of Preface were applied to bare soil and flushed to incorporate the herbicide into the soil profile. In 2023, the rates ranged from 0 to 1 fluid ounce per acre of Preface in 1/8 of an ounce increments.

These rates did not result in yield differences compared with the nontreated plots, so the rate structure was adjusted in 2024 to 0 to 2 fluid ounces per acre of Preface in 1/4 of an

ounce increments. The goal is to determine yield potential of different varieties based on the amount of imazethapyr present in the soil.

Simulated overcast weather conditions and how overcast weather influences Provisia injury.

Since the release of PVL01, crop response has been an issue. In 2023, due to adverse growing conditions, numerous reports of negative crop response were reported. Two studies were designed with different levels of shade cloth covering the plots to simulate different degrees of solar radiation.

One study introduced shade to the plots seven days prior to the Provisia herbicide application; the other introduced shade seven days after application.

In the 2023 season, it was observed that crop response chances increased when overcast growing conditions were present after an application. Crop response was observed for both timings of overcast growing conditions but were more prevalent after a Provisia application. These studies were repeated in 2024.

Identification and control of fimbristylis.

Beginning in 2022, on-farm trials have been conducted in green rice fields on Hebert Farms in Abbeville. The results from these on-farm research trials have made a substantial impact on rice production in south Louisiana.

The information gained from these studies has been disseminated at winter production meetings and provided the vital information needed for recommendations that were made throughout the 2023 and 2024 growing seasons.

Of the herbicides evaluated, 2,4-D provided the highest levels of control followed by Grandstand, Rogue, Novixid and Regiment.

Of the residual control studies conducted, Prowl and Bolero provided the highest levels of residual control of fimbristylis.



Research Associate Ben Stoker and graduate student Gavin Sparks harvest a trial evaluating a new herbicide active ingredient. Photo by Wesley Carr

New algorithm could help AgCenter analyze rice yields with notable efficiency



Researchers analyzed the images of rice produced from the LSU AgCenter's breeding program to evaluate grain characteristics like chalkiness, milling and grain length at the H. Rouse Caffey Rice Research Station. Photo by Jardel da Silva Souza

By Anthony Bailey

LSU AgCenter scientists and genetics experts have been working on a new platform to better evaluate grain quality from rice produced through the AgCenter's rice breeding program. The platform would allow researchers to quickly determine certain characteristics of the rice with a focus on chalk impact.

Led by Jardel da Silva Souza, a visiting researcher from Brazil, and Roberto Fritsche-Neto, an assistant professor and researcher at the H. Rouse Caffey Rice Research Station, the platform development began this past year to be able to save time and money when evaluating the rice produced. Currently, the equipment used is expensive and takes too long to adequately test the new varieties at the speed researchers would like.

Souza had done work like this before while working towards his master's degree in Brazil. He used pictures of ornamental plants and created an algorithm to

find out information on color intensity and how the different phenotypes would change a plant's architecture.

He used this idea for the new rice analysis program which uses pictures of rice to evaluate it. After the photos are put into the system, they are then processed through an algorithm and the physical characteristics of the rice, such as chalkiness, milling and grain length, can be evaluated.

The new platform has been found to be efficient at correctly evaluating the rice yields and significantly lowering the time it would take to do so. The process to look at the almost 10,000 breeding plots at the Rice Research Station would take only 10 business days and cost about \$1,500, significantly less than the \$40,000 currently spent on equipment.

Work is still being done to make the platform more efficient and adapt it to changing field conditions. The

work will continue over the next few years to fine-tune the algorithm, but Souza and Fritsche-Neto are excited about the opportunity to make such a large leap forward for their research.

"As soon as I received the project, I saw enormous potential in it. It was something that needed to be done to facilitate research and speed up the process," Souza said. "In plant breeding research, decisions need to be quick, and this project offered the opportunity to conduct applied research that could have a significant impact."

There are still some issues with the program, like being able to find photos of the rice that can be used within the algorithm, as well as the more logistical issue of Souza returning to Brazil to finish his Ph.D. However, the program could soon be used in its intended manner increasing efficiency for researchers.

Economic tools available for rice producers

By Olivia McClure

To help rice growers make good decisions, LSU AgCenter economist Michael Deliberto prepares a variety of farm management tools and keeps close tabs on market conditions.

Rice enterprise budgets: Updated and released annually, these spreadsheets contain projected costs and returns for rice production in Louisiana for the upcoming crop year. Growers can enter their estimated costs and quantities for items like labor, fuel, fertilizer and irrigation to get customized budgets.

