

LOUISIANA Agriculture

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ENSURING OUR FUTURE THROUGH SCIENTIFIC
RESEARCH AND EDUCATION



**FOOD SCIENTISTS WORK
to FEED THE WORLD**

DEVELOPING NEW PRODUCTS TO FEED THE WORLD AND HELP PRODUCERS

■ KYLE PEVETO

AS THE GLOBAL POPULATION INCREASES to an estimated 9 billion people by 2037, many scientists are focused on new ways to feed the world.

Through his work in the LSU AgCenter School of Nutrition and Food Sciences, Witoon Prinyawiwatkul is doing his part.

A food scientist, Prinyawiwatkul and his team of researchers devise solutions to the problem of food waste while also developing new revenue streams for agricultural producers.

"The population is growing, so we need a new source of food," Prinyawiwatkul said. "We are looking for alternative sources of protein or other material."

In collaboration with the U.S. Department of Agriculture, Prinyawiwatkul's Sensory Services Lab recently developed uses for two underused parts of catfish and then tested consumers' reactions. Catfish is the predominant aquaculture fish product in the South. It is also a vital feature of Louisiana's food culture, whether served fried, blackened, broiled or smothered with etouffee.

The work of Prinyawiwatkul and his team to help feed the world while simultaneously helping producers develop new sources of income fulfills the promise of the LSU Agriculture strategic plan — Louisiana Solutions, Global Impact. Hundreds of LSU AgCenter and College of Agriculture researchers work on the LSU campus and 14 research stations across the state to implement this vision. Prinyawiwatkul works closely with FOODii, the AgCenter Food Innovation Institute, which assists food business entrepreneurs with technical and

marketing assistance and provides additional services.

For much of the world, fish is an important source of healthy protein. Fish and seafood provide about one-fifth of all animal-derived protein, according to a 2021 study by the United Nations.

The aquaculture industry has found commercial uses for most of the fish it produces, but up to 60% of the fish can be wasted in processing depending on the industry, Prinyawiwatkul found. Prinyawiwatkul and his team hope to feed humans with as much of the fish body as possible.

"Can we do something with that byproduct to convert it into a food product?" Prinyawiwatkul said. "Normally, it's going to the landfill or into animal feed."

Another AgCenter lab, the Seafood Processing Demonstration Lab, has worked to teach processors to use new processing methods to separate bits of

meat from the fish frame, saving more meat from the trash.

Prinyawiwatkul and his team brainstormed uses for catfish byproducts and created crispy, air-fried catfish skins flavored with barbecue seasoning, paprika and lemon pepper. They also found an ingenious use for the discarded catfish bones when they dried and ground the bones into powder. This powder could be used as a calcium supplement for fried catfish. They tested consumers' opinions in the Sensory Services Lab on the LSU campus in Baton Rouge. Learn more about the tests on page 16.

Consumer studies helped researchers determine how much ground bone could be added to the fried fish batter before participants reacted negatively.

"It's challenging," Prinyawiwatkul said. "If you add bone into fish patties, the texture is going to be horrible because you can detect that sandiness."

In Sensory Services Lab tests, consumers approved of the new products, leading Prinyawiwatkul and his team to dream up new ideas.

"That has inspired us," he said. "What can we do with that?"

Kyle Peveto is the editor of Louisiana Agriculture.



The work of Prinyawiwatkul and his team to help feed the world while simultaneously helping producers develop new sources of income fulfills the promise of the LSU Agriculture strategic plan — LOUISIANA SOLUTIONS, GLOBAL IMPACT.

Photo by Olivia McClure

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ON THE COVER: LSU AgCenter food scientist Witoon Prinyawiwatkul leads the AgCenter Sensory Services Lab, which conducts consumer food tests and helps develop new foods and uses for many ingredients. Photo by Olivia McClure

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PENNINGTON BIOMEDICAL AND LSU AGCENTER PARTNER TO EXPAND LOUISIANA-BASED FAMILY HEALTH STUDY

Through a new longitudinal, statewide study — dubbed the Pennington Generation study — researchers at Pennington Biomedical Research Center are delving into how physical activity, nutrition, sleep and other factors affect children's health and growth and will examine how those behaviors can relate to weight gain and obesity over time.

A new partnership between Pennington Biomedical and the LSU AgCenter is working to broaden the reach of the Pennington Generation health research study by helping to bring it to communities across Louisiana. With a presence in all 64 parishes, the AgCenter will leverage its nutrition and community health agents across the state to help educate people in their community about the study and recruit participants.

The study is coordinated with Pennington Biomedical's Greaux Healthy initiative, an evidence-based public service initiative in partnership with the state of Louisiana and focused on preventing and treating childhood obesity. ■ **TOBIE BLANCHARD**



Data collected through the Pennington Generation study can be used to help create effective programs that improve children's health and development over the lifespan. Photo provided by Pennington Biomedical Research Center

NEW AGCENTER FOOD INNOVATION INSTITUTE DIRECTOR SETS EYES ON GREATER PROGRESS IN FOOD SCIENCE

Amogh Ambardekar, a food scientist who has worked for international brands such as Mars and Burger King, joined the LSU AgCenter as the new Food Innovation Institute (FOODii) director earlier this year.

Ambardekar envisions FOODii as an innovation hub in addition to a business incubator. He sees a future where FOODii scientists develop creative uses for Louisiana agricultural products by helping to reduce waste of underutilized materials through value addition while also creating ingenious functional ingredients for local and national food industries.



Amogh Ambardekar joined the LSU AgCenter in April as the new AgCenter Food Innovation Institute (FOODii) director. Ambardekar envisions a future where FOODii is an innovation hub as well as a business incubator. Photo by Kyle Peveto

At a time when food companies are working to increase fiber, protein and other nutrients in foods, many exciting pathways lie ahead for food scientists, Ambardekar said. New technologies — such as intelligent packaging, precision fermentation or nonthermal processing — can create novel, nutritious, functional and safe ingredients or develop innovative methods that could allow scientists to harness natural flavors and colors and break new ground.

While FOODii will seek to innovate and create new opportunities to grow the Louisiana food industry, Ambardekar said the institute will not lose sight of its original mission of helping Louisianians perfect and market families' recipes and entrepreneurs' creations. ■ **KYLE PEVETO**

LEADERS, INNOVATORS AND CHAMPIONS HONORED AT THIRD ANNUAL LSU AGEXCELLENCE AWARDS

The LSU AgCenter and College of Agriculture hosted the third annual LSU AgExcellence Awards Ceremony, presented by A. Wilbert's Sons, on May 1, at the South Stadium Club in Tiger Stadium. The event was led by Senior Vice Chancellor and Dean Matt Lee and emceed by State Rep. Dixon McMakin, the Voice of Tiger Stadium, and celebrated individuals whose leadership and service advanced agriculture, research, education and communities across Louisiana.

AgExcellence brought together honors from across the LSU AgCenter and College of Agriculture, including alumni recognition, faculty and student awards and innovation through patents.

Over the past year, the LSU AgCenter and College of Agriculture gained momentum, rising to No. 12 nationally in agricultural sciences research expenditures and recording a 26% increase in applications to the College of Agriculture.

"Everything we do comes back to people," Lee said. "From research to outreach, it's the dedication of our faculty, staff, students, alumni and supporters that makes real impact possible. Tonight was a chance to celebrate that teamwork and the progress it's bringing to Louisiana agriculture." ■ **ANNABELLE LANG**

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

MAY 1 | A Terrebonne Parish 4-H'er is earning national recognition for her talent and creativity. Makayla Rhodes was selected based on her artwork to create drawings at the Smithsonian National Portrait Gallery, where some of the country's most iconic works are displayed.

These achievements highlight the many ways 4-H helps youth explore their passions, build confidence and represent Louisiana on a national stage.

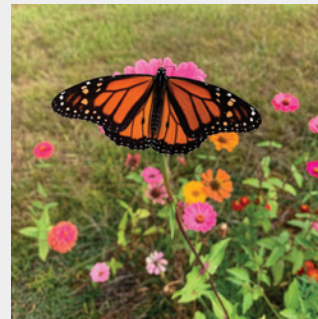
X | FOLLOW THE AGCENTER AT➔ TWITTER.COM/LSUAGCENTER

MARCH 2 | As droughts and diseases become more common, there is a need for more robust research into crawfish management systems. Aquaculture researcher Kaelyn Fogelman hopes to facilitate research into crawfish management. Read more: tinyurl.com/3upv69nk.



INSTAGRAM | FOLLOW THE AGCENTER AT INSTAGRAM.COM/LSUAGCENTER ◀.....

MARCH 12 | Happy Plant a Flower Day! Planting a variety of blooms throughout the season helps support bees, butterflies and other beneficial insects while keeping your garden thriving! What are you planting this year?

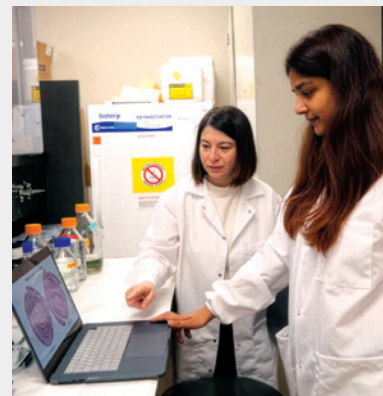


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APRIL 20 | LSU AgCenter researcher Ezgi Özcan is exploring how diet interacts with the gut microbiome to affect neurological health across the lifespan, from pediatric epilepsy to neurodegenerative diseases like Alzheimer's.

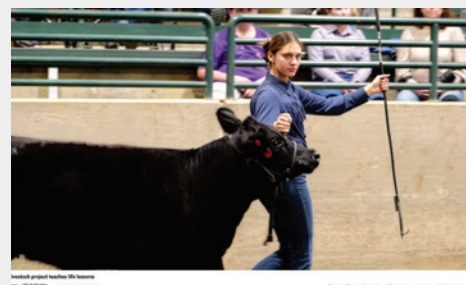
Her work examines how dietary components such as fiber and fats shape gut-brain communication, with the goal of developing precision nutrition strategies that may one day help prevent or slow neurological disease.

Read more: https://lnkd.in/gFKg3Z_V.



YOUTUBE | FOLLOW THE AGCENTER AT➔ YOUTUBE.COM/LSUAGCENTER

MARCH 5 | For many 4-H and FFA students, competing in livestock shows is the high point of their time in the organizations. The LSU AgCenter Livestock Show just finished its run, and for one student, it was her last time in the ring. LSU AgCenter reporter Craig Gautreaux was there and has this report.



College of Ag NEWS

LSU COLLEGE OF AGRICULTURE CULTIVATES TWO TIGER TWELVE STANDOUTS FOR 2026

Two outstanding students from LSU's College of Agriculture have been chosen to represent the LSU Tiger Twelve Class of 2026: Chandler Collins and Madelyn Faith Phillips.

The Tiger Twelve is an esteemed program that celebrates a group of exceptional undergraduate seniors who have made significant contributions to campus life at LSU and have had a positive impact on the Baton Rouge community.

Being selected for the Tiger Twelve is a significant honor that reflects each recipient's hard work, dedication and accomplishments. These students have demonstrated exceptional leadership, service and commitment throughout their time at LSU, embodying the core values of the university.

