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H. Rouse Caffey Rice Research Station News

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Special Dates of Interest:

- May 26, 2022 – Central Region Rice Field Day
- June 15, 2022 – Acadia Parish Rice Field Day
- **June 29, 2022 – H. Rouse Caffey Rice Research Station Annual Field Day**
- July 7, 2022 – Row Rice/Soybean Field Day
- July 2022 TBD – St. Landry Rice and Soybean Field Day

Contact Information:

Dr. Kurt Guidry
Southwest Region Director and Resident Coordinator
H. Rouse Caffey
Rice Research Station
1373 Caffey Road
Rayne, LA 70578
Phone: (337) 788-7531
Fax: (337) 788-7553
https://www.lsuagcenter.com/portals/our_offices/research_stations/rice

USA Rice Leadership Development Program Tours Rice Research Station

Rice industry professionals from across the U.S. were given an in-depth look at the H. Rouse Caffey Rice Research Station as part of the USA Rice Federation's Rice Leadership Development Program.

On March 31, the class – led by Program Director and former HRCRRS Resident Coordinator Steve Linscombe – toured the facility to learn how the research conducted here impacts the local, state and national rice industries. The educational experience offered at the numerous stops throughout South Louisiana offered a look at many aspects of rice production, including crop production, milling, marketing and research, Linscombe said.

"The rice leadership program develops young people to be leaders going forward within the U.S.A. rice industry," Linscombe said. "What they have the opportunity to get from the whole educational effort is the importance of research."

During the stop at the Rice Research Station, participants heard from Resident Coordinator Kurt Guidry; Rice Specialist Ronnie Levy and Rice Breeder Adam Famoso. The nine participants toured the facility's greenhouses, genetic marker laboratory and rice mill during the visit.

"I got a good perspective of just how much is invested in this facility but also how the whole industry has benefitted from it and how much cooperation there is, too," said Peter Rystrom, a rice producer from Chico, California. "All the ways to manage the difficulties of the rice industry run through here."

Figures 1 and 2. Dr. Famoso giving a tour of the HRCRRS greenhouses to the USA Rice Leadership Development group.

"I was most intrigued by the way they pollinate the plants," reported Daniel Cavazos, director of rice farming at Florida Crystals. "It's a meticulous process."

"The class gets to see the importance of the collaboration," said Kane Webb, USA Rice Federation director of Louisiana field services. "What goes on here directly benefits them in the field."

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This project was partially supported by USDA National Institute of Food and Agriculture and the Louisiana Rice Research Board.

The class consists of rice producers and rice industry professionals from across the United States. Participants from the Louisiana rice industry include Julie Richard (Kaplan), Conner Popeck (Gueydan) and Corey Conner (Lake Arthur).

The two-year program consists of four weeklong sessions at various rice growing areas across the nation, as well as a trip to Washington, D.C., to meet with legislators and agricultural policymakers. The program's Gulf Coast excursion also included visits to Katy and Beaumont, Texas, Kaplan, Duson, and the Ports of Lake Charles and New Orleans.

Mr. Derek Albert – Assistant
Communications Specialist
dalbert@agcenter.lsu.edu

Low GI High-Protein Rice Cultivar – More Than Just Diabetes-Friendly Rice

For diabetes patients, rice is to be avoided. But what would you feel if you could have white rice? With the low glycemic index (GI) high-protein rice, people with diabetes can now eat white rice again. People in the southern regions and other parts of the United States are so accustomed to white rice. Changing to a brown, un-milled rice or to other different kinds of rice can be challenging. Jambalaya, Dirty rice, or Etouffee served with cooked brown rice instead of with cooked white rice, for example, will taste differently. Luckily, with this low GI rice cultivar, people no longer need to choose between taste and health concerns. Rice has a GI of 73 and belongs to a high GI food group, while this low GI high-protein rice cultivar has a GI of 41 that falls into a low GI food group. This is a game changer, not only for people with diabetes but also for people with pre-diabetes to help prevent it from progressing into a full stage of diabetes.

