



Entomology

NEWSLETTER



College of
Agriculture

2024

News from the LSU Department of Entomology

FROM THE DEPARTMENT HEAD

Alumni, supporters and friends of LSU Entomology,

This year's newsletter is dedicated to the memory of Dr. Thomas Eugene (Gene) Reagan, who passed away on Dec. 14, 2023. Dr. Reagan was a faculty member in the LSU Department of Entomology for 46 years, from 1977 until his passing. He was an internationally recognized expert on integrated pest management (IPM) and in particular was an authority on the sustainable management of insect pests of sugarcane. Dr. Reagan published almost 150 refereed papers and book chapters and almost 250 non-refereed articles during his career.



Dr. Thomas Eugene
"Gene" Reagan

Among the many highlights of his career was his service as Subject Matter Expert and Liaison to the Environmental Protection Agency, Office of Pesticide Programs, for the Entomological Society of America. He was an outstanding mentor for his students, many of whom went on to successful careers in academia and industry. A few days after he passed, we received word that he had been selected for the IPM Hall of Fame award by the Southern IPM Center. He had a substantial influence on the LSU Department of Entomology through his research, teaching, leadership and mentorship, and we also remember his persistence and courage in the face of serious health challenges. He will be sorely missed by his friends and colleagues.

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Christine Gambino checking cover crops. Photo by Blake Wilson

Climate Resilient Innovations for Sustainable Production of Rice (CRISP-Rice)

Mike Stout, Blake Wilson and Christine Gambino

Lead Investigator: Dr. Prasanta Subudhi, School of Plant, Environmental and Soil Science

Climate Resilient Innovations for Sustainable Production of Rice (CRISP-Rice) is a \$10 million, multi-state, multi-institutional and multi-disciplinary project funded by the U.S. Department of Agriculture Sustainable Agricultural Systems grant program. Over 20 principal investigators (PIs) are involved. The overall goal of CRISP-Rice is to enhance the profitability and sustainability of rice production in the southern U.S., considering the challenges posed by changing climatic conditions. The project aims to increase the sustainability of rice farming systems using innovative climate-resilient technologies.

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In the CRISP-Rice project, a significant portion of the research is dedicated to entomology. Leading this crucial component are Drs. Michael Stout and Blake Wilson, along with a team of dedicated graduate students, Jyoti Sharma, Danyal Khan and Laila Santos.

The entomology portion of the CRISP-Rice grant is centered on developing cost-effective tactics for managing insect pests in Louisiana rice. This is of paramount importance as insects significantly impact the yield and quality of the crop. The team is focusing on key pests such as the rice water weevil (*Lissorhoptrus oryzophilus*) and a complex of stem borers (primarily *Eoreuma loftini*), which attack rice roots and stems, respectively. A panel of

diverse genotypes will be screened for resistance to rice water weevil and stem borers in field and greenhouse trials. The molecular genetic basis of the insect-resistant phenotypes will be deciphered using genomic and metabolomic tools. Highly resistant genotypes will be retained in rice breeding programs for development of insect-resistant cultivars. Moreover, research will be conducted to determine how to best integrate resistant varieties into a multi-tactic management program.

Pls Stout and Wilson will also evaluate the economic returns on insecticidal seed treatments in field trials conducted at five research stations in rice-growing states for judicious

use of chemical control strategies. Trials will evaluate insecticides alone and in combinations. Optimal seed treatments will be developed for each study region. Results from these studies will be used for the development of seed treatment selection guides to assist in grower decision making.

Another member of our department is featured in this grant. Christine Gambino is the extension associate for the CRISP-Rice project. She plays a key role in translating research into practical application. She organizes meetings, creates print and digital content, and ensures the project's benefits reach farmers, consultants and researchers. A major project Gambino is working on is creating an immersive summer

experience, Camp CRISP, for high school students in the Baton Rouge area. She will be exposing them to various areas of agricultural careers available through the AgCenter. Her main goal is to equip stakeholders with the skills to use new climate-smart agriculture tools and technologies. Gambino is also getting her master's degree in entomology under Drs. Stout and Wilson researching the effects of soil health on insect populations in rice.

Our team of rice entomologists are focused on enhancing the profitability and sustainability of rice production in the southern U.S. through innovative climate-resilient technologies. CRISP-Rice research and extension activities will be continued through 2026. ■

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Dr. Reagan's career epitomized the mission of the LSU Department of Entomology, to provide innovative solutions to the insect-related problems faced by Louisiana and the world. This newsletter details some of the department's contributions to the well-being of Louisiana in 2023.

The productivity of our faculty, staff and students remained strong in 2023. Entomology faculty authored or co-authored more than 40 refereed articles and book chapters. Our faculty with extension responsibilities gave dozens of presentations to their stakeholders. Entomology faculty were principal investigators (PI) or co-PIs on grants totaling more than \$6 million. Several of our faculty were recipients of prestigious awards. In addition to Dr. Reagan's IPM Hall of Fame award, Dr. Rodrigo Diaz led a team that was awarded the LSU AgCenter Tipton Team Award, Dr. Kristen Healy became the President of the American Mosquito Control Association, Dr. Fangneng Huang was recognized as the recipient of the LSU AgCenter Doyle Chambers Research Award, Victoria Bayless was named an honorary member of The Coleopterists Society, and I was the recipient of the Excellence in Integrated Pest

Management Award by the Southeastern Branch of the Entomological Society of America. Eleven students in the department won awards for their presentations at scientific meetings. We welcomed one new faculty member in 2023, Dr. Honglin Feng, whose areas of responsibility will include research and teaching related to insect physiology. We expect to add at least two new faculty members in 2024.

As we reflect on these accomplishments, we are grateful for the opportunity to serve the citizens of Louisiana, and we look forward to another successful year in 2024. We appreciate the interest and support of our alumni and friends, and we welcome opportunities to visit with you by email, phone, remote conference, or, even better, in person. Suggestions for improving our programs are always welcome. Finally, if you would like to donate to support any of our programs, details for doing so can be found in this newsletter.

Again, the Department of Entomology sincerely appreciates your support of our efforts.

Michael J. Stout ■

2023 Entomological Society of America Southeastern Branch Award for Excellence in Integrated Pest Management

This award recognizes outstanding contributions to integrated pest management (IPM) in North America and U.S. possessions. The 2023 award was given to Dr. Michael Stout, head of the LSU Department of Entomology.

Dr. Stout received his Bachelor of Arts in biological sciences from the University of California, Berkeley, and a Ph.D. in entomology from the University of



Dr. Michael Stout

California, Davis. His dissertation research was an investigation into the mechanisms of induced resistance in tomatoes.

Dr. Stout began his career in the Department of Entomology at Louisiana State University as an Assistant Professor in 1997. His research interests at LSU include the biology and management of insect pests of rice, the use of host-plant resistance in IPM, and the importance of phenotypic plasticity in pest management.

In his role as rice entomologist for the LSU AgCenter, Dr. Stout worked closely with rice growers to

integrate the use of plant resistance, insecticides and cultural practices against rice pests.

He has taught a course on host-plant resistance at LSU for more than 25 years and has published approximately 130 refereed journal articles and book chapters and more than 150 technical and extension articles and reports.

In 2016, he assumed the position of head of the LSU Department of Entomology.

HELP US TO ENSURE EXCELLENCE IN ENTOMOLOGY

While the department receives monetary support for its core research, extension and teaching programs, private financial support is vital for enhancing our existing programs, providing additional financial support for our students and beginning new initiatives. Please consider contributing to help support our programs.

You may help to support the Entomology Department by donating to one of the funds below:

- #100162 – Entomology Development Fund
- #100166 – Entomology Research Support Fund
- #104126 – Extension Entomology Development Fund
- #104131 – Louisiana State Arthropod Museum Fund
- #104133 – Entomology and Alternate Uses
- #104134 – Integrated Pest Management Research Fund
- #104135 – Arthropod Pest Management Program Support Fund
- #105260 – Louisiana Mosquito Control Association Endowed Scholarship

Donations can be made by accessing the LSU Foundation site at www.lsufoundation.org/give or by sending a personal check made out to the LSU Foundation with a letter stating which fund you would like to donate to. Address the letter to:

Entomology Department
404 Life Sciences Building
LSU Campus
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Strengthening communities, enhancing awareness, expanding outreach

Over the past year, the LSU Department of Entomology has been involved in many extension and outreach activities. These initiatives, led by dedicated faculty, graduate students, staff and other collaborators, have enhanced insect awareness, pest identification and improved management efforts while also strengthening community bonds within Louisiana and expanding our reach both locally and nationally.

Since launching at LSU, the commitment to streamlining and updating the Insect ID program has yielded significant results. Over the past year, the program received and responded to more than 300 inquiries for insect identification and management. This number is more than double from the previous year, and the team has been instrumental in assisting residents, pest control operators, parish county agents and state employees with pest identification and control recommendations. Notably, bed bugs, ant identification and cases of delusory parasitosis topped the list of inquiries. This was undertaken as a collaborative effort by experts such as the Louisiana State Arthropod Museum Curator Victoria Bayless and Drs. Aaron Ashbrook, Chris Carlton, Karen Sun, Kristen Healy



Children look at insects during Bug Day, an outreach event held at an elementary school. LSU AgCenter photos

and Mike Stout. The efforts regarding insect identification are driven by the volume of requests received and in turn, guide extension training, articles, fact sheets and other endeavors. For any insect identification requests, visit the Insect ID portal at <https://bit.ly/36c4awm>.

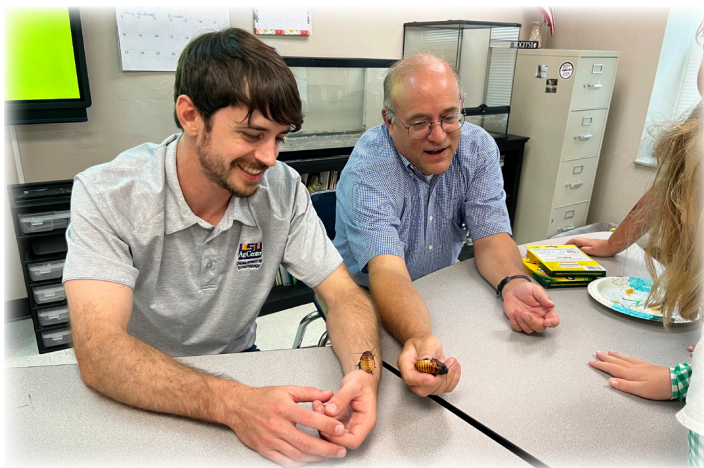
The LSU Department of Entomology has actively contributed to extension publications, including articles on leaf mulch benefits, red imported fire ants, crane flies, love bugs, tawny crazy ants and many other commonly encountered Louisiana

fauna. These articles are often featured in “GNO Gardening,” the Bug Biz series or LSU AgCenter webpages. These resources aim to support Louisiana residents with information on beneficial insects and sustainable pest management practices and to educate the public on various entomological topics. Efforts to provide residents with up-to-date content resulted in the production of an updated version of the Louisiana Insect Pest Management Guide which is regularly updated by LSU entomology faculty and provides specific pest management information for

pests of certain crops, under the guidance of Dr. James Villegas. Similarly, the 4-H Insect Identification Study Guide was updated and led by Victoria Bayless. These updates to the 4-H Insect Identification Study Guide will ensure that valuable resources for 4-H members and homeowners are available.