■ AVA ARCENEUX



Madelyn Phillips

of McComb, Mississippi, is an LSU Ogden Honors College student who graduated with a degree in nutrition and food sciences. Phillips and a fellow classmate are responsible for starting a branch of the Food Recovery Network at LSU, which focuses on repackaging leftover food from on-campus dining halls into ready-made meals and distributing it to designated refrigerators around campus. Phillips also has worked closely with Project 225, the Food Insecurity Branch, the Backpack Program, the Baton Rouge Food Bank and the LSU Food Pantry.



Chandler Collins

of Baton Rouge, graduated with a degree in textiles, apparel and merchandising. During her time at LSU, Collins has been actively involved in a variety of organizations and experiences that have shaped her personal and academic growth. A central part of her journey has been her involvement with Alpha Kappa Alpha Sorority Inc., where she has held leadership roles including vice president, membership co-chair and corresponding secretary. In 2024, Collins was inducted into the Order of Omega, an experience she credits with deepening her engagement within the broader Greek community. Having served as chapter president, she says the organization challenged her to lead with intention and reflect on the lasting impact she wanted to leave at LSU.

Photos by Jacob Lofton

COLLEGE OF AGRICULTURE CELEBRATES SPRING GRADUATES

On May 15, the LSU College of Agriculture celebrated 293 graduates during its spring commencement ceremony, part of the largest LSU class in history, with 5,710 degrees awarded across 12 schools. Eight of the College of Agriculture graduates were honored as LSU Distinguished Communicators, a distinction earned through a rigorous program that includes four intensive communication courses, faculty mentorships and experiences outside the classroom. The Distinguished Communicator Medal is a permanent commendation on each graduate's official transcript. ■ STAFF REPORT



Matt Lee, right, LSU senior vice chancellor and dean of agriculture, poses with a graduate and Georgianna Tuuri, department chair of the College of Agriculture School of Nutrition and Food Sciences.



Entomologist Todd Johnson, who has been with the LSU AgCenter since 2022, focuses on insects that affect forests.

Photo by Olivia McClure

FROM Poetry TO Pests:

AN AGCENTER ENTOMOLOGIST'S UNLIKELY PATH TO PROTECTING LOUISIANA FORESTS

■ OLIVIA MCCLURE

GROWING UP IN SCENIC UPSTATE NEW YORK, Todd Johnson thought he wanted to write for a living, finding inspiration in nature.

“I spent a lot of time outside as a kid, did a lot of mountain biking, did a lot of reading, which got me really interested in writing,” said Johnson, who grew up in Saratoga Springs, a tourist town near the Adirondack Mountains. “I went to college to be a writer. I was really interested in short fiction and poetry.”

One of Johnson’s pastimes was reading interviews with famous writers. After he came across a conversation with the legendary poet Robert Frost — “If you grew up in the Northeast, you read a lot of Robert Frost,” Johnson said — he began to rethink his career aspirations.

“He was like, ‘Don’t go to school and be an English major. Major in a discipline and learn something to write about,’” Johnson recalled.

As a student at Moravian College (now Moravian University) in Pennsylvania, Johnson took Frost’s advice, settling on a biology degree. Today, he is an assistant professor of forest entomology with the LSU AgCenter, where he studies

the fascinating world of insects and how they interact with the environment.

One of Johnson's specialties is wood-boring insects such as the flatheaded hackberry borer, a native, occasional pest of hackberry trees in the southeastern United States, and the emerald ash borer, a related but invasive species that poses a more serious threat to forests and the timber industry. He is working to better understand how these types of insects decide which trees to attack and to identify natural enemies.

Johnson has zeroed in on a couple of keys. First: It's important to understand that a non-native, invasive species like the emerald ash borer — which has been damaging ash trees in Louisiana for at least a decade — doesn't share any history with local trees. It's a different story for trees in the insect's native range.

"They've evolved defenses against it," Johnson said. "When this insect gets introduced elsewhere, many of the trees are kind of like a buffet. They're unable to detect or respond as strongly or at all to that organism because it's new to them."

A second area Johnson is focusing on involves insects' responses to the odors and other volatile cues that trees emit. These cues often change when forests experience problems.

"When the tree begins to smell different, things that are looking for that perfect stressed tree are all really strongly attracted to those odors," Johnson said. "And so they fly in and then they attack the tree."

This could help explain how invasive species take advantage of already-stressed environments, he said. These insects often are adept at noticing shifts in trees' condition. And their arrival can spur additional changes to the ecosystem.

"When the invasives move in, they harm the biodiversity, and that changes how the forest functions," Johnson said. "That alters habitat for insects that are important, that decompose things, that pollinate things, that provide pest suppression in other ways. And you can see these dramatic shifts in an ecosystem as a result of the loss of one or two species. Some of these changes are irreversible. Loss of function cannot always be restored once species go locally extinct or the environment has changed too dramatically."

It's that sort of looking at the big picture that Johnson said is crucial to protecting Louisiana's forests from invasive insects.

"We're always trying to think towards how is the structure and function of the

forest going to change under different circumstances?" he said. "And how do we do that in ways that are consistent with our management goals — whether it's conservation, whether it's production?"

Since coming to the AgCenter in 2022, Johnson has enjoyed learning about Louisiana forest and insect issues.

"I'm happy and grateful to be here," he said. "Forestry is such an important component of the state."

In addition to his undergraduate degree, Johnson holds a master's degree from the University of Wisconsin-Madison and a doctorate from the University of Illinois Urbana-Champaign. He worked as a postdoctoral researcher at the University of New Hampshire.

"I have moved a lot as part of my college and graduate experiences," he said. "I think in terms of my research, it's really exposed me to a broad range of forest types and different insects — and sometimes the same insects, like emerald ash borer, which I studied in Wisconsin, New Hampshire and now here. I'm seeing how the same insect might behave differently in these different areas."

As a professor, he even gets the chance to be a writer — perhaps not of short fiction and poetry, but of research papers, grant proposals and lesson plans for the classes he teaches.

"We do a lot of writing in our jobs," Johnson said. "So, in a way, I feel like I did achieve that goal."

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



LSU AgCenter entomologist Todd Johnson examines corky structures on the trunk of a sugarberry, or southern hackberry, tree in a forested area at the AgCenter Doyle Chambers Central Research Station in Baton Rouge. Johnson studies how factors like texture can influence insect behavior. Photo by Olivia McClure



A rainbow crosses above the Choctaw Cattle Company in Sunset.

Photo by Dr. Angela Mayeux-Hebert

INSIDE A REGENERATIVE CATTLE OPERATION:

THE CASE OF THE CHOCTAW MODEL FARM

■ MARCELO VEDOVATTO AND BRITTANY B. ZAUNBRECHER

THE CHOCTAW CATTLE COMPANY began in 1994 when Dr. Angela Mayeux-Hebert, an orthopedic surgeon at that time who is now retired, purchased her first piece of land in Sunset, Louisiana. She was motivated by her lifelong love of horses and her desire to build something of her own. What started as a small pasture gradually expanded as she acquired neighboring tracts and developed a growing interest in grazing management. She began working with rotational grazing in 1996. Her early steps into cattle production eventually connected her with Roylee Hebert, an animal scientist and lifelong cattleman whose family has raised cattle in Louisiana since the 1930s. The couple married in 2002 and began shaping the operation together.

From the beginning, the couple approached the farm as a place of continuous learning. They tested new ideas, refined old ones and were never afraid to experiment. Many of the simple, low-cost strategies they use today were once difficult and expensive to figure out. Years of trial, error and persistence gradually transformed the property into a highly

efficient cow-calf operation of 40 to 50 cows on about 65 acres fully supported by farm income. No outside money is used to sustain the system today, a point they take pride in. The farm is profitable, sustainable and visually picturesque.

Their success and long-standing relationship with the LSU AgCenter led to a formal partnership in 2024 when the Choctaw farm became an official LSU AgCenter model cattle farm. Today, the site serves as a showcase of an efficient cattle operation for LSU students, extension agents, faculty and ranchers. It also hosts farm research projects designed to evaluate practical, science-based management strategies for small- and medium-sized beef operations.

WHAT IS A REGENERATIVE CATTLE OPERATION?

In simple terms, a regenerative system is designed to improve the land while producing cattle. A regenerative cattle operation focuses on rebuilding soil health, increasing forage productivity, enhancing animal performance and improving the farm's long-term resilience. At the same time, it aims to reduce dependence on external inputs such as purchased feed, fertilizers and chemicals. Rather than emphasizing short-term production gains, regenerative systems prioritize restoring the natural processes that support cattle production. These processes include soil biological activity, plant growth, nutrient cycling and overall ecosystem function. In this approach, the farm is viewed as a living system where all components are interconnected. Healthy soils lead to more productive and resilient forage systems. In turn, better forage supports greater performance and healthier cattle. Healthier cattle require fewer inputs and interventions, helping reduce costs and environmental impact. Over time, this creates a positive feedback cycle that benefits both the producer and the land.

REGENERATIVE PRACTICES ADOPTED BY THE CHOCTAW MODEL FARM

Soil conservation and grazing management

Soil conservation is the foundation of the regenerative system at the Choctaw model farm. The owners base their management on a simple idea: Protect the soil surface and keep living roots in the ground year-round. To achieve this, they avoid overgrazing by moving cattle frequently and giving each pasture enough rest to recover. Cattle typically remain in each pasture for only about three to four days, always leaving a noticeable amount of forage behind. That leftover forage is not waste. It is an investment in the soil that protects the surface, supports deeper root growth and contributes to long-term improvements in organic matter, water infiltration and drought resilience. As organic matter accumulates, the soil becomes more biologically active and better able to retain nutrients released from plant residues, manure, urine and any