Low Glycemic Index, why it is important? As we eat food or beverage that is high in carbohydrates, our body breaks down the carbs into glucose. The glucose goes into the bloodstream causing the blood glucose (blood sugar) levels to rise. High-glycemic foods lead to a quicker and greater spike in blood sugar levels. These foods place a higher demand for insulin on the body. They also lead to more dramatic dips in blood glucose after the spike, potentially causing hunger, carbohydrate cravings, and weakness. This new rice that has a low glycemic index can alleviate these problems and is especially helpful for diabetic patients who must watch their insulin levels.

Figure 1. Milled New Low GI High-Protein Rice.

Beyond Diabetes Friendly. The low GI high-protein rice is not only diabetes friendly but also has a number of important benefits. With a protein content of 10.5% (w/w), a 50% increase from 6-7% of regular rice, people will have extra protein when they eat this new rice that can be useful in moderating meat consumption. Rice protein is lean protein which is a good dietary component to help develop healthy lipid profiles. The greatest benefit of having more protein is in alleviating malnutrition problems. Globally, more than 750 million people are malnourished. This rice can be an effective tool to help reduce these global problems. Vegetarians can benefit also from this rice by having an additional 50% of plant-based protein per serving. Rice is naturally gluten-free, and consumption of the low GI high-protein rice also will help gluten-sensitive individuals to get all of the benefits from consuming low GI food while acquiring more protein per serving as well.

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Figure 2. New Low GI advanced line in Preliminary Yield Test.

Taste, Cook, and Appearance. Consumer acceptability of any new variety of food is critical. Without it, the research efforts intended to help societies as stated above cannot be reached. Important grain quality characteristics, such as cooking quality, grain chemistry, appearance, and taste of the low glycemic rice, are closely similar to other U.S. long-grain rice cultivars such as Cypress and Cocodrie. With these characteristics, this long-grain, low GI high-protein rice can readily serve rice consumers who are familiar with the U.S. long-grain rice both in the United States as well as many countries of the U.S. rice export destinations, including Mexico, Haiti, Japan, Canada, and South Korea.

Next on the pipeline. Breeding low GI high-protein rice is a rather tedious process. It took long years initially, but some short-cuts are recently identified that can be integrated into breeding techniques to speed-up the breeding process. A specific selection index with three key determinants is being used in low GI selection schemes in parallel to high-protein screening. To serve more diverse market needs, we are now expanding our breeding efforts to include other rice types aimed to improve protein content to 12% and increase yield potential while keeping the GI score low. Two advanced lines are in the pipeline. One long-grain and one medium-grain are developed for the southern U.S. rice growing regions. Another medium-grain rice for California is also in development.

(*Acknowledgement: This research is funded partially through the grant from the LSU LIFT2 – Leveraging Innovation for Technology Transfer).

Dr. Herry Utomo – Professor
hutomo@agcenter.lsu.edu

U.S. Rice Trade Dynamics in the Global Market

Rice is a staple food for more than half the world's population of 3.5 billion people, providing more than 20 percent of the calories consumed worldwide. Rice is cultivated in more than 100 countries with Asia commanding a global rice production share of 90 percent. With rice being such an essential staple in the diet of over half the world's population, it comes as no surprise that rice is very heavily traded in the global market. In 2021, the world's leading rice exporting countries were India, distantly followed by Vietnam, Thailand, Pakistan, and the United States. The top five rice importing countries were: China, the Philippines, Bangladesh, Nigeria, and the European Union.

For 2021, the USDA reported that U.S. rice exports to the global market were valued at $1.9 billion, a 2 percent increase over 2020 U.S. export volumes. Three markets accounted for nearly 43 percent of total U.S. rice exports in 2021: Mexico at $306 million, Japan at $289 million, and Haiti at $218 million.