Insect identification requests and public interactions lead to outreach events that the department offers throughout the state. For example, in collaboration with LSU

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Drs. Aaron Ashbrook, left, and Michael Stout show live insects to students at an outreach event.



Children get an up-close view during Bug Day.



Bandana Shrestha greets young students at an elementary school Bug Day.



Several members of LSU's Department of Entomology volunteered at Insect Day at the University of Louisiana-Lafayette Science Museum. They included, bottom row from left, Jyoti Sharma, Emily Benoit, and Keyla Pruett; and top row, Row Danyal Khan, Santosh Bhandari, Bandana Shrestha and Anjana Duwal.

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AgCenter parish agents, the department provides basic entomological training to Master Gardeners. This presentation covers basic entomology and essential insects for gardeners, emphasizing the importance of maintaining beneficial insects and managing pests in an ecological way. Additionally, engaging with the community through the AgMagic event, which thousands of school-aged children attend, has always been a great success. The weekend portion of the event features the popular cricket spitting

contest invented by Purdue Universities' Dr. Tom Turpin. This competition features frozen dead crickets that are spat out of a person's mouth to see who can send the cricket the farthest. Believe it or not, it seems that the adults end up having more fun with it than the participating kids. AgMagic also features many pinned insects displayed in cases, shows live insects under microscopes, provides an up-close encounter with various species and exhibits specimens from the live insect zoo. There are also exhibits by the LSU

entomology research faculty, Baton Rouge Mosquito Abatement and Rodent Control Board and Fluker's Farms to show how wide an impact insects have on our everyday lives.

The department's volunteer efforts do not stop there, as they also include educating children about lepidopteran life stages. By participating in various outreach events, there is a great opportunity to inform children about the value and importance of insects. Participation in events like NOLA BugFest

and numerous media interviews showcased the department's commitment to public education. These engagements covered a range of topics from insect identification and control to the impact of weather on insect populations. Similarly, collaborations with the LSU research stations throughout the state provide extension and outreach trainings that are specific to the crops and plants of the station's focus.

Recognizing the importance of community bonds, the LSU Entomology

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Children take a closer look at some insects at the Louisiana State Arthropod Museum. Photo by Victoria Bayless



Above, LSU's Department of Entomology staffs a table at Insect Day at the University of Louisiana-Lafayette Science Museum.



Right, Dr. Aaron Ashbrook sports his best buggy attire at the NOLA BugFest.

At left, the Department of Entomology hosts a section at the LSU AgCenter's AgMagic annual event. Participating in 2023 are, from left, Schyler Lee, Anjana Duwal, Sara Navarro, Dr. Jeff Davis, Scott Lee, Santosh Bhandari and Jeff Murray.

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Club focuses on outreach and engagement while enhancing organizational structure and support for members. The LSU Entomology Club offers outreach and extension events to schools and other organizations that are quite successful. Recently, the club brought back the traveling insect zoo, featuring Madagascar hissing cockroaches and other insects, which has been a hit at outreach events. They also offer unique insect apparel for purchase to support the club.

Continued collaboration with the New Orleans Mosquito, Termite and Rodent Control Board has resulted in opportunities to present comprehensive updates to the Louisiana Mosquito Control Association, focusing on disease vectors and associated research in the state and the southern U.S. This has resulted in increased collaboration between organizations at outreach events,

like the NOLA BugFest, training events throughout the state for pest management professionals, and at in the Entomological Society of America's 2025 Southeastern Branch's meeting, which will be held in Baton Rouge.

Moving forward, the department remains committed to advancing entomological knowledge, fostering community engagement and addressing the insect-related needs of Louisiana residents. We look forward to another year of impactful extension, outreach, service and research. Feel free to reach out to the LSU Department of Entomology with insect and outreach requests. ■





Tyler Musgrove Earns 2023 Ray and Dorothy Young Graduate Student Award

Tyler Musgrove checking for disease in rice circa 2013. Photo by Rusty Elston

Tyler Musgrove was raised in Forest Hill, Louisiana. He enrolled at Louisiana Tech in 2013 where he majored in agricultural business and minored in plant science.

He began his master's program at LSU in the fall of 2019 where he joined the soybean entomology lab under Dr. Jeff Davis. His research focused on the role of insecticide seed treatments controlling the threecornered alfalfa hopper.

In the summer of 2022, Tyler joined Dr. Blake Wilson's lab and began the Ph.D. program. His role in the Wilson lab is to help enhance the sustainability of insect pest management in furrow-irrigated rice (row rice). This research focuses on improving the understanding of the pest complex and natural enemies associated with row rice. This is done partnering with growers across Louisiana in conducting field surveys. He is also looking at the role of insecticide seed treatments in row rice.



Tyler Musgrove

In reflecting on his path up to this point, Musgrove shared:

"I'd like to take a moment to mention where I'd like my journey to go post-graduation, but in order to do that I want to first touch on where I started. This is a picture of

me (above) about 10 years ago, disease-checking in rice. I would have been 16-17 in this picture. This was my second year as a field scout. But really in my first year I was more of a chauffeur/taxi-driver for the man behind the camera. That individual is Rusty Elston. Many of you are very familiar with Mr. Rusty. I first knew him as a deacon in the church I grew up in. I knew he was involved in agriculture but didn't know how. One day he approached me and asked, 'Hey, would you like to meet at the Burger King? I have a job proposition for you.' And the rest is history.

"I've had many opportunities but have never expressed it in person, but I have Mr. Rusty to thank for opening the path for me to learn to love agriculture, and specifically for the crop consulting profession – a profession that I hope to be successful in the future. I tell my story to illustrate the importance of – and I'm sure we've all heard it at least once – we need to get the youth involved. But even past that, you need to mentor them. If it weren't for the mentorship I had under Mr. Rusty, I don't believe I would have stumbled upon the path that would have led me to where I am today. For that, I'm incredibly grateful.

"On behalf of me, my wife Erika, and our two children, Olivia and Theodore, I once again extend my thanks to Mr. Ray and Mrs. Dorothy Young, the Louisiana Agricultural Consultants Association, the LSU AgCenter, my past and current advisors Dr. Davis and Dr. Wilson, as well as all those who contribute to and support this award."

STOUT-WILSON LAB



Members of LSU's Stout-Wilson Lab include, from left, Laila Santos, Schyler Lee, Carlos Wiggins, Carlos Rivera, Muhammad Danyal Khan, Tanner Hartley, Dr. Blake Wilson, Tyler Ray T. Musgrove, Christine Gambino and Jyoti Sharma. LSU AgCenter photos

■ **Schyler M. Lee** was born and raised in Baton Rouge, Louisiana. In 2021, she received her Bachelor of Science in animal science and a Bachelor of Science in plant and soil systems from Louisiana State University, with a minor in music. Lee completed her Master of Science under Dr. Jeff Davis. Her project was "Enhancing integrated management of sweet potato weevil (*Cylas formicarius elegantulus*)."

Lee graduated in December 2023 and joined the Wilson Lab in January 2024. Her Ph.D. project focuses on improving our understanding of the invasive Mexican rice borer (*Eoreuma loftini*) in Louisiana sugarcane, *Saccharum* spp. Her study aims to: (1) evaluate Mexican rice borer yield loss in commercial



sugarcane varieties, (2) examine population dynamics and the correlation of adult populations and larval injury, (3) quantify the spatial distribution of adults and larvae both in the field and on-plant, and (4) understand the relationship of the Mexican rice borer and its parasitoids. She plans to graduate in 2028 and pursue a career in agricultural extension.

■ **Jyoti Sharma** was born and raised in India. She completed her Bachelor of Science in 2018 from Punjab Agricultural University in agriculture. She then earned her Master of Science in entomology from the same school in 2020, working on the characterization of resistant *Rhopalosiphum*. In August 2021, she joined Dr. Michael Stout's lab to work on her Ph.D. project titled "Effect of the OsLsi1 mutation on rice defense against insect pests." Her research aims to investigate the mechanism behind silicon-mediated resistance at the biomechanical, biochemical and molecular levels. The objective of her project is to provide



more sustainable pest management strategies. She has a keen interest not only in advancing her research in this field but also in using her knowledge and skills to cultivate crops in an environmentally conscious way that aligns with the broader goals of sustainability.

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■ **Carlos J. Rivera** was born and raised in Juticalpa, Olancho, Honduras. He graduated from the Universidad Nacional de Agricultura in 2023 with a Bachelor of Science in agronomy. In the summer of 2022, he came to LSU where he worked as a short-term scholar in Dr. Witoon Prinyawiwatkul's laboratory, assessing the functional potential of teosinte (*Dioon mejiae*) seeds over the rheological, physicochemical, and sensory properties. In 2023 he joined Dr. Blake's laboratory as a graduate assistant, collaborating with the implementation of chemical control against sugarcane stem borers (*Eoreuma loftini*), monitoring the invasive species of apple snails (*Pomacea maculata*) across various aquatic environments, and assessing insecticidal control methods for managing wireworms (*Melanotus communis*) infestation in sugarcane. In the 2024, he started a master's degree under the supervision of Dr. Blake Wilson, focusing on building a foundation for the development of an effective apple snail (*Pomacea maculata*) management plan through the identification of key ecological factors influencing snail population density. Rivera anticipates graduating in December 2025. After his graduation, he aspires to pursue a Ph.D. degree in integrated pest management focusing on invasive species.



■ **Laila G. Araujo Santos** was born and raised in Brazil. She received her Bachelor of Science in agronomy from the Federal University of Lavras, Minas Gerais State, Brazil. Under Dr. Bruno Henrique Sardinha de Souza's supervision, she started working in an integrated pest management and resistance lab for two years. During this period, she was able to conduct two field-season experiments as well as lab oviposition and performance bioassays on the resistance of (*Coffea canephora*) cultivars to the coffee leaf miner (*Leucoptera coffeella*), a major pest of coffee crop in Brazil. In 2022, Santos came to the U.S. and spent six months working with plant-insect interactions and plant resistance, under supervision of Dr. Michael J. Stout at LSU. She went back to Brazil for one year, where she worked for Syngenta as a field assistant tech working on the Plinazolin project. She mapped pesticide resistance and the effectiveness of Plinazolin for pest control. Santos joined the Stout-Wilson Lab in 2024. Her Master of Science project focuses on plant-insect interactions. Her main goal is to find the key volatiles that rice plants and rice stink bugs (*Oebalux pugnax*) emit. She will be working to find new techniques for monitoring insects in the field such as remote sensing. She will graduate in 2026 and plans on pursuing her Ph.D.