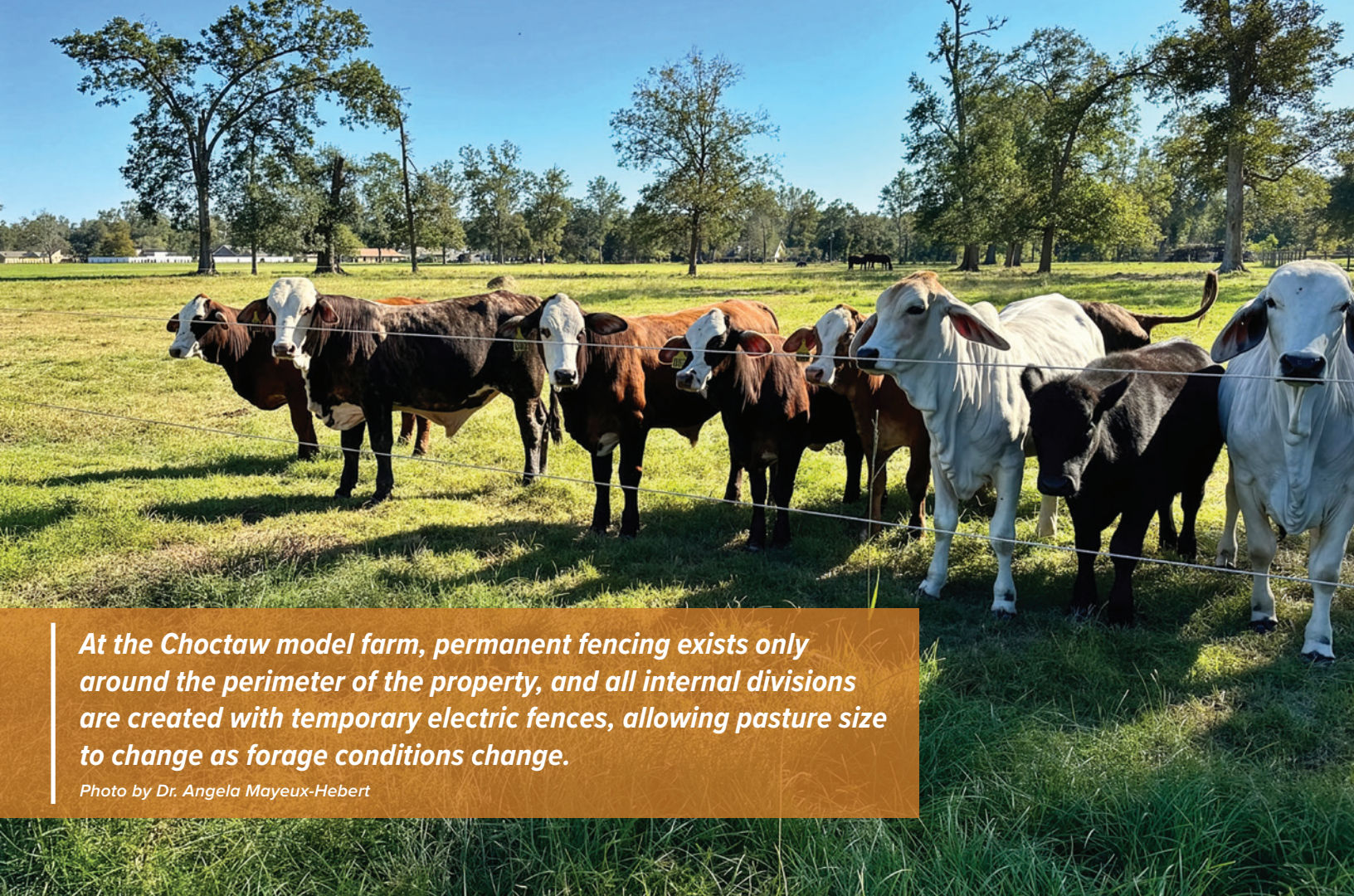


Figure 1: High accumulation of organic matter on the soil surface in pasture areas at the Choctaw model farm. Photo by Marcelo Vedovatto

applied fertilizer (Figure 1). Over time, this reduces the need for external inputs, a trend confirmed through regular soil testing and careful nutrient management.

The grazing system is supported by a simple and flexible infrastructure. Permanent fencing exists only around the perimeter of the property, and all internal divisions are created with temporary electric fences. This design allows Choctaw's proprietors to adjust pasture size as forage conditions change, control grazing pressure with precision and remove fences easily when needed for fertilization, mowing or other management practices. Electric fencing is less expensive than permanent fencing, making the system accessible and cost-effective for small- and medium-sized operations.

Creep grazing adds another layer of efficiency within this rotational system by meeting the nutritional needs of growing calves. At the Choctaw model farm, one of the electric fence wires is raised high enough for calves to pass underneath while cows remain in the previous pasture. This gives calves early access to fresh pasture, where forage is fresher and more nutrient-dense. Because young animals have greater nutritional requirements, this access to better forage supports faster growth without increasing feed costs. Meanwhile, the cows help manage the more mature forage in the previous pasture.



At the Choctaw model farm, permanent fencing exists only around the perimeter of the property, and all internal divisions are created with temporary electric fences, allowing pasture size to change as forage conditions change.

Photo by Dr. Angela Mayeux-Hebert

Forage, hay and baleage

Forage production at the Choctaw model farm follows the rhythm of Louisiana's seasons. During winter and spring, the farm grows annual ryegrass mixed with clover, which is the most nutritious forage produced on the property. In summer and early fall, the pastures shift to warm-season grasses such as bermudagrass, bahiagrass and pearl millet. Even with this diversity, there is a predictable forage gap from October through December, when cool-season forages have not yet grown enough and warm-season grasses have already declined. To bridge this gap, the farm relies on hay and baleage. Hay is produced during the summer when warm-season grasses can dry properly in the field. Ryegrass and clover, however, are difficult to cure into hay during winter and spring due to the high humidity and rainfall, which prevent adequate drying. Because ryegrass and clover are the highest quality forages on the farm, preserving them for fall feeding requires a different approach. Baleage provides that solution.

Baleage is made by cutting the forage and allowing it to wilt for a few hours until it reaches about 40% to 60% dry matter. The forage is then baled tightly and wrapped with several layers of specialized plastic. This creates an anaerobic environment that allows fermentation to occur, preserving the forage until fall. The resulting product is highly palatable and

very nutritious. Cows readily consume it, and its high quality supports strong animal performance during the fall without the need to purchase grain.

If only low-quality hay were available, grain supplementation would be necessary to supply adequate protein and energy. Baleage changes that equation. Even when fed alongside hay to stretch supplies, such as offering one bale of hay and one bale of baleage, the system maintains excellent animal performance entirely on forage. This allows the Choctaw model farm to operate year-round normally without purchasing external feed grains. Although baleage is more expensive to produce than hay, its role on this farm is not to replace hay but to replace grain. When compared to the cost of purchased feed, baleage is significantly more economical. This strategy keeps the operation forage-based, low-input and nutritionally consistent throughout the year.

Grains and mineral supplementation

The farm's goal is to avoid purchasing grains to feed during the fall. In most years, hay and baleage provide enough nutrition to maintain excellent performance. However, in unusually dry winters when cool-season forages produce less than expected, hay and baleage may need to be fed earlier and in larger amounts. If baleage supplies run short, the farm



Figure 2: The Choctaw Model Farm follows Louisiana's seasons, with annual ryegrass mixed with clover — the most nutritious forage produced on the property — in the winter and spring. In summer and early fall, the pastures shift to warm-season grasses. Photo by Marcelo Vedovatto



Figure 3: The Choctaw farm uses a simple and highly effective mineral and water trough system. The mineral feeder is placed directly beside the water trough, which increases intake and reduces the number of cows that would otherwise underconsume. Photo by Dr. Angela Mayeux-Hebert



Figure 4: The Choctaw farm uses a mobile chicken barn that can be moved across the pastures. Photo by Dr. Angela Mayeux-Hebert

may need to rely on purchased feed. For these situations, Hebert and Mayeux-Hebert worked with a feed company to produce a formula that contains no starch or sugar. This allows the rumen — the largest compartment of cattle's stomachs where microbes break down tougher plant fibers — to remain adapted to a forage-based diet throughout the year.

Mineral nutrition is a critical component of the Choctaw model farm because Louisiana forages, even when grown on fertile soils, do not supply all the minerals required for maximum cattle performance and health. Across the state, deficiencies in sodium, magnesium, copper and zinc are common. At Choctaw, selenium is also deficient. Although plants do not require selenium for growth, cattle do, which makes supplementation essential. To address these gaps, the farm provides a loose mineral and vitamin mix year-round, ensuring that minerals are always available in the trough. Encouraging consistent mineral intake can be challenging, so the Choctaw farm's owners developed a simple and highly effective mineral and water trough system (Figure 3). The mineral feeder is placed directly beside the water trough, so every time a cow goes to drink, the mineral is right there. This increases intake and reduces the number of cows that would otherwise underconsume. The system is portable and moves with the herd during rotational grazing, eliminating the need for multiple troughs across the farm and helping cattle stay familiar with the same equipment, thereby reducing hesitation and improving mineral consumption.

The mineral formula also includes an insect growth regulator, or IGR. Louisiana herds experience heavy pressure from horn flies, which consume blood, reduce weight gain and cause significant discomfort during the summer. The IGR is not absorbed by the animal. Instead, it passes through the digestive tract and remains active in the manure, preventing fly larvae from developing. Because horn flies lay their eggs in fresh manure, this approach breaks the life cycle at its source. After several years of consistent use, fly pressure on the Choctaw farm is now very low, and the operation no longer needs injectable or pour-on insecticides to control flies.

Cattle genetics adapted for efficient grazing and hot weather

The farm works mainly with Brahman and Braford genetics, two breeds well known for their ability to thrive in the heat, humidity, parasites and forage-based systems typical of the southeastern United States. These genetics are not just a preference; they are a strategic choice that aligns perfectly with the regenerative, low-input philosophy of the Choctaw model farm. Brahman-influenced cattle bring natural heat tolerance, parasite resistance and the ability to maintain performance on warm-season forages. Braford cattle complement these traits with strong maternal ability, good udder quality and longevity. In addition to choosing breeds

adapted to the region, Mayeux-Hebert and Hebert apply a strict selection program within the herd. Animals are evaluated for performance, temperament, maternal ability, conformation and calving ease, and any individual that does not meet these criteria is removed from the herd. This continuous selection ensures that each generation becomes better adapted to the farm's grazing-based, low-input environment.

Beyond genetics, the farm's environment further supports animal comfort and performance. Every pasture contains natural tree shade, providing relief during the hottest months and reducing heat stress.

Cattle health

Cattle health at the Choctaw model farm is based on prevention. Most issues are handled early by Mayeux-Hebert, which keeps the need for veterinary intervention very low. The herd is given a broad vaccination program, receives a yearly deworming to control internal parasites and gets a trace mineral injection at key times to support immune function. Because of this preventive protocol, the healthy environment created on the farm, the use of genetics that are naturally more resistant to parasites and diseases, and the low-stress handling practices, health problems are very rare.

Integration of chicken and cattle

Integrating species is one of the core principles of regenerative agriculture, and the Choctaw model farm has refined a system that combines chickens and cattle in a practical, low-cost and low-labor way. Over the years, the Choctaw farm's owners developed a mobile chicken barn that can be moved across the pastures (Figure 4). The current design requires only a few minutes each morning to check feed and water, collect the eggs and move the barn forward using a four-wheeler. The eggs are sold through a local agricultural

supply store, providing an additional source of income that complements the cattle enterprise. This integrated system contributes directly to pasture health. As the chickens move behind the cattle, they scratch through manure pats, spread organic matter and reduce fly larvae. They also consume a wide variety of insects they encounter, including fire ants, which helps lower pest pressure in the pastures. Their manure adds nutrients to the soil, enhancing soil fertility and supporting the farm's regenerative goals. Beyond the practical benefits, the presence of chickens adds an enjoyable and dynamic element to daily farm life.

CONCLUSION

The Choctaw model farm shows how a small cattle operation can become productive and resilient by focusing on soil health, rotational grazing, adapted genetics and consistent proper management. The system works because each practice reinforces the others. Healthy soils support strong forage growth, which keeps cattle performing well on a forage-based diet. Adapted genetics and preventive healthcare reduce the need for treatments and external inputs. Simple infrastructure and low stress handling keep labor and costs low. The farm also demonstrates the value of continuous learning. Mayeux-Hebert and Hebert test ideas, refine what works and collaborate with the LSU AgCenter to generate practical knowledge for Louisiana producers. Their experience shows that regenerative agriculture is not complicated or expensive. It is a set of decisions that builds long-term productivity while keeping the operation profitable and sustainable.

Marcelo Vedovatto, an assistant professor of beef cattle nutrition, is the Mayeux-Hebert Endowed Professor in Applied Beef Cattle Research. He is stationed at the LSU AgCenter Dean Lee Research and Extension Center. Brittany B. Zaunbrecher is an LSU AgCenter agriculture and natural resources extension agent focused on beef cattle and forages for St. Landry, Evangeline, Avoyelles and Allen parishes.