Figure 1 graphically represents how U.S. rice exports have remained steady over the period 2012 to 2021, averaging 3.13 million tons (milled basis). U.S. rice exports in 2021/22 are projected at 86.0 million cwt,

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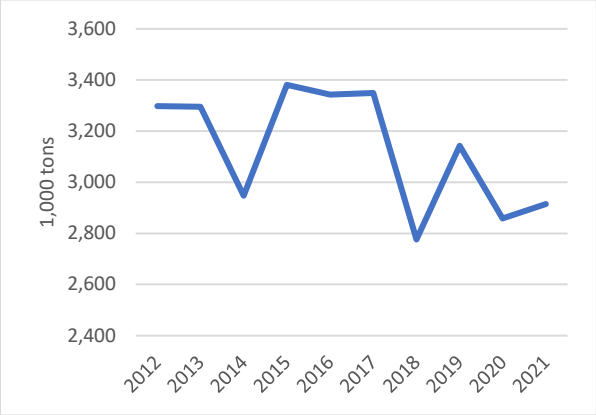
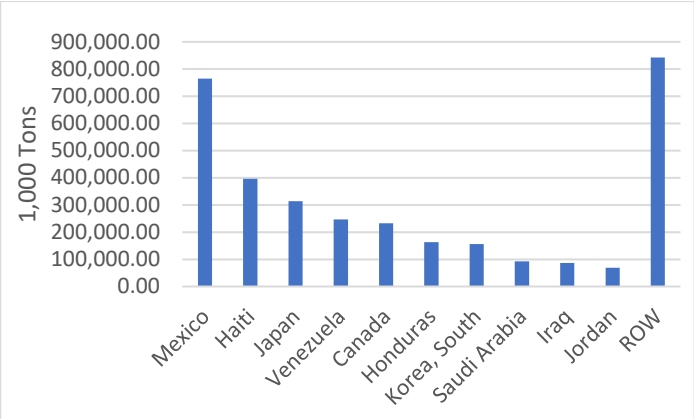
more than 8 percent below a year earlier and the smallest since 2000/01. Long-grain exports in 2021/22 remain projected at 64.0 million cwt, nearly 2 percent smaller than a year earlier. The decline is primarily based on smaller supplies and higher U.S. prices.



Source: USDA FAS.

Figure 1. U.S. Rice Exports (Milled Basis), 2012-2021.

A snapshot of U.S. rice exports by partner country for 2021 is presented in Figure 2. Mexico and Central America are the largest markets for U.S. long-grain rough rice. In contrast, Haiti is the United States' top export market for long-grain milled rice. In Latin America, the United States is facing increasing competition from South American exporters in several key markets, mostly a result of lower prices. Similar to U.S. rice, the rice exported from South America into these markets is considered high quality. In late July 2021, the United States sold 120,000 tons of long-grain milled rice to Iraq. There have been no additional sales of U.S. rice to Iraq in 2021/22 and there were no shipments in 2020/21.



Note: ROW includes all other U.S. trading partners in the 'rest of the world'.

Figure 2. U.S. Rice Exports Snapshot by Partner, 2021.

In late January of 2022, the Colombian Rice Export Quota, Inc. (COL-RICE) held the largest of its three 2022 quota auctions for the duty-free purchase of U.S. rice under the U.S.-Colombia Trade Promotion Agreement. A total of 85,913 metric tons (milled-rice equivalent) of U.S. rice import quota was made available to the market, providing an opportunity for quota holders in the United States to ship rough, brown, milled, or broken rice duty-free.

Combined medium- and short-grain U.S. exports in 2021/22 are projected at 22.0 million cwt, 24 percent below 2020/21 and the lowest since 2006/07. The year-to-year decline in medium- and short-grain exports is based on expectation of few sales outside the core U.S. markets in Northeast Asia—Japan, South Korea, and Taiwan— where the bulk of U.S. medium- and short-grain exports are shipped. U.S. medium- and short-grain sales to the Middle East are expected to be lower than in 2020/21, with Jordan and Saudi Arabia the main buyers. The tighter U.S. supplies of medium- and short-grain rice are expected to reduce exportable sales and have already boosted U.S. trading prices, further reducing sales.