The Microsoft Excel files are available at no cost on the AgCenter website. Variations are offered for conventional, Clearfield, hybrid and Provisia rice systems; water and drill planting; flooded and furrow-irrigated rice; and northeast and southwest Louisiana.

"This type of planning information plays a pivotal role in the development of annual crop production plans by producers," Deliberto said. "In addition, information regarding production alternatives and costs and returns for major crop enterprises is needed by extension personnel, researchers, ag lending institutions and agribusiness firms."

Just as no two rice farming operations are alike, no two budgets are alike. Deliberto has worked to make the budget spreadsheets more detailed to account not only for estimated net returns and cash flow but also for the nuances of each farm. The budget templates "can consider other management decision areas such as enterprise compatibility, alternative land rental arrangements, ARC and PLC farm program payments and crop insurance coverage efficiency," Deliberto said.

Economic analysis: Deliberto studies economic considerations related to emerging production

practices, including climate-smart methods. He is currently analyzing the cost effectiveness of alternative irrigation systems such as alternate wetting and drying (AWD) given varying degrees of irrigation frequency.

Newsletters: "Growers must have access to timely market information," Deliberto said. To meet this need, he writes a monthly crop market report that summarizes the domestic market situation as well as international dynamics that are impacting the global rice market. He also publishes a quarterly agricultural policy newsletter that focuses on policy issues of interest to rice growers, such as the development of the farm bill, H-2A labor, conservation program availability, export trends and trade. To be added to the distribution lists for these publications, email Deliberto at mdeliberto@agcenter.lsu.edu.

AgCenter researchers look to improve water, fertilizer efficiency in flood system

By Anthony Bailey

While work is always being done to improve rice yields, scientists are focusing on how to make rice production cleaner for the environment and cheaper for the farmers who produce it. One way AgCenter researchers have done this is by altering the amount and frequency that inputs like water and fertilizer are added to rice farms.

In the past year, researchers at the H. Rouse Caffey Rice Research Station have made strides to achieve this, especially with nitrogen fertilizer, and to create environmentally friendly changes to common rice farm management practices.

AgCenter researcher Manoch Kongchum and his team are also working to promote their latest recommendation on how often farmers must apply nitrogen fertilizer in the delayed flood rice system, which currently is recommended twice during the year — once before flooding and once during midseason. However, research is being done to make this process cheaper for farmers by lowering the applications to just one.

“We are trying to get rid of the midseason [application] to reduce cost for hiring an airplane,” Kongchum said.

Kongchum indicated that the optimal yield could be achieved without midseason fertilizer application, and this will allow rice farmers to fertilize just once before they flood their fields. Hiring an airplane can start at around \$2,000, making the current recommendation an expensive one for rice farmers.

Research has also recently begun to determine if it is possible to reduce the amount of water that is used every season by farmers. If it is possible to lower water use, this could reduce the cost for pumping and the amount of greenhouse gas emissions, like methane, that are commonly released during the flooding period. Early research shows that farmers could reduce the amount of water used by 30% to 40%.

“We don’t have to pump all the water all the time. We can stop for some period,” Kongchum said. “We can save the energy for pumping and the greenhouse gas emission.”

This research will continue for at least a few more years to ensure the data collected is accurate.

LSU AgCenter agronomy researchers have also continued to do research on the optimum seed rates, optimal fertilizer requirements and ratooning ability for the newly released varieties.

Some rice fields are used to try out new water management strategies while others have been used for changes to fertilizer applications. Photo by Manoch Kongchum

Mysterious ineffectiveness of pesticide prompts AgCenter entomology research

By V. Todd Miller

Over the past year, LSU AgCenter researchers have been fighting an uphill battle against stemborers in the most commonly grown rice variety in southwest Louisiana, PVL03. A widely used pesticide has suddenly begun to prove ineffective on the insect, and entomologist Blake Wilson is working to find out why.

Wilson says that for approximately the past 15 years, stemborers have been controlled by the seed treatment Dermacor X-100, which has also historically been used in curbing the rice water weevil.

“But this year we’ve seen reduced control of the rice water weevil and almost no control of stemborers,” Wilson said. “The Dermacor failed not just at the rice research station, but also in commercial fields around the state.”

Development of insecticide resistance is common in chemicals that have been widely used for years, but Wilson says the ineffectiveness doesn’t necessarily fit the pattern of pests building up resistance due to that fact that the control failures occurred with all the insect species at the same time.