CURRENT EXPERIMENTS

Dr. Angela Mayeux-Hebert and Roylee Hebert work closely with Marcelo Vedovatto, a beef cattle nutritionist at the LSU AgCenter, and Brittany Zaunbrecher, an AgCenter extension agent, to develop and evaluate practical strategies to improve forage-based beef production systems in Louisiana. Current on-farm projects are focused primarily on improving forage conservation. One line of research evaluates different forage species for baleage production, optimal harvest timing and the use of inoculants to enhance fermentation quality and nutritive value. The goal is to refine

baleage systems so producers can rely more on high-quality conserved forages and reduce dependence on purchased feeds. Another collaborative project is being conducted at the AgCenter Dean Lee Research and Extension Center, where researchers are evaluating how early-life nutrition strategies influence cattle performance in forage-based systems later in life. This work investigates whether nutritional management during the nursing phase can improve grazing efficiency, adaptability and long-term productivity.

This research was inspired by observations from Mayeux-Hebert, who noted that calves raised by cows consuming strictly forage-based diets without grain supplementation during lactation appeared to develop into future cows better adapted to forage systems. Her practical insight helped shape a controlled research study now being conducted under experimental conditions. This collaboration highlights the value of integrating producer experience with scientific research.

FROM **BRAZILIAN DAIRY BARNs** *TO* **LOUISIANA PASTURES,**

*MARCELO VEDOVATTO WORKS TO
BUILD BETTER BEEF CATTLE*

■ KYLE PEVETO



AS A CHILD ON A DAIRY FARM IN SOUTHERN BRAZIL, Marcelo Vedovatto grew to love caring for cattle.

Now, from the pastures of the LSU AgCenter Dean Lee Research and Extension Center in central Louisiana, Vedovatto instructs American beef producers to raise strong, healthy cattle.

"I grew up with producers, and I have this feeling that I need to help producers make their system more profitable and more sustainable," said Vedovatto, an assistant professor of beef cattle nutrition for the AgCenter.

Vedovatto grew up on his family's dairy and poultry farm in Planalto Alegre in the state of Santa Catarina, Brazil. His family descended from Italian immigrants who settled there a century ago. Similar to many farms in the area, part of the top dairy-producing region for the country, they kept 30 to 40 cows, mostly Holsteins.

"It was a small farm," he said. "This was my routine; waking up early, milking and feeding the cows with silage and concentrate, setting up temporary electric fences to move them through paddocks in a rotational grazing system. It was an enjoyable time in my life."

When he began studying animal science at Santa Catarina State University, Vedovatto delved into beef production rather than dairy. Raising cattle is a major industry in Brazil, which has the world's largest commercial beef herd.

Marcelo Vedovatto,

a beef cattle nutrition specialist, feeds cattle at the LSU AgCenter Dean Lee Research and Extension Center in Alexandria.

Photo by Kyle Peveto

"It attracted me more," he said. "I like the system of beef cattle, and the large operations were very attractive, how they work and how intense it is. I like the ranch and the rancher's life."

The interest in beef production led Vedovatto to earn his master's and doctoral degrees at Mato Grosso do Sul Federal University in Brazil. There, Vedovatto focused on animal nutrition, starting research on topics and methods he continues to pursue. He first came to the United States to complete post-doctoral research at the University of Florida, which introduced Vedovatto to farms similar to those found in Louisiana.

After returning to Brazil to teach for two years at Mato Grosso do Sul State University, Vedovatto joined the AgCenter in July of 2023. Vedovatto sees the extension work, which involves educating producers and answering their concerns, as vital to his research.

"Several times, I have seen in the field some questions that I'm not able to answer," he said. "I look at the literature, and if I don't find the answer, it gives me an argument to conduct research on that."

In addition to research at Dean Lee, Vedovatto collaborates with the proprietors of the Choctaw Cattle Company, an LSU AgCenter model farm that uses innovative sustainable regenerative ranching techniques in St. Landry Parish. He studies their techniques, which include regular pasture rotations and incorporating chickens into the program, and offers suggestions when needed.

After 30 years of developing the farm, co-owner Dr. Angela Mayeux-Hebert, a retired orthopedist, was nervous about inviting a Ph.D. who would tear out her grass and rework their plans. "Dr. Marcelo," as she calls Vedovatto, was the opposite.

"He's just been a joy to work with," Mayeux-Hebert said. "He's very open-minded."

One recommendation he offered for Choctaw was the use of baleage to feed cattle over winter. Created by quickly wrapping cut forage and causing it to ferment, baleage offers higher nutritional value than hay.

Beef cattle are the No. 2 animal commodity in Louisiana, and Vedovatto sees many ranchers working to improve even more. Several embrace the LSU AgCenter Master Cattleman programs and search for every edge.

"I see opportunities to improve even more than what we have today," he said.

Vedovatto recommends most cattle producers try growth promoter implants that have been proven safe and cost only about \$1.50 per head for a few months. He also studies trace mineral strategies that can help cattle receive the minerals they miss from grass produced in native soils and is creating a mineral formula for Louisiana producers. These minerals can greatly improve pregnancy rates, studies show.

"When a woman gets pregnant and she does to see a doctor, the doctor prescribes vitamins and minerals," he said. "For cows, it is exactly the same."

Vedovatto looks forward to building a research program for Louisiana. He has settled into central Louisiana with his wife, Denise, and two sons, who are 3 and 6.

"My goal is to help the producers to produce more and also have an animal that's consuming a better diet," Vedovatto said. "I'm thinking about welfare. An animal that consumes a better diet will be a strong animal, a healthy animal and probably will have a better life, too."

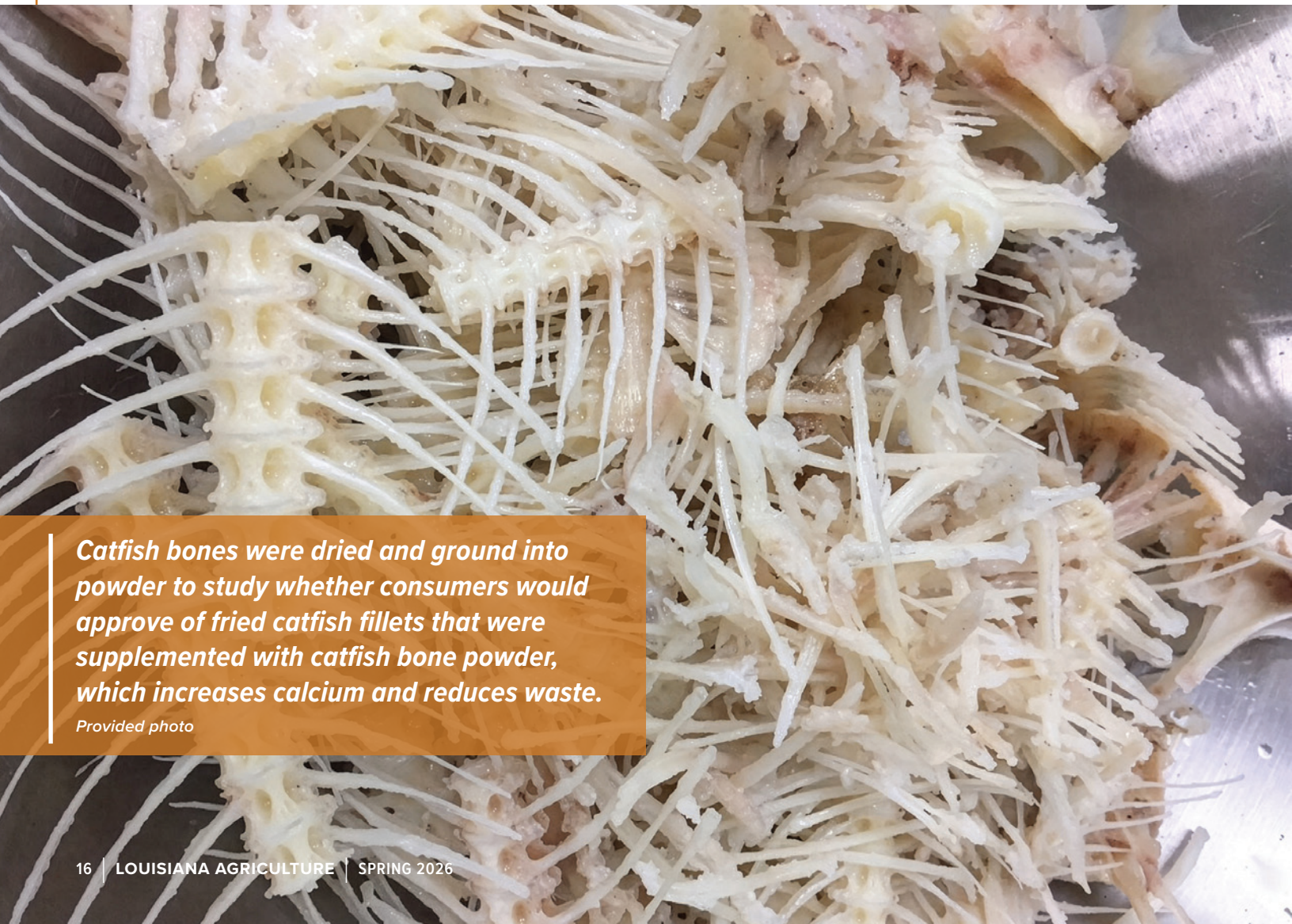
Kyle Peveto is the editor of Louisiana Agriculture.

STUDYING CONSUMER PREFERENCES FOR UNDERUSED CATFISH PRODUCTS

■ WITOON PRINYAWIWATKUL, SILVIA MURILLO, RYAN ARDOIN AND EVELYN WATTS

GLOBAL FISH PRODUCTION, which includes both capture fisheries that harvest wild fish and aquaculture, is projected to reach 204 million tons by the year 2030. It has been estimated that over 60% of fish biomass can be wasted during processing, which can have social, economic and environmental implications. Converting seafood byproducts, such as bone and skin, into human food rather than waste or feed applications, a process called valorization, can contribute to an increasingly circular and sustainable food supply where natural resources are fully exploited. However, consumer insight is needed for effective waste-to-value product development.

To understand consumers' preferences for valorized catfish products, the LSU AgCenter School of Nutrition and Food Sciences worked with the U.S. Department of Agriculture Agricultural Research Service in New Orleans to conduct two studies through the AgCenter Sensory Services Lab.



Catfish bones were dried and ground into powder to study whether consumers would approve of fried catfish fillets that were supplemented with catfish bone powder, which increases calcium and reduces waste.

Provided photo

EFFECTS OF CATFISH (*ICTALURUS PUNCTATUS*) BONE POWDER ON CONSUMERS' LIKING, EMOTIONS AND PURCHASE INTENT OF FRIED CATFISH STRIPS

Catfish is the predominant U.S. aquacultural product. The major commercial outputs of catfish processing include fillets, shank fillets, strips and nuggets. Catfish byproducts, such as viscera (internal organs), heads, skin and frames, can account for more than 60% of the whole catfish weight. The frame, which is composed of the backbone and ribs with some muscle, fat and nerve tissues still attached and remains after filleting, constitutes around 18% of the original catfish mass. This frame, including bones, is high in calcium (21.07% dry weight basis) and typically goes to waste or is sold as a low-value feed. Fried catfish is an immensely popular, iconic Southern dish featuring fillets dredged in seasoned cornmeal and fried until crispy and golden. It is growing in popularity not just in the South but throughout the United States.