■ **Muhammad Danyal Khan** was born and raised in Pakistan. He graduated from the University of Agriculture Faisalabad in 2020, majoring in entomology. Khan earned his Master of Science in entomology from the same school, on the resistance mechanism of pink bollworm (*Pectinophora gossypiella*). After graduation, he worked with the WWF-Pakistan, a leading environmental conservation organization, as a cotton specialist. In 2023, he came to LSU as a Fulbright scholar to get his Ph.D. with Dr. Michael Stout and Dr. Blake Wilson. He is exploring integrated approaches to host plant resistance, crop phenological modelling and toxicological studies for the management of Mexican rice borer (*Eoreuma loftini*). He plans to graduate in 2027 and pursue a career as an entomologist in industry.

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■ **Carlos J. Wiggins** was born and raised in Shreveport, Louisiana. He earned his Bachelor of Science in field and organismal biology from LSU Shreveport in 2018. Wiggins worked in the Diaz Lab at LSU's Baton Rouge campus in spring 2019, working on the identification and use of potential biological control (biocontrol) agents associated with invasive terrestrial and aquatic weeds. His project focused

primarily on identification and host specification of potential biocontrol agents associated with (*Conyza bonariensis*) and closely related plants in the family Asteraceae. Wiggins completed his Master of Science in 2021. His project was titled "Revealing the native status of *Conyza bonariensis*: specialization of insect herbivores associated with (*Conyza* and *erigeron* spp.) (Asteraceae) in Louisiana,

Texas, and Mississippi." After graduating, he continued to work on a project in the Diaz Lab testing the cold tolerance of salvinia weevils, (*Cyrtobagous salviniae*) from the northern, central, and southern geological regions of Louisiana. Currently, Wiggins is a research associate working with invasive apple snails (*Pomacea maculata*) in Dr. Blake Wilson's lab and plans to continue his career in academia.

■ **Tanner J. Hartley** was born in Baton Rouge, Louisiana, and raised in Dallas, Texas. He earned a Bachelor of Science in biochemistry from LSU in 2023. He joined Dr. Blake Wilson's lab in the fall of 2023, and he is pursuing a Master of Science in entomology. His master's project is assessing cold tolerance variations in geographically distinct Mexican rice borer (*Eoreuma loftini*) populations and modeling future North American range expansion. His experiments will focus on measuring the supercooling point, the critical thermal minimum, and characterizing the mortality rates of *E. loftini*. This data will be assimilated into the ArcGIS program to model the northern limit of *E. loftini* expansion. Hartley plans to graduate in 2025 and pursue a Ph.D. in Florida.



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■ **Christine Gambino** was born and raised in Slidell, Louisiana. She received her Bachelor of Science in plant and soil systems from LSU in 2021, where she was focused on sustainable agriculture. After graduating, Gambino started working in Dr. Michael Stout's entomology lab as a research associate. She worked with a lumber company looking to develop a new type of horticultural substrate from milling refuse. This project ended up moving to another research facility, and Gambino moved into a parasitology lab focusing on developing oysters (*Crassostrea virginica*) resistant to Dermo (*Perkinsus marinus*). After working with the oysters for six months, she accepted her current job back in the entomology department.



Gambino is the extension associate for the CRISP-Rice project. She plays a key role in translating research into practical application. She organizes meetings, creates print and

digital content, and ensures the project's benefits reach farmers, consultants, and researchers. She is also getting her Master of Science in entomology under Drs. Michael

Stout and Blake Wilson researching the effects of soil health on insect populations in rice. Gambino plans to stay in extension for the duration of her career.



■ **Tyler Musgrove** was born in Anchorage, Alaska, then his family relocated to his father's childhood home in Forest Hill, Louisiana, where he grew up. Musgrove received his Bachelor of Science in 2017 from Louisiana Tech University in agricultural business with a minor/concentration in plant science. He then came to LSU where he worked to elucidate the impact of neonicotinoid seed treatments against the hemipteran pest (*Spissistilus festinus*) (Say), the threecornered alfalfa

hopper in soybean, under Dr. Jeff Davis. Musgrove completed his Master of Science in the spring of 2022 and immediately began his Ph.D. program the following summer. His current work is to improve the sustainability of insect IPM in furrow-irrigated rice, as this system is relatively novel to Louisiana and requires additional scientific inquiry beyond what is known in traditional irrigated rice systems. He plans to graduate by winter 2025 and pursue a career in academia.

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■ **Kim Landry** was born and raised in Lacassine, Louisiana. He received his Bachelor of Science in animal science with minor agronomy in 1990 from McNeese State University. He then came to LSU and earned his Master of Science in vocational education in 1997. Landry has worked with the AgCenter in various roles since 1991. He was a 4-H agent for nine years before he switched jobs to an extension associate working with rice agronomy. He is now a research associate working at the H. Rouse Caffey Rice Research Station in Crowley under Dr. Blake Wilson. He is an integral part of making the research at the station come to fruition. He is deeply interested in plant-insect interactions and integrated management of insect pests of rice. He plans to continue his career in academia.



■ **Michael Stout** was born and raised in Northern California. He received his Bachelor of Arts from the University of California, Berkeley in biological sciences and his Ph.D. from University of California, Davis, in entomology. After working as a post-doctoral fellow at UC Davis, Stout came to LSU in 1997 where he has been a professor for 26 years. He is also Head of the Department of Entomology in the LSU AgCenter. His academic interests include plant-insect interactions, host-plant resistance, induced plant responses, and integrated management of insect pests of rice. He plans to continue his role in academia.

■ **Blake Wilson** was born and raised in Mandeville, Louisiana. He received his Bachelor of Science in 2009 from LSU in biology. In 2011, he earned his Master of Science in entomology and statistics, and in 2016, he obtained his Ph.D. in entomology. Wilson joined the LSU faculty in 2017 as a research/extension entomologist with responsibilities for sugarcane and rice insect management. He is an associate professor in the Department of Entomology. He has 15 years of experience in integrated pest management research in rice, sugarcane and other row crops. He has authored or co-authored 58 refereed research articles and obtained \$3.8 million in grant support. He has published 70 extension articles and presented his research at more than 400 grower meetings and conferences. He plans to continue his career in academia. ■





Meet Honglin Feng, assistant professor of insect physiology

I am a new assistant professor of insect physiology within the Department of Entomology. I received my bachelor's degree in plant protection, followed by a master's degree in agricultural entomology and pest control, both from Jilin University, China. Subsequently, I pursued and completed my Ph.D. in biology at the University of Miami, Florida, with Dr. Alex Wilson, working on insect symbiotic interactions with bacteria.

Prior to establishing my own research group at LSU, I worked as a postdoctoral associate with Dr. Georg Jander at Boyce Thompson Institute,



Honglin Feng

Cornell University. During this time, my research concentrated on exploring molecular mechanisms underlying insect and plant interactions and developing novel technologies toward agricultural pest control.

In my own lab, my ongoing research centers on insect/

bacterial symbiosis, insect/plant interactions and agricultural pest control. My research program is a marriage between basic and applied research methodologies, integrating computational and experimental approaches. In my lab, we aim to uncover the cellular and molecular mechanisms of miRNAs in regulating insect/bacterial symbioses and insect/plant interactions; and the application of miRNAs (and their target genes and/or metabolites) for integrated pest management.

Learn more about the lab at <https://sites.google.com/view/the-feng-lab/home>.

Victoria Bayless honored by The Coleopterists Society

The [Honorary Member of The Coleopterists Society](#) for 2023 is Victoria Bayless. The award recognizes devotion to the society and dedication to the discipline.

Bayless is the curator of the Louisiana State Arthropod Museum. She served as society councilor (2007–2008) and president (sequence, 2011–2016). She was also the creator of The Coleopterists Society booth at the Entomological Society of America in 2013.

Congratulations, Victoria!



Victoria Bayless served at the first booth of The Coleopterists Society in Austin, Texas, in 2013. Photo by The Coleopterists Society



BUSY BEES:

Graduate students author numerous Bug Biz articles

Chris Carlton

As of February 2024, 135 Bug Biz articles have been published and are now available on the LSU AgCenter website at www.LSUAgCenter.com/bugbizseries.

In addition, 10 articles have been submitted and are in production, and 36 more are scheduled preparation by graduate student authors enrolled in the special problems course dedicated to articles in the series. There is also a wish list of 90 target taxa for articles during the next three years that will serve as examples of taxa from most common families of non-marine arthropods found in Louisiana.

Anyone wishing to write or co-author new articles in the series can contact Chris Carlton at ccarlton@agcenter.lsu.edu for assistance with preparation and editing.



News from LSU Entomology Club

Throughout 2023, the LSU Entomology Club has continued its mission of promoting interest in entomology through a mix of social events and educational outreach. The club is primarily composed of graduate students in the Entomology Department, but undergraduate participation has been growing. The 2023-2024 officers are Allyson Martin Ewert, president; Christine Gambino, vice president and outreach coordinator; Ajana Duwal, treasurer; Jyoti Sharma, secretary; Alejandra Velez, social media; Bandana Shrestha, marketing; Emily Benoit, insect handler; Lauren Eckert, undergraduate representative; and Dr. Aaron Ashbrook, faculty advisor.

In the past year, members of Entomology Club have hosted educational booths at community events including the AgCenter Spring Garden Show, AgMagic, LSU Girls' Day at the Museum, University of Louisiana-Lafayette Insect Day and LSU Fall Fest. Through visiting Buchanan Elementary and Walker Elementary, the club inspired interest and excitement about insects in young students by leading hands-on learning activities. Members also participated in several entomological expeditions, including BREC Bioblitz, a group collection hike at Burden Gardens, and a black lighting event at the LSU Hilltop Arboretum. Other club events included making Mardi Gras jewel beetle masks, a spring crawfish boil, a fall tailgate for the LSU versus Auburn football game and a Halloween screening of "The Fly" (1986).



Helpers at the AgCenter Garden Show include, from left, Allyson Martin Ewert, Emily Benoit, Jyoti Sharma and Bandana Shrestha.



Members and friends of the LSU Entomology Club visited the Feliciana Preserve on Dec. 11 to celebrate the end of the semester with hiking, salamander hunting, burgers and a campfire. The group was hosted by Drs. Christopher Carlton, Dorothy Prowell and Brittany Owens. Salamander ecologist Maggie Keller, from Southeastern Louisiana University, joined the festivities. Participants included, bottom row from left, Bandana Shrestha, Christopher Carlton, Emily Benoit, Jyoti Sharma, Allyson Martin Ewert and Saumya Jain; and top row from left, Tanner Sparks, Rodrigo Diaz, Chiranjivi Sharma, Andrew Sanford, Tanner Hartley, Vanshika Jindal and Maggie Keller. Photos by LSU AgCenter

MASTER'S SCHOLARSHIP: Schyler Lee

Louisiana Agricultural Consultants Association scholarship recipient funded by Louisiana Land Bank

Schyler Lee earned the 2023 Louisiana Agricultural Consultants Association's master's scholarship funded by Louisiana Land Bank.

