

LOUISIANA Agriculture

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ENSURING OUR FUTURE THROUGH SCIENTIFIC
RESEARCH AND EDUCATION



**LOUISIANA SOLUTIONS
GLOBAL IMPACT**



LOUISIANA SOLUTIONS, GLOBAL IMPACT

■ MATT LEE

LOUISIANA'S agricultural and natural resource systems are entering a period of rapid change shaped by new technologies, shifting economic pressures and evolving environmental conditions. These transitions present both challenges and opportunities for our producers, our communities and our research enterprise. Louisiana Solutions, Global Impact, the strategic plan for LSU Agriculture, is designed to guide our work in addressing these realities with clarity, purpose and collaboration.

The plan outlines a focused set of priorities that reflect the strengths of the LSU AgCenter and College of Agriculture while charting a path for growth. We will focus on core areas that strengthen production systems, expand economic opportunities and support communities across the state. Work already underway across our research stations, academic programs and extension offices demonstrates how these priorities translate into real progress for Louisiana. A few of these efforts are highlighted in this issue of Louisiana Agriculture, along with an article that takes a closer look at the strategic plan.

Agriculture remains one of the most significant components of Louisiana's economy, especially in rural parishes. The state's producers depend on research-based guidance to navigate production challenges, emerging pests and diseases, volatile markets and unpredictability of weather events. Faculty across our departments and research stations continue to conduct studies that expand our understanding of these issues and evaluate practical solutions that can be implemented at

the field level. Their efforts position LSU Agriculture as a reliable source of information for producers working to maintain profitability and sustainability.

Louisiana Solutions, Global Impact also strengthens our commitment to educating the next generation of agricultural scientists, producers and leaders. Students in the College of Agriculture benefit from hands-on learning, applied research opportunities and direct engagement with industry partners. Preparing this workforce is essential to meeting the state's future needs in precision agriculture, natural resource management, food technology and related fields.

Extension remains a cornerstone of our mission. Through parish-level programming, field days, agent support and direct outreach, the LSU AgCenter ensures that research develops into recommendations that can be used by families, businesses and producers. From crop management to nutrition education to youth development, our extension teams remain trusted resources in communities across the state.

As we implement this strategic plan, our focus will remain steady to generate solutions

that strengthen Louisiana's economy, support resilient agricultural systems and improve quality of life for the people we serve. Louisiana Solutions, Global Impact provides a framework that aligns our work across research, teaching and extension, ensuring that LSU Agriculture continues to fulfill its role as a leader for the state and a contributor to global agricultural progress.

Matt Lee is the senior vice chancellor for agriculture and dean of the College of Agriculture, where he advances the university's land-grant research, education and outreach missions.



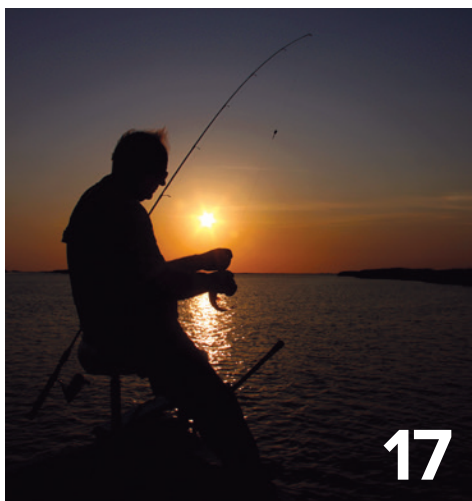
LOUISIANA Agriculture

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ON THE COVER: LSU AgCenter faculty are working to craft solutions for Louisiana with the power to change the world. Clockwise from top left: Evelyn Watts, seafood education specialist; Terrence Tiersch, researcher, Aquatic Germplasm and Genetic Resources Center; Brian Gautreau, 4-H Youth Development education specialist; Quincy Vidrine, Nutrition and Community Health regional coordinator; and Adam Famoso (center), AgCenter rice breeder. Illustration by Ana Iverson

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LOUISIANA MASTER FARMER PROGRAM PARTICIPANTS HONORED AT CEREMONY

The Louisiana Master Farmer Program is celebrating a quarter century of educating agricultural producers and others involved in the industry about conservation strategies that benefit both the environment and farming operations.

The latest graduates of the program — along with those who have completed recertification and the 2025 Outstanding Master Farmer — were honored at a Jan. 8 ceremony held during the Louisiana Association of Conservation Districts annual meeting in Alexandria.

“This year marks the program’s 25th anniversary, a testament to its enduring success and impact,” said Donna Gentry, coordinator of the program. “With their certification, these producers join the ranks of 381 others who have achieved certification or recertification since 2006, continuing a legacy of responsible stewardship and agricultural excellence.”

The program, which is led by the LSU AgCenter, was created in 2001 to help farmers protect natural resources while maintaining productivity. To earn the title of Master Farmer, participants must attend educational sessions and write conservation plans for their farms that incorporate research-based management practices. After graduation, Master Farmers are required to log continuing education hours, and they go through a certification process every five years. ■ **OLIVIA MCCLURE**



William “Bart” Dobson, center, a cattle, hay and row crop producer from Bossier Parish, was recognized as the 2025 Outstanding Master Farmer during a Jan. 8 ceremony in Alexandria. He’s pictured with, from left, Robert Crotty, of Louisiana Land Bank; Richard Fontenot, president of the Louisiana Farm Bureau; Mike Salassi, director of the Louisiana Agricultural Experiment Station; Mike Strain, commissioner of the Louisiana Department of Agriculture and Forestry; and Sarah Trichel, acting state conservationist with the Natural Resources Conservation Service. Photo by Olivia McClure



Rodrigo Diaz, LSU AgCenter entomologist, stands in front of a thriving plot of roseau cane. He and a team have been planting roseau cane near Pass-a-Loutre since 2022. Photo by Cecelia Dolaz

LSU AGCENTER RESEARCHERS REPORT PROGRESS IN ROSEAU CANE RESTORATION

LSU AgCenter scientists are seeing promising results in their ongoing efforts to restore roseau cane stands in coastal Louisiana, a critical step in protecting the state’s fragile wetlands.

The research team, led by AgCenter entomologist Rodrigo Diaz, recently visited Pass-a-Loutre Wildlife Management Area at the mouth of the Mississippi River to monitor restoration trials planted since 2022. This region, characterized by expansive mudflats, presents unique challenges for establishing roseau cane, a plant vital for stabilizing riverbanks and reducing erosion.

During the December visit, researchers observed strong establishment in most plots and noted that trials planted in spring 2025 are thriving. To measure growth, the team deployed a drone equipped with a lidar sensor to estimate plant height and biomass — key indicators of restoration success. ■ **TOBIE BLANCHARD**

LSU AGCENTER APPLAUDS \$1 MILLION IN FEDERAL FUNDING FOR MISSISSIPPI RIVER INVASIVE SPECIES CONSORTIUM

The LSU AgCenter is proud to announce \$1 million in federal funding that will supercharge ongoing initiatives aimed at stamping out invasive species that threaten agriculture and natural resources in Louisiana and across the Mississippi River valley.

The funding will enable the creation of the Mississippi River Invasive Species Consortium — a regional hub for research and outreach on detecting, identifying and managing invasive and non-native pest species. The consortium, which will be coordinated by the LSU AgCenter, will promote collaborative projects that unite scientists from land-grant institutions throughout the Mississippi River valley in the fight against species that pose economic, environmental and social challenges.

U.S. Rep. Julia Letlow, of Louisiana’s 5th Congressional District, was instrumental in obtaining the funding. She is a member of the House Committee on Appropriations Subcommittee on Agriculture, Rural Development, Food and Drug Administration, and Related Agencies. ■ **OLIVIA MCCLURE**

From Our SOCIAL MEDIA

Join the LSU AgCenter on social media. AgCenter researchers and extension agents reach out via the web with videos, articles and helpful hints on Facebook, YouTube, Instagram, LinkedIn and X.

Join the conversation by following the LSU AgCenter.

FACEBOOK | FOLLOW THE AGCENTER AT➔ [FACEBOOK.COM/LSUAGCENTER](https://www.facebook.com/LSUAGCENTER)

JAN. 28 | A cloudy day in Leesville turned into an unforgettable learning experience for ropers! Participants ranging from age 10 to 70 gathered at the Vernon Parish Covered Arena for a two-day roping clinic led by two-time world champion Matt Sherwood.



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JAN. 27 | Snow covers our barn at the Red River Research Station in Bossier City. Many of our offices are closed today due to inclement weather. We hope everyone is staying safe and warm!



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JAN. 23 | The LSU AgCenter partnered with a rural restaurant to help locals make healthy choices when dining out. The Magnolia Cafe and Coffee Shop in Crowville now has menu items that have the @ochsnereatfit seal of approval. <https://tinyurl.com/yymm7ya5z>



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JAN. 24 | Congratulations to Ed Bush, LSU AgCenter horticulture professor, for receiving the Louisiana Nursery and Landscape Association Professional Achievement Award. The award recognizes his many years of service and contributions, including the Coastal Roots nursery program, mentoring high school students in science fairs, development of Tiger Greaux and Garden Greaux, graduate student education and his 39 years of service at Louisiana State University.

YOUTUBE | FOLLOW THE AGCENTER AT➔ [YOUTUBE.COM/LSUAGCENTER](https://www.youtube.com/LSUAGCENTER)

JAN. 23 | Mirlitons (pronounced mer-la-tonhs) are not so well known in Louisiana, but they are part of the state's culinary history. On this edition of Get It Growing, LSU AgCenter horticulturist Jason Stagg demonstrates how to grow these squash that are also called vegetable pears.



COLLEGE OF AGRICULTURE CELEBRATES FALL GRADUATES

On Dec. 18, the LSU College of Agriculture celebrated 108 graduates during its fall commencement ceremony. The graduating class included 81 bachelor's degree recipients, 19 master's degree earners and eight doctoral graduates.

Students in the class of 2025 represented 10 U.S. states and 11 countries, with 80% of the class coming from Louisiana. The youngest bachelor's degree recipient was 20 years old, while the oldest was 39. The youngest graduate degree recipient was 23, and the oldest was 53. ■ **AVA ARCENEUX**



PEDIATRIC CULINARY HEALTH PROGRAM TRAINS RESIDENTS IN TIME-SAVING, NUTRITIOUS MEAL PREP

At the LSU College of Agriculture Human Ecology Building in early January, future pediatricians learned about skills crucial to reducing childhood obesity.

The kitchen provided instructors and residents from the [Our Lady of the Lake Children's Weight and Nutrition Clinic](#) with the perfect setting to collaborate on preparing spaghetti and meat sauce at various caloric levels to give those present an idea of how to substitute healthier ingredient options. [Judy Myhand](#), senior instructor in the School of Nutrition and Food Sciences, said it's important for parents to work on healthier choices for their family without spending too much time or money doing so.

"The goal here is to teach pediatric residents more about nutrition and healthy food preparation," Myhand said. "They're going to be working with families to reduce obesity risks."

According to April Hamilton, a registered nurse with the clinic, the program began in partnership with the [American College of Culinary Medicine](#) and is one of the first of its kind to focus on pediatric residents.