Research by the team evaluated the potential use of catfish bones that are dried and ground into powder as a food ingredient. It is potentially feasible to upcycle catfish bone powder by incorporating it in a cornmeal seasoning mix to add calcium while also improving the crispiness of fried dredged catfish. To achieve this, it was critical to first determine how much catfish bone powder can be incorporated in a cornmeal seasoning mix without compromising quality and consumer acceptance of the fried catfish.

To study this, catfish fillet strips were dredged with cornmeal seasoning mixes containing 0%, 10% and 20% catfish bone powder before deep-frying. For a taste testing session at the AgCenter School of Nutrition and Food Sciences Sensory Services Lab, 211 consumers were recruited.

Consumers evaluated the visual appearance and color, aroma, surface crispiness, texture and flavor of fried catfish strips. They also rated how they liked the strips overall. Collectively, the data indicated that at 10% and 20% catfish bone powder addition levels in the breading mixes, catfish bone powder did not compromise the sensory quality of the fried catfish strips. The sample with 20% catfish bone powder obtained “liking” scores between 6.88 and 7.12 (“moderately liked” on a 9-point hedonic scale). About 62% of consumers indicated that the surface crispiness of the sample with 20% catfish bone powder was perceived as “just about right.” Negative effects of catfish bone powder on the aroma or flavor liking of fried catfish were not observed. The fish aroma or flavor inherent to catfish bone powder may have been indistinguishable from that of the catfish flesh or commensurate with their expectations of fried fish.

A statement that read “The breading mix was supplemented with edible and safe catfish bone powder to increase calcium, which may provide health benefit” was given to consumers.



A study sought to find how consumers would appreciate catfish fried with a batter that included catfish bone powder. Catfish fillet strips were dredged with cornmeal seasoning mixes containing 0%, 10% and 20% catfish bone powder before deep-frying. Provided photo

CATFISH FILLET STRIPS STUDY DEMOGRAPHICS

211 PARTICIPANTS

52% male | 48% female

52% Identified as non-Hispanic white

25% Identified as Hispanic or Latino

62% ages 18–25 | 29% ages 26–35

Positive purchase intent of the sample with 20% catfish bone powder increased from 74% to 84% after such statement had been given. This statement showed a greater effect on positive purchase intent of Latin Americans or Hispanics than non-Hispanics.

Food-evoked emotions have been shown to differentiate food products and predict purchase intent better than sensory liking scores alone. Emotional responses may be particularly relevant to understanding consumers' willingness to consume ingredients from novel sources such as catfish byproducts like catfish bone powder.

Positive emotions, such as good, satisfied, pleasant, happy and interested, were associated with samples containing catfish bone powder by 45% to 60% of consumers. Low selection rates (less than 8% of consumers) of the negative descriptors, such as worried, unsafe, disgusted and guilty, lent credence to consumers' openness to consumption of catfish bone powder delivered in a familiar and readily acceptable product like fried catfish. This result may suggest that most consumers were not

powder and subsequent food applications are not intended to be a sole source of dietary calcium but rather provide additional options to address dietary calcium deficiencies.

CONSUMERS' ACCEPTANCE, EMOTIONS AND RESPONSIVENESS TO INFORMATIONAL CUES FOR AIR-FRIED CATFISH (*ICTALURUS PUNCTATUS*) SKIN CHIPS

Previous research found that consumers identified fish products as the most appropriate for seafood byproduct incorporation and also identified snack foods as a top five product category. This motivated a new product concept of upcycling catfish skin by transforming it into catfish skin chips. Fish skin chips are not unprecedented. In Asia, they are available commercially and made from salmon, basa fish (*Pangasianodon hypophthalmus*) and tilapia (*Oreochromis* spp.) skin.

The research team pioneered the development and testing of air-fried chips made from catfish (*Ictalurus punctatus*) skins, which were flavored with lemon and pepper, paprika or barbecue seasoning powder. The team chose the nontraditional cooking method of air-frying because it required no oil for cooking, yielding less greasy catfish skin chips. Additionally, it was less messy compared with the deep-fat frying method.

.....➔ SENSORY LIKING IS DEFINED AS THE DEGREE TO WHICH PEOPLE LIKE OR DISLIKE A PRODUCT BASED ON THEIR SENSORY EXPERIENCE, INCLUDING APPEARANCE, SMELL, TASTE AND TEXTURE.

concerned with the safety or origin of catfish bone powder. Adventurous is one of the "sensation-seeking emotions" tested in the lab. As catfish bones are not typically consumed in the U.S., a higher rate of adventurousness (approximately 19% for both samples with 10% catfish bone powder and 20% catfish bone powder compared to 10% for sample with 0% catfish bone powder) was observed. This may have been related to increased arousal and positive regard for new eating experiences.

Overall, consumers were not averse to the consumption of catfish bone powder, which can contribute to sustainable nutrition through waste reduction. Successful calcium fortification of fried catfish dredged with 20% catfish bone powder did not compromise sensory liking and may be feasible in other products. To meet the recommended daily intake of 1,000 milligrams of calcium from catfish bone powder alone would require consumption of 4.72 grams (dry weight basis) of catfish bone powder daily, which is equivalent to 25 grams of the 20% catfish bone powder-fortified seasoning mix. Catfish bone



CONTROL

A study sought to find how consumers would appreciate catfish fried with a batter that included catfish bone powder. Catfish without supplemented bone powder was served as a control in the study. Provided photo

For a taste testing session at the Sensory Services Lab, 115 consumers were recruited for a taste testing. Consumers evaluated sensory liking of overall visual quality, surface color, aroma, texture, crispiness and flavor of the catfish skin chip samples. The most visually acceptable chip was flavored with barbecue seasoning, followed by the paprika-flavored sample. The plain, nonseasoned sample was not acceptable in terms of visual quality and surface color. Likewise, the barbecue-seasoned chip obtained the highest liking score for aroma and flavor (6.2-6.5, which is slightly to moderately liked on a 9-point hedonic scale). Unexpectedly, the paprika-flavored chip was the least acceptable to consumers and fell into the “dislike” portion of the 9-point scale. Regardless of the seasoning flavor applied, all samples were similar in terms of texture and crispiness approval scores. Our results suggested that target crispiness was achieved, as a satisfactory majority of consumers (74.78% to 80.87% across samples) perceived the crispiness of the catfish skin chips as “just about right.”

Consumers associated the catfish skin chip samples with positive-valence emotions: interested (55%–59% consumers), good (45%–52%), pleasant (30%–40%), adventurous (23%–29%), good-natured (21%–30%), happy (22%–35%) and active (14%–28%). The emotions “adventurous and interested” are related to food-evoked sensation-seeking emotions, implying consumers’ desire for new eating experiences.

After an informational cue that read “The consumption of catfish skin will help to reduce food waste and support food sustainability” had been given to consumers, the overall liking score increased from 6.2 to 6.6, while the positive purchase intent increased by 12% from 50% to 62%. Furthermore, consumers reported feeling more adventurous, daring, interested and wild. Higher levels of these sensation-seeking emotions have been associated with increased willingness to consume new food products.

In conclusion, the research team successfully transformed catfish skin into a crispy chip with attractive color and well perceived texture and crispiness. The barbecue seasoning was the most promising flavor for catfish skin chips. The results indicated positive attitudes toward health and sustainability impacts of waste-to-value seafood product development, which increased not only product acceptance but also intensity of food-evoked sensation-seeking emotions and behavioral intent. This finding may be useful in communicating the benefits of new products to consumers which can motivate trial of catfish skin chips.

Witoon Prinyawiwatkul is a professor of sensory sciences in the LSU AgCenter School of Nutrition and Food Sciences. Silvia Murillo, a senior research scientist at The Hershey Company, was a graduate research assistant with the LSU AgCenter Sensory Services Lab. Ryan Ardoin is a food scientist at the U.S. Department of Agriculture Agricultural Research Service Southern Regional Research Center, New Orleans. Evelyn Watts is an associate professor and the seafood extension specialist at the LSU AgCenter.



A study at the LSU AgCenter Sensory Services Laboratory sought to learn whether consumers would appreciate chips made from crisped catfish skin. The chips were flavored with paprika (a), lemon pepper (b) and barbecue (c) seasonings. One chip was left unflavored. Provided photos

CATFISH SKIN CHIPS STUDY DEMOGRAPHICS

115 PARTICIPANTS

56% male | 44% female

45% Identified as non-Hispanic white

32% Identified as Hispanic or Latino

57% ages 18–25 | 30% ages 26–35

RUNOFF TO RAIN GARDENS:

ENGINEERING ENVIRONMENTAL INFRASTRUCTURE FOR THE LOUISIANA LANDSCAPE

■ DAMON EDWARD ABDI

PRECIPITATION can inundate existing drainage infrastructure, putting communities throughout Louisiana at risk when flash floods or slow, relentless rains occur. Ongoing research at the LSU AgCenter is developing solutions to soak up this stormwater with style. Green infrastructure features such as rain gardens offer both engineering and aesthetics to support sustainable landscapes.

WHAT IS A RAIN GARDEN?

There are many examples throughout Louisiana, ranging from coincidentally installed plants in a ditch to sometimes complexly constructed features. Quite simply, it can be any low-lying area of the landscape that periodically pools with water after rain events, possesses plants that prefer more saturated soils, and sequesters and drains stormwater deeper into the soil.

More advanced rain gardens may possess subsurface drain systems to evacuate excess water and facilitate faster drainage; soils engineered to retain, treat and drain runoff water with more control; and creative compositions of plant materials to provide a wider array of ecosystem services and visual value.

TARGETED RESEARCH TO ADDRESS THE ISSUES

At the LSU AgCenter Hammond Research Station (HRS), laboratory-scale research projects investigate and optimize media for rain gardens. Media can be optimized to support ornamental plant growth and remove contaminants through a variety of natural processes including bacterial transformations and adsorption (binding contaminants in soils).

Nitrogen and phosphorus are essential elements for plant growth, which is, why it is applied as fertilizer; however, they may also be considered contaminants if runoff water washes these nutrients from farm fields and landscapes to downstream waters. Rain gardens can be optimized to remove nitrogen by adding organic carbon materials to the media, retaining the runoff and providing sufficient time (several hours to a few days) for bacteria to denitrify and transform nitrogen. Phosphorus removal involves “binding” it to a charged surface such as clay or shale aggregate.

Of course, plants provide a vector for nutrient uptake from runoff-rich water for their own nutrition. A wide range of locally sourced materials, including organic byproducts like sugarcane bagasse and inorganic materials, such as sands and aggregates from regional industries, have been studied at a small

scale to qualify and quantify their potential for use in larger rain garden systems. These studies indicate that rain garden media can be optimized for nitrogen removal (more than 90% in under two days) if water is retained in a carbon-rich medium.

SCALING SOLUTIONS FOR REAL-WORLD RESULTS

Building upon the laboratory-scale research, field-scale rain gardens were developed to represent real-world dimensions. A total of 36 model plots (measuring 10-by-10 feet each) that could fit between crosswalks, street corners and other congested sites were developed at the HRS.

Plots were excavated and filled with unique rain garden media, including combinations of standard landscape bed materials (pine bark and sand) with woodchips and expanded shale aggregate based on lab-scale studies. A mix of Louisiana native plants suitable for a spectrum of soil moisture conditions was installed in the different media, including bald cypress (*Taxodium distichum*), sweetbay magnolia (*Magnolia virginiana*), river birch (*Betula nigra*) and Virginia willow (*Itea virginica*).