Lee was born and raised in south Louisiana with a strong work ethic and a deep appreciation of agriculture. She double majored in animal science and horticulture. She also marched piccolo in the LSU Golden Band from Tigerland, where she learned valuable leadership skills and received the Kayleigh Billings Memorial Scholarship. She



Schyler Lee earned the Louisiana Agricultural Consultants Association scholarship. Photo by Tyler Ray Musgrove

has served as a volunteer musician at St. John the Evangelist Catholic Church since 2015.

Professionally, she has immersed herself into as many agricultural disciplines as possible throughout the years. From landscape to sugarcane production, she is inspired to help producers in a hands-on way. After earning her master's degree, she hopes to become a well-respected crop consultant in this state. This goal was inspired after an internship with GreenPoint Ag in Louisiana, where she learned from Ryan Waguespack, Shawn Mayeaux, Faron Molaison and Neal Poche. She gained valuable field knowledge and skills in sugarcane, soybean, milo

and rice and worked to understand the complexity of precision agriculture and how it can be used in modern production. According to Lee, the more she learns, the more she finds herself asking bigger picture questions that have direct application. How can research influence a consultant's advice to a grower and make production most economical for them?

With her current and future findings, she hopes to reach Louisiana growers with information to aid management decisions and limit yield losses throughout the growing season.

STUDENT ARTWORK

"Golden Buzzing Symmetry"

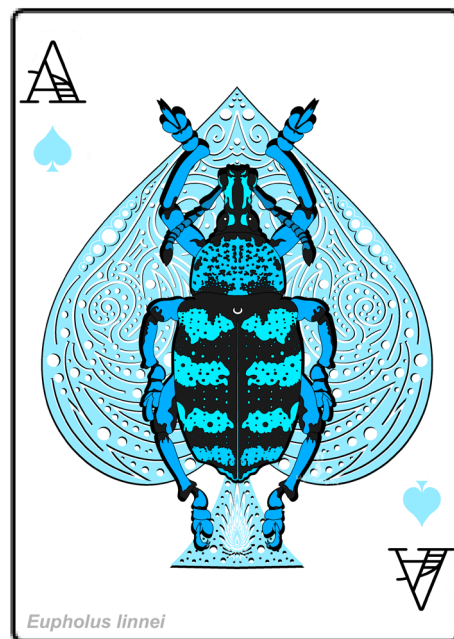
My acrylic painting celebrates the yellow jacket wasp's vibrant beauty. As an entomology student, I aimed to capture its essence and significance. It's a colorful addition to our department newsletter, inspired by my love for exploring yellow hues.



Bandana Shrestha (bandana9_)
Department of Entomology, M.S.

"*Eupholus linnei*: The Blue Banded Snout Weevil"

Eupholus linnei is a metallic blue/green weevil that has always fascinated me. Blue being my favorite color, and weevils being my favorite insect group, it was perfect to me. Members of the *Eupholus* genus, hailing from the island of New Guinea and Indonesia, are known to many locals as "the jewels of the forest," which I believe is a fitting title for such enchanting animals.



(Made in Adobe Photoshop and Procreate, February 2024.)

Alexia C. DeSoto
Department of Entomology, M.S.,
class of 2024



2023 ENTOMOLOGY AWARD WINNERS



Dr. Mike Salassi, left, and Dr. Matt Lee, right, presented the Kenneth W. Tipton Team Research Award at the 2023 LSU/SU Joint Annual Conference to, from left, Drs. Yadong Qi, Vinson Doyle, Jonathan Richards, Blake Wilson, Xuelian Meng and Rodrigo Diaz. Photo by Olivia J. McClure

95th Annual Meeting of the Southeastern Branch Entomological Society of America

March 2023, Little Rock, Arkansas

- **Schylar Lee** – First place, M.S. oral presentation.
- **Shucong Lin** – Second place, Ph.D. oral presentation.
- **Tyler Musgrove** – Second place, Ph.D. oral presentation.
- Entomology Games team, coached by Blake Wilson – Second place, Branch competition (advances to national games): **Joel Dubois, Allyson Martin, Tyler Musgrove, Ethan Doherty, Tanner Sparks.**

13th Annual LSU Entomology Department Graduate Student Symposium

Infographic

- **Jayvee S. Bruno** – Winner. How silicon soil amendments help the fight against insect pests? **Jayvee S. Bruno** and James Michael Villegas.

Poster Session

- **Hasim Hakanoglu** – First place. Lifespan and behavioral maturation of honey bee (*Apis mellifera*) workers expressing Varroa sensitive hygiene (VSH). **Hasim Hakanoglu**, Kate Ihle, Qian Sun.
- **Myriel Green** – Second place. Effects of Menadione on Food Consumption and Survival of the Formosan Subterranean Termite, *Coptotermes formosanus*. **Myriel Green**, Brendon Davis, Arjun Khadka, Qian “Karen” Sun.



The LSU Entomology Debate team, from left, Allyson Martin Ewert, Arjun Khadka, Tanner Sparks, Tyler Musgrove, Bandana Shrestha, Dr. Ethan Doherty and Coach Dr. Blake Wilson, won their debate on the topic “Should disclosure of Artificial Intelligence (A.I.) usage in scientific writing always be required?” and achieved second place overall at the ESA Annual Meeting in National Harbor, Maryland, in November 2023. Photo by Chiranjivi Sharma

3-Minute Oral Proposals (Masters and Ph.D.)

- **Vanshika Jindal** – First place. Assessing response of two biological control agents of the emerald ash borer to five species of ash trees. **Vanshika Jindal**, Todd D. Johnson.
- **Brandi Misiaszek** – Second place. Investigating the distribution, host range, and impact of the naturalized weevil *Ochyromera ligustri*: A potential biological control agent of invasive *Ligustrum*. **Brandi Misiaszek**, Amy Roda, Rodrigo Diaz.
- **Victoria Ayala** – Third place. Development of a real-time monitoring tool for detection of giant salvinia (*Salvinia molesta*) and improvement of the salvinia weevil (*Cyrtobagous salviniae*) biological control program across southern Louisiana. **Victoria Ayala**, David Kinsler, Rodrigo Diaz.
- **Christine Gambino** – Fourth place. Effects of soil health on pest resistance in rice. **Christine Gambino**, Lisa Fultz, Blake Wilson, Michael Stout.
- **Tanner Hartley** – Fourth place. Assessing cold tolerance variations in geographically distinct *Eoreuma loftini* populations and modeling future north American range expansion. **Tanner Hartley**, Blake Wilson, Michael Stout.

10-Minute Oral Presentations – Master’s

- **Santosh Bhandari** – First place. Can *Metarhizium* spp. Deter feeding by *Cylas formicarius elegantulus*? **Santosh Bhandari**, Sara Navarro, Chad A. Keyser, Jeffrey A. Davis.

See more, Page 17 ►

2023 ENTOMOLOGY AWARD WINNERS

Continued from Page 16

- **Bandana Shrestha** – Second place. Understanding the role of relative humidity in achieving sub-lethal mortality in bed bugs (*Cimex lectularius*) in combination with different temperatures. **Bandana Shrestha**, James A. Ottea, Qian Sun and Aaron R. Ashbrook.
- **Payton Floyed** – Third place. Influence of environmental conditions on shelter tube construction in the Formosan subterranean termite. **Payton Floyed**, Joseph McCarthy, and Qian Sun.

10-Minute Oral Presentations – Ph.D.

- **Allyson Martin Ewert** – First place. Engineered algae feed to bolster honey bee disease resistance. **Allyson Martin Ewert**, Alexander McMenamin, Victor Rainey, Daniela Adjaye, Vincent Ricigliano.
- **Tyler Musgrove** – First place. Improving IPM in Furrow-Irrigated Rice in Louisiana. **Tyler Musgrove**, James Villegas, Michael Stout, Blake Wilson.
- **Alejandra Velez Chavez** – Second place. Can insecticides improve soybean seed quality? **Alejandra Velez Chavez**, Jeffrey A. Davis.
- **Arjun Khadka** – Third place. Molecular characterization of foraging gene in the Formosan subterranean termite, *Coptotermes formosanus*. **Arjun Khadka** and Qian “Karen” Sun.

Entomological Society of America National Meeting

November 2023, National Harbor, Maryland

- **Shucong Lin** – Second place. Graduate P-IE: Behavior and IPM, 10-minute oral.
- **Hasim Hakanoglu** – First place. Graduate PBT: Physiology and Toxicology, poster.
- **Tanner Sparks** – First place. Graduate P-IE: Biocontrol and IPM 2, 10-minute oral.
- **Allyson Martin Ewert** – Second place. Graduate PBT: Apiculture, 10-minute oral.
- **Tyler Rae Musgrove** – First place. Graduate P-IE: Host Plant Resistance, 10-minute oral.
- **Jyoti Sharma** – Second place. Graduate P-IE: IPM – Field Crops, poster.
- **Paula Castillo** – Second place. On-demand Student

Competition, 10-minute oral.

Additional Awards

L.D. Newsom Memorial Graduate Student Award in Entomology

- Ethan Doherty – Ph.D.

John and Grace Roussel Graduate Fellowship Award in Entomology

- Allyson Martin Ewert – Ph.D.

2023 Louisiana Agricultural Consultants Association Scholarship

- Schyler Lee.

Ray and Dorothy Young Graduate Student Award

- Tyler Musgrove.

2023 Entomological Society of America Southeastern Branch Award for Excellence in Integrated Pest Management

- Michael Stout.

President of the American Mosquito Control Association

- Kristen Healy.

IPM Hall of Fame Career Professional Award

- Thomas “Gene” Reagan.

Coleopterists Society Honorary Member 2023

- Victoria Bayless.

Fangneng Huang received the **Doyle Chambers Research Award**. Huang is an entomologist whose research on insect resistance to *Bacillus thuringiensis* (Bt) in maize and cotton crops seeks to solve a problem with huge economic and environmental consequences for farmers throughout the world.