"A lot of the other sites focus on medical students, dietitians and chefs," she said. "We're fortunate to have gotten the funding to purchase the curriculum."

■ **V. TODD MILLER**



Residents and instructors from the Our Lady of the Lake Children's Weight and Nutrition Clinic prepare spaghetti and meat sauce using various amounts of beef in the LSU Human Ecology Building test kitchen. Some residents used an all-beef recipe while others cut the amount of red meat with mushrooms and lentils. Photo by V. Todd Miller

Damon Abdi:

DEVELOPING SOLUTIONS FOR
LOUISIANA LANDSCAPES,
NURSERY INDUSTRY

■ OLIVIA MCCLURE

LIKE A LOT OF TEENAGERS, Damon Abdi's first jobs were part-time gigs at fast food joints. He tired of that sort of work quickly.

"I was like, 'I really want to do something outside,'" recalled Abdi, who grew up in Maryland. "I wanted to be able to get some fresh air and build something with my hands."

Luckily, one summer, he landed a new job that fit the bill: as a laborer for a landscape contractor. He liked it so much that he decided he wanted to start his own landscaping business one day.

"I knew I wanted to make a career of it," Abdi said. "Not just for the outside part, but the capacity to create your own vision and put that in the landscape was something I really enjoyed."

When he enrolled at Pennsylvania State University, he chose landscape contracting as his major. But his career plans began to shift as he realized that he enjoyed learning about the science behind growing plants.

Abdi went on to earn a doctorate in horticulture from Michigan State University, and since 2021, he's been an assistant professor of landscape horticulture at the LSU AgCenter Hammond Research Station. He recently was named to the Arlene and Joseph Meraux Professorship.

Abdi's work covers a wide array of issues and brings him into contact with horticulturists of all stripes.

"My overarching goal is to develop solutions and resources to assist landscape contractors and other green industry professionals as well as home horticulturists and anybody with an interest in plants," he said.

With a 70% extension appointment, Abdi spends much of his time educating

people — working especially closely with industry groups like the Louisiana Nursery and Landscape Association, which earlier this year presented him its Young Professional of the Year award.

"I serve as that liaison between what they are seeing in the field and their challenges and then what AgCenter resources can do with them," Abdi said. "I work closely with them for all of their events, especially with regard to continuing education and helping to grow the industry, get more people licensed and encourage best management practices."

He also participates in Master Gardener outreach efforts, conducts workshops on topics like how to build patios and writes articles and fact sheets. He's even on Martha Stewart's rotation of experts who are interviewed for gardening advice — including in a recent online piece on plants that grow well from seed.

On the research front, Abdi's focus is water management, including runoff mitigation and nature-based solutions such as rain gardens. Other projects include studies on tree establishment, mulching techniques, frost protection fabrics and reducing the environmental impact of nursery and greenhouse production. He

also is involved in plant evaluations at the station, which is home to extensive trial gardens.

Louisiana's climate and landscapes are much different than what Abdi was accustomed to back home in Maryland and at the universities he attended. That was part of the appeal of coming to work for the LSU AgCenter, he said.

"I thought it would be cool to be able to see a different plant palette and some of the unique opportunities and challenges in Louisiana," he said. "With my background in research in water management, it seemed like a very perfect fit to be able to come to an area where I can use landscapes and landscape engineering to addresses prominent issues like water management."

Even though his career took a different direction than he originally expected, he's happy with where it has led him.

"It's a lot different than starting a landscaping company, but now I get to help people with their companies, and that's a really fulfilling thing," he said. "It's sort of similar — same row, but different seed."

Olivia McClure is a writer, photographer and videographer in AgCenter Communications.

Damon Abdi, assistant professor of landscape horticulture, stands with petunias in a greenhouse at the LSU AgCenter Hammond Research Station. Photo by Olivia McClure

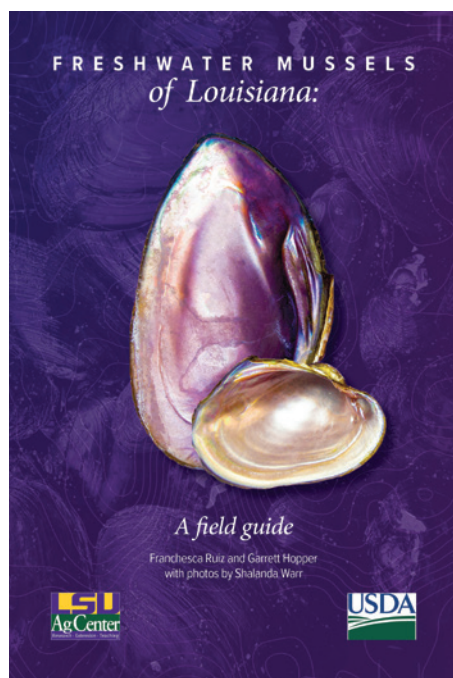


AGCENTER RESEARCHER, STUDENTS EDUCATE LOUISIANANS ABOUT LINK BETWEEN MUSSELS AND WATER QUALITY

■ KYLE PEVETO

BENEATH THE SURFACES of rivers, lakes and ponds throughout Louisiana, freshwater mussels are the “livers of the river,” filtering water while also building habitats for other aquatic species, research shows.

While these important bivalves perform crucial ecosystem functions in numerous Louisiana streams, they remain undervalued and at risk, said Garrett Hopper, an assistant professor of aquatic ecology at the LSU AgCenter.



Francesca Ruiz and Garrett Hopper worked to create Freshwater Mussels of Louisiana: A Field Guide to help educate people about freshwater mussels in the state and spread the word about the importance of these animals as wildlife and a natural resource. Cover design by Stephen Llorens

More than half of Louisiana’s freshwater mussel species are considered critically imperiled, imperiled or vulnerable by the Louisiana Department of Wildlife and Fisheries, and five species are listed as threatened or endangered by federal agencies.

“Our goal is to figure out how to protect them and manage them so that they can basically keep doing what they’re doing to make our water healthier,” Hopper said.

Hopper’s fish and mussel ecology lab in the School of Renewable Natural Resources focuses on freshwater fish and the bivalves while educating the public about many lesser known, yet significant, species. While scouring the state’s waterways, Hopper and his student researchers can be found distributing “mussel propaganda,” as Hopper calls it, such as educational posters and booklets.

The most recent outreach publication, *Freshwater Mussels of Louisiana: A Field Guide*, was published in December after nearly two years of work by Hopper and undergraduate researcher Francesca Ruiz.

Hopper said the 84-page booklet was 95% of the vision of Ruiz, who became fascinated by mussels during an introductory class in the School of Renewable Natural Resources. She completed much of the work on the project as an intern in the LSU AgCenter ASPIRE program, which helps undergraduates earn hands-on agriculture experience

and is funded by a U.S. Department of Agriculture grant.

“These animals have a really special place in my heart,” Ruiz said. “They’re so amazing once you learn more about them and what they do. This is something I personally enjoy, but a lot of the public aren’t aware of these animals.”

The booklet features a primer on mussels and a glossary of important terms along with vivid photographs and information about each of the 63 species of mussels found in the state, including maps of their ranges.

Hopper became interested in freshwater mussels while in graduate school at Kansas State University. After completing his doctorate, Hopper researched the bivalve creatures for four years in Alabama, a state with an incredibly diverse mussel population. The intriguing creatures’ lives captivated him.

“There’s this complex life history where mussels need a fish to carry around their parasitic larvae,” Hopper said. “That can be a very specific interaction between one mussel and one fish or many different kinds of fish and one kind of mussel.”

Mussels grow from larvae and form dense beds, living for decades while they feed and filter water and store bacteria and other substances in their tissues as they grow. The waste they produce becomes available to algae and aquatic plants, Hopper said, and “fuels the bottom of the food web.”

Nutrients from mussel beds can be traced to plants along the stream banks and into insects that emerge from the stream and provide food for birds, bats, spiders and other animals.

“Those mussel beds form these really big hot spots of biodiversity,” Hopper said.

Hopper strives to better understand these organisms and what purpose they serve in the ecosystem. Through the work of Hopper’s lab, graduate students are studying mussels’ nutrient cycling in the Bogue Chitto River and have surveyed mussels in Bayou Pierre in the northwestern region of the state.

“We all need freshwater,” Hopper said. “Ultimately, protecting mussels and fish and learning more about them and how they interact with their environment is really important for understanding how to keep our freshwater safe and healthy.”

The lab recently received funding from the Environmental Protection Agency for a long-term study of mussels in six of Louisiana’s rivers: the Sabine, Calcasieu, Atchafalaya, Tangipahoa, Tchefuncte and Pearl.

“We’re going to learn a lot about the life history of different mussels, and then we’re going to compare what we collect now to mussels in museum collections that are from relatively similar locations that predate the Clean Water Act.”

“It can help address whether or not freshwater systems are healthy here in Louisiana,” Hopper said. “We’ll be looking for mercury in the soft tissue. I know a lot of people are interested in that. Because these animals sit in the mud at the bottom of the river for decades and decades, they just collect things. We can use them to collect information about the river.”

Kyle Peveto is the editor of Louisiana Agriculture.

LEARN MORE ABOUT MUSSELS AND THE WORK OF HOPPER’S LAB AT

[garretthopper.wixsite.com/
streamecology/outreach](http://garretthopper.wixsite.com/streamecology/outreach).

TOP: Francesca Ruiz, a senior in the LSU School of Renewable Natural Resources, became fascinated by mussels early in her college career. She has contributed to a comprehensive guide to the freshwater mussels of Louisiana that was published recently. Photo provided by Francesca Ruiz

BOTTOM: Garrett Hopper, an assistant professor of aquatic ecology at the LSU AgCenter, studies the freshwater fish and mussels of Louisiana and aims to educate the public about their important place in the ecosystem. Photo provided by Garrett Hopper



LOUISIANA SOLUTIONS GLOBAL IMPACT

■ LSU AGCENTER COMMUNICATIONS

LAST YEAR, the LSU AgCenter and College of Agriculture unveiled a bold strategic plan that is encapsulated by the slogan Louisiana Solutions, Global Impact. The plan aims to position LSU as a national and global leader in agricultural innovation, education and outreach through transformative, Louisiana-driven solutions. LSU Agriculture is rooted in the land-grant mission established by the federal Morrill Act of 1862, which encouraged higher-education institutions to prioritize agriculture and other practical fields for economic development and public service. LSU Agriculture's strategic goals focus on serving Louisiana and delivering solutions to secure our future. The strategic plan goals are:

- Increase agricultural production and enhance the preservation of Louisiana's natural resources by developing talent, technologies, products and practices.
- Expand the talent pipeline through youth development, ag leadership and college academic and workforce development programming that returns talent to rural communities in Louisiana.
- Collect and analyze data to identify opportunities and strategies for market growth, ultimately strengthening food and fiber production capacity.
- Support small business startups and workforce development through our Food Innovation Institute (FOODii), the Seafood Processing Demonstration Lab, industry-based credential programs, our intellectual property commercialization program and other mechanisms.
- Identify incentives and programs to place much-needed professional services in rural communities, supporting local and state decision-makers and enhancing community resilience.
- Provide programming and solutions to strengthen rural communities and ensure economic prosperity, a healthy population and flourishing institutional structures.