“It’s not impossible that it’s resistance, but that would be highly unusual,” he said. “We just know it’s not working like it used to.”

On a positive note, Wilson and his colleagues began a project last year that looks at alternative management strategies for stemborer control, particularly host plant resistance, but also identifying better scouting scenarios for foliar insecticide application and determining what stage of the crop is most susceptible to the pest.

Wilson says that absent PVL03, he and his researchers have identified varieties that are showing stemborer resistance that might not require insecticide protection.

Other ongoing projects focus on:

Apple snails. In addition to continuing the use of copper sulfate to control apple snails, researchers have begun to attempt to manipulate crawfish production practices to make the environment less conducive to snail populations. One option may be switching from rice to sorghum sudangrass as a forage crop for crawfish to clean up the worst impacted fields that farmers can no longer crawfish in. This would be a potential solution to allow producers to continue to fish their ponds without having to fully dry them out in an attempt to eliminate the invasive species of snail.



Extension associate and master’s student Christine Gambino applies insecticidal seed treatments to rice. Photo by Schyler Thibodaux

Row rice. Seed treatments for billbugs in row rice have continued to be ineffective, which has led to multiple applications of insecticide to keep the crop free of the pests. There has yet to be an economic analysis to judge if the cost of numerous applications outweighs the profit from potentially higher yields.

Insecticidal seed treatments. Last year treatments were up to 50% less effective in controlling the rice water weevil and stemborers in rice planted late in May. This year that figure held steady regardless of planting date. Multiple controls need to be integrated for rice water weevils to prevent substantial yield loss across the state. These include using seed treatment as well as spraying a foliar insecticide at the flooding stage.

Emerging pests. With the Mexican rice borer becoming more established in the state, researchers have begun carefully monitoring the rice delphacid, which has been reported consistently in Texas and has likely moved eastward.

AgCenter plant pathologist Felipe Dalla Lana has discovered an incident of a disease called hoja blanca, or white leaf rice virus, which is only known to be vectored by the rice delphacid, so it’s likely already here although AgCenter entomologists have yet to locate it.

Extension associate and master’s student Christine Gambino examines cover crops at the H. Rouse Caffey Rice Research Station. Photo by Blake Wilson



Genomic selection helps predict success of rice characteristics

By Olivia McClure

High school yearbooks often feature a section dedicated to senior superlatives, spotlighting graduating students whose peers have voted them most likely to succeed or become famous — or maybe even most likely to be late to class. With some help from technology, LSU AgCenter researchers are now able to do the same for prospective rice varieties.

Using a plant breeding approach called genomic selection, scientists can use DNA information to predict which experimental rice lines have the best odds of offering desirable traits like strong yields, resistance to diseases like sheath blight and high milling quality. They also can weed out lines that are most likely to have problems.

“We use DNA markers to understand the relationships between all the lines, and, based on those relationships, we can determine if the line is likely to be good for the trait or bad for the trait,” explained Adam Famoso, a rice breeder and director of the AgCenter H. Rouse Caffey Rice Research Station. “We’ve explored this and have been optimizing it for years. Now we’ve taken the next step. We’re fully integrating it into the breeding program.”