Ten scientists who have done tireless work investigating die-off of roseau cane in the Gulf of Mexico and an invasive scale insect as a contributing factor were named recipients of the **Kenneth W. Tipton Team Research Award**. They are entomologists **Rodrigo Diaz** and **Blake Wilson**; plant pathologists Rodrigo Valverde and Jonathan Richards; ecologists Andy Nyman, Jim Cronin, Yadong Qi and Tracy Quirk; systematic mycologist Vinson Doyle; and geographer Xuelian Meng. ■



2023 ENTOMOLOGY GRADUATES



Above, Erin Cloherty earned her Ph.D. in the fall of 2023. Photo by Javier Gallego. Right, Dr. Michael Stout and Dr. Jeff Davis, from left, are joined by spring 2023 entomology graduates Scott T. Lee, CJ Fellows and Garima Setia. Photo by Annabelle Lang



CJ Fellows, Ph.D. – Spring 2023

[Characterization of Antiviral Immunity, Host Virus Interactions, and Toxicity of Agrochemical Residues in the Western Honey Bee](#)

Advised by Daniel Swale

Scott T. Lee, Ph.D. – Spring 2023

[Evaluating the Pesticide-Induced Outbreak of Soybean Looper, *Chrysodeixis includens* \(Walker\) \(Lepidoptera: Noctuidae\), in Louisiana Soybean](#)

Advised by Jeff Davis

Garima Setia, M.S. – Spring 2023

[Investigating the Potential Role of Termites as Pathogen Vectors in the Decline of Ironwood Trees \(*Casuarina Equisetifolia*\) in Guam](#)

Advised by Claudia Husseneder

Schyler M. Lee, M.S. – Summer 2023

[Integrating cultivar resistance and entomopathogens for pest management of sweetpotato weevil, *Cylas formicarius elegantulus* \(Summers\)](#)

Advised by Jeff Davis

Korey Pham, M.S. – Summer 2023

[Evaluation of salvinia weevil establishment, dispersal, and environmental pressures impacting the giant salvinia biological control program](#)

Advised by Rodrigo Diaz

Tiago H. da Silva, M.S. – Summer 2023

[Susceptibility of *Spodoptera frugiperda* populations in the southern region of the U.S. to common Bt proteins and performance of a dual-gene resistant *Helicoverpa zea* strain on common pyramided Bt corn traits](#)

Advised by Fangneng Huang

Paula Castillo, Ph.D. – Summer 2023

[Morphological and Molecular Characterization of the Olfactory System in the Formosan Subterranean Termite](#)

Advised by Qian “Karen” Sun

Santosh Bhandari, M.S. – Fall 2023

[Optimizing Virulence and Understanding the Endophytic Colonization of *Metarhizium* spp. in Sweetpotato for the Control of *Cylas Formicarius Elegantulus* \(Summers\)](#)

Advised by Jeff Davis

Erin Cloherty, Ph.D. – Fall 2023

[Impact of area-wide and localized mosquito adulticide on insecticide susceptibility in populations of *Culex Quinquefasciatus* \(Diptera: Culicidae\) in New Orleans, Louisiana.](#)

Co-advised by Kristen Healy and James Ottea

Ethan Doherty, Ph.D. – Fall 2023

[Integrated pest management and behavior of stored grain beetles](#)

Advised by Blake Wilson

FACULTY ACTIVITIES

Aaron R. Ashbrook

Invited Presentations

- Louisiana Mosquito Research Update 2023. Louisiana Mosquito Control Association (LMCA). December 2023.
- Understanding and Controlling Several Louisiana Pest Ant Species. LSU AgCenter, New Orleans, Louisiana, City Park. December 2023 (virtual).
- Pesticide Labels and Safety. LSU Termite School Recertification. November 2023.
- German Cockroach and Management. The Bugman in Service Training, Baton Rouge, Louisiana. November 2023.
- Understanding and Controlling the Tawny Crazy Ant (*Nylanderia fulva*). Louisiana Pest Management Association, LSU AgCenter, Lafayette, Louisiana. October 2023.
- Bed Bug Biology and Management. Louisiana Pest Management Association (LPMA) Shreveport Certification Event. May 2023.
- German Cockroach and Bed Bug Research Update. Greater Baton Rouge Pest Control Association. April 2023.
- Using IPM to Improve Bed Bug Control. Inservice presentation with The Bugman Pest Control. February 2023.
- Controlling Red Imported Fire Ants and Tawny Crazy Ants. Landscape Pest Management Recertification Workshop. February 2023.
- Biology and Control of Red Imported Fire Ants and Tawny Crazy Ants. Louisiana Landscaping and Naturalist Association. February 2023.
- Understanding and Controlling Red Imported Fire Ants and Tawny Crazy Ants. Baton Rouge Pest Control Association. January 2023.
- Bed Bug Control. Baton Rouge Pest Control Association. January 2023.
- Research on How to Improve Pest Management. LSU Winter Institute. January 2023.
- Stored Product Pest Management. LSU Winter Institute. January 2023.
- Pest Ants in Louisiana: ID, Biology, and Control. LSU Winter Institute. January 2023.

Other Presentations

- Interview with BRProud, Hate ants? Here's how to keep them out of your home, work around them safely. October 2023.

- Interview with News Radio 710 KEEL, Louisiana Facing an Insect Infestation. September 2023.
- Interview with KATC3 ABC Acadiana's News, Exterminators in Lafayette say crickets are taking over. September 2023.
- Interview with The Eunice News, Cricket Crazy. September 2023.
- Interview with Louisiana Radio Network, Sudden surge of mole and field crickets in Louisiana due to dry conditions. September 2023.
- Interview with BRProud, Are ants looking for water in your home? Louisiana experts can help you get rid of the problem. August 2023.
- Interview with the Morning Fox Weather Broadcast, Mosquitos and Weather. August 2023.
- Interview with the Morning Fox Weather Broadcast, Insect Extremes and Weather. May 2023.
- Interview with AZ Animals, When Is Cockroach Season in Louisiana? April 2023.
- Interview with AAA Science, When female cockroaches lost their sweet tooth, courting males cooked up a new confection. March 2023.

New Committees

- Delusory Infestations Working Group.
- LMCA Operational Research and Awards Committees.
- Entomological Society of America Southeastern Branch 2024 planning committee.

New Grants and Contracts

- "Coordinated Training and Evaluation of Professionals and Pre-Service Students to Achieve an Integrated Workforce to Mitigate Community Vector-Borne Disease Risks in the Gulf Coast Region" Brass #5286; K23-1033 Sub-award. Argentine ant product study on speed of kill.
- SIPM Center Grant to create a working group with Drs. Santos Portugal at Mississippi State University and Anamika Sharma at Florida Agricultural and Mechanical University (FAMU). The project is titled "Surveying Termite Diversity in the Southern US Working Group," and it is for \$39,992. The goal of the grant is to provide training on termite alate and soldier identification, then survey termite diversity in the southern U.S. with a focus on Formosan subterranean termites. Afterwards, we will use the information gained from the survey, we will create a map of termite diversity in the southern U.S. region to help with proactive termite management.

FACULTY ACTIVITIES

New Collaborations (University, Industry, Other)

- Dr. Claudia Riegel, Director of New Orleans Mosquito, Termite, Rodent Control Board. She was awarded CDC Grant 1NUSOCK000638-01-0, which focuses on expanding vector capacity in the southern U.S. LSU Entomology, several other LSU schools, and other universities in the southern U.S. region collaborate on this project.
- Joined the Delusory Parasitosis Working Group (Southern Region IPM Center Award #2022-2759-02), led by Drs. Karen Vail and Nancy Hinkle.

Publications

- Ashbrook A.R. GNO Gardening October 2023, Ants' Quest for Water in Louisiana's Dry Conditions.
- Ashbrook A.R. and Chris Dunaway. GNO Gardening August 2023, Mosquitos in the Garden.
- Ashbrook A.R. GNO Gardening June 2023, Red Imported Fire Ants.
- Ashbrook A.R. GNO Gardening April 2023 edition, Pest Control Using Items Around the House.
- Ashbrook A.R., F. Huval, T.E. Reagan, and C.E. Carlton. Bug Biz: Peri-domestic cockroaches Part 1.
- Ashbrook A.R., F. Huval, T.E. Reagan, and C.E. Carlton. Bug Biz: Peri-domestic cockroaches Part 2.
- Ashbrook A.R. GNO Gardening January 2023 edition, A Beneficial Insect with a Bite.

Jeff Davis

Graduated Students

- Scott Lee, Ph.D., spring 2023.
- Schyler Lee, M.S., summer 2023.
- Santosh Bhandari, M.S., fall 2023.

Awards

- Bhandari, S. 2023. First place, Masters 10-minute Oral Presentation: Can *Metarhizium* spp. deter feeding by *Cylas formicarius elegantulus*? 13th Annual LSU Entomology Department Graduate Student Symposium, Baton Rouge, Louisiana. Oct. 20, 2023.
- Lee, S.M. 2023. Louisiana Agricultural Consultants Association Scholarship funded by Louisiana Land Bank. Feb. 8, 2023.
- Lee, S.M. 2023. First place, Masters 10-minute Oral Presentation: Field testing commercial entomopathogens for control of sweetpotato weevil, *Cylas formicarius elegantulus*. 95th Annual Meeting of

the Southeastern Branch of the Entomological Society of America, Little Rock, Arkansas. March 13, 2023.

- Lee, S.M. 2023. Second place, Agriculture Graduate Student Oral Presentation: Field testing commercial entomopathogens for control of sweetpotato weevil, *Cylas formicarius elegantulus*. The LSU Pinkie Gordon Lane Graduate School First Annual Graduate Research Conference, Baton Rouge, Louisiana. April 26, 2023.
- Velez, A. 2023. Second place, Ph.D. 10-minute Oral Presentation: Can insecticides improve soybean seed quality? 13th Annual LSU Entomology Department Graduate Student Symposium, Baton Rouge, Louisiana. Oct. 20, 2023.

Talks/Posters/Infographics

- Davis, J.A. 2023. Best management practices for Louisiana soybeans. Recertification for RUP salespersons and Category 1 AgPest pesticide applicators. Alexandria, Louisiana. Nov. 2, 2023.
- Davis, J.A., S. Lee, and D. Swale. 2023. Understanding insecticidal impact on aphid behavior to design better protectants. Innovations in Vector Control: New Tools and Strategies Symposium. American Chemical Society Fall 2023 Meeting, San Fransisco, California. Aug. 16, 2023.
- Sabliov, C., O. Mendez, C.E. Astete, J.A. Davis, S. Hermanova, and W.J. Orts. 2023. Amphiphilic lignin-graft-PLGA polymer, a versatile precursor to biomaterial synthesis. ZeroWaste Strategies: Valorizing Undervalued Agricultural Coproducts and Food Waste Symposium. American Chemical Society Fall 2023 Meeting, San Fransisco, California. Aug. 15, 2023.
- O'Hara, F., J.A. Davis, J. Bloomquist, and D. Swale. 2023. Development of novel N-aryl amide insecticides to control hemipteran vectored pathogens. Innovations in Vector Control: New Tools and Strategies Symposium. American Chemical Society Fall 2023 Meeting, San Fransisco, California. Aug. 15, 2023.
- Davis, J.A. 2023. Soybean insect identification and damage. LSU AgCenter Field Crops Insect Scout School, Alexandria, Louisiana. June 2, 2023.
- Davis, J.A. 2023. Soybean insect identification and damage. LSU AgCenter Field Crops Insect Scout School, Winnsboro, Louisiana. May 25, 2023.
- Davis, J.A. 2023. Redbanded stink bug FAQ. Louisiana Agricultural Technology and Management Conference, Marksville, Louisiana. Feb. 9, 2023.