***READ THE
FULL PLAN***

LIVING THE LAND-GRANT MISSION

LSU AgCenter faculty are hard at work helping the people of Louisiana and fulfilling the goals of the strategic plan.



GOAL: Increase the rural talent pipeline

Brian Gautreau

STEM education specialist, LSU AgCenter 4-H Youth Development

Through the Agricultural Career Exploration with Drones program, Gautreau and his team designed a course that teaches high school students the basics of flying drones and helps them earn the Federal Aviation Administration Part 107 certification needed to fly a drone commercially, along with another important certification. The students can learn to fly fixed-wing drones, create images and map fields — crucial skills for agricultural drone careers.

“It’s important for youth to have multiple pathways into careers,” Gautreau said. “A Part 107 certification can open so many doors. It might not be agriculture. It might be in insurance adjustment, inspections or just a side hustle taking pictures at weddings. It is going to open avenues that youth often aren’t even aware of. It might be the spark that sets them down a road for a career or college.” ■ Kyle Peveto

GOAL: Increase agricultural production by developing talent, technologies, products and practices.

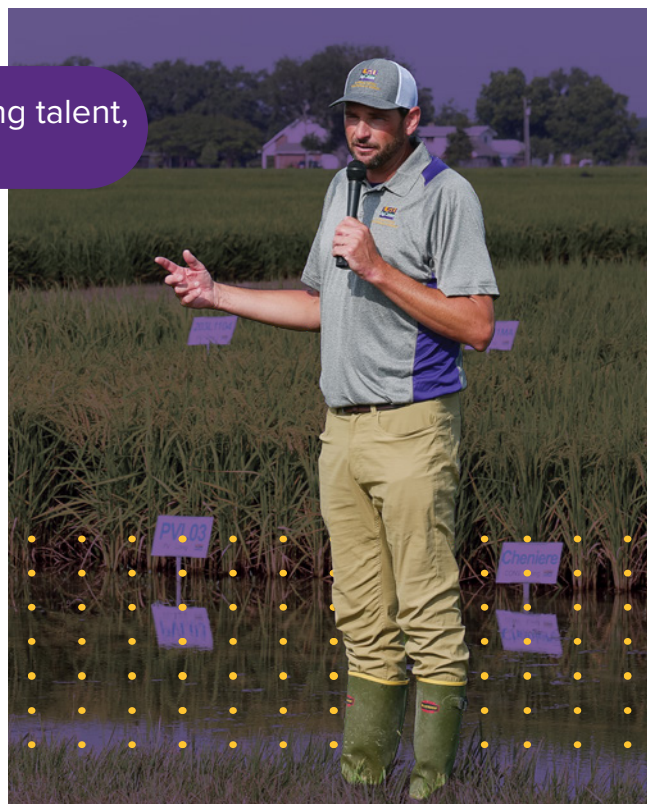
Adam Famoso

Rice breeder, H. Rouse Caffey Rice Research Station

AgCenter rice breeder Adam Famoso and his team are working to grow better rice —varieties that are healthier, tastier and aligned with modern consumer preferences, while also being high-yielding and pest-resistant. Using advanced genomic tools, they analyze rice DNA to select desirable traits, such as shorter plants that resist lodging and grains with appealing aroma, and accelerate the development of new varieties.

This work helps Louisiana rice farmers stay competitive and profitable. By creating rice that grows well and meets the needs of both farmers and consumers, the program supports local agriculture and strengthens the state’s role in global food production. It also helps ensure that future rice varieties are more resilient, more nutritious and better suited to changing tastes and climates.

■ Tobie Blanchard





GOAL: Identify opportunities and strategies for market growth

Michael Deliberto

Economist, LSU AgCenter Department of Agricultural Economics and Agribusiness

Deliberto has helped agricultural producers navigate market trends, policy changes and other economic forces. Through spreadsheets, reports, newsletters, workshops and other avenues, Deliberto is a resource for farmers as they face decisions that affect their bottom lines. The changing nature of federal agricultural policy also plays a key part in Deliberto's research.

"Ag economics is really the practical side of the application of finance, budgeting, accounting, management, decision-making, risk, uncertainty," Deliberto said.

With the unpredictability of the farm economy, every year agricultural producers must carefully consider several factors when deciding what to plant and in what quantities to apply fertilizer, chemicals, irrigation and other inputs. Deliberto's tools help Louisiana producers make the best possible plans.

■ Tobie Blanchard

GOAL: Assist small business startups and success

Evelyn Watts

Seafood extension specialist

In the heart of Cajun Country, where seafood is a cornerstone of the local economy, Watts and the team with the LSU AgCenter and Louisiana Sea Grant Seafood Processing Demonstration Lab are advancing the state's seafood industry while providing invaluable support to small businesses and independent fishermen. She has helped secure state-of-the-art equipment for the lab to assist with research and processing seafood and is helping fishermen identify niche markets that can give them more value for their catch.

The lab provides essential training on preserving product quality, packaging and compliance with regulations, empowering fishermen to be able to process and sell their catch directly to consumers.

"We're not only working with seafood and fishermen," Watts said. "We are also working with consumers and outreach faculty, so we create the need from the consumers, so we close the circle — we have a product, and we have a demand." ■ Tobie Blanchard





GOAL: Strengthening Louisiana's rural communities

Luke Stamper

State wildlife specialist

Based in rural northeastern Louisiana's Caldwell Parish, Stamper travels throughout Louisiana implementing a dynamic statewide wildlife extension program. His work includes holding wildlife field days, forestry and wildlife stewardship seminars and workshops, as well as interagency and multi-institution collaborations, reaching stakeholders where they live and giving them the tools to manage habitats and deal with both animal and vegetative invasive species encroaching on their land.

Stamper's mission is to create better land stewards, wildlife managers and wildlife habitat managers through research and education that will have a lasting impact on Louisiana's natural resources.

"There's a lot of interest in habitat management and food plots, whether it's for whitetail deer or waterfowl," Stamper said. "On the vegetation side, we want to train landowners on management techniques that they can eventually do themselves." ■ V. Todd Miller

GOAL: Support local and state decision-makers

Quincy Vidrine

Nutrition and Community Health regional coordinator

Through her work with the LSU AgCenter's Healthy Communities Program, Vidrine has helped form a coalition in Franklin Parish that is making a real difference in the quality of life in the towns and villages that dot the parish.

New festivals, farmers markets and town events fill the parish calendar. Park improvements draw families to once neglected areas. Grant-funded programs are making the areas more pedestrian-friendly. These community-wide improvements have been instrumental in helping individuals make their own positive changes, which is at the heart of the LSU AgCenter's Healthy Communities initiative.

"With healthy communities, it's about building coalitions," Vidrine said. "It's getting the right people together at the table for the right projects."

■ Tobie Blanchard



FLY MANAGEMENT:

IMPACTS ON CATTLE PERFORMANCE, HEALTH AND ECONOMICS

■ MATHEUS FERREIRA, ASHLEY EDWARDS, MARCELO VEDOVATTO AND LEE FAULK

FLY MANAGEMENT IS A CONSTANT CHALLENGE for cattle producers in the southeastern United States, where warm and humid conditions favor rapid increases in fly populations. Numerous studies by LSU AgCenter researchers — including the late Lane Foil, who is profiled on Page 17 — and other scientists have shown that fly infestations affect the productivity and profitability of cattle operations throughout the U.S., making flies one of the costliest external parasites in livestock operations.

National estimates place annual economic losses from horn fly infestations for cattle production at approximately \$876 million. For stable flies, data published in the Journal of Medical Entomology in 2012 estimated a total impact to U.S. cattle industries of \$2.2 billion per year, which includes dairy and beef cattle. Implementing effective fly management strategies not only enhances cattle health and welfare but also significantly improves production efficiency. In this article, AgCenter researchers and extension experts discuss practical approaches to fly management, focusing on the timing of interventions and the measurable impacts these practices can have on cattle growth and well-being.

TYPES OF FLIES AFFECTING CATTLE

In the southeastern U.S., cattle are primarily affected by horn flies, stable flies and face flies. Among these, horn flies are the most economically damaging insect pest of grazing cattle.

- **HORN FLIES** are blood-feeding flies usually found on the back, sides and poll area (the space between the ears where horns may grow) of cattle, causing irritation, blood loss and reduced grazing efficiency. Each fly can bite up to 40 times a day, leading to significant discomfort and energy loss for the cattle.



- **STABLE FLIES** can deliver painful bites, primarily feeding on the legs and causing cattle to bunch together to avoid being bitten, which can lead to increased heat stress and reduced feed intake.
- **FACE FLIES**, as the name suggests, are nonbiting flies found around the face area that feed on secretions from the eyes, nose and mouth. They can spread diseases like pinkeye, causing significant health issues and decreased productivity.

Producers have many fly management options and strategies available to help manage these three fly species, which economically affect grazing cattle.

IMPACT ON CATTLE HEALTH AND WELFARE

Effective fly management has profound impacts on cattle health and welfare because flies are vectors for several diseases, including pinkeye and anaplasmosis. Face flies are the main cause of pinkeye and spread the bacteria from one animal to another as they feed on eye secretions. Pinkeye is a highly contagious bacterial infection affecting the eyes of cattle and is also known as infectious bovine keratoconjunctivitis. It can cause pain and discomfort, leading to decreased grazing and feed intake and, consequently, reduced growth rates. Horn flies are generally not considered to be important vectors of cattle diseases, but they are the intermediate host for a nematode that causes skin lesions in cattle.

Welfare plays an important role in productivity because comfortable cattle are more productive. Reducing stress and irritation from flies leads to improved welfare, as cattle spend more time grazing and less time fighting fly annoyance. While fly management is a necessity anywhere in the U.S., hot and humid conditions make the practice even more necessary. As summer

FLY CONTROL METHODS

A multifaceted approach is essential for effective fly control. Flies can be directly or indirectly controlled. Direct control measures are a combination of efforts directed to eliminate flies, such as the use of insecticides and traps, whereas indirect control is essentially the implementation of practices to reduce the ambient spreading of flies.

INDIRECT CONTROL (CULTURAL MANAGEMENT PRACTICES)

Implementing practices such as regular manure management reduce breeding sites for flies. Keeping areas where cattle congregate clean and dry is vital. Additionally, rotational grazing can minimize the buildup of fly populations in specific areas. Accumulations of hay and animal waste around these feeders are excellent substrates for the breeding and development of stable fly larvae, which may be the primary source of stable fly infestations in Louisiana.

DIRECT CONTROL (INSECTICIDES AND TRAPS)

For direct elimination of flies, popular options include pour-ons, sprays, dust bags and ear tags. It is imperative to use a combination of insecticide classes to prevent resistance. The best product for your operation is the one that delivers the best results. A product that works well for one producer may not fit your operation's needs. Therefore, it is important to thoroughly evaluate the effectiveness of control methods in your own system and adapt accordingly. Rotating products and following label instructions are essential to ensure long-term effectiveness. In addition to insecticide treatments, using fly traps, sticky tapes and other physical barriers around working facilities and feeding areas help in controlling fly populations.