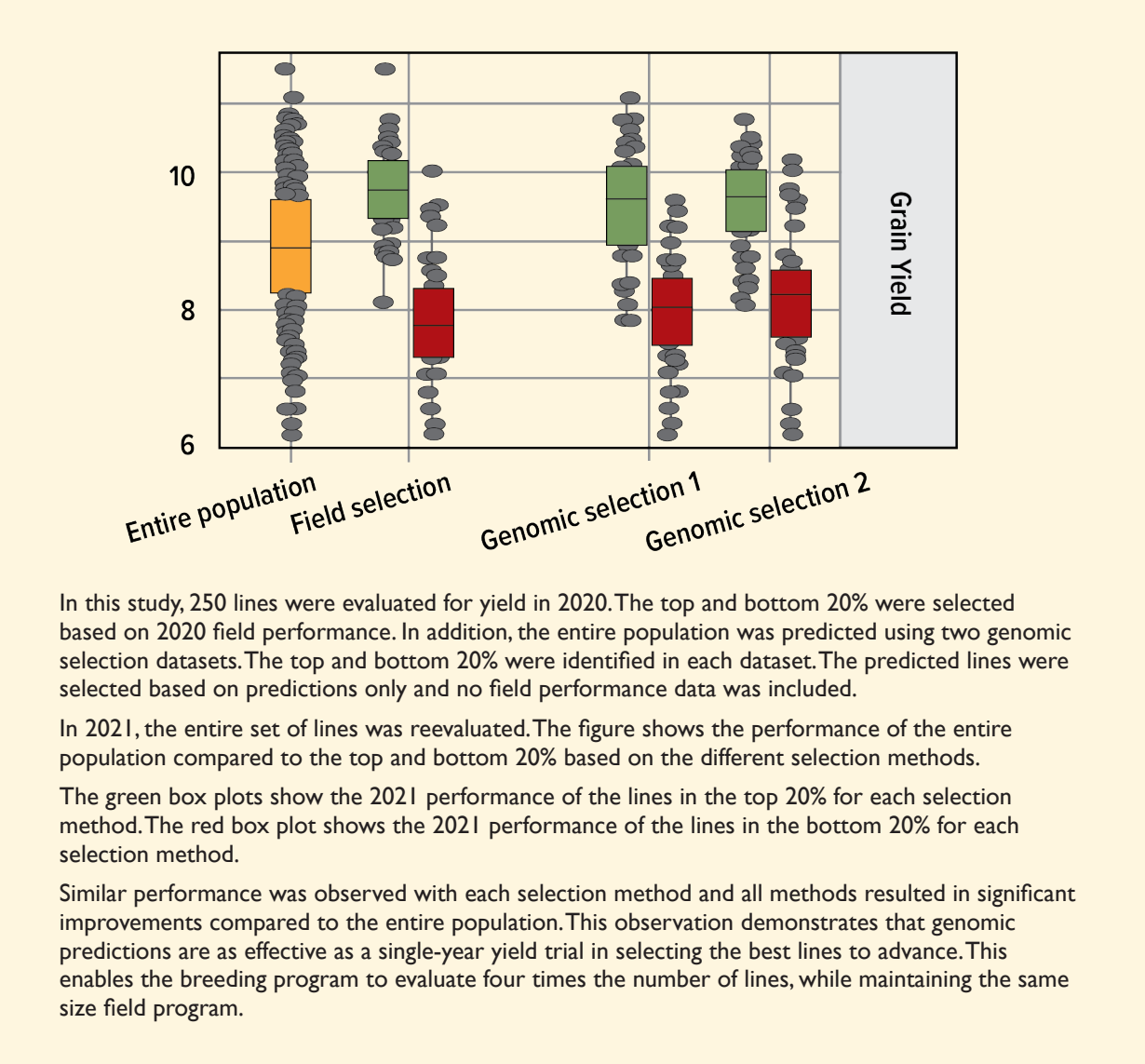
This advance will save time and resources that in the past would have been spent on growing test plots to evaluate the performance of newly crossed rice plants.

Genomic selection is done by taking small tissue samples from the leaves of rice plants. These samples are managed by Brijesh Angira, an associate professor in the rice station’s breeding marker lab, and sent to a third-party provider for analysis using the AgCenter-developed LSU500 DNA marker set. These data points are used to characterize the relationships of the lines for use in genomic predictions.

It isn’t all that difficult to generate data about the DNA of the plant samples. “What’s challenging is making sense of that data,” Famoso said. He praised the efforts of Roberto Fritsche Neto, an assistant professor at the rice station who played a key role in conducting the statistical modeling needed to craft the marker set, and postdoctoral researcher Jomar Punzalan and doctoral student Kashish Grover.

“Each of them has conducted extensive optimization studies to determine the best datasets for genomic selection,” Famoso said. “Now it’s routine. Those statistical pipelines are already set up for us to use.”

Genomic selection will complement marker-assisted selection, another high-tech method for screening potential rice varieties that’s already in use at the rice station. The difference between the two? Marker-assisted selection focuses on specific individual genes while genomic selection is useful for traits that are controlled by more than one gene.



In this study, 250 lines were evaluated for yield in 2020. The top and bottom 20% were selected based on 2020 field performance. In addition, the entire population was predicted using two genomic selection datasets. The top and bottom 20% were identified in each dataset. The predicted lines were selected based on predictions only and no field performance data was included.

In 2021, the entire set of lines was reevaluated. The figure shows the performance of the entire population compared to the top and bottom 20% based on the different selection methods.

The green box plots show the 2021 performance of the lines in the top 20% for each selection method. The red box plot shows the 2021 performance of the lines in the bottom 20% for each selection method.

Similar performance was observed with each selection method and all methods resulted in significant improvements compared to the entire population. This observation demonstrates that genomic predictions are as effective as a single-year yield trial in selecting the best lines to advance. This enables the breeding program to evaluate four times the number of lines, while maintaining the same size field program.