FACULTY ACTIVITIES

- Davis, J.A., and N. Sarkar. Life table parameter comparisons of *Nezara viridula* (Hemiptera: Pentatomidae) on five okra varieties. 95th Annual Meeting of the Southeastern Branch of the Entomological Society of America, Little Rock, Arkansas. March 14, 2023.
- Musser, R., A. Catchot, W. Crow, G. Lorenz, B. Thrash, S. Stewart, S. Brown, and J.A. Davis. Longitudinal trends in mid-southern soybean insect losses. 95th Annual Meeting of the Southeastern Branch of the Entomological Society of America, Little Rock, Arkansas. March 14, 2023.
- Lee, S.T., J. Greene, D. Owens, D.D. Reisig, S. Taylor, and J.A. Davis. 2023. Parasitoids of soybean looper, *Chrysodeixis includens* (Walker), in soybean agroecosystems. 95th Annual Meeting of the Southeastern Branch of the Entomological Society of America, Little Rock, Arkansas. March 13, 2023.
- Lee, S.M., M.J. Stout, and J.A. Davis. 2023. Field testing commercial entomopathogens for control of sweetpotato weevil, *Cylas formicarius elegantulus*. 95th Annual Meeting of the Southeastern Branch of the Entomological Society of America, Little Rock, Arkansas. March 13, 2023.
- Bhandari, S., S. Navarro, C.A. Keyser, and J.A. Davis. 2023. Can *Metarhizium* spp. deter feeding by *Cylas formicarius elegantulus*? 13th Annual LSU Entomology Department Graduate Student Symposium, Baton Rouge, Louisiana. Oct. 20, 2023.
- Patla, B., J.A. Davis, G. Head, G. Sword, A. Miller, J. Qureshi, T. Towels, J. Villegas, X. Ni, D. Carrillo, F. Reay-Jones, D. Cook, C. Davis, M. Stout, B. Thrash, Y. Niu, S. Tiago, S. Lin, C.R. Sakuno, J. Ottea, and F. Huang. 2023. Susceptibility of *Spodoptera frugiperda* populations in the southern United States to four common insecticides: Dimilin, Intrepid, Vantacor, and Warrior-II. 13th Annual LSU Entomology Department Graduate Student Symposium, Baton Rouge, Louisiana. Oct. 20, 2023.
- Duwal, A., S.T. Lee, and J.A. Davis. 2023. Evaluating the impacts of hedgerow plantings on arthropod communities in Louisiana soybean. 13th Annual LSU Entomology Department Graduate Student Symposium, Baton Rouge, Louisiana. Oct. 20, 2023.
- Velez, A., and J.A. Davis. 2023. Can insecticides improve soybean seed quality? 13th Annual LSU Entomology Department Graduate Student Symposium, Baton Rouge, Louisiana. Oct. 20, 2023.

- Martinez, C.M., and J.A. Davis. 2023. Determining *Euschistus quadrator* population dynamics on soybean *Glycine max*. 13th Annual LSU Entomology Department Graduate Student Symposium, Baton Rouge, Louisiana. Oct. 20, 2023 (poster).

Grants

- Louisiana Soybean and Grain Research and Promotion Board. "IPM for Louisiana soybean insect pests." 2023-2024. J.A. Davis. \$75,000.
- Louisiana Soybean and Grain Research and Promotion Board. "Fungicide Seed Treatment with Lignin Nanoparticles." 2023-2024. C.M. Sabliov (Lead PI), C.E. Astete, P.P. Price, V. Doyle, and J.A. Davis. \$25,000.
- Bayer CropScience. "Bayer SIP4 Open Field Efficacy Trial." 2023. J.A. Davis. \$46,800.
- MidSouth Soybean Board. "Enhancing stink bug resistance in Midsouth soybean." 2023-2024. J.A. Davis. \$86,000.
- United Soybean Board. "Developing a Resilient Soybean IPM Program for Stink Bugs." 2023-2024. J.A. Davis (Lead-PI), S. Grover, and D.R. Swale. \$97,780.
- SSARE Research Grant. "Spatio-temporal distribution and management of *Drosophila suzukii* in Louisiana mayhaw." 2023-2026. J.A. Davis (Lead PI) and N. Sarkar. \$75,000.
- USDA AFRI Competitive Grants Foundation Program. "Tunable Polymeric Nanoparticle Platform for Contact/Systemic CuS Delivery for Crop Disease Management." 2023-2027. C. Sabliov (Lead-PI), C. Astete, J. White, M. Kah, and J.A. Davis. \$727,328.
- USDA AFRI Competitive Grants Foundation Program. "Development of resistance-breaking aphicides with novel mode- and mechanism- of action." 2023-2026. D.R. Swale (Lead PI), Z. Liu, and J.A. Davis. \$707,758.

Publications

- Musser, F.R., E. Bick, S.A. Brown, W.D. Crow, J.A. Davis, C. DiFonzo, S.H. Graham, J.K. Greene, D.C. Ludwick, S. Malone, D. Owens, D.D. Reisig, P.M. Roberts, T.A. Royer, N.J. Seiter, A.J. Sisson, B.C. Thrash, K.J. Tilmon, and R.T. Villanueva. 2023. 2022 Soybean insect losses in the United States. *MidSouth Entomol.* 16: 1 – 25.
- Nagoshi, R.N., J.A. Davis, R.L. Meagher, F.R. Musser, G.P. Head, H. Portillo, and H. Teran. 2023. Evidence for two soybean looper strains in the United States with limited capacity for cross-hybridization. *Genes* 14: 1509.

FACULTY ACTIVITIES

- Nagoshi, R.N., J.A. Davis, R.L. Meagher, F.R. Musser, G.P. Head, H. Portillo, and H. Teran. 2023. Investigating the migratory behavior of soybean looper, a major pest of soybean, through comparisons with the corn pest fall armyworm using mitochondrial haplotypes and a sex-linked marker. *Genes* 14: 1495.
- Lee, S.T., and J.A. Davis. 2023. The impact of thiamethoxam on the feeding and behavior of two soybean herbivore feeding guilds. *J. Econ. Entomol.* 116: 1621 – 1635.
- Bonser, C.A.R., C.E. Astete, C.M. Sabliov, and J.A. Davis. 2023. Elucidating the insecticidal mechanisms of zein nanoparticles on *Anticarsia gemmatalis* (Lepidoptera: Erebididae). *J. Econ. Entomol.* 116: 1196 – 1204.
- Bonser, C.A.R., J. Borgatta, J.C. White, C.E. Astete, C.M. Sabliov, and J.A. Davis. 2023. Impact of zein and lignin-PLGA biopolymer nanoparticles used as pesticide nanocarriers on soybean growth and yield under field conditions. *Agrosystems, Geosciences & Environment* 6: e20350.
- Bonser, C.A.R., C. Tamez, J.C. White, C.E. Astete, C.M. Sabliov, and J.A. Davis. 2023. Field applications of zein as a precise nanoscale delivery system for methoxyfenozide. *J. Insect Sci.* 23: 8, 1-9.
- O'Hara, F.M., Z. Liu, J.A. Davis, and D.R. Swale. 2023. Catalyzing systemic movement of inward rectifier potassium channel inhibitors for antifeedant activity against the cotton aphid, *Aphis gossypii* (Glover). *Pest Manag. Sci.* 79: 194 – 205.

Rodrigo Diaz

Presentations

- Roseau cane scale biocontrol updates and future research. Tanner Sparks, Rodrigo Diaz, Hannah Broadley. Fifth Annual Roseau Cane Summit, Baton Rouge, Louisiana. Jan. 12, 2023.
- Distribution, population dynamics, and biological control of the roseau cane scale in Louisiana. Tanner Sparks, Rodrigo Diaz, Hannah Broadley. 95th Annual Meeting of the Southeastern Branch of the Entomological Society of America, Little Rock, Arkansas. March 12-15, 2023.
- Multiplex PCR primers reveal the biodiversity and phenology of roseau cane scale (*Nipponaclerda biwakoensis*) parasitoids in Louisiana. Tanner Sparks, Ilgoo Kang, Rodrigo Diaz, Hannah Broadley. 13th Annual Entomology Graduate Student Symposium, Baton Rouge, Louisiana. Oct. 20, 2023.
- Multiplex PCR primers reveal the biodiversity and phenology of roseau cane scale (*Nipponaclerda biwakoensis*) parasitoids in Louisiana. Tanner Sparks, Ilgoo Kang, Rodrigo Diaz, Hannah Broadley. Entomological Society of America, National Harbor, Maryland. Nov. 6, 2023.
- Investigating the distribution, host range, and impact of the naturalized weevil *Ochyromera ligustri*: A potential biological control agent of invasive Ligustrum. Brandi Misiaszek, Amy Roda, Rodrigo Diaz. 13th Annual Entomology Graduate Student Symposium, Baton Rouge, Louisiana. Oct. 20, 2023.
- Implementing the biological control of giant salvinia in southeastern USA. Rodrigo Diaz. Pontifical Catholic University of Chile, Chile. September 2023.
- Surveying the Mississippi River Delta: Field monitoring of *Phragmites* performance, roseau cane scale and parasitoid density. Logan Herbert, Rodrigo Diaz. Fifth Annual Roseau Cane Summit, Baton Rouge, Louisiana. Jan. 12, 2023.
- Biological Control of Giant Salvinia. Logan Herbert, Aristide Takoukam, David Kinsler, and Rodrigo Diaz. AMMCO, Cameroon, Africa. July 2023.
- Combating Invasive Species: Using Remote Sensing to Help Restore Natural Ecosystems. Logan Herbert, Rodrigo Diaz. Science on Tap. November 2023.
- Role of sediment composition, elevation, timing, planting density, and spacing on *Phragmites* stem planting success. Joshua Snook and Rodrigo Diaz. Fifth Annual Roseau Cane Summit, Baton Rouge, Louisiana. Jan. 12, 2023.
- Development of a real-time monitoring tool for detection of giant salvinia (*Salvinia molesta*) and improvement of the salvinia weevil (*Cyrtobagous salviniae*) biological control program across southern Louisiana. Victoria Ayala, David Kinsler, Rodrigo Diaz. 13th Annual Entomology Graduate Student Symposium, Baton Rouge, Louisiana. Oct. 20, 2023.
- Harnessing *Phragmites australis* genetic diversity to promote coastal restoration. Karina Nolasco, Rodrigo Diaz, Josh Snook, and Jonathan Richards. 13th Annual Entomology Graduate Student Symposium, Baton Rouge, Louisiana. Oct. 20, 2023.