- ▶ **FEED-THROUGH LARVICIDES/INSECT GROWTH REGULATORS (IGRs):** These products prevent fly larvae from maturing into adults and are most effective against horn flies and face flies. They can be delivered through feed rations, supplements or mineral mixes formulated with fly control. IGRs are designed to disrupt the growth and development of the fly larva. Several commercial options are available, and the best choice depends on your operation's budget and target species.
- ▶ **GARLIC BLENDS:** These products may include garlic powder, garlic oil, citronella or peppermint, which act as natural fly repellents. They are typically added to mineral mixes or feed and do not kill flies directly. Instead, once ingested, garlic compounds are released through the animal's skin and breath, creating an odor that discourages flies, lice, mites and other biting pests, particularly around the eyes and nose.
- ▶ **INSECTICIDE EAR TAGS:** Insecticide ear tags are insecticide-impregnated tags that can be applied to cattle. These types of fly tags are the only fly treatment that gives sustained long-term control. Some ear tags can protect for up to five months for horn flies and up to four months for face flies on cattle.
- ▶ **TOPICAL INSECTICIDES:** Pour-on or spray-on insecticides are usually easy to apply, do not require mixing and can target specific fly species. Insecticides should be used in an integrated pest management system, which may involve repeat treatments and the use of other pest control practices.
- ▶ **DUST BAGS AND BACK RUBBERS:** Dust bags are cloth bags filled with insecticidal dust, while back rubbers are long ropelike or fabric-covered devices that are soaked in an insecticide solution. They are usually hung in areas where cattle naturally walk through, like near water or feed sources. As the cattle brush against a back rubber, the insecticide is applied to their skin to help kill or repel pests.



An Angus-cross cow is loaded with horn flies in the beginning of summer in the northwestern Louisiana. Photo by Matheus Ferreira

days arrive, fly populations peak along with temperature and humidity. Stable fly-infested cattle tend to bunch up to avoid being bitten, which leads to heat stress and, therefore, less productive cattle. Managing fly populations reduces the incidence of diseases, improves herd health and welfare, and reduces veterinary costs.

IMPACT ON CATTLE GROWTH AND ECONOMICS

Efficient growth and production are associated with healthy, less stressed cattle that can express natural grazing behavior and utilize nutrients more efficiently. This leads to better feed intake and conversion rates, which result in improved weight gain and overall productivity, according to a 1992 study published in the *Journal of Animal Science*.

Studies conducted in the U.S. and Canada have shown that cattle with effective fly management can gain 15% to 30% more weight compared to those not treated. One of these studies, a 1995 horn fly management study by AgCenter researchers, found that over a three-year period, treated cattle with 25% to 50% Brahman heritage gained 17% more than untreated cattle. In a scenario where fly-treated steers gain 30% more weight during the background phase (the postweaning growing period before finishing) — gaining 1 pound per day versus 0.70 of a pound, for example — the effect is substantial. In today's market, depending on the fly management program, producers can expect a return of \$20 to \$40 for every \$1 invested in fly management. This

estimate is based on an additional 20% to 30% weight gain during the June to September backgrounding period using the current average price of \$3.40 per pound for 600-pound steer calves.

Average daily gain differences are variable among studies and highly influenced by location, breed and year. However, an overwhelming number of studies consistently find significant differences between treated and untreated cattle. Differences in performance between treated and untreated cattle also extend to cow-calf pairs. A four-year study conducted in New Mexico on rangelands showed that fly-treated cows gain, on average, 33 pounds more each year in comparison to untreated cows. Furthermore, calves paired with treated cows were 35 pounds heavier at weaning compared to calves paired with cows infested with horn flies, according to the New Mexico State University study published in 2019. Similarly, studies conducted in Nebraska have shown that calf weaning weights were 10 to 20 pounds higher when horn flies were managed on nursing cows, according to a 1984 study published in the *Journal of Economic Entomology*.

Although fly management can impact the growth performance of heifers, it does not seem to have a strong impact on reproduction. A 2003 study conducted by AgCenter researchers with 670 Angus and Brangus heifers showed that the total weight gain of treated heifers was 14% greater than that of untreated heifers. However, the fly treatment did not affect pregnancy rate (78% and 75% for untreated and treated heifers, respectively). Fly management

also plays an important role in dairy operations, as milk production can be reduced by 10% to 20% if cows are not fly-treated, according to a 1958 study.

DID YOUR FLY MANAGEMENT PROGRAM WORK LAST YEAR?

As previously shown, cattle left untreated against flies are significantly less productive during peak fly season. Implementation of effective fly control is important to maintain herd productivity, efficiency and economic value. The economic injury level for horn flies is 200 flies per animal, which means that 200 is the standard threshold for treating cattle. For stable flies, no threshold is set, but research has shown that an average daily count of 25 to 50 flies per animal will have an economic effect on cattle, whereas others have shown that an average of only two flies per leg could reduce weight gain in heifers.

In the southeastern U.S., where fly populations are particularly problematic, starting early and maintaining consistent management efforts through the summer is essential. Effective fly management consists of multiple strategies that combine the correct timing of insecticide applications, physical barriers and sanitization. Each fly management method has advantages and disadvantages that should be considered during decision-making. By investing in fly management strategies, cattle producers can enhance the welfare and performance of their cattle, leading to a more profitable and sustainable operation.

Matheus Ferreira is an assistant professor based at the LSU AgCenter Hill Farm Research Station in Homer. Ashley Edwards is the state livestock extension specialist based at the AgCenter Dean Lee Research Station in Alexandria. Marcelo Vedovatto is an assistant professor of beef cattle nutrition based at Dean Lee, and Lee Faulk is an associate extension agent focused on animal production, beef cattle and forage.

A silhouette of a man, Lane Foil, is shown from the side, sitting in a boat and fishing. He is holding a fishing rod that is bent, indicating a catch. The background is a sunset over water, with the sun low on the horizon, creating a bright orange glow and reflecting on the water's surface. The sky is a deep blue.

Lane Foil fishes in the Gulf.
Photo by Claudia Husseneder

AGCENTER RESEARCHER

Lane Foil:

ACCOMPLISHED ENTOMOLOGIST AND MENTOR

■ KYLE PEVETO, MICHAEL STOUT AND
CLAUDIA HUSSENER

LANE FOIL, AN ACCOMPLISHED RESEARCHER AND A PROFESSOR in the LSU AgCenter Department of Entomology for over four decades, died in June 2025 at the age of 76 following a brief illness.

Foil made pioneering contributions on the biology and management of pestiferous flies, including studies on their economic effects, interactions with wildlife and livestock, and importance as vectors of disease. He leaves a long list of accomplishments and a legacy of scholarship, mentorship and scientific innovation.

Lane Foil in his lab in 2019.
Photo by Olivia McClure

“He was always a man of big ideas and a visionary,” said Claudia Husseneder, a professor in the Department of Entomology and his partner. “Where there was a problem, it was his mission to build and lead the right team to look for a solution — and have some fun while doing it.”

Born in Mississippi, Foil graduated from Auburn University with a bachelor’s degree in zoology. He then worked at the Jackson (Mississippi) Zoological Park, where he encountered many exotic animals and became “locally famous” and featured in regional media outlets, according to Foil’s family, for raising a baby wallaroo for seven months.

Foil earned a master’s degree in preventive medicine from the University of Mississippi Medical Center in 1975 before receiving his doctorate in medical entomology from Mississippi State University in 1978. Hired by the AgCenter in 1980 to study horse flies, he soon expanded his research.

At the AgCenter, Foil began studying anaplasmosis in cattle and equine infectious anemia, or “swamp fever,” and helped reduce the numbers of animals suffering from those diseases worldwide. Foil studied the mosquito-borne West Nile virus as well as the connection between fleas and cat scratch fever and many other diseases linked to insects.

In the 1990s, Foil turned his attention to horn flies, which were the top economic pest for cattle, and produced several studies focused on their resistance to common insecticides and the economic impact of the flies on cross-bred beef cattle in the South.

Beginning in 2012, Foil researched the bluetongue virus and the epizootic hemorrhagic disease virus, which is known by its initials EHDV, in deer at the Wildlife Research Institute at the AgCenter Bob R. Jones-Idlewild



Research Station in Clinton. In 2013, he was named to the Pennington Chair for Wildlife Research.

Foil captivated students with stories of research in Africa and South America. A favorite tale included Foil escaping Africanized bees by jumping into piranha-infested waters, Husseneder said.

“Science was fun for him, which is not mutually exclusive with a rigorous approach to science and holding himself

Foil loved fishing in the estuaries along the Louisiana coast. The Deepwater Horizon oil spill in 2010 deeply affected Foil, leading him and Husseneder to use Gulf of Mexico Research Initiative and National Science Foundation grants to study the greenhead horse fly, which they used as a bioindicator of marsh health. The horse fly is native to salt marshes, and its larvae grow in the marsh sediment and depend on small soil organisms for food.

“For over a decade, we were roaming the marshes sampling horse flies, other insects and soil invertebrates, using biodiversity, population genetics and food web analyses to show the impact of the oil spill and the recovery of the greenhead horse fly and other insect bioindicator species and their food web,” Husseneder said.

One of Foil’s proudest late-career accomplishments was his work on sand flies and transmission and management of leishmaniasis, a parasitic disease. Along with his students, Foil demonstrated the efficacy of feed-through systemic control of sand flies, an approach for reducing transmission of leishmaniasis by delivering insecticides to sand fly larvae that feed on the feces of treated rodents and to sand fly adults that feed on infected rodents that act as reservoirs of the Leishmanial parasite.

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Claudia Husseneder

and his team to high standards,” she said. “Fun in figuring things out and finding solutions for interesting issues — that was driving him. He lived and breathed science and never retired from doing what he loved.”

Lane Foil poses with a redfish. Foil “enjoyed the simple things in life: fishing, hunting and cooking in good company. Louisiana was his chosen home; the Gulf of Mexico and the Caribbean were his favorite playgrounds,” said partner and colleague Claudia Husseneder.

Photo by Claudia Husseneder



This approach was recently demonstrated to be effective at an epidemiologically relevant, spatial scale in the Middle East.

He received four U.S. patents for vaccines, including two for animal vaccines, and wrote more than 170 articles for journals. In 2006, Foil received the AgCenter’s Doyle Chambers Research Award for meritorious contributions to agriculture. The committee awarding the honor cited his “unconventional approach” to research and noted that it yielded practical solutions that were adopted worldwide.

Foil was devoted to his research and mentoring young scientists, his colleagues said, and in the months before he passed away, he could be found taking specimens for his work and planning new research projects.



Lane Foil counts flies while conducting research. Photo by Claudia Husseneder

Kyle Peveto is the editor of Louisiana Agriculture. Michael Stout is head of the LSU Department of Entomology and is the associate director of the Louisiana Agricultural Experiment Station, and Claudia Husseneder is the Paul K. Adams Professor of Urban Entomology.