“With marker-assisted selection, you have a known gene that controls a trait,” Famoso said. “A great example is blast resistance. We know the gene that causes that. If a plant has it, it’s resistant; if not, it’s susceptible. That has been a wonderful tool. It has allowed us to go from 5% to 10% of our germplasm being resistant to 75% to 80% of our germplasms being resistant.”

“The limitation of marker-assisted selection is it only works when you know the gene,” he continued. “Some traits have a gene that’s like a yes-no or an on-off switch — but some traits are controlled by dozens or hundreds of genes. It’s not practical to go in and discover every gene.”

Important attributes such as yield, sheath blight resistance and milling quality are among those determined by a combination of genes.

Famoso said he and his team are now able to screen lines sooner after crossing; they no longer have to spend two to three years growing out plants to generate enough seed to plant a test plot. They also can work more efficiently, focusing their field studies on lines that have the highest probability of succeeding.

“We don’t need to have a lot of seed available. We don’t need to do the trials or collect all the data,” he said. “It’s basically taking a piece of the leaf, generate the marker data, and, instead of 2,000 lines a year, we can screen 10,000 lines.”

While genomic selection may help speed up the early stages of the rice breeding process, several years of field evaluation are still necessary before a variety can be released. Famoso also pointed out that genomic selection can provide only a prediction — not a definite answer — about the performance of a line.

Rice verification program continues education for new, early career farmers

By Kyle Peveto

For 27 years, new and early career rice farmers have received assistance directly from experts as part of the Louisiana Rice Research Verification Program.

The program connects producers to LSU AgCenter Extension agents and rice specialists who visit each participating farm to teach best management practices and research-backed methods, said Ronnie Levy, the state rice specialist who directs the program.

While the program aims to assist producers in improving yields and sustainability, it also provides a training opportunity for extension agents and crop consultants.

“The verification program takes research results directly to the farm and puts them into practice,” Levy said.

The Louisiana Rice Research Verification Program is funded by the Louisiana Rice Research Board.

Four producers participated in the program during 2024, with program farms located in Acadia, Allen, Jefferson Davis and Vermilion parishes. A fifth farm in central Louisiana could not participate because weather delays during planting season led the producer to plant an alternative crop, Levy said.

continued on Page 10

Rice farmer Connor Popeck (center in red shirt) poses with members of the Louisiana Rice Research Verification Program team in a rice field. Photo provided by Ronnie Levy



Pathology program performs wide range of studies

By Kyle Peveto

Research into rice disease control practices is a “core project” for the Louisiana Rice Research Board, said Felipe Dalla Lana, the LSU AgCenter rice pathologist who leads the team developing management strategies for the state’s most significant diseases.

This important project comprises a wide variety of studies that seek to assemble large amounts of data and make foundational recommendations to help producers.

“That’s why we are working on building these databases, building all this information,” he said. “The goal is to eventually have all these tools and a single environment or hub where the growers or stakeholders can go and get that information.”

Research into disease control has three guiding principles or pillars, Dalla Lana said.

“The first one is we want to develop solutions that are profitable for the growers,” he said. “With all these solutions, we are thinking more on what the growers can do to make more profit.”

The other two principles focus on maintaining the quality consumers expect from Louisiana rice and causing minimal environmental effects.

“We didn’t say we need to control all disease,” Dalla Lana said. “You can have a level of disease where it doesn’t reach an economic threshold where it costs much more for control.”

On the project, Dalla Lana works with AgCenter rice breeders, geneticists and plant pathologists, and the team has developed a relationship

with Camila Nicolli, a plant pathologist at the University of Arkansas System Division of Agriculture.

In recent years, the rice disease control practices program has focused on sheath blight, blast, Cercospora, bacterial panicle blight and grain smuts as the most important diseases for Louisiana rice producers. These cause thin stands, lodging, spotted kernels, fewer and smaller grains, reduced milling, higher chalk and a reduction in plant efficiency, Dalla Lana said. The best defense against these diseases is a sound integrated pest management strategy, he said.

“Some of them we need to have a few years before we have results that we can trust,” he said.

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Left: Rice farmer Colin Lawson (right) poses with Ronnie Levy, the AgCenter state rice specialist and director of the Louisiana Rice Verification Program. Right: Rice farmer Jamie Stelly (right) poses with members of the Louisiana Rice Research Verification Program team. Photos provided by Ronnie Levy



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Weekly visits to each farm allow the AgCenter specialists to give advice and track progress. The extension agents and rice specialists maintain records of planting dates, treatments, harvest dates and yield data.