FACULTY ACTIVITIES

Awards and Honors

- Sparks, T., 2023. First place, 10-minute Ph.D. Oral Presentation: Multiplex PCR primers reveal the biodiversity and phenology of roseau cane scale (*Nipponaclerda biwakoensis*) parasitoids in Louisiana. 13th Annual Entomology Graduate Student Symposium, Baton Rouge, Louisiana. Oct. 20, 2023.
- Diaz et al.: LSU AgCenter Tipton Team Award for Roseau Cane Project. December 2023.

New Grants and Contracts

- United States Department of Agriculture, Agriculture Research Service. 2023-2027. Synergies in aquatic plant biological control: translating research between the Southern and Western USA. Rodrigo Diaz (LSU AgCenter). \$150,000.
- United States Department of Agriculture, Animal and Plant Health Inspection Service. 2023-2025. Roseau Cane Die-off Research Support. \$1,618,000. James Cronin (LSU Biology), Tracy Quirk (LSU A&M), Xuelian Meng (LSU A&M), Rodrigo Diaz (LSU AgCenter), Andy Nyman (LSU AgCenter), Co-PIs. (Diaz portion \$429,040).
- Coastal Wetlands, Planning, Protection and Restoration Act. 2023-2027. CWPRA Coastwide salvinia weevil propagation facility and monitoring program. Rodrigo Diaz (LSU AgCenter). \$481,474.

Visiting Scientists/Students

- Victoria Ayala, Zamorano Pan-American Agricultural School. Tegucigalpa, Honduras.
- Karina Nolasco, Zamorano Pan-American Agricultural School. Tegucigalpa, Honduras.

New Collaborations (University, Industry, Other)

New collaborators on aquatic weed biological control:

- Dr. Paul Pratt, USDA-ARS Albany, California.
- Dr. Aristide Kamla, AMMCO, Cameroon.
- Dr. Tania Zaviezo, Universidad de Chile.

Publications

- Manrique, V., Kraus, E., Schaffer, C., Diaz, R., Kelm, C. Poffenberger, R., Rohrig, E., Murray, R., David, A., Smith, M.C., Lake, E., Rayamajhi, M.B., Leidi, J., Dray, A., Minter, C.R., Le Falchier, E., Mass, J. and Hight, S. 2023. Assessing the status of biological control of air potato (*Dioscorea bulbifera*) in the southeastern USA. *Biocontrol Science and Technology* 33: 1173-1185. <https://doi.org/10.1080/09583157.2023.2294207>.

- Garcia-Lopez, X., Ortiz-Zayas, J.R., Diaz, R., Castro-Jiménez, A. and Wahl, C. 2023. Limnological Response of Las Curiás Reservoir, San Juan, Puerto Rico: Successful Management of the Invasive Aquatic Fern, *Salvinia molesta*. *Water* 15, 3966. <https://doi.org/10.3390/w15223966>.
- Lee, H., Diaz, R., Johnston, J., Knight, I.A., Nyman, J.A. and Cronin, J.T. 2023. Vegetation restoration following dieback of *Phragmites australis* in the Mississippi River Delta, USA. *Wetlands* 43, 98. <https://doi.org/10.1007/s13157-023-01746-8>.
- Woodley, S.E., Wahl, C.F., Tryforos, A., and Diaz, R. 2023. Biological control of invasive floating fern leads to rapid recovery of ecological functions in coastal freshwater wetlands in Louisiana. *Journal of Aquatic Plant Management* 61:42-54. <https://doi.org/10.57257/JAPM-D-22-00011>
- Salgado, A.L., Glassmire, A.E., Sedio, B.E., Diaz, R., Stout, M.J., Čuda, J., Pyšek, P., Meyerson, L.A., and J.T. Cronin. 2023. Metabolomic Evenness Underlies Intraspecific Differences Among Lineages of Wetland Grass. *Journal of Chemical Ecology* 49: 437–450 <https://doi.org/10.1007/s10886-023-01425-2>.
- Madeira, P.T., Diaz, R., Dray, F.A., Rayamajhi, M.B., Lake, E. and M. Smith. 2023. Population genetics comparison of *Lilioceris cheni* (Coleoptera: Chrysomelidae) colonies released onto *Dioscorea bulbifera* in Southeastern U.S.A. *Biocontrol Science and Technology* 33: 429-447.
- Chura, M., Healy, K., Diaz, R. and M. Kaller. 2023. Effects of species, sex, and diet on thermal tolerance of *Aedes aegypti* and *Culex quinquefasciatus* (Diptera: Culicidae). *Journal of Medical Entomology* 60: 637-643.

Honglin Feng

Other Presentations

- Feng H., Identification of biosynthetic pathways for the production of endogenous pharmaceutical compounds in common milkweed (*Asclepias syriaca*). USDA-NIFA project leader conference, July 18, 2023.

New Grants and Contracts

- Functional characterization of insecticidal miRNAs targeting symbiosis for aphid control, Brown Foundation, \$15,000.

FACULTY ACTIVITIES

- Developing insecticidal microRNAs targeting symbiosis for aphid control, LSU AgCenter, Center of Research Excellence in Plant Biotechnology and Crop Development, \$30,000.

Name of Collaborator or Institution

- Dr. Susan R. Strickler, Negaunee Institute for Plant Conservation Science and Action, Chicago Botanic Garden.
- Dr. Jiwei Fan, Lianyungang Academy of Agricultural Science, Lianyungang, China
- Mingming Li, Institute of Food Science and Technology, Chinese Academy of Agricultural Sciences, Beijing China.
- Jesus Simal-Gandara, University of Vigo, Vigo, Spain.

Publications

- Li M., Feng, H., Simal-Gandara J., Natural Products from Plants and Applications for Pest Management. *Frontiers in Plant Science*, Frontiers Media SA, 2023 (Special Issue Book).
- Feng H., Tzin V., Chen W., Adegbayi F., Ugine T., Fei Z., Jander G., Horizontally transferred genes as RNAi interference targets for aphid and whitefly control. *Plant Biotechnology Journal*, <https://doi.org/10.1111/pbi.13992>.

Lane Foil

Invited Presentations

- Vector Biology. University of South Alabama Medical School, Mobile Alabama. April 2023.

New Grants and Contracts

- GLP Study on horn fly control. Animal Health company. \$140,000.

Publications

- Kylie G. Bendele, Felix D. Guerrero, Kimberly H. Lohmeyer, Lane D. Foil, Richard P. Metz, Charles D. Johnson. 2023. Horn fly transcriptome data of ten populations from the southern United States with varying degrees and molecular mechanisms of pesticide resistance. *Data in Brief* <https://doi.org/10.1016/j.dib.2023.109272> 2352-3409.
- Benjamin G. Aker, Claudia Husseneder and Lane D. Foil. 2023. The influence of salinity and vegetation texture on the ecological roles of insects in tidal marshes in Louisiana. *Ecosphere*. DOI: 10.1002/ecs2.4692.

Patents

- U.S. Patent No. 11,632,953 “Method for controlling hematophagous or sap-feeding arthropods” (2023) Daniel Swale and Lane Foil.

Kristen Healy

Invited Presentations

- Factors influencing thermal tolerances in mosquitoes, and Update of the American Mosquito Control Association (AMCA). Utah Mosquito Control Association. October 2023.
- Bee and Wasp Control, and Delusory Parasitosis. Winter Pesticide Institute. January 2023.
- Navigating non-target impacts from mosquito control. Mosquito Beacons. December 2023.
- Community Engagement in Mosquito Control. AMCA Virtual Training module. March 2023.
- What to expect during Washington Days. AMCA Washington Days. April 2023.

Other Presentations

- Presentation of the business meeting, Diversity and Inclusivity Subcommittee overview. American Mosquito Control Association Annual meeting. March 2023.
- Update of the American Mosquito Control Association. Louisiana Mosquito Control Association Annual Meeting. December 2023.
- Biology of Mosquitoes. LMCA Annual Spring workshop. February 2023.

Awards and Honors

- Gavel ceremony, AMCA Presidential Gavel, sworn in as AMCA president.

New Committees

- AMCA president (executive committee).
- AMCA virtual training development.
- AMCA strategic planning committee.
- Louisiana Agriculture magazine editorial board.
- LMCA annual meeting committee.
- AMCA quarterly meeting of committee chairs.

New Collaborations (University, Industry, Other)

- Louisiana State Crime Lab.

FACULTY ACTIVITIES

Graduated Students

- Erin Cloherty, Ph.D. (co-advised with James Ottea), fall 2023.

Publications

- Sarah Lang, Michael Simone-Finstrom and Kristen Healy (2023) Effects of honey bee queen exposure to deformed wing virus-A on queen and juvenile infection and colony strength metrics, *Journal of Apicultural Research*, DOI: 10.1080/00218839.2023.2284034
- Cloherty, E.R., Mcallister, J.C., Ottea, J.A., Healy, K., and Riegel, C. (2023). A Survey on Mosquito Control Knowledge and Insecticide Use in New Orleans, Louisiana, 2020–2021. *Journal of the American Mosquito Control Association*, 36(4).
- Chura, M., Healy, K., Diaz, R., and Kaller, M. (2023). Effects of species, sex, and diet on thermal tolerance of *Aedes aegypti* and *Culex quinquefasciatus* (Diptera: Culicidae). *Journal of Medical Entomology*, tjad037.

Fangneng Huang

Invited Presentations

- Huang, F. 2023. Bt Crop IRM: why, what, and related concepts. CTC Centro De Tecnologia Canaveieira, Sao Paulo, Brazil. Dec. 7, 2023.
- Huang, F. 2023. Bt crop IRM: lessons from more than 20-year use of transgenic Bt crops for pest management in North America. Academy of Gansu Agricultural Science. Oct. 11, 2023.
- Huang, F. 2023. Is resistance to transgenic Bt plants reversible? A keynote presentation for the Second International Electronic Conference on Toxins (IECT 2023). July 21, 2023.
- Huang, F. 2022. Bt toxins and transgenic Bt crops for insect pest management webinar. Institute of Plant Protection, Gansu Academy of Agriculture, Gansu, China. Nov. 30, 2022.

Other Presentations

- Patla, B., G. Head, G. Sword, A. Miller, J. Qureshi, T. Towels, J. Villegas, X. Ni, D. Carrillo, F.P.F. Reay-Jones, D. Cook, C. Daves, M. Stout, B. Thrash, Y. Niu, S. Tiago, S. Lin, C.R. Sakuno, F. Huang. 2023. An extended investigation of the susceptibility of *Spodoptera frugiperda* in the southern U.S. to seven common chemical insecticides. Annual Meeting of Entomological Society of America, National Harbor, Maryland. Nov. 4-9, 2023 (oral).