An on-site weather station and soil moisture sensors (in each of the 36 individual plots) measure all the rain that falls and how fast it drains or evaporates from each medium. This research provides



Rain gardens provide interest to people and pollinators when in bloom.

Photo by Damon Abdi

direct insights toward which rain garden media and plant species work best for a wide range of conditions.

By using installations of representative size, community members and green industry professionals alike can draw direct inspiration in their own designs.

IMPLEMENTING ACTIONABLE SOLUTIONS FOR LOUISIANA COMMUNITIES

Rain gardens may be optimized to meet the unique community needs throughout Louisiana. Rural and suburban communities may benefit from rain garden installations that can remediate fertilizer-rich runoff from agricultural lands, home lawns and landscapes. The plurality of paved surfaces in urban areas reduces the rate at which water can naturally infiltrate into surrounding soils, demanding rapid drainage to

reduce flooding risks. For areas like parking lots, rain gardens may be optimized to facilitate fast drainage, regardless of how small a footprint is provided for planting.

The LSU AgCenter is combating community concerns surrounding flooding by using rain gardens engineered for a variety of conditions. Through a combination of lab-scale research to better understand the underlying mechanisms of rain garden media, field-scale plots to provide a tangible template in real-world conditions and offering advice to stakeholders and residents of Louisiana through extension resources, the LSU AgCenter is advancing sustainable solutions for the Louisiana landscape.

Damon Abdi is an assistant professor of landscape horticulture at the LSU AgCenter Hammond Research Station.



TOP: An overhead view of the 36 field-scale model rain gardens at the LSU AgCenter Hammond Research Station. Photo by Brianna Slade

BOTTOM: A close-up view shows several field-scale rain garden research plots at the LSU AgCenter Hammond Research Station. Photo by Damon Abdi

LOUISIANA FARM TO SCHOOL INSTITUTE INAUGURAL COHORT IMPACT REPORT

■ CECILIA STEVENS AND TYNE BANKESTER

THE FIRST COHORT of the Louisiana Farm to School Institute conducted by Seeds to Success: Louisiana Farm to School Program concluded in July 2025. The Louisiana Farm to School Program, an initiative of the LSU AgCenter, works to connect schools with local agriculture through initiatives that integrate food, education and community engagement. The institute is a yearlong professional development program designed to help schools build long-term farm to school practices into their community and culture through initiatives that connect cafeteria, classroom and community.

School communities often lack the resources to fund farm to school coordinators; however, this type of focused leadership is needed to develop practices that are ingrained into the school community's cafeteria, classroom and community routines. The institute's model of professional development and individualized team coaching is designed to fill this need when districts cannot provide salaried farm to school coordinators. The Seeds to Success team evaluated program data to determine the institute's impact on team outcomes.

Teams representing school districts in Calcasieu, Concordia, East Baton Rouge and Iberville parishes participated in the institute's first cohort — a group of participating teams moving through the program together. Team makeup included teachers, child nutrition staff, administrators and community stakeholders. Three of the teams completed all of the requirements. Together, the teams impacted 74,143 students through farm to school activities including nutrition and gardening education, local food procurement and community engagement with Louisiana farmers and producers. As a result, 29 school gardens were established or revitalized, and 5,317 students participated in Seeds to Success educational lessons. The teams were awarded \$22,120 in new grants and funding and 353 volunteer hours were donated to their programs.

Louisiana agriculture also benefited, as the teams spent \$353,642 of their cafeteria budgets on locally grown or produced ingredients to feed their students. Overall, the dollar value invested in the 2025 institute cohort multiplied

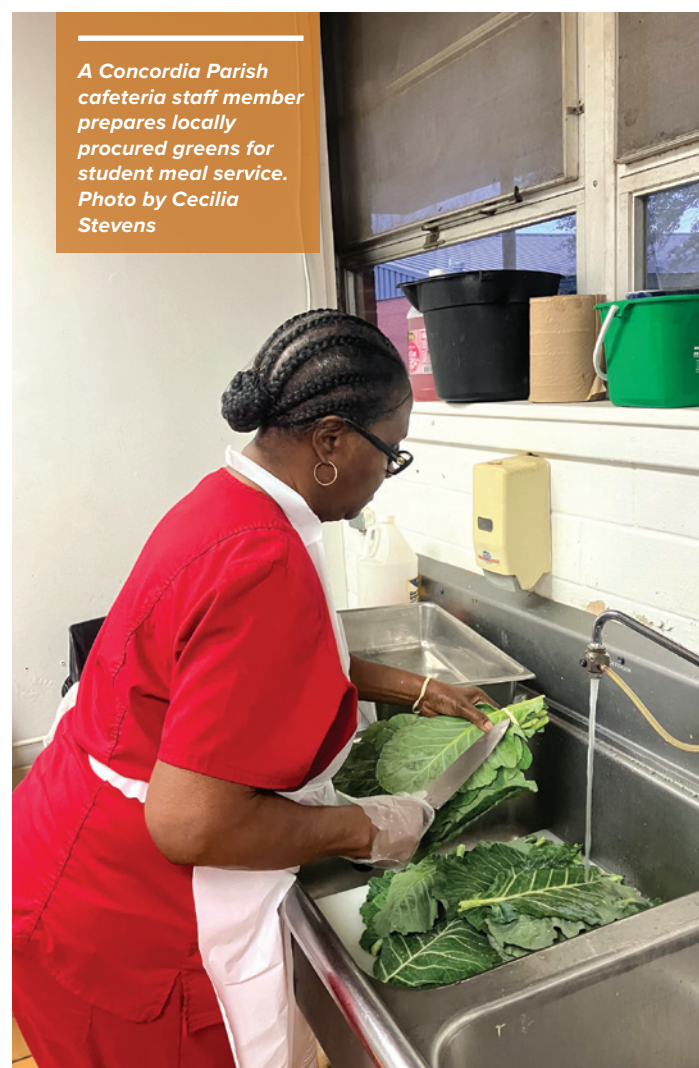
more than fivefold. The effects of this investment will sustain future farm to school efforts through ongoing professional development and support offered to school teams on best practices for local food procurement.

The data suggest that the institute's coaching facilitation model and professional development practices positively impacted farm to school outcomes and Louisiana communities. In addition to the documented quantitative impact of the institute on the school districts' programming, many participants expressed appreciation for the opportunity to build teams, develop a plan of action and access resources to implement programming tailored to their districts.

"We're especially proud to see that many students have been inspired to start gardens at home, a strong indicator that knowledge and enthusiasm gained at school is carrying over into personal lives. Our expanding program is not just about gardening; it's about cultivating lifelong habits that support healthier futures," said team leader Leslie Petross of Calcasieu Parish.

This spring will mark the end of the Louisiana Farm to School Institute's second cohort and the start of the third.

Cecilia Stevens and Tyne Bankester are LSU AgCenter Extension associates with Seeds to Success: The Louisiana Farm to School Program.



A Concordia Parish cafeteria staff member prepares locally procured greens for student meal service. Photo by Cecilia Stevens

EDUCATION IMPACT



5,317

Students impacted by Seeds to Success educational lessons

29

School gardens installed or expanded



An Iberville Parish team member during a team planning retreat. AgCenter file photo

LOCAL FOOD SYSTEM IMPACT



74,143

Students impacted through cafeteria procurement

\$353,642
in local foods purchased



17

Local products introduced



An Iberville Parish student learns about crawfish farming from a local producer. Provided by Rebecca Lirette

COMMUNITY IMPACT



\$22,120

in grants/donations secured by institute teams

353
Volunteer hours valued at \$7,667



INTERACTIVE TRAINING BRINGS FOOD SAFETY TO LIFE FOR FOOD PROCESSORS NATIONWIDE

■ SHANNON M. COLEMAN, AMANDA J. KINCHLA, MATHEUS CEZAROTTO, ASHLEY GUTIERREZ, RUTH TORRES CASTILLO, RACHEL BOREN, BARBARA CHAMBERLIN AND ADINA ARSHAD

MANY SMALL FOOD PROCESSORS

come from nontraditional agriculture backgrounds. These include small food businesses in urban, suburban and rural communities. Shared-use kitchens and commercial incubator kitchens have also created new opportunities for these processors to produce and sell products. However, owners and managers face many challenges, such as understanding food safety rules, completing required training, managing limited time and running a successful business.

Because of these challenges, there is a strong need for focused and practical food safety training for production-level employees. Federal food safety rules require that anyone who makes, processes, packs or stores food be adequately trained or experienced in safe food handling. Many food safety courses are available, but they are usually designed for supervisors or managers, not for those from nontraditional agricultural backgrounds. To fully meet these requirements at the production level, food safety information must be taught in clear, easy-to-understand ways and offered in the native languages of production-level employees.

One effective solution is the use of virtual labs, which provide interactive, flexible learning experiences. Many people in this audience run their food businesses as second jobs while working full time elsewhere. Online training available 24/7 allows them to learn at their own pace and gain the knowledge they need for their food production processes.

To meet this shared need for practical, flexible food safety training, LSU AgCenter experts joined a multistate team to develop the Interactive Tools to Improve the Practice of Food Safety (iTIPS) program, which includes an interactive game and an on-demand, self-paced online curriculum. This collaboration was created to support small food processors and production-level employees nationwide, especially those in underserved urban, suburban

and rural communities. Many of these workers have limited access to training that fits their schedules, languages and job roles, making streamlined programming especially important.

The iTIPS game suite is available online at no cost in both English and Spanish. It includes an engaging online game that allows learners to practice food safety skills in a fun, interactive way without being tied to a course or program. The iTIPS game suite also includes an animated overview, a comprehensive on-demand course and a companion social media campaign that reinforces key food safety messages. The on-demand online curriculum also offers self-paced online training modules through New Mexico State University's fee-based, on-demand learning platform. Together, these tools give learners flexible options to build food safety knowledge at any time from anywhere. Both program items are available at www.itipsfoodsafety.com.

LEARNING TOOLS THAT MAKE FOOD SAFETY UNDERSTANDABLE

iTIPS offers engaging, easy-to-use training for a broad audience. The iTIPS Food Safety suite includes an animated video that gives a clear overview of good manufacturing practices and sanitation standard operating procedures. This animation helps learners understand key food safety basics in a simple, visual way.

The program also includes an interactive online module, a comprehensive



self-paced food safety training course and a companion social media campaign that reinforces key lessons from the modules. Both the interactive suite and the on-demand online curriculum outline essential areas of a shared-use kitchen, including the breakroom, processing floor, warehouse, and facilities and grounds. The team included quizzes and scenario-based learning and a fast-paced food safety training course.

The iTIPS project team recognized that while the interactive module was practical for introducing food safety practices, many learners also needed more guidance, details and examples to understand why specific rules and behaviors are required. To address this need, the team developed a self-paced, on-demand food safety curriculum to expand the concepts introduced in the game and provide deeper explanation and context. The iTIPS on-demand course is designed for small food processors and production-level employees and focuses on applying good manufacturing practices and sanitation standard oper-

ating procedures in real-world settings. Using practical examples and interactive activities, the course guides learners through key areas of a food facility, including the office and breakroom, processing floor, warehouse and distribution areas and facility grounds. Topics include personal hygiene, handwashing, use of personal protective equipment, cleaning and sanitizing, allergen control, safe storage and facility maintenance. Knowledge checks and scenario-based learning help reinforce how daily actions impact food safety and product quality. Delivered through New Mexico State University's fee-based on-demand platform, the course allows learners to move at their own pace, making it ideal for busy workers. Together with the iTIPS animation and interactive game, the on-demand curriculum provides a complete and flexible food safety training experience.