“This gives us an opportunity to make sure that the recommendations and things we’re recommending or suggesting do work and have positive effects,” Levy said.

On average, the rice fields used in the verification program see higher yields. This year, most of the planting was done by drill seeding and was completed early in the spring, but some planting was delayed by rain.

“It started raining, and it was a long time before we were able to get back in the fields in south Louisiana, almost a month,” Levy said.

The fields that were planted earlier produced very well, while the fields that were planted later were hit with disease and weather conditions, Levy said. Summer rains affected the harvest of the fields that were planted later, and bird damage affected some, he said.

“I tell people you can’t beat Mother Nature,” Levy said. “We have to live within that realm, but we try to do things in a timely manner and that’s one of the important things in rice production.”

Producers in the program planted different varieties of rice, depending on their needs, Levy said. The main varieties included Avant, an early maturing variety developed at the AgCenter H. Rouse Caffey Rice Research Station; PVL03, which was also developed at the Rice Research Station and can be treated with Provisia herbicide to control red rice and resist weedy rice; and RiceTec RT7523, which is tolerant to other herbicides.

All the producers involved in the Louisiana Rice Research Verification Program planned to harvest ratoon crops, and they all plan to produce crawfish in the fields this season.



These rice plants show symptoms of *Cercospora*, which is often known as narrow brown leaf spot. Photo provided by Felipe Dalla Lana

symptoms on the sheath and panicle infections, now referred to as *Cercospora* net blotch and *Cercospora* panicle blight, respectively. The research team also tested prothioconazole, a fungicide recently labeled for rice that will likely become commercially available to Louisiana rice producers in the future.

Researchers analyzed commercially available varieties and new breeding lines for several diseases. Because the plots planted in April showed a high incidence of kernel smut, the team assessed additional plots for the pathogen. They also sampled 30 fields in Louisiana and some in Arkansas for fungicide resistance to sheath blight. Additional studies are seeking to understand the association between the health of the main crop and the yield of the ratoon crop.

“If you protect the main crop, will it then reflect a better crop in the second crop, or are the two totally independent?” he said.

For 2025, the program will continue studies on fungicide efficacy, timing and integrated pest management, Dalla Lana said, with a focus on sheath blight, *Cercospora* and blast. The team will continue to analyze new breeding lines and commercial varieties for disease and support studies of new industry products for disease management.

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This past year the ongoing project focused on studies into sheath blight and *Cercospora* along with assessments of fungicide resistance and observing commercially available varieties for their reactions to common diseases.

In 2024, the integrated disease management strategy project maintained over 70 trials. The team analyzed sheath blight by inoculating plants with the fungal disease and carried out four separate studies:

- Compared the fungicide efficacy of seven active ingredients labeled for rice
- Applied fungicides to three varieties that represented different levels of resistance to attempt to expand the application decision criteria for producers
- Tested different doses of azoxystrobin and flutolanil for sheath blight control
- Sprayed multiple doses of a fungicide at different stages to explore timing of applications

Another set of studies centered on *Cercospora*. Researchers explored two different timings of fungicide applications on eight varieties with differing levels of resistance to the fungal disease and also tested whether current application timing recommendations reflect the best advice for control of *Cercospora*

One pathogen, two diseases and the research trying to understand all three

By Tobie Blanchard

The fungal pathogen *Cercospora janseana* is responsible for two diseases that have become economically important to rice growers — narrow brown leaf spot and *Cercospora* net blotch.

Jonathan Richards, a scientist in the LSU AgCenter Department of Plant Pathology and Crop Physiology, is studying the pathogen and the diseases, which he said had been sporadic in rice until the past 15 to 20 years.

“There hadn’t been a ton of research conducted on these diseases really since the 1930s or 1940s,” Richards said. “So, when we started working with these diseases, we kind of had to start at square one.”

The researcher said more farmers have noticed the diseases in their fields. He said Louisiana’s hot, humid conditions are conducive to the diseases’ development.

Over the past few years, Richards’ research has been addressing the knowledge gap of these diseases so that the AgCenter can help develop effective management strategies.

“We’ve come to realize that even though this is one fungal pathogen, it causes two distinct diseases that likely need to be managed differently, and because we just don’t have enough research done on either disease, it’s going to be critically important for us to understand and develop management strategies that are going to be effective against both,” Richards said.