Japan and South Korea are the two largest markets for U.S. medium- and short-grain rice. The United States is not expected to sell any rice to North Africa. In addition, by late spring, Australia is expected to be in position to increase its exports due to a strong area expansion in 2021/22, partly a response to higher expected global trading prices for medium-grain rice. Australia is expected to increase its market share in Northeast Asia and Oceania. China has abundant supplies of extremely low-priced Government-held stocks of medium- and short-grain rice available for export, with North Africa, the Middle East, and Oceania the major market destinations, as well as Puerto Rico, a smaller medium- and short-grain market.

By type, U.S. rough-rice exports in 2021/22 remain projected at 34.0 million cwt, down almost 2 percent from a year earlier. Almost all U.S. rough-rice exports are currently shipped to Latin America. Long-grain accounts for the vast majority of U.S. rough-rice exports. U.S. milled rice exports (milled and brown rice exports on a rough-rice basis) are projected at 52.0 million cwt, 12 percent below a year earlier and the lowest since 1973/74. The United States is expected to make few sales of milled rice beyond Northeast Asia, Haiti, Canada, Iraq, Jordan, and Saudi Arabia. However, Mexico, although primarily a rough-rice market, regularly imports small quantities of U.S. milled rice. Exports of U.S. milled rice are limited by lower-priced rice from Asia, as well as increased competition from several South American exporters.

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Table 1. U.S. rice market share (percentage) in selected Latin American/South American markets by marketing year.

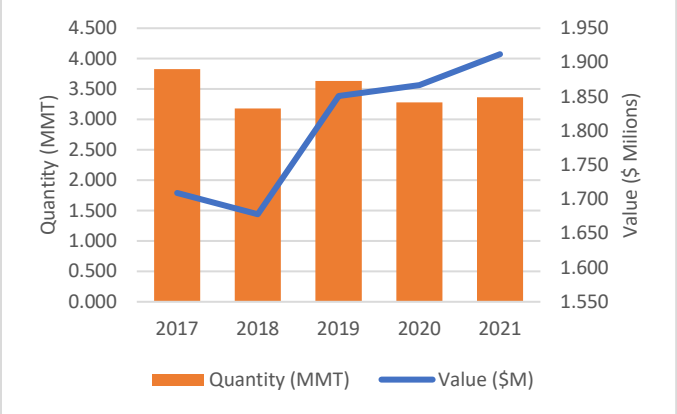
Country	2011/ 2012	2012/ 2013	2013/ 2014	2014/ 2015	2015/ 2016	2016/ 2017	2017/ 2018	2018/ 2019	2019/ 2020	2020/ 2021
Brazil	0.1%	0.1%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	9.4%	0.0%
Chile	1.6%	2.6%	1.8%	1.4%	2.3%	1.8%	1.7%	1.9%	1.0%	1.2%
Colombia	27.3%	41.6%	27.4%	79.1%	41.0%	94.3%	79.3%	58.9%	56.5%	32.3%
Costa Rica	83.3%	51.6%	50.5%	53.3%	46.3%	38.4%	39.1%	34.4%	22.0%	36.7%
Dominican Republic	100.0%	100.0%	100.0%	100.0%	95.0%	97.6%	100.0%	95.8%	97.4%	100.0%
Ecuador	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.0%
El Salvador	82.4%	81.5%	78.9%	90.8%	76.7%	71.2%	73.7%	85.7%	53.5%	81.1%
Guatemala	97.2%	87.3%	101.6%	108.1%	89.4%	87.1%	87.8%	81.0%	43.1%	84.8%
Honduras	91.9%	93.3%	89.3%	96.6%	94.7%	96.4%	93.4%	88.5%	72.7%	89.9%
Mexico	93.5%	86.4%	82.5%	86.4%	84.3%	75.8%	71.8%	84.5%	54.1%	72.4%
Nicaragua	55.6%	7.3%	2.9%	1.4%	0.8%	5.7%	8.8%	90.3%	62.5%	71.6%
Panama	86.5%	41.1%	41.3%	100.0%	37.8%	61.7%	12.3%	44.7%	19.0%	96.0%
Peru	0.4%	0.6%	3.4%	3.9%	2.3%	1.8%	1.3%	0.0%	0.0%	0.0%
Venezuela	42.4%	41.4%	34.0%	29.4%	51.8%	51.1%	4.7%	7.4%	11.1%	28.8%