TORPEDOGRASS:

A NEW WEED IN SUGARCANE PRODUCTION

■ MATTHEW FOSTER, ALBERT ORGERON AND KENNETH GRAVOIS

TORPEDOGRASS (*Panicum repens*) is no stranger to south Louisiana, where it is commonly found in wetland areas, landscapes and along roadsides. Recent documentation of its presence in St. John the Baptist Parish sugarcane fields, however, prompted new LSU AgCenter research trials to develop management recommendations.

This perennial, rhizomatous grass is a major weed problem in many tropical and subtropical regions of the world. The first reported sighting in the United States was near Mobile, Alabama, in 1876. In the early 1900s, the U.S. Department of Agriculture tried incorporating torpedograss into forage systems, but it proved inferior as a forage crop. Additionally, it is found in the Carolinas, Georgia, Florida, Mississippi, Texas, California and Hawaii. It is considered one of the most invasive weeds in the world. The Louisiana Department of Wildlife and Fisheries classifies torpedograss as a Tier I invasive species, which is defined as “species currently causing severe or widespread negative impacts on wildlife or natural communities.”

Its spread throughout south Louisiana is mainly attributed to the transfer and use of rhizome-infested soils from the Bonnet Carré Spillway. In St. John the Baptist Parish, the weed has most likely been present in these sugarcane fields for several years and mistaken for bermudagrass (*Cynodon dactylon*). Torpedograss is a weed pest of sugarcane in Florida, Taiwan and Japan. Previous research in Japan reported that severe torpedograss infestations can reduce sugarcane yield by as much as 80%.

Torpedograss is characterized by long, creeping rhizomes with a sharp, pointed end that resembles a torpedo. The plant allocates much of its biomass to the rhizomes, which are strong enough to penetrate wood and asphalt and can run deep underground. Up to 80% of torpedograss biomass occurs underground as rhizomes and roots. The rhizomes can regenerate and produce new roots and shoots at every node, creating large, dense stands even from small pieces. It has erect, waxy, silver-green leaves that are pointed at the tip and can be up to 0.3 inches wide and 10 inches long. Leaves can be flat or folded, and hair is typically present on the surface and around the sheath. Seed heads are small and flat and are white to brown in color. Plants often produce seed, but they are not viable. Propagation only occurs vegetatively by rhizome growth. In wetland areas, rhizomes may float or move with soil after flooding events. Optimal growth occurs when day and night temperatures exceed 77 F. When fully mature, torpedograss can grow up to 3 feet tall and form dense mats that displace native vegetation.

Management of torpedograss is extremely difficult due to an aggressive growth habit, perennial life cycle, ability to survive in adverse environmental conditions and tolerance of herbicides. Because torpedograss spreads by rhizomes, preemergence herbicides are not an effective control option. Sugarcane weed management programs in Louisiana rely heavily on preemergence herbicides; however, products such as asulam and trifloxysulfuron (Envoke) are commonly utilized for postemergence control of johnsongrass (*Sorghum halepense*), itchgrass (*Rottboellia cochinchinensis*), vaseygrass (*Paspalum urvillei*) and several other annual grasses. Research



TORPEDOGRASS GROWING BETWEEN ROWS OF SUGARCANE IN LAPLACE, LOUISIANA.

Photo by Kyle Peveto

1. Torpedograss that was not sprayed with herbicide.
2. Torpedograss 35 days after being sprayed with asulam at 4 quarts per acre.
3. Torpedograss 35 days after being sprayed with asulam at 2 quarts per acre plus Envoke at 0.3 ounces per acre.
4. Torpedograss 35 days after being sprayed with asulam at 4 quarts per acre plus Trycera at 1.4 quarts per acre.

Photos by Kyle Peveto

conducted in sugarcane in Japan reported that three sequential asulam applications at 3.2 quarts per acre at 40-day intervals reduced torpedograss regrowth for nearly one year. In bermudagrass turf research in Florida, sequential applications of trifloxysulfuron (labeled as Monument in turf) at 0.5 ounces per acre resulted in 87% torpedograss control.

To develop torpedograss management recommendations for the Louisiana sugarcane industry, the AgCenter conducted two research trials during 2024 and 2025. In August 2024, a fallow field in Paulina was utilized to evaluate herbicide efficacy on torpedograss. Herbicide treatments included: (1) asulam at 4 quarts per acre, (2) asulam at 2 quarts per acre plus Envoke at 0.3 ounces per acre and (3) asulam at 4 quarts per acre plus triclopyr (Trycera) at 1.4 quarts per acre. Crop oil concentrate at 1% volume per volume percentage was added to all treatments, and a nontreated control was included for comparison. Weed control was assessed using a visual rating of 0 (no effect) to 100% (complete plant death). At 36 days after treatment, torpedograss control was 80% for all herbicide treatments.

In July 2025, a replicated trial utilizing the previously mentioned treatments and rating method was conducted in a commercial sugarcane field in LaPlace. Treatments were applied postemergence-directed to a field of third stubble cane or the fourth crop after initial planting. At 35 days after treatment, torpedograss control was 90% for asulam applied alone or in combination with Envoke; however, control increased to 98% when Trycera was applied with asulam. At 69 days after treatment, aboveground shoot biomass was collected from a 144-square-foot area in each plot. Dry weights of each sample were measured, and data were converted to a percent reduction from the nontreated control. All treatments reduced torpedograss dry weight by 60%.

Short-term control of torpedograss in Louisiana sugarcane is possible. For long-term control, additional in-crop herbicide applications may be necessary. Like many other grassy weeds, a fallow program that integrates multiple applications of glyphosate along with tillage is the best control measure for torpedograss. Future research will evaluate additional management strategies and the impact of torpedograss on sugarcane yield.

Matthew Foster is the LSU AgCenter sugarcane weed specialist and is stationed at the AgCenter Sugar Research Station in St. Gabriel. Albert Orgeron is the coordinator of the Sugar Research Station, and Kenneth Gravois is the AgCenter state sugarcane specialist.



BUILDING RESILIENCE

AGAINST SEVERE WINTER WEATHER IN LOUISIANA

■ SHELLY KLEINPETER, RUBAYET BIN MOSTAFIZ AND MEGGAN FRANKS

WHILE LOUISIANA is known for its hot, humid climate, cold snaps during the winter months are increasingly common. Because many residents are not accustomed to this cold weather, these temperature dips can create dangerous situations for families.

LaHouse is an LSU AgCenter program focused on research, extension and training to create more resilient, sustainable and healthy Louisiana homes and communities. While the program's model home is on LSU's main campus, it is also a statewide education and outreach program providing information on natural hazard risk, resilient home upgrades, new home technologies and other principles of building science.

The LaHouse team received a grant from the U.S. Department of Agriculture following a freeze in 2024 to educate homeowners on staying safe during severe winter weather and maximizing their homes' energy efficiency.

Given that record-breaking snow and freezing temperatures occurred again in south Louisiana during the project period, the initiative offered a timely opportunity to provide residents with clear, research-based guidance on protecting themselves while also reducing energy spending during winter months.

As part of the USDA-funded Home Energy Resilience Outreach, Education and Support, or HEROES, project LaHouse collaborated with LSU's Department of Construction Management to better understand how different building

techniques perform in cold weather. The LSU team was led by Zhihong Pang, assistant professor, and ran advanced building energy simulations to evaluate which wall and window construction methods deliver the highest levels of energy efficiency in Louisiana's diverse climate zones. This research helps identify building strategies that can keep homes warmer during extreme cold, reduce energy bills and improve overall comfort and resilience.

Using the data from the simulations, LaHouse developed a suite of extension resources tailored to Louisiana homeowners, builders and community leaders. These resources include:

- Printed homeowner guides focused on cold-weather safety and energy-saving upgrades
- Workshops and outreach events teaching residents practical strategies such as sealing air leaks, adding insulation and protecting plumbing
- Youth education activities designed to build STEM learning and awareness around home resilience
- Demonstrations and videos highlighting winterization tools and techniques
- Social media posts

By combining research, outreach and hands-on education, the HEROES project reached thousands of Louisiana residents, strengthening the state's capacity to respond to cold-weather dangers.



KEY WINTER HAZARDS AND ENERGY-SAVING STRATEGIES

Severe winter events can lead to a range of hazards, from frozen pipes and power outages to dangerous indoor heating practices. The HEROES project emphasized safe, cost-effective ways homeowners can protect their property and stay warm, including:

PROTECTING PLUMBING

- Insulate exposed pipes.
- Seal gaps near plumbing penetrations.
- Let faucets drip during hard freezes and keep under-the-sink cabinets open to allow for warm air to circulate around plumbing.

HEATING SAFELY AND EFFICIENTLY

- Maintain and service heating systems annually.
- Use space heaters away from flammable, upholstered furniture and always plug them directly into the wall.
- Avoid carbon monoxide risks by never using ovens or grills for heating the interior of your home.

IMPROVING HOME INSULATION AND AIR SEALING

- Add weatherstripping to doors and windows.
- Install additional attic insulation where needed.
- Use caulk and foam sealants to close air leaks.

These measures benefit the home year-round and can reduce energy waste and overspending on utilities.

Youth engagement was a key component of the project. LaHouse staff developed hands-on learning experiences that taught students about insulation, heat transfer and home energy systems. One activity included students building and insulating a miniature model home, then testing how much an ice cube inside the structure melted when placed outdoors. These activities aimed at teaching kids about energy and how choices we make can impact how much energy our homes consume.

The project reached more than 17,000 people through in-person outreach events and more than 400,000 through mass media. At one workshop, 88% of attendees reported learning more about energy-efficient techniques and their benefits.

Youth were reached at larger events like AgMagic, Ocean Commotion and livestock shows and through field trips to LaHouse, where students participated in hands-on activities and saw energy-efficient technologies in action throughout the facility. Of the youth surveyed during the project, 94% reported learning more about energy efficiency, and 57% said they would share what they learned with someone they knew.

Overall, evaluation continuously refined program offerings throughout the project and provided staff with insight into stakeholder needs regarding energy efficiency.

LaHouse is located at 3622 Gourrier Ave. in Baton Rouge and is open from 10 a.m. to 3 p.m. on Mondays, Wednesdays and Fridays for self-guided tours featuring exhibits on home improvement and disaster-ready construction. All of LaHouse's exhibits and resources are online as part of a virtual tour which can be accessed at www.lsuagcenter.com/lahouse. The virtual tour allows you to explore exhibits, read more about the home's features and explore publications.

Shelly Kleinpeter is the creative content manager for the LSU AgCenter LaHouse Research and Education Center. Rubayet Bin Mostafiz is the assistant director of research for LaHouse and is an assistant professor of research, and Meggan Franks is an assistant professor for extension at LaHouse.



Adobe Stock illustration

SWEET POTATO UNDER SIEGE:

HOW THE RENIFORM NEMATODE AFFECTS SWEET POTATO IN THE SOUTHERN UNITED STATES

■ TIMOTHY MILLER AND TRISTAN WATSON

Sweet potatoes have been a proud part of Louisiana's agricultural legacy for many years. Louisiana and the LSU AgCenter remain national leaders in sweet potato research and cultivar development despite declines in total acreage in recent decades. In 2024, the estimated farm-gate value of sweet potatoes produced in Louisiana was more than \$50 million. Today, breeders continue to innovate by producing cultivars that are higher yielding, better tasting and more resilient to diseases and pests. Among those pests, few are as pervasive as nematodes.