The two diseases also affect different areas of the plant. Narrow brown leaf spot causes brown lesions most commonly found on the leaf blade, while *Cercospora* net blotch affects the sheath and stem of the plant. The diseases occur late in the season so they also can affect the ratoon rice crop.

Richards conducted field evaluations of the rice breeding germplasm panel for resistance to narrow brown leaf spot and *Cercospora* net blotch.

He observed one variety that is highly resistant to *Cercospora* net blotch, and Richards said he is working to understand and characterize the gene that can control resistance and ultimately identify a linked molecular marker that can be used in the breeding program. He said a priority in the research, which he is conducting with rice breeders Adam Famoso and Brijesh Angira, is a genetic study to map the resistance gene.

“Basically, it will let us find the approximate location where that gene is in the rice genome, and then the breeder can then select for that gene in their program,” he said.

For narrow brown leaf spot, the CRSP2.1 gene has been effective in controlling it, but recently some varieties are showing waning resistance.

“The CRSP2.1 gene has been deployed in rice varieties like PVL03, which has a high acreage in Louisiana, and it was very effective, very high level of resistance in leaf tissue. However, we’ve noticed in the last couple of years that that resistance seems to potentially have been defeated,” Richards said.

Richards theorized that a new race could have emerged that has overcome the CSP2.1 resistance. Lab tests confirmed his theory, but Richards said there are still some lines that may be resistant to the new race.

In addition to host resistance, Richards said they are looking at how to effectively treat or manage this disease with chemical applications. He said research has been conducted on fungicides to control narrow brown leaf spot, but there haven’t been studies on fungicide control of *Cercospora* net blotch.

“So, we don’t know if the same recommendations for narrow brown leaf spot chemical applications would be effective toward *Cercospora* net blotch,” he said.

With his research, Richards is trying to build the foundation of tools that can help farmers manage these two diseases. His plans for the coming year include continued efforts to characterize pathogen races for both narrow brown leaf spot and *Cercospora* net blotch through controlled inoculation experiments and screening of the rice breeding germplasm for *Cercospora* net blotch resistance.



Typical symptoms for narrow brown leaf spot, at top, and *Cercospora* net blotch, below, observed in the field. Photos provided by Jonathan Richards



New medium-grain rice variety looks to replace long-standing predecessors

By Anthony Bailey

After more than a decade, the LSU AgCenter is preparing to release a new medium-grain conventional rice variety to farmers. Researchers at the H. Rouse Caffey Rice Research Station plan to launch the new variety next year.

“This variety is an improvement over the current varieties in cultivation right now, which are Jupiter and Titan,” said Brijesh Angira, an assistant professor and head of the medium-grain rice variety program.

The new variety, tentatively called Venus, will be a new conventional medium-grain rice variety. Angira hopes

that the new variety will finally be able to take over the dominance that Jupiter, also an AgCenter variety, and Titan, a variety from the University of Arkansas, have had since they were first released in 2005 and 2016, respectively.

The new variety has shown an ability to produce a greater yield and earlier harvest time than the Jupiter rice variety. The grain length of the new variety is between Jupiter and Titan. Like Jupiter, Venus does not have any major gene for blast resistance, Angira said. Like all varieties released by the AgCenter, the Venus variety has gone through years of research to ensure

that it will be an improvement on the varieties in use today on most rice farms.

This will also be the first conventional medium-grain variety release the AgCenter has had since 2011. That variety was named Caffey, after Rouse Caffey, one of the former Rice Research Station directors and the namesake of the research station.

The University of Arkansas has also released a new variety recently, named Taurus. First issued in 2023, this variety also shows potential to out-yield Jupiter and Titan.

significant yield improvement. The program has been very productive in increasing yield potential, and we hope to continue that because yield is certainly the No. 1 focus of any breeding program.”

The impact of this work has been felt not just in Louisiana, but worldwide.

“Some of the technologies and varieties that have been developed here at the station have been grown throughout the South and even throughout the world,” Famoso said. “The most significant would be the advent of the Clearfield rice, which revolutionized rice farming throughout much of the world by allowing us to control weedy red rice, which is one of the major weeds in rice.”

The variety development program has allowed the rice industry to make strides in sustainability, too. Developing varieties that contain traits that make them resistant to diseases, for instance, reduces the need for chemical applications and saves farmers money.

Below is a rundown of recent accomplishments and up-and-coming varieties in the breeding program.

Clearfield: “We’re very excited about CLL19, which was released commercially this year,” Famoso said, adding that it was grown on about 70,000 acres this year. “This is one we think could be a pretty notable, impactful variety that could be grown on significant acres.”