Source: USDA FAS.

As seen in Table 1 above, the United States commands a majority share of the imported rice market in many Latin American countries. For 2021, the United States commanded nearly 100 percent of the imported rice market in the Dominican Republic, 96 percent of the imported rice market in Panama, >80 percent for the Central American nations of El Salvador, Guatemala, and Honduras, >71 percent of Nicaragua's imported rice market, and 72 percent of the Mexican imported market (largest importer of U.S. rice by volume). The United States commanded more than one-third of the Costa Rican imported rice market at 37 percent and nearly one-third of the imported rice market in Colombia at 32 percent for 2021. It is not difficult to see that with the U.S.'s proximity to rice markets in Central America and North America where the United States dominates their rivals in Southeastern Asia.

Figure 3 shows a summary of U.S. rice exports both in terms of value and quantity for the period 2017 to 2021. Some of the main drivers behind the increase in U.S. rice exports for 2021 were: increased long grain rice exports to Venezuela, a resumption of rice exports to Iraq in July, increased shipments to Central American countries under CAFTA-DR, and a 23 percent increase in volume (25 percent in value) of U.S. rice exports to the U.S.'s largest rice export market, Mexico.

The demand for U.S. rice is expected to remain strong in its key destination markets with competition mainly coming from South American suppliers in 2022. The U.S. is expected to maintain its position in both the Japanese and Mexican rice import markets in 2022. The U.S. does not anticipate any rice exports to North Africa in 2022. Free trade agreements between the U.S. and Columbia and the Dominican Republic seem to suggest that the U.S. will maintain its market share in those domestic rice markets. However, the challenge for U.S. rice comes in the way of prices as U.S. rice prices remain relatively high relative to those in Asia, which makes the prospect of expanding exports of U.S. rice into price-sensitive markets such as Africa and Southeast Asia a daunting task.



Source: USDA FAS.

Figure 3. Summary of U.S. Rice Exports (Value and Quantity) for the Period, 2017-2021.

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Given the pricing level for U.S. rice, analysts expect that in U.S. will not a see a growth in new export markets for its rice in 2022. Rice exports are projected to decline in 2022 for Cambodia, China, and India as well, with Cambodia projected to see the sharpest decline. Experts, however, predict that the global rice trade is going to be at near record levels in 2022, with some rice industry analysts predicting a record 52.5 million tons (milled basis) being traded in 2022. Thailand and Pakistan are projected to account for the largest share of the expected increase in global rice exports in 2022, with Australia, Burma, and Uruguay also expected to export more rice in 2022.

Dr. Michael Deliberto – Assistant Professor-Research
and Mr. Brian Hilbun – Research Associate
mdeliberto@agcenter.lsu.edu
bhilbun@agcenter.lsu.edu

Delaware Ag Leaders Tour HRC Rice Research Station

A contingent of farmers, agri-business professionals and extension educators from Delaware were given a look at the H. Rouse Caffey Rice Research Station.

The LEADelaware Class VI fellows visited the Crowley facility on March 23.

Learning about the rice and crawfish industries gave the class of agriculture professionals a crash course into commodities that are unfamiliar to those from Delaware where their top commercial crops consist of corn, apples, and soybeans.

LEADelaware Co-Director Chris Brosch said despite a 1,300-mile distance between Delaware and Louisiana, the two states share some geographical characteristics.