Nematodes are microscopic roundworms that inhabit nearly all soils. Most are beneficial, feeding on bacteria or fungi and improving soil fertility by releasing immobilized nutrients. A separate group of nematodes, known as plant parasites, poses a major challenge to farmers worldwide and can cause billions of dollars of yield loss globally every year. These parasites use specialized feeding strategies to tap into plant roots and draw out nutrients. Parasitized plants rarely die; however, their growth slows, and yields can drop dramatically.

When it comes to sweet potatoes, two nematodes in particular are responsible for significant economic losses: the root-knot nematode and the reniform nematode.

The root-knot nematode (*Meloidogyne* spp.) is easily recognized by the distinctive galls — or knots — that form on infected roots. It is a widespread pest capable of infecting hundreds of different crops, and in sweet potatoes, it causes severe disfigurement of both the nutrient-absorbing roots and the sweet potato itself. Several species of root-knot nematodes occur across the southern U.S., each varying in aggressiveness and damage potential.

The reniform nematode (*Rotylenchulus reniformis*), by contrast, is far less conspicuous but highly damaging. A tropical species, it parasitizes the roots of numerous high-value crops such as cotton, tobacco and soybean, in addition to sweet potato. The first nationwide survey for the reniform nematode in 1990 revealed its presence in 11 southern states, including Louisiana. Around that time, Louisiana researchers began inves-



Relative yield of a sweet potato plant grown in a reniform nematode-infested field that has been left untreated, at left, or treated with a nematicide, at right. Photo by Tristan Watson

SWEET POTATO ROOT

EGGS

MATURE FEMALE

A microscope image of a mature female reniform nematode actively parasitizing a sweet potato root and laying eggs within a gelatinous egg mass. Photo by Timothy Miller

tigating its impact on sweet potatoes. Early studies suggested that the reniform nematode could significantly reduce yield, but as root-knot nematode management took center stage, research into the reniform nematode remained minimal.

In 2020, the LSU AgCenter Nematode Advisory Service began surveying sweet potato fields across the state. The findings were striking. The reniform nematode was detected in more than 97% of the fields, while the root-knot nematode appeared in only 17%. A broader survey in 2023 across the entire southern U.S. showed that the reniform nematode had expanded its range into four new states and 140 new counties and parishes. Today, more than half of all counties and parishes that produce sweet potatoes are infested.

The reniform nematode is a particularly concerning pest because of its subtlety. Infected sweet potatoes often have no obvious symptoms. Vines may appear slightly chlorotic, a symptom easily mistaken for nutrient deficiency. Roots may develop tiny lesions that are indistinguishable to the naked

eye. Female nematodes secrete a gelatinous substance that protects their eggs and binds soil particles, which can give the roots a dirty appearance even after washing. Despite the lack of clear symptoms, the damage is real. Field trials performed in Louisiana have shown that infestations can result in a 20% to 30% yield reduction.

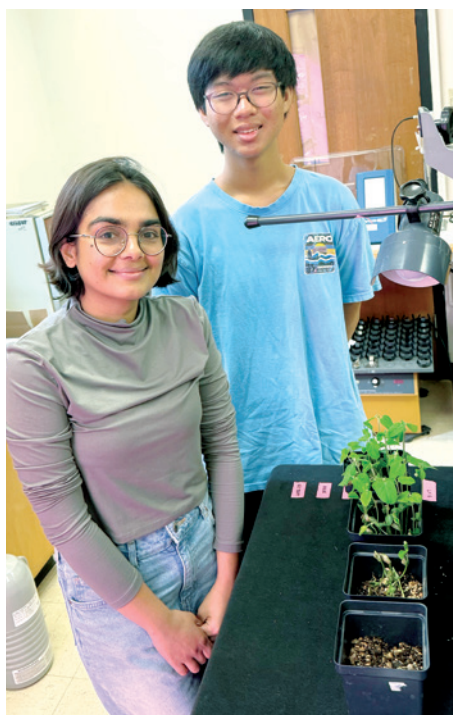
Work in Tristan Watson's nematology lab is currently focusing on better understanding how to manage this pest using both chemical and cultural strategies. Some nematicides have been shown to reduce both the number of nematodes in the soil and the number of eggs produced by females. Multiple years of field data have shown that nematicides can boost yield in reniform nematode-infested fields. Overall, effective management of the reniform nematode in sweet potato will require an integrated approach that relies on the use of host resistance, nematicides and effective crop rotations.

Timothy Miller is a graduate student in the LSU AgCenter Plant Pathology and Crop Physiology Department, and Tristan Watson is an assistant professor in the department.

PLANT-DERIVED NATURAL MOLECULES ARE NEW TOOLS TO MANAGE IMPORTANT FUNGAL DISEASES IN SOYBEANS

■ INDIRA POUDEL, MADALEINE ALESSI, SARA THOMAS-SHARMA, VINSON DOYLE AND CHIEN-YU HUANG

SOYBEANS, one of the most economically important crops produced in Louisiana, are planted on more than 1 million acres annually in Louisiana and contributed more than \$776 million to the state's economy in 2024.



Indira Poudel, a graduate student in the LSU AgCenter Department of Plant Pathology and Crop Physiology, and undergraduate student Achun Jaden Thatthamla, who is majoring in microbiology at LSU, have tested the efficacy of plant-derived natural molecules with seed treatments. Photo by Chien-Yu Huang

Many fungal pathogens can infect soybeans and detrimentally impact yield. To enhance the resilience of soybean production against fungal diseases, a team of LSU graduate students and LSU AgCenter plant pathologists are exploring the use of naturally occurring, plant-derived molecules that have antimicrobial activities or defense-priming effects as novel tools to manage important fungal diseases of soybeans.

In the Midsouth region, *Cercospora* leaf blight, purple seed stain, frogeye leaf spot and aerial blight are diseases caused by fungal pathogens that have significant economic effects on soybean production. These pathogens all share a preference for the weather conditions characteristic of the southern states, such as high temperatures and high humidity during the growing season. Notably, *Cercospora* leaf blight and frogeye leaf spot are becoming more common in the midwestern and northern soybean production regions of the United States because of warming winter temperatures.

Cercospora leaf blight and purple seed stain in the Midsouth region are primarily caused by three known pathogens: *Cercospora* cf. *flagellaris*, *Cercospora kikuchii* and *Cercospora* cf. *sigesbeckiae*. In recent years, intensive disease surveys have shown that *C. cf. flagellaris* is the dominant *Cercospora* species in the southern states of the U.S. Frogeye leaf spot is caused by another species of *Cercospora* known as *Cercospora sojina*. All these *Cercospora* species can be transmitted by wind and through infected plant tissue or passed

onto seeds. Aerial blight is caused by a soilborne pathogen, *Rhizoctonia solani* AG1-IA, which can remain in fields for many seasons due to its ability to form survival structures called sclerotia that can overwinter in the soil. Its ability to infect corn and rice, which are often grown in rotation with soybeans, also makes this pathogen difficult to control in the field. Each of these diseases is increasingly difficult to manage because the frequency of resistance to commonly used fungicides has increased in the pathogen populations.

In addition to the increasing levels of fungicide resistance among the pathogens causing *Cercospora* leaf blight and purple seed stain — which are different stages of the same disease — as well as frogeye leaf spot and aerial blight, many countries have reduced synthetic pesticide inputs for agricultural use because of their nontarget environmental effects and concerns about producing safe food. Thus, the development of safe, eco-friendly and effective fungicides to manage *Cercospora* leaf blight, frogeye leaf spot and aerial blight will help prevent the development of pathogen resistance and improve the marketability of soybeans.

The research team's goal is to develop an effective biofungicide using naturally occurring, plant-derived lipid biosynthesis or metabolic inhibitors and peptides with antimicrobial activities or defense priming effects as new and original tools to manage *Cercospora* leaf blight, purple seed stain, frogeye leaf spot and aerial blight. Lipids, a group of molecules that includes fats, oils



Cercospora leaf blight is a disease caused by a fungal pathogen and has significant economic effects on soybean production. This pathogen has a preference for the weather conditions characteristic of the southern states, such as high temperatures and high humidity during the growing season. AgCenter file photo

and steroids, are essential to all living organisms. They play a fundamental role in maintaining membrane integrity, regulating cell signaling and serving as energy reserves. In disease-causing Fungi, lipid metabolism — a process that includes the formation and breakdown of lipid molecules — is also linked to virulence, stress tolerance and fungicide resistance mechanisms.

Selective toxicity lipid biosynthesis inhibitors are compounds that disrupt the production of essential lipids in a target pathogen (the fungi that cause disease) while causing minor or no harm to the host and are used for the development of new antifungal compounds or as antimicrobial agents for fungicide applications. Importantly, the phyto-toxin cercosporin, which is produced by species of *Cercospora* that cause *Cercospora* leaf blight and purple seed stain, was shown to be sequestered in the fungal lipid droplets. This showed that plant-derived lipid biosynthesis inhibitors can be effective solutions for managing fungal diseases in soybeans.

The team's research focuses on exploring various plant-derived lipid biosynthesis inhibitors — which block the creation of lipids and include flavo-

noids, terpenes, diterpenoids and fatty acids — and their effects on fungal lipid biosynthesis and metabolism. By growth or cercosporin inhibition screenings, the team has identified a panel of compounds that can suppress fungal pathogens associated with *Cercospora* leaf blight, frog-eye leaf spot and aerial blight.

This approach offers a promising and sustainable alternative to conventional fungicides, potentially reducing the risk of chemical resistance and environmental harm. Naturally occurring, plant-derived peptides with antimicrobial activities are emerging as potential biopesticides against a wide range of plant pathogens. Additionally, peptides (short-chain amino acids) with priming effects can elicit plant defense responses, which act as immunity inducers. When this occurs, a plant exposed to a priming stimulus initiates a temporary “primed state” within the plant to prepare it for future challenging events. If the plant is later attacked by a pathogen, its defense response would be launched significantly quicker and more robustly than a plant without the initial priming. Thus, peptides with priming effects can be used as protectants to prevent pathogen infection.

Functional peptides with antimicrobial activity or disease-response priming effects, such as SAMP (stable antimicrobial peptide) from finger limes and CAPE1 (CAP-derived peptide 1) from tomatoes, can be applied externally as seed treatments to prime the defense response and protect the plant from future infection. The team has tested seed treatments using SAMP and CAPE1 on soybean seeds inoculated with the causal agents of *Cercospora* leaf blight and purple seed stain and frog-eye leaf spot, and both have shown promising results in the laboratory.

The team will continue to experiment with disease management from the perspective of inhibiting fungal pathogens as well as improving natural

defense responses in plants. The efficacy of these compounds will be evaluated at different concentrations and through different application methods. The success of the compound is ideally determined by its combined ability to prime the defense response in the plant and suppress fungal growth. The compounds can be applied by spraying the leaves of the plants or by coating the seeds. These experiments will allow the team to determine the most effective concentration and application method of the compounds.