The project team conducted a post-training survey to assess participants' perceptions of the knowledge gained about food safety concepts after

To meet a shared need for practical, flexible food safety training, LSU AgCenter experts joined a multistate team to develop the Interactive Tools to Improve the Practice of Food Safety (iTIPS) program, which includes an interactive game and an on-demand, self-paced online curriculum. Image provided by New Mexico State University Learning Games Lab

completing the iTIPS online training modules. A total of 104 participants participated, and overall, they reported a higher level of understanding of key areas after completing the module activities. These data indicate the tool's effectiveness in teaching food safety concepts to small processors. Additionally, regarding how relevant the modules were for their work, of the 104 participants who responded, over half (54 respondents) indicated "very relevant," with "somewhat relevant" selected second most often (31 respondents).

DESIGNED FOR ACCESSIBILITY AND USER ENGAGEMENT

As part of the team's commitment to effective design, the iTIPS team developed the module to maximize accessibility and user engagement, applying established best practices throughout the design and development process. To meet accessibility needs, the team incorporated keyboard control, enabling users with motor impairments to interact with the module more easily. The design team also chose to use clear and straightforward language for content delivery, ensuring that users with limited reading skills or cognitive needs could access the information. Furthermore, the module was developed in English and Spanish, allowing more learners to access the content in their native language.

All characters represented in the module were intentionally designed to reflect the variety of individuals working in small facilities and incubator kitchens, with a majority being Hispanic (the main demographic for this project), including characters with mobility assistance, hair coverings and a variety of appearances, creating a richer experience for users. In addition to visual representation, characters have Hispanic names such as “Fátima,” “Anita” and “Alonso,” which facilitate learners’ connections with the characters and, consequently, with the content, as they see themselves represented.

To meet a shared need for practical, flexible food safety training, LSU AgCenter experts joined a multistate team to develop the Interactive Tools to Improve the Practice of Food Safety (iTIPS) program, which includes an interactive game and an on-demand, self-paced online curriculum. Image provided by New Mexico State University Learning Games Lab

PROGRAM IMPACT

Ebony McCallister, owner of Posh Pop Gourmet Popcorn and an LSU AgCenter Food Innovation Institute (FOODii) business incubator tenant, shared how the iTIPS food safety training modules made a meaningful impact on her growing business. She said the program was “extremely relevant,” offering practical guidance that applied directly to daily production, packaging, storage and mobile vending operations.

After completing the training, Posh Pop strengthened its food handling protocols, improved labeling and storage practices, expanded temperature monitoring and set clearer expectations for staff across all locations — including busy stadium and festival settings.

LOOKING AHEAD

The iTIPS team plans to continue expanding and improving the program to support small food processors better. A key focus for future updates is allergen awareness and control, as allergens remain a significant challenge for small food businesses and can have serious impacts on product safety, recalls and consumer trust. The team has identified

a strong need for more explicit guidance and practical training on allergen management at the production level. To address this, the group has applied for additional funding to develop new content and tools that strengthen allergen education and build on the success of the current iTIPS program. These future efforts aim to support small processors further and help them maintain safe, compliant and successful food operations.

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Q
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Tips Module 1: Office / Breakroom

6% COMPLETE

Lesson Introduction

1.1 PERSONAL PROTECTIVE EQUIPMENT

Personal Protective Equipment

Hair and Beard Restraints

Personal Protective Equipment and Personal Wear

Personal Hygiene

1.2 | FOOD SAFETY PRACTICES WHILE TAKING A MEAL BREAK

Locker Room

The types of Personal Protective Equipment (PPE) will vary based on the employee's work location. It may include:



- Goggles
- Hard hat
- Non-slip footwear
- Gloves
- Finger guards (in case of injury)
- Arm covering
- Smocks
- Coveralls
- Vest
- Aprons
- Earplugs
- Earmuffs

Staying safe at work starts with wearing the right gear. Personal Protective Equipment (PPE) helps protect you from injuries and hazards, but only if it's worn and cared for properly. Likewise, your clothing should fit just right (i.e. not too tight or too loose) to avoid accidents. It's important to:

LEADERSHIP, CAREER READINESS AND GRIT:



HOW LOUISIANA 4-H SHAPES FUTURE PROFESSIONALS



Young people work on hands-on projects and learn to solve problems during their time in 4-H. Provided photo

■ MEGGAN FRANKS, ASIA DELASBOUR, CHRISTINA ZITO-HEBERT, SHELLY KLEINPETER, MADELINE SMITH AND MAYAR NICKOLS

IN LOUISIANA, 4-H isn't just about blue ribbons. For thousands of youths across the state, it's also where they learn how to lead, communicate and, perhaps most importantly, keep going when things get hard. A five-year look at Louisiana's 4-H Honor Cord program shows that teens involved in 4-H graduate with more than memories and awards. They leave with real-world readiness — and grit.

The Louisiana 4-H Honor Cord program recognizes high school seniors who demonstrate sustained commitment to 4-H. To earn the cord, youth must participate in 4-H for at least three years and complete at least one state-level activity. As part of the application, seniors are asked to reflect on what they learned through their 4-H experiences. Their answers tell an important story about perseverance.

Over the past five years, more than 2,000 Louisiana 4-H seniors have submitted reflections describing how 4-H shaped their growth. When those responses were analyzed, eight key areas of career development appeared repeatedly: leadership, communication, responsibility, life skills, personal growth, community engagement, career exploration and grit. In other words, young people consistently described 4-H as a place where they learned not just what to do, but how to approach life.

WHAT IS GRIT?

Research describes grit as a combination of perseverance and passion for long-term goals. It's the ability to keep working when things get difficult, to push through setbacks and to stay committed over time. When reviewing the 4-H reflections, that idea surfaced frequently. 4-H youth described working hard, sticking with projects, overcoming obstacles and pushing themselves to improve.

SOME CLEAR THEMES EMERGED IN THE REFLECTIONS:

Overcoming challenges

Youth described facing difficult projects, competitions or responsibilities and learning how to work through them.

Commitment to long-term goals

Many participants described staying dedicated to projects over multiple years, including raising livestock, leading clubs, completing service projects or preparing for competitions.

Learning through failure

Several reflections emphasized learning from setbacks and continuing forward rather than quitting. One 4-H member wrote, "4-H taught me to keep trying even when I failed." Another reflected on the discipline they developed over years of participation: "I learned to stick with my projects, even when they got tough."

BY THE NUMBERS

To better understand the themes in the reflections, responses were coded and grouped into major categories. The results provide a clear snapshot of how youth believe 4-H prepared them for life after high school.

The most frequently mentioned area was professional skill development, which included communication, teamwork, public speaking and problem-solving. Many students described learning how to present ideas, work with peers and organize projects.

Leadership followed closely behind. Nearly half of participants said 4-H helped them develop leadership and responsibility through roles such as club officers, committee leaders and project mentors.

Youth also frequently connected their experiences to future career goals. Many described how 4-H helped them explore professions, build resumes and prepare for college or the workforce. But woven throughout these responses was another powerful theme: perseverance. Of all reflections, nearly 1 in 10 youth explicitly described experiences that built grit and persistence.

TEACHING GRIT:

■ V. TODD MILLER



Curstyn Oncale



Shaohannah Martin

4-H'ERS LOOK BACK AT IMPACTFUL LESSONS

..... *Curstyn Oncale*

A 2024 graduate of Thibodaux High, Oncale attends LSU and majors in agricultural and extension education with a concentration in teaching in formal education.

What skills did you learn from 4-H that are useful as a young adult?

4-H taught me many skills that I use as a young adult, especially confidence in public speaking, communication and even cooking skills. It also helped me learn responsibility and how to work with people from different backgrounds. I'm thankful for everything 4-H taught me because it played a big role in shaping who I am today and gave me skills I know will continue to benefit me in the future.

How did 4-H challenge you?

4-H challenged me to step outside of my comfort zone in the best way. When I first started, I was shy and not very confident speaking in front of others. Through competitions, leadership opportunities and meeting new people, I was pushed to grow and try things I wouldn't have done otherwise. Over time, those challenges helped me become much more confident and comfortable in myself, and I'm grateful for that growth.

Did your 4-H experience help you overcome any particular challenge?

Yes, 4-H played a big role in helping me figure out what I want to do in the future. Through opportunities like leadership roles, showing rabbits and working with others, I was able to discover my interests and strengths. Those experiences helped me realize how much I enjoy teaching, communicating and working in agriculture. 4-H helped guide me toward my goal of becoming an agricultural education teacher, and I'm very thankful for the direction it gave me.

..... *Shaohannah Martin*

A 2023 graduate of Raising Arrows Christian Academy, Martin attends LSU and majors in animal sciences with a concentration in animal production and a minor in youth development and extension.

What skills did you learn from 4-H that are useful as a young adult?

I think the biggest skill I learned was time management. By learning how to manage my time in high school, I was able to navigate college more successfully. It made the transition to college smoother, and I gained more confidence in myself.

How did 4-H challenge you?

I think the biggest challenge it gave me was learning responsibility. You're responsible for your livestock projects and being able to understand that raising a project that is completely dependent on you really helped me understand the importance of consistency and just showing up and taking care of my animal. No one is going to be there holding your hand.

Did your 4-H experience help you overcome any particular challenge?

I was a really shy girl growing up, and by taking on leadership opportunities, I was able to build a stronger foundation for myself, be more confident and talk to people to give presentations, be quick on my feet and overall become a better communicator and public speaker.

V. Todd Miller is a writer, editor and photographer in LSU AgCenter Communications.

...➤ TOP SKILLS YOUTH SAY THEY GAINED THROUGH 4-H

Professional skill development – **65%**

Leadership and responsibility – **47%**

Life and career preparation – **38%**

Community engagement – **37%**

Confidence and personal growth – **21%**

WHY IT MATTERS

In today's workforce, technical skills matter. But so do persistence, adaptability and the ability to learn from failure.

Employers consistently rank qualities such as communication, teamwork and problem-solving among the most important skills for new hires. Just as important are traits like reliability, determination and being resilient. These are exactly the kinds of habits young people described learning through Louisiana 4-H.

Through hands-on projects, mentorship from volunteers and opportunities to lead and compete, 4-H provides something many young people don't always experience elsewhere: real responsibility. Participants plan meetings. They raise animals. They present projects. They lead teams. They serve their communities. And sometimes they fail. But they also learn how to try again. One student wrote: "4-H showed me how to persevere when things don't go as planned." And another wrote, "Through 4-H, I developed the determination to see things through."

LOOKING AHEAD

Louisiana 4-H and the 4-H agents across Louisiana do more than teach practical skills. They create environments where young people are encouraged to try, fail, learn and grow. When Louisiana youth are supported, challenged and believed in, they develop the confidence to lead and the perseverance to keep going. In other words, they develop grit. This is exactly the kind of preparation today's young people, and tomorrow's workforce, need.

Meggan Franks is an assistant professor for extension at LSU AgCenter LaHouse Research and Education Center. Asia Delasbour, a graduate student at the University of Maryland, was previously an LSU College of Agriculture student in the department of Agricultural Extension Education and Evaluation. Christina Zito-Hebert is the college and career readiness specialist for Louisiana 4-H Youth Development. Shelly Kleinpeter was the creative content manager for LaHouse and is now the social media coordinator for LSU AgCenter Communications, and Madeline Smith and Mayar Nickols are student workers at LaHouse.