“We are really struck by the similarities between the two states because Louisiana and Delaware are both low-lying and wet areas,” he said.

Brosch said Louisiana’s longer growing season offers growers here a major contrast that their Delaware counterparts do not have to their advantage.

In addition to the Rice Research Station, the LEADelaware fellows were taken to Allen Lawson’s crawfish and rice operation in Crowley.

Figure 1. Rice Specialist Ronnie Levy explains to the LEADelaware Class VI fellows how rice farmers across the U.S. receive rice seed from the H. Rouse Caffey Rice Research Station Foundation Seed program. The visiting class consisted of producers, agri-business professionals and extension educators.

Mr. Derek Albert – Assistant
Communications Specialist
dalbert@agcenter.lsu.edu

Managing Diseases in Rice

Rice disease development varies due to the variety, or hybrid, you have chosen to plant, the presence of the disease pathogen, and the current environment for that pathogen to develop. The most common diseases in rice that we can use a fungicide to manage include blast, sheath blight, Cercospora (narrow brown leaf spot; NBLS), and smut (kernel smut and false smut). Scouting is an important in-season tool used to determine the presence and severity of rice diseases, particularly for sheath blight and blast.

Scouting for diseases should begin early in the season. When scouting a field, make sure your disease evaluation is based on the whole field, not just a localized area. There is no easy way to do this. You must cover the entire field, making as many stops a necessary to check for present diseases. At each stop, you will want to evaluate if the disease is present on approximately a 3-foot section by opening the canopy. If you find disease, you may want to subjectively rate the severity of the disease from 1 to 10. A one rating would indicate that only one or two lesions were present, with a ten rating being a complete infestation.

For sheath blight, cultivars that range from very susceptible to susceptible, will experience an economic loss of 5% to 10% of the tillers are infected during vegetative stages. For moderately susceptible cultivars, the level is 15%. At these levels, consider using a fungicide. For blast control, apply a foliar fungicide at early heading (50% to 70% heads emerging) when leaf blast symptoms are present. Leaf blast does not always precede rotten-neck blast, and preventive applications of a fungicide may be warranted if a blast-susceptible variety is grown. The best timing against Cercospora is between panicle differentiation and boot growth stages. The later the rice is planted, the earlier the fungicide must be applied for Cercospora. Boot applications of the proper fungicides can reduce Kernel Smut or False Smut. Fungicide applications for smuts after boot split have little if any activity.

Fungicide timing is critical for disease control. Growth stages change quickly, so it is important to scout for the rice growth stage while scouting for disease.

Rice disease control using a single fungicide application is becoming more difficult because of the fungal resistance to fungicides, multiple diseases requiring different timings for effective control and higher multiple applications being warranted. Rice producers are encouraged to use full label rates, rotate modes of actions and use multiple fungicide applications when justified to effectively, and economically, manage rice diseases.

Additional information on rice disease control can be obtained at www.lsuagcenter.com/ricediseases.

Figure 1. Sheath blight.

Figure 2. False smut

Figure 3. Cercospora

Figure 4. Kernel smut

Figure 5. Blast canopy

Dr. Ronnie Levy – Rice Specialist
rlevy@agcenter.lsu.edu

Lafayette FOX-NBC Affiliate Shines Light on HRC Rice Research Station

National Agriculture Day, celebrated on March 22, was marked with a special showcase of the faces and facilities of the H. Rouse Caffey Rice Research Station.

Local television news reporter Al Hebert, along with videographer Jon Arnold, of Lafayette FOX-NBC affiliate News15, spent the morning with the faculty and staff highlighting the importance of the valuable research conducted at the Rice Research Station.

Hebert was particularly interested in the station's breeding program which is currently working to release its 60th rice variety since the station's inception in 1909.

The segments filmed aired on the local dual-network's News15 Today and News15 At Noon programs.

Research Station Resident Coordinator Kurt Guidry said the coverage was a positive way to let the Acadiana audience know about the valuable work conducted by the LSU AgCenter.