A new high-amylose variety called CLHA03 is on the horizon, and Famoso expects it to be commercially available in 2025. It’s similar to Addi Jo, which was released a few years ago and was the rice station’s first foray in the high-amylose market class. Amylose is a polysaccharide, and rice varieties with more of it tend to be less sticky when cooked. “It’s very important for some processing applications and for some of our key export markets — that’s the quality of rice they want,” Famoso said. Traditional U.S. long-grain rice is too sticky for some tastes around the world, including Latin America customers. While Addi Jo is a great, high-quality variety, it leaves room for improvement when it comes to yield. “CLHA03 is a great step in that direction,” Famoso said.

Provisia: The current variety, PVL03, has been a consistent performer. “We want to make sure anything we release is an improvement,” Famoso said. He and his team are eyeing two advanced experimental lines — currently called I130 and I140 — for potential release. Both have advantages over PVL03 and tradeoffs. I130 has better second crop, or ratoon, potential and milling quality but has lower yields than I140. But I140 doesn’t ratoon as well, nor does it share I130’s high milling quality.

Conventional long grain: The most recent variety, Avant, was released a couple of years ago. While it’s one of the earliest varieties out there and exhibits excellent ratoon potential, Avant is less resistant to blast disease than many other releases from the rice station. Famoso said two promising experimental lines address these concerns. Both I008 and I251 have better blast resistance and higher yields than Avant. “But we need to keep testing them to see if those yield gains are stable,” Famoso said, before making any decisions about a possible release.

Conventional medium grain: A line currently called 21-2070 and tentatively named Venus has been in seed production this year. The station plans to release it in 2025, with it becoming commercially available in 2026. This potential new variety is a cross between Titan and Jupiter, which are widely grown in Louisiana. “It is an improvement on both of those lines — a bit less lodging-prone and a bit earlier than Jupiter, and a bit shorter than Titan,” Famoso said. “And it’s shown a consistent yield advantage over Titan and Jupiter.”

Conventional specialty: Fitzgerald was released in 2024, and seed will become commercially available in 2025. It’s a long-grain, jasmine rice with a sticky texture similar to medium-grain rice when cooked. “It’s targeted to be an option for folks growing either CLJ01 or Jazzman 1,” Famoso said. “It’s a non-Clearfield alternative to CLJ01, and it has higher and more stable yield than CLJ01 Jazzman.”

There also may be a new popcorn rice variety soon. Famoso has been evaluating an experimental line that shows a significant yield jump over Della, the existing variety released decades ago.

Famoso said it’s important to develop new specialty options. Popcorn rice, for example, is a beloved dish in south Louisiana. Much of the jasmine rice consumed in the U.S. is imported, though interest has been growing in producing more domestically.

Louisiana Rice Research-January 2025

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Rice Research Projects for 2025

CONTINUING PROJECTS		
Agricultural Economics and Agribusiness \$30,000 Economic Analysis of Rice Production and Farm Management in Louisiana <i>Michael Deliberto</i>	Development of Integrated Disease Management Strategies Rice <i>Felipe Dalla Lana</i>	Plant Pathology and Crop Physiology \$38,829 Improvement of Management Strategies for Narrow Brown Leaf Spot of Rice <i>Jonathan Richards</i>
	Rice Management Strategies for Efficient Utilization of Agronomic Inputs and Natural Resources <i>Manoch Kongchum</i>	
Entomology \$75,000 Integrated Management Strategies for Insect Pests of Rice <i>Blake Wilson</i>	Louisiana Rice Research Verification Program <i>Ron Levy</i>	School of Plant, Environmental and Soil Sciences \$150,000 Weed Management in Herbicide-Resistant/Tolerant and Conventional Rice <i>Connor Webster</i>
	Development and Validation of Disease Phenotyping Protocols to Improve Breeding Selection and Pathology Research Rice <i>Felipe Dalla Lana</i>	
H. Rouse Caffey Rice Research Station \$1,016,824 Development of Superior Rice Varieties for Louisiana <i>Adam Famoso</i>	Evaluation of Starter Fertilizer Nitrogen and Ratoon Fertilizer and Stubble Management in Delayed Rice Systems <i>Manoch Kongchum</i>	OTHER PROJECTS \$20,000 Black Bird Research <i>William Futch</i>
Enhancement of Rice Research and Extension Communications <i>Frankie Gould</i>		TOTAL Total funding for 2025: \$1,330,653