Currently, this research is conducted in the laboratory with the long-term goal of directly benefiting soybean farmers in the field. By identifying plant-derived natural molecules that effectively inhibit fungal growth, the researchers aim to develop safer and more sustainable options for managing major soybean diseases, including *Cercospora* leaf blight and purple seed stain, frog-eye leaf spot and aerial blight. Once the optimal formulations are identified, they will be further tested in field applications as natural alternatives to fungicides.

These compounds have the potential to reduce farmers' dependence on chemical fungicides, minimize resistance issues and lower production costs. In addition, the use of eco-friendly treatments will help maintain soil health, protect beneficial microorganisms, reduce environmental pollution and increase marketability. Ultimately, this research will enable Louisiana farmers to achieve more stable yields and sustainable soybean production, promoting long-term profitability and environmental stewardship.

Indira Poudel and Madaleine Alessi are graduate students in the LSU AgCenter Department of Plant Pathology and Crop Physiology. Sara Thomas-Sharma is an associate professor, Vinson Doyle is a professor and Chien-Yu Huang is an assistant professor, all in the Department of Plant Pathology and Crop Physiology. The project is supported by the Louisiana Soybean & Grain Research and Promotion Board and the LSU AgCenter.

EXPERIENTIAL LEARNING PROGRAMS FOR SUSTAINABLE AGRICULTURAL WATER

■ M.P. HAYES



AS STUDENTS transition between educational programs and career pathways, there is a degree of on-the-job training that is lacking — experience. While most students rely on summer internships to explore posteducational opportunities, the LSU AgCenter hosts federally funded experiential learning programs that enhance the future workforce with practical skills from diverse stakeholders. These programs initiate stakeholder, student and faculty interaction to prioritize on-site technical assistance and expand sustainable practices by engaging students in place-based learning. This approach fosters practical and creative problem-solving for issues that immediately impact stakeholders. Students with backgrounds in engineering, environmental science and business actively participate in assess-

ments to learn from content experts in the various agricultural fields.

This educational platform allows students to learn from peers, faculty and industry personnel as they enhance communication skills, broaden critical thinking and develop local networks for career opportunities. The lead faculty in these university programs have specializations in diverse fields that build a foundation for both teaching and research partnerships. Faculty work with students to identify sustainability-based recommendations in energy, water, waste and productivity that will turn into scoped, or clearly defined, projects for businesses to assess for implementation. Overall, these programs allow for open communication between students, academics and industries for long-term research collaboration, imple-

*Students participating in the Water Quality Extension Lab program visit a seafood processor with wastewater treatment ponds that utilize aeration for effluent treatment.
Photo by M.P. Hayes*

mentation of forecasted projects and building a stronger agricultural workforce with practical knowledge.

The most recent experiential learning program led by the LSU Water Quality Extension Lab occurred through the U.S. Department of Agriculture Renewable Energy for America Program (USDA REAP). This funded program focused on water and energy conservation for rural agricultural stakeholders and included eight site visits in the first year of funding. By utilizing a strategic network of community partnerships and associations, the university-based programs provide an innovative networking platform to promote work in the rural and urban agriculture sector, including plant nurseries and seafood processors. At these facilities, best management practices in conservation and the adoption of technology in agriculture can lead to the nexus of water and energy. The university team has outlined recommendations, including conserving water through recycling opportunities, utilizing water quality sensors to optimize dissolved oxygen and opportunities to install floating photovoltaics (solar panels) for energy resiliency.

CASE STUDY: A SEAFOOD PROCESSING FACILITY

For a partnering seafood processing facility, water quality sensors were recommended to measure critical parameters — including ammonium and dissolved oxygen — that require energy usage for aeration and long-term maintenance on retention ponds. The sensor packages needed for this type of treatment facility include temperature, pH, ammonium and dissolved oxygen (DO) sensors. Generally, the hesitation of most rural facilities for technology adoption arises from the lack of hands-on training availability and the initial implementation cost. Part of the Water Quality Extension Lab's programmatic field is bringing field-based equipment for students to operate and collect data during site visits. This allows facility personnel the opportunity



Students in M.P. Hayes' Water Quality Extension Lab program visit an insect-rearing operation to learn about their business, process and career pathways. Photo by M.P. Hayes

to see the equipment in use and learn applications specific to their facility. This also allows the team to incorporate field data into the reporting processes to make templated recommendations more tailored to the facility's water footprint.

DATA COLLECTION

With the field data taken and the operating practices described by the facility personnel, savings can be generated for projects of immediate interest. Typical operations at this facility were to take single-point samples multiple times per day to test for different water parameters and manage the health of the facility's pond.

DISSOLVED OXYGEN (DO)

is a measurement of the amount of oxygen dissolved in water, which is the amount of oxygen available for organisms living in the water. The measurement of dissolved oxygen in a water body can reveal a great deal about water quality.

The partnering facility shared that the average dissolved oxygen testing showed a concentration of 6 to 8 milligrams per liter for the pond. In this case, ammonium was the major parameter being processed. Based on the literature, for 1 milligram per liter of ammonium, the optimized dissolved oxygen concentration is 2 to 5 milligrams per liter. In most cases, facilities will generate more dissolved oxygen than needed to ensure proper treatment. This helps account for unknown amounts of ammonium in the inflow of the pond. Aeration in the pond was driven by nine 20-horsepower water aeration devices that run about 6,480 hours during the year.

RESPONSE BY THE TEAM

To better understand water variability and optimize the oxygen profile in the pond, the team crafted a recommendation to install a water quality sensor network to provide real-time water parameters through supervisory control and data acquisition (SCADA) software. This type of software is standard at many manufacturing facilities and allows for the process to be controlled

Table 1: Estimated implementation cost for sensor network and monitoring stations

ITEM	QUANTITY	UNIT COST	COST (\$)
Deployable water quality sensors (including calibration solutions)	4	\$20,000	\$80,000
Installation of real-time monitoring station	4	\$15,000	\$60,000
Labor and training cost	40 hours	\$25/hour	\$1,000
Total implementation cost			\$141,000

from a central location. Implementation would allow for automatic adjustment of dissolved oxygen based on monitored water inflow concentrations. Conservative estimates of a 25% reduction in dissolved oxygen were estimated after discussing trends in pond health with personnel. The university report provides detailed calculations for the facility personnel to adjust for lower or higher targeted values to fit financial feasibility.

RECOMMENDATIONS

For implementation costs, a variety of manufacturers build each type of sensor and unit recommended. The implementation cost was calculated for four total sensors, where two sensors would be placed in each treatment pond at the inflow and outflow. This would allow the facility to make decisions for preventative maintenance and aeration based on input and processing. The implementation cost incorporates pricing for a full network, but calculations are provided if the facilities need to modify values to scale up or down based on their immediate funding situation. Most sensors and monitoring stations are versatile and can operate on batteries, through hardwiring or through solar panels if the facility chooses. For this recommendation, the turnkey sensor station and units would come with small solar panels, which means no additional cost is added for energy usage. The team encourages partnering facilities to reach out to a leading water quality sensor provider for a quote package for their facility. Based on the average

commercial prices available at leading providers’ websites, Table 1 estimates the implementation cost of the sensor network.

GRANTS AVAILABLE

An additional benefit for partnering agricultural stakeholders is that they are often eligible for stakeholder grant opportunities by working with university experiential learning programs. University programs affiliated with USDA REAP and the Department of Energy Industrial Training and Assessment Center Implementation Grant Program will provide reports formatted to transition into federal grant opportunities for stakeholders. These programs have match grant opportunities to help industries reduce the payback period of projects and provide financial support to implement energy efficiency and renewable energy projects. Students affiliated with the program are trained to write recommendations used for these funding opportunities, which allows them to make an immediate impact when hired after graduation. Many students have the skills to forecast projects with real-world values and find sources of funding for potential implementation. Federal match grants have drastically improved the implementation rate of recommendations and built a foundation for students to understand the entire process of recommending, calculating and acquiring funding for industrial-level projects.

To help build the next generation of agricultural professionals, stake-

holders can check program eligibility for the LSU AgCenter’s various hosted experiential learning programs. Recent funding through the Environmental Protection Agency Pollution Prevention Program has developed a new experiential learning program through the LSU AgCenter specifically for food and agricultural rural manufacturers to explore opportunities in sustainability recommendation. These programs develop critical field-based skills, build foundational partnerships for continued collaborations and provide access to implementation funding for sustainability projects on-site.

M.P. Hayes is a dual-appointed assistant professor in the LSU AgCenter School of Plant, Environmental and Soil Sciences and Louisiana Sea Grant.

FOR MORE INFORMATION



or questions regarding university experiential learning programs, contact M.P. Hayes at mhayes@agcenter.lsu.edu or visit the [Water Quality Extension Lab homepage](#).

More than 2,500 students participated in the Adopt-A-Pond Program from 2017 to 2024, planting 7,210 trees resulting in more than 30 million gallons/day of stormwater runoff improved. Photo by Whitney Wallace



ADOPT-A-POND:

REDUCING POLLUTION THROUGH INNOVATIVE EDUCATION PROGRAMS

■ WHITNEY WALLACE AND CAROL FRANZE

RAINFALL in southeast Louisiana averages over 63 inches per year, making it one of the wettest regions in an already water-rich state.

As development expands and parish watersheds are increasingly altered, localized flooding during heavy or prolonged rain events has become more common. In response, St. Tammany Parish has implemented a range of flood control practices that create unique opportunities to both reduce stormwater impacts and engage youth in real-world watershed education. Through the Adopt-A-Pond program, the LSU AgCenter partners with local schools to support these hands-on learning experiences while promoting stewardship of neighborhood waterways.

State and local governments are required to maintain good water quality in state waterways as mandated by the Clean Water Act and enforced by U.S. Environmental Protection Agency (EPA) and Louisiana Department of Environmental Quality (LDEQ). Water pollution may be from known sources (point source) more easily assessed and regulated or from unknown sources (non-point) requiring innovative removal and monitoring techniques. One technique is to divert stormwater through retention (wet) or detention (dry) ponds planted with trees and other vegetation to remove pollutants before discharging to local waterways. Plants remove excess nutrients and bind other pollutants to soils within the stormwater ponds.



TOP: The St. Tammany Parish Adopt-A-Pond Program engages students from seventh to 12th grades in a variety of science and agriculture classes and environmental clubs.

BOTTOM: Adopt-A-Pond partnership instructors show students potential education and career paths, and students gain a sense of stewardship in their community.

Photos by Whitney Wallace

In 2013, St. Tammany Parish Government engaged student volunteers from area schools to help plant trees throughout the parish due to the huge loss of trees from Hurricane Katrina in 2005 and subsequent tropical storm events. Planting trees in the stormwater ponds eliminates the need to mow the ponds, saving parish funds and allowing wetland habitats to develop. Trees improve the local carbon footprint, adding localized cooling while sequestering potential pollution. A single, 10-inch bald cypress can intercept 1,182 gallons of rainwater a year and provide food and wildlife habitat for numerous birds and mammals.