Mr. Derek Albert – Assistant Communications Specialist
dalbert@agcenter.lsu.edu

Focus

Dr. Felipe Dalla Lana

The LSU AgCenter has added plant pathologist Felipe Dalla Lana to its roster of researchers at the H. Rouse Caffey Rice Research Station.

With nearly a decade of experience studying plant disease in both Brazil and the United States, Dalla Lana brings a wealth of experience from his work in the Midwest applying statistical analysis and modeling to the realm of plant pathology. He said his work as a plant pathologist offers him the freedom to study a variety of crops with ever-evolving challenges.

“You have new diseases. You have diseases that become resistant to fungicides. You have new technologies, new cultivars,” Dalla Lana said. “Everything is always changing. It is very dynamic.”

Kurt Guidry, resident coordinator of the Rice Research Station, said Dalla Lana not only offers the continuity of exemplary research skills that has become an expectation at the AgCenter facility, but he also offers an analytical skill set that can potentially expand the scope of rice research.

“Some of the analytical skills that he has and some of the approaches he has used can be adapted not only to what we are doing here with rice diseases but also have applications in other areas of rice research,” Guidry said.

Dalla Lana received his doctorate in plant pathology from Ohio State University and was most recently a postdoctoral researcher at Penn State University. The bulk of his research at those universities included research in fungicide efficacy for crops such as corn, wheat and soybeans. His academic work focused on several systems of increasing complexity that helped to answer crop pathology questions.

“The diseases are always there,” Dalla Lana said. “I was really into understanding how there are some years when diseases are a problem and some years there is not a problem with disease.”

Dalla Lana grew up with strong family ties to agriculture in south Brazil. His mother’s family includes many farmers who nudged him toward studying plant diseases with their crop production inquiries.

“The questions I would always have were about disease,” he recalled. “When should we make interventions? When should we spray? When should we not spray?”

To begin his work in south Louisiana, Dalla Lana said he wants to meet with local rice growers to find out what they need from an AgCenter pathologist. He has learned fungicidal resistance to sheath blight is a major concern.

“It’s something we need additional research on,” said AgCenter rice specialist Ronnie Levy. “It’s a very elusive type of disease to try to control. Plus, we are losing a lot of the fungicides that we had available because of the strobilurin (fungicide) resistance.”

Blast, another fungal disease in rice, was a major concern for the soggy 2021 growing season as it began showing up in varieties that it was not seen in prior years. Levy said sheath blight and blast can be responsible for about 10% annual yield losses, with some farmers seeing up to 40% losses in extreme cases.

Dalla Lana said he takes a three-pronged approach to reaching his research goals. He said farmers want the highest return of investment while consumers want the highest quality product for the lowest price. As a society, he said, people want all those things with the least impact to the environment.

“These goals are not always met,” he reflected. “One way to do this is to make our decisions using our knowledge of disease development. My problem here is to identify the key components that can maximize those three things.”

Dalla Lana said he looks forward to working at the Rice Research Station because of the decades of research data that have been compiled since the station’s inception in 1909. The facility is the definitive source for rice production data, which Dalla Lana said he plans to pore over in one of the first steps of his research — data mining.

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"I want to visit a lot of farms to see what the resistance is," Dalla Lana said. "The success of my research depends a lot on my collaboration with farmers."

Dalla Lana is succeeding Donald Groth, who served many roles, including research director, in his 38-year career at the Rice Research Station. Groth, who retired in January 2021, is now serving as professor emeritus.

When not working to eradicate yield-shrinking crop diseases, Dalla Lana said he enjoys traveling the open roads to explore new sights with his wife, Francine, and 2-year-old son, Benjamin. He and his family are settling in Lafayette.

Mr. Derek Albert – Assistant
Communications Specialist
dalbert@agcenter.lsu.edu

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This newsletter is produced by Valerie Dartez, Derek Albert, Kurt Guidry, Darlene Regan, and Jennie Gary.