In 4-H clubs, young people learn to build with their hands, working on projects such as this wind-measuring instrument. Provided photo



4-H clubs teach the importance of a strong work ethic during service projects and hands-on activities. Photo provided by Louisiana 4-H Youth Development



LAHOUSE STUDIES FLOODING TO EDUCATE, PROTECT LOUISIANANS

■ SHELLY KLEINPETER AND MD ADILUR RAHIM

LOUISIANA'S IDENTITY is shaped by its many waterways. The Mississippi River, the Atchafalaya Basin, extensive bayou networks and thousands of miles of wetlands shape both our economy and culture. Along the southern edge, the Gulf brings economic opportunity through fisheries, shipping and energy production.

The prevalence of water brings economic opportunities and risks to the state. Louisiana's low-lying topography, heavy rainfall patterns and frequent tropical systems lead to one of the highest flood risks in the country. Annual rainfall averages more than 60 inches statewide, with some regions receiving significantly more during extreme events.

The Louisiana State Hazard Mitigation Plan revealed that flood losses in the state could reach \$3.6 billion

annually by 2050. Without proactive measures to safeguard citizens and essential systems, flooding will continue to be a large financial burden to the state. The LSU AgCenter's LaHouse Research and Education Center is a unique facility on LSU's Baton Rouge campus displaying research-based practices and approaches to building homes more resilient to wind and flood. With more than 250 exhibits, LaHouse provides homeowners, home building professionals, insurance professionals and policymakers strategies to reduce the risk of wind and flood on homes. LaHouse also offers a variety of youth outreach programs that help children understand emergency preparedness, energy efficiency and STEM (science, technology, engineering and math) concepts through engaging, age-appropriate lessons.

LESSONS FROM PAST FLOODS

Major events like hurricanes Katrina, Rita, Gustav, Isaac and Ida demonstrate the recurring and widespread nature of Louisiana's flood vulnerability. Importantly, many damaged properties were located outside of Special Flood Hazard Areas, the zones traditionally associated with mandatory flood insurance requirements.

In Louisiana, flooding is not confined to coastal communities as heavy rains and saturated soils can lead to pluvial floods, commonly referred to as flash flooding. For agricultural producers and rural landowners, flooding impacts homes, equipment, storage facilities, livestock operations and cropland.

ABOVE: Following the August 2016 flood in south Louisiana, Cameron Parish 4-H'er Alanah Theriot, 17, swings a sledgehammer to dismantle a flood-damaged counter in a workshop at a Denham Springs home. Photo by Olivia McClure

This year marks the 10th anniversary of the 2016 flood, a multiday rain event that caused severe, widespread disruption and damage across the state. Louisiana Economic Development estimates that 109,000 housing units experienced flooding, resulting in an estimated \$3.8 billion in residential property damage and 20,000 businesses disrupted. Agricultural losses reached just over \$110 million. The total damage estimated for the state was \$8.7 billion.

FLOOD RISK IS STATEWIDE

Understanding that flood risk is statewide is essential for improving insurance literacy and mitigation adoption. Flood insurance remains one of the most important financial protection tools available for homeowners and agricultural property owners to protect themselves. Improving public understanding of flood insurance is a major focus of research and outreach efforts at LaHouse.

EVIDENCE-BASED BUILDING GUIDANCE

LaHouse serves as a living laboratory and demonstration center for resilient, flood-smart construction. Through applied research and extension programming, LaHouse evaluates elevated building designs, flood-resistant materials and cost-effective mitigation strategies tailored to Louisiana conditions now and in the coming years.

In 2024, LaHouse research contributed significantly to the American Society of Civil Engineers' new technical standard, ASCE/SEI 24-24. According to LaHouse's research, 40% of buildings were at risk of flooding in 50 years under previous building codes. Rather than a blanket requirement, this new standard considers multiple factors that influence a property's individual flood risk to determine the minimum first floor height. In addition to assisting with the standard, the LaHouse team created a free webtool to help local floodplain managers and code enforcement officials enforce the standard. It is anticipated that this new standard will reduce

flood insurance premiums for residents in addition to improving the safety of homes across the country.

Key practices include elevating structures above base flood elevation (BFE). This means that the first floor of homes is above what floods are anticipated and therefore more protected from flooding. Additionally, flood-damage resistant materials like specific membranes, lumber or insulation can withstand floods better and make the repair and rebuilding process easier.

For agricultural structures, strategic placement of equipment, elevating critical systems and water-resilient design can reduce downtime and recovery costs. By translating building science into practical guidance, LaHouse helps homeowners and builders make informed decisions that align with both safety and financial resilience.

BUILDING A MORE INFORMED LOUISIANA

Flooding will remain a challenge for Louisiana, and flood insurance will continue to be a large financial burden for many Louisiana families and producers. Improved risk literacy, research-informed construction practices and educated insurance decisions can significantly reduce long-term losses.

LaHouse research suggests that proactive mitigation is far more cost-effective than post-disaster recovery. Through research, outreach and partnerships across state agencies and communities, LaHouse continues working to ensure that people have the knowledge and tools needed to live and build more safely in Louisiana.

Shelly Kleinpeter was the creative content manager for LaHouse and is now the social media coordinator for AgCenter Communications. Md Adilur Rahim is an assistant professor for research at LaHouse.





This year marks the 10th anniversary of the 2016 flood, a multiday rain event that caused severe, widespread disruption and damage across the state. LSU AgCenter file photo



In the aftermath of the August 2016 flood that struck south Louisiana, 4-H'ers helped gut damaged houses. Cameron Parish 4-H'ers Kailey Murrell, left, and Hannah Doucet dump a wagon full of discarded drywall and insulation, adding to an ever-growing pile of flood-damaged items outside the Denham Springs, Louisiana, home they helped clean. Photo by Olivia McClure

PUBLIC ENGAGEMENT AND FLOOD INSURANCE LITERACY

A key contributor to this work is Md Adilur Rahim, assistant professor of research at the LaHouse Research and Education Center. Rahim's research focuses on flood insurance, risk communication and policy implications. His work with the Coastal Protection and Restoration Authority (CPRA) helps state agencies understand how coastal master planning efforts will impact flood insurance pricing. He also worked with Louisiana Sea Grant to complete a flood insurance literacy project which produced multiple extension publications and resulted in a statewide education campaign.

In addition, Rahim is exploring the development of agentic artificial intelligence tools and decision-support platforms to help residents, policymakers and builders better understand flood risk and the benefits of risk mitigation. The integration of hazard modeling and insurance data into user-friendly interfaces aims to provide accessible, actionable knowledge to those who need it.



Md Adilur Rahim,

assistant professor of research at the LaHouse Research and Education Center.

Provided photo



Concordia SPIN Club members prepare air fried calas, a Louisiana Farm to School Program Harvest of the Month dessert recipe using Louisiana rice.

Photo by Cecilia Stevens

FARM TO FORK:

IMPLEMENTING THE GROWING MINDS TOOLKITS WITH 4-H SPIN CLUB

■ CECILIA STEVENS

FARM TO FORK is an apt description of Concordia Parish 4-H's implementation of the Growing Minds Toolkit. The toolkit, developed by the LSU AgCenter's Seeds to Success: Louisiana Farm to School Program alongside 4-H leadership, is used by 4-H agents to regularly expose students to Louisiana agriculture, nutrition education and locally grown foods.

The Growing Minds Toolkit was developed in 2023 through a partnership between Louisiana 4-H and Seeds to Success to provide consistent, high-quality programming that can be used year-round by 4-H youth development professionals.

Designed to highlight seasonal Louisiana Harvest of the Month (HOM) items, the toolkit contains a fact sheet, lesson plan, recipe, coloring sheet, activity sheet and newsletter that celebrate a specific HOM while increasing students' understanding of agriculture systems across the state.

The Growing Minds Toolkit was piloted by Louisiana 4-H agents during the 2024 school year. Concordia Parish 4-H agent Paige Pirkey was one of the pilot participants. She used the toolkits to launch a Special Interest (SPIN) Club in September 2024 and received a \$500 Excellence in Teamwork award from the LSU AgCenter to begin the program.

Pirkey partnered with Concordia Parish's entire extension team as well as local farmers to enhance the agricultural, nutritional experiences and learning opportunities for students. Community members also became involved, offering site tours of farms and livestock production facilities as well as providing



Concordia SPIN Club members taught a tomato lesson using Seeds to Success materials as part of Concordia Fall Garden Day held in September 2025.

Photos by Cecilia Stevens

visits from produce growers and livestock producers. The Concordia Growing Minds SPIN Club was so successful that it remained active during the 2025 school year.

The SPIN Club meets each month for two hours, during which 4-H'ers learn about the production aspect of the Louisiana commodities and participate in lessons that incorporate agricultural product history and production requirements. The focus then shifts from farm to fork as 4-H'ers prepare and taste test Louisiana Harvest of the Month recipes, an initiative of Seeds to Success.

Concordia SPIN Club members prepared recipes using rice, citrus, greens, squash, strawberries, herbs, okra, catfish, crawfish and root vegetables. Based on student interests, the club expanded the program to include bread making, garden planning and garden growing skills.

Feedback suggests that the program is truly connecting the farm to the fork for families in Concordia Parish. Savannah LaPrarie's two daughters participated in the okra lesson and came home asking to prepare smothered okra and tomatoes for the rest of their family.

"They would never have looked at okra before, much less tried it," LaPrarie said.

Monique Bryant, whose children prepared herb butter, zucchini boats and fried rice through their participation in the club, echoed a similar sentiment.

"I am amazed that they not only wanted to eat this food but also wanted to be the ones to cook it for our family," Bryant said.

Regular participation in the taste tests is actively driving students to be more open to new culinary adventures and willing to try unfamiliar foods.

When participating in a taste test, students sample a prepared recipe and are given three voting choices: "I loved it," "I liked it" or "I tried it."

According to Pirkey, student voting has shifted over the last two years; initially, most students cast votes for "I tried it." Now, in year two, students who are participating in the taste tests are more likely to say they "loved it" or "liked it."

"I think this shows a growing willingness to expand their local food world," Pirkey said.

Pirkey is already making plans for the 2026 school year with a kick-off event with local producers at the second Concordia Parish Fall Garden Day as well as an exploration of even more Louisiana products and Harvest of the Month recipes.

"Farm to fork, production to eating, that's what we are learning and loving about the Growing Minds SPIN Club," Pirkey said.

Cecilia Stevens is an LSU AgCenter Extension associate with Seeds to Success: The Louisiana Farm to School Program.

SEE INSIDE

LSU AgCenter animal science experts collaborate with cattle producers at the Choctaw model farm to study regenerative ranching systems. This form of agriculture emphasizes building soil health and forage productivity to produce resilient farms and animals.

SEE PAGE 9.

Research at the LSU AgCenter Hammond Research Station develops solutions to soak up stormwater with features such as rain gardens, which offer aesthetically pleasing ways to support sustainable landscapes.

SEE PAGE 20.

An innovative digital teaching curriculum helps small food processors and food workers learn about federal food safety rules by personalizing the instruction. LSU AgCenter food safety experts worked with colleagues across the country to create the interactive tool.

SEE PAGE 24.



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