Over the past decade, these landscapes have matured into wetland ecosystems, providing co-benefits found in natural wetland habitats. Watershed-based, hands-on STEM (science, technology, engineering and mathematics) activities were added to provide students with a greater understanding of functioning watershed features constructed to mimic natural hydrology. As future taxpayers, students gain a sense of responsibility and continuing stewardship for the stormwater ponds they restored to regional wetland habitats.

In 2017, the program was formalized as a partnership among St. Tammany Parish Government, St. Tammany Parish Public Schools, St. Tammany Mosquito Abatement District, Louisiana Sea Grant and the LSU AgCenter and is known as the St. Tammany Parish Adopt-A-Pond Program. It engages



The Adopt-A-Pond Program provides enormous educational, social and economic benefits to students and parish residents for a small investment. Photo by Whitney Wallace

students from seventh to 12th grades in a variety of science and agriculture classes and environmental clubs.

Lessons include water quality tests (seven parameters, including nutrients) on inflow and outflow samples to track changes as the wetland habitats develop and mature. Program instructors show students how to recognize animal tracks and scat and to assess habitat development. Aquatic insects and other invertebrates are sampled and identified as indicators of water body health.

The St. Tammany Mosquito Abatement District highlights mosquito larvae found in samples and discusses potential human health impacts, like West Nile Virus. The St. Tammany Parish Government uses the data collected by the students to report reductions in pollution to the LDEQ and U.S. EPA. A marine debris lesson was implemented to discuss how trash and other aquatic pollution occurs. Equally important, partnership instructors show students potential education and career paths, and students gain a sense of stewardship in their community. Lessons developed for the program enhance Louisiana science standards and support classroom curricula.

The Adopt-A-Pond Program provides enormous educational, social and economic benefits to students and parish residents for a small investment. Approximately \$50,000 has been pulled together from multiple sources for the program over the past seven years. The St. Tammany Parish Government provides stormwater pond sites and sapling trees for planting through grant funding and district general funds.

The LSU AgCenter Youth Wetlands Program provided the initial water quality test kit supplies. Louisiana Sea Grant provided funding for the logo development and printing and provided grant funding for two teacher professional development workshops in 2023 and 2025. St. Tammany Parish Public Schools provides funding for bus travel, substitute teachers and water quality kits and equipment for recently added ag science classes. Private funding was provided by Sunbelt Rentals and Duplantis Design Group for student bus

transportation to the planting sites. The largest private donation of \$19,000 came from an anonymous resident to provide an Adopt-A-Pond Program logo-wrapped trailer to transport equipment, supplies and trees to the pond and park events.

More than 2,500 students participated in the Adopt-A-Pond Program from 2017 to 2024, planting 7,210 trees, which resulted in more than 30 million gallons per day of stormwater runoff improved. St. Tammany Parish Government regulatory manager E. deEtte Smythe estimates the removal of 1,540 pounds of biological oxygen demand per day and 1,333 pounds of ammonia per day in the receiving streams. These pollutants produce algae blooms and dissolved oxygen collapse in receiving streams, causing ecosystem impacts. Four teacher professional development workshops were conducted with activities targeting wetland habitats and water quality lessons; the last workshop took 12 teachers on an airboat ride to view a U.S. Fish and Wildlife Refuge marsh restoration site guided by researchers from LSU. The tour from dock to restoration site helped make the important connections between natural watersheds and the stormwater ponds.

In 2023, students from Boyet Junior High in Slidell and Madisonville Jr. High made presentations to the St. Tammany Parish Council and St. Tammany Parish School Board, enthusiastically demonstrating the knowledge they gained through hands-on learning activities and the importance of stormwater ponds in St. Tammany Parish communities.

From a post-test evaluation of the Adopt-A-Pond Program, a student commented the following on his experience: "I could teach my little brother, cousins or even my dad." Many students say they would like to return to see how their trees are growing. This leads us to believe they feel ownership or stewardship in their community.

Whitney Wallace is an LSU AgCenter forestry and wildlife associate extension agent based in Tangipahoa Parish, and Carol Franze is a marine extension program agent for the LSU AgCenter and Louisiana Sea Grant.

USDA-AGRICULTURAL MARKETING SERVICE HARVESTING OPPORTUNITIES: THE ROLE OF GRANTS IN BOOSTING LOCAL FOOD PRODUCTION

■ ISABELLA FRANK AND CECILIA STEVENS



THE U.S. DEPARTMENT OF AGRICULTURE'S Agricultural Marketing Service offered opportunities for small-scale producers to apply for infrastructure grants designed to strengthen farm operations and meet the growing demand for local foods. Many local food producers face challenges in processing, storing and distributing their products into local and regional food chains. Unlike large commercial operations, many smaller farms lack the capital to invest in cold storage, transportation and postharvest processing. Infrastructure grants are essential to helping these producers meet market demands.

Five Louisiana farmers — James McCreedy, a hydroponic grower in Ouachita Parish; Ashley Armstrong, a vegetable farmer in Morehouse Parish; Stacy McGraw, a vegetable farmer and rancher in Concordia Parish; and Sierra Torres and Becks Hilliard, vegetable farmers in Tangipahoa Parish — shared how grant support has helped them make inroads on the backroads of local food processing and distribution.

Small farms often operate with limited equipment or make do without essential tools while saving for upgrades. Refrigerated storage and transportation are among the most critical needs for expanding market access. One of the farms required specialized postharvest infrastructure, including a freezer-cooler combo, greens cutter, washing station, spinner and pallet jack, to scale up leafy

green processing. One first-generation farm lacked inherited resources and had to build a farm from the ground up.

All four farms received funding through the Resilient Food Systems Infrastructure (RFSI) program through the USDA AMS, with amounts around \$100,000 each. Other organizations that contribute grant funding to farmers include the Young Farmer Coalition, Campti Field of Dreams, the Natural Resources Conservation Service, the Big River Economic and Agricultural Development Alliance (BREADA), and the Louisiana Small Scale Agriculture Coalition. Grant support enabled each farm to construct on-site cold storage and acquire refrigerated vehicles or trailers, enhancing product preservation and expanding delivery capacity.

Beyond the farmers' own persistence, institutional support played a meaningful role in helping them navigate the grant landscape. Carl Motsenbocker, executive director of LSU AgCenter's Seeds to Success Program, provided Armstrong with a letter of support during her application process — a reminder that producers need not pursue these opportunities alone.

Across the LSU AgCenter, extension agents routinely share grant announcements and guidance with their stakeholder communities, helping connect small-scale growers with resources they might not otherwise encounter. This network of encouragement and information sharing has become an important part of how farmers access the tools they need to strengthen their operations. For example, all five of the producers cited in this article have participated in training programs offered by the LSU AgCenter to enhance their production practices and professional knowledge.

Many of the farms pursue grants to support expanding operations and meet the growing demand for fresh, local foods in both public markets and schools. With guidance from Seeds to Success, the Ouachita Parish farm strengthened its ability to effectively communicate with

A Morehouse Parish farm is one of the small businesses that have taken advantage of funding through the Resilient Food Systems Infrastructure program through the USDA-AMS. Photo by Ashley Armstrong

school nutrition purchasing programs. In Concordia Parish, the farm's involvement in the Farm to School Institute and in a northeast region farmers market training offered by extension agents highlighted the need for local foods, leading to successful partnerships that now help fill that gap.

Although infrastructure grant funding helped these farms take major steps forward, ongoing challenges continue to limit their growth. Farmers continue to face financial barriers for costly additions, such as enclosed, insulated buildings for postharvest processing and storage — essential tools for food safety and worker comfort, especially during extreme heat.

"Some days we shut down early," Armstrong said. "I don't want anyone passing out from the heat."

Torres and Hilliard echoed the need for a renovated barn to meet food safety standards as their production expands. Applying for grants proved to be a time-intensive process for all. From navigating complex paperwork to learning the language of grant writing, producers emphasized the importance of patience and seeking help.

"You can get to the point where you just want to push it away and quit, but it's definitely worth it if you can keep going," Armstrong explained.

Many grants operate on a reimbursement basis, requiring farmers to make purchases using private funds upfront before receiving funds — a model that can be inaccessible for small producers.

"Many farmers don't have thousands of dollars lying around," Torres said. "They have it tied up in their crops, which come with so much uncertainty as it is."

The farmers offered advice for others navigating the grant process.

"If you have one person who could just concentrate on the grant, that's good," Armstrong said. "It's really hard when you are trying to get a grant and take care of your farm every day."

Torres and Hilliard emphasized the importance of storytelling.

"Funders want to know who you are. They want to know where their money is going," adding that farmers should attend grant writing workshops and seek one-on-one support. "They can help you take your story and put it into a format that programs are looking to fund."

Infrastructure grants have not only strengthened individual farms — they've also helped grow regional food systems across Louisiana. McGraw has used her refrigerated truck and cold storage to support other producers at farmers markets.

"If I have the chance to work with another farmer and help them get something delivered, I can," she said.

Her vision for a collaborative delivery route could streamline access to fresh, local produce for more consumers.

In Morehouse Parish, Armstrong is helping fill a critical gap in fresh vegetable access to neighbors and institutions in the area. Her upgraded processing capacity has allowed her to assist other producers with tasks like pea processing while also improving product quality and shelf life.

"We can produce more with less waste and have a higher quality product because it is not exposed as long to the heat," she said.

McCreedy's refrigerated trailers have expanded their reach to schools, grocery stores and distributors, permitting consistent delivery of produce.

"We can now cast a wider net and reach customers further than ever," McCreedy said. Their added capacity has also opened doors for neighboring farmers to share transport space and access new markets.

Torres and Hilliard used grant funding to build high tunnels and purchase a delivery van — key infrastructure that has expanded their reach into urban markets like Baton Rouge and New Orleans. With their new delivery capacity, they hope to begin working with other small-scale producers in their region to help distribute local goods more efficiently and strengthen the broader food community.

These farmers are proving that with the right support, small-scale agriculture can thrive. Seeking grant funding not only helps build better farms, but also creates stronger connections between growers, markets and communities across Louisiana.

Isabella Frank is an extension associate with the LSU AgCenter Grow Louisiana Beginning Farmer Training Program and Seeds to Success: The Louisiana Farm to School Program. Cecilia Stevens is a program manager for Seeds to Success: The Louisiana Farm to School Program from the LSU AgCenter.

Sierra Torres (left) and Becks Hilliard are owners of a farm in Tangipahoa Parish. They emphasized the importance of storytelling to get grant funding, as donors like to know where their money is going. Provided photo



SEE INSIDE

Torpedograss, a tropical weed, is now infesting some Louisiana sugarcane. Matthew Foster, the sugarcane weed specialist, is studying which treatments can help manage this new pest.

SEE PAGE 20.

The AgCenter LaHouse team received a grant from the U.S. Department of Agriculture to educate homeowners on staying safe during severe winter weather and maximizing their homes' energy efficiency.

SEE PAGE 22.

The reniform nematode (*Rotylenchulus reniformis*), is highly damaging and is found in many Louisiana sweet potato fields. A tropical species, it parasitizes the roots of numerous high-value crops. AgCenter researchers are working to better manage this pest.

SEE PAGE 24.



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