- Silva, T., G. Sword, A. Miller, J.A. Qureshi, G. P. Head, D.D. Kerns, J.L. Jurat-Fuentes, J. Villegas, T. Towels, X. Ni, D. Carrillo, D. Cook, C. Daves, F. Reay-Jones, M. Stout, B. Thrash, S.V. Paula-Moraes, S. Lin, B. Patla, Y. Niu, C.R. Sakuno, and F. Huang. 2023. No resistance to Cry1F detected in fall armyworm from the southeastern U.S. after a decade since practical resistance to Cry1F corn was documented. Annual Meeting of Entomological Society of America, National Harbor, Maryland. Nov. 4-9, 2023 (oral).
- Lin, S., G.P. Head, T. Silva, Y. Niu, B. Plata, and F. Huang. 2023. Presence of host plant tissue enhances adult mating and reproduction of *Helicoverpa zea* in laboratory rearing. Annual Meeting of Entomological Society of America, National Harbor, Maryland. Nov. 4-9, 2023 (oral).
- Patla, B., G. Head, G. Sword, A. Miller, J. Qureshi, T. Towels, J. Villegas, X. Ni, D. Carrillo, F.P.F. Reay-Jones, D. Cook, C. Davis, M. Stout, B. Thrash, Y. Niu, S. Tiago, S. Lin, C.R. Sakuno, and F. Huang. 2023. Geographical susceptibility of fall armyworm populations in the southern region of the United States to five common chemical insecticides. 95th Annual Meeting of the Southeastern Branch-Entomological Society of America. Little Rock, Arkansas. March 12-15 (oral).
- Huang, F. 2023. Completeness of resistance to Bt crops. 95th Annual Meeting of the Southeastern Branch-Entomological Society of America. Little Rock, Arkansas. March 12-15 (oral).
- Lin, S., T. Silva, G.P. Head, B. Plata, Y. Niu, A. Cerutti, and F. Huang. 2023. Effect of lab-adaption and cannibalism on calling, mating, and reproduction of *Helicoverpa zea*. 95th Annual Meeting of the Southeastern Branch-Entomological Society of America. Little Rock, Arkansas. March 12-15 (oral).
- Niu, Y., Q. Song, S. Stewart, B. Wilson, G. Head, S. Brown, W. Yu, T. Silva, C. Sakuno, S. Lin, and F. Huang. 2023. An extended investigation of Bt resistance allele frequency in southwestern corn borer and sugarcane borer in Tennessee and Louisiana. Annual Meeting of Entomological Society of America, National Harbor, Maryland. Nov. 4-9, 2023 (poster).
- Silva, T., G. Sword, A. Miller, J. Qureshi, G.P. Head, D. D. Kerns, J.L. Jurat-Fuentes, J. Villegas, T. Towels, X. Ni, D. Carrillo, D. Cook, C. Davis, F. Reay-Jones, M. Stout, B. Thrash, S.V. Paula-Moraes, S. Lin, B. Plata, Y. Niu, C.R. Sakuno, M. Stout and F. Huang. 2023. Fall armyworm susceptibilities to four proteins commonly used proteins in pyramid Bt corn in the

FACULTY ACTIVITIES

southern United States. 95th Annual Meeting of the Southeastern Branch-Entomological Society of America. Little Rock, Arkansas. March 12-15 (poster).

Awards and Honors

- Listed among the world's top 2% of scientists by Stanford University's scientist rankings.
- 2023 LSU AgCenter's Doyle Chambers Research Award.
- Lin, S. 2023. Second place for student competition 10-minute presentation, Graduate P-IE: Behavior and IPM Section: Presence of Host Plant Tissue Enhances Adult Mating and Reproduction of *Helicoverpa zea* in Laboratory Rearing. Annual Meeting of Entomological Society of America, National Harbor, Maryland. Nov. 4-9, 2023.
- Lin, S. 2023. Second place for outstanding Ph.D. oral presentation: Effect of lab-adaption and cannibalism on calling, mating, and reproduction of *Helicoverpa zea*. 95th Annual Meeting of the Southeastern Branch-Entomological Society of America. Little Rock, Arkansas. March 12-15.

New Grants and Contracts

- An extended investigation of susceptibility/resistance of the fall armyworm and corn earworm/bollworm in the U.S. southern region to common Bt proteins and chemical insecticides. \$88,672, Bayer Crop Science.
- Extended Selection and Maintenance of the Cry1Ab- and Cry2Ab2-Resistant Strains of Sugarcane Borer. \$47,000, Bayer Crop Science
- Susceptibility/resistance of field populations of corn earworm and fall armyworm in Louisiana to common insecticides. \$30,600. Louisiana Soybean and Grain Research and Promotion Board.
- Bt-resistant fall armyworm tests. KWS Gateway Research \$29,862.
- Screening toxins for efficacy on resistant and susceptible insect larvae. Corteva \$29,999.
- Susceptibility of Bt-resistant Fall Armyworm, Corn Earworm, and Sugarcane Borer to Syngenta's Novel Insecticidal Proteins. \$23,580, Syngenta Crop Protection.

Visiting Scientists/Students

- Anderson da Cruz Cerutti, IDEAU University Center, UNIDEAU, Brazil.

Graduated Students

- Tiago Sila, M.S., spring 2023.

Publications

- Qureshi, J., F. Huang, and R. Day (eds.). 2022. Fall armyworm: Managing a significant threat to global food security. CABI Agriculture and Bioscience. CABI. (Special issue).
- Chae, H., Wen, Z.; Hootman, T., Himes, J., Duan, Q., McMath, J., Ditillo, J., Sessler, R., Conville, J., Niu, Y., Matthews, P., Francischini, F., Huang, F., Bramlett, M. 2022. eCry1Gb.1lg, a novel chimeric Cry protein with high efficacy against multiple fall armyworm (*Spodoptera frugiperda*) strains resistant to different GM traits. *Toxins* 2022, 14, 852. <https://doi.org/10.3390/toxins14120852>.
- Yu, W., G. Head, and F. Huang. 2022. Inheritance of resistance to Cry1A.105 in *Helicoverpa zea* (Boddie) (Lepidoptera: Noctuidae). *Insect*. 13, 875. <https://doi.org/10.3390/insects13100875>.
- Oliveira, W.S. de, Sakuno, C.I.R., Miraldo, L.L., Tavares, M.A.G.C., Komada, K.M.A., Teresani, D., Santos, J.L.X., and Huang, F. 2022. Varied frequencies of resistance alleles to Cry1Ab and Cry1Ac among Brazilian populations of the sugarcane borer, *Diatraea saccharalis* (F.). *Pest Manag. Sci. Pest Manag Sci* 2022; 78: 5150–5163.
- Banerjee, R., Placidi de Bortoli, C., Huang, F., Lamour, K., Meagher, R., Buntin, D., Ni, X., Reay-Jones, F., Stewart, S. and Jurat-Fuentes, J.L. 2022. Large genomic deletion linked to field-evolved resistance to Cry1F corn in fall armyworm (*Spodoptera frugiperda*) from Florida. *Sci. Report.* (2022) 12:13580. <https://doi.org/10.1038/s41598-022-17603-3>.
- Yu, W., G.P. Head, P. Price, S. Brown, D. Cook, X. Ni, F. P.F. Reay-Jones, M. Dimase, and F. Huang. 2022. Estimation of resistance allele frequencies to Cry1A.105 and Cry2Ab2 in the corn earworm (Lepidoptera: Noctuidae) with F2 isolines generated from a mass-mating method, *Crop Protect*, doi: <https://doi.org/10.1016/j.cropro.2022.106054>.
- Lin, S., I. Oyediran, Y. Niu, S. Brown, D. Cook, X. Ni, Y. Zhang, F. P.F. Reay-Jones, J. S. Chen, Z. Wen, M. Dimase, and F. Huang. 2022. Resistance allele frequency to Cry1Ab and Vip3Aa20 in *Helicoverpa zea* (Boddie) (Lepidoptera: Noctuidae) in Louisiana and three other southeastern U.S. states. *Toxins* 4, 270. <https://doi.org/10.3390/toxins14040270>.

FACULTY ACTIVITIES

- Yang, F., J. Williams, F. Huang, and D. L. Kerns. 2021. Characterization of Vip3Aa resistance in *Spodoptera frugiperda* (Lepidoptera: Noctuidae) derived from Texas, USA. *Crop Prot.* 147 <https://doi.org/10.1016/j.cropro.2021.105702> (not reported in 2021).
- Yu, W., S. Lin, M. Dimase, Y. Niu, S. Brown, G.P. Head, P.A. Price, F.P.F. Reay-Jones, D. Cook, D. Reisig, B. Thrash, X. Ni, S.V. Paula-Moraes, and F. Huang. 2021. Extended investigation of field-evolved resistance of the corn earworm *Helicoverpa zea* (Lepidoptera: Noctuidae) to *Bacillus thuringiensis* Cry1A.105 and Cry2Ab2 proteins in the southeastern United States. *J. Invertebr. Path.* 183 (2021)107560. <https://doi.org/10.1016/j.jip.2021.107560> (not reported in 2021).
- Dimase, M., I. Oyediran, S. Brown, W. Walker, J. Guo, W. Yu, Y. Zhang, J. Chen, Z. Wen, and F. Huang. 2021. Larval movement and survival of *Helicoverpa zea* (Boddie) in seed blends of non-Bt and Bt maize containing Agrisure Viptera trait: implications for resistance management. *Crop Protect.* <https://doi.org/10.1016/j.cropro.2020.105339> (not reported in 2021).
- Towles, T., B. Wilson, M. Stout, and F. Huang. 2022. An Army on the Move: Farmers, Entomologists Battle Fall Armyworm in 2021. *Louis. Agr.* 65(1): 20-21.

Claudia Husseneder

Awards and Honors

- 2023 First place 11th Annual Beauty of the Bee Photo Contest.
- 2023 Honorable mention Peoria Insect Photosalon Contest for “Thread-wasted Wasp Mating.”
- 2023 Finalist photo contest of Pest Control Technology Magazine.

Visiting Scientists/Students

- Juergen Ziesmann, University of Lynchburg, Virginia.

Graduated students:

- Garima Setia, M.S., spring 2023.

Publications

Book Chapter

- Husseneder, C. 2023. Symbiosis and microbiome in termite guts: a unique quadripartite system In: *Biology and Management of the Formosan Subterranean Termite and Related Species*. Su, N.-Y., and Lee C.-Y. (eds.). CABI Books, pp 144-170.

Peer-reviewed Journal Articles

- Chen, J., Setia, G., Lin, L.-H., Sun, Q., Husseneder, C. 2023. Weight and protozoa number but not bacteria diversity are associated with successful pair formation of dealates in the Formosan subterranean termite, *Coptotermes formosanus*. *PLoS ONE* 18(11): e0293813. <https://doi.org/10.1371/journal.pone.0293813>. Impact Factor: 3.7.
- Setia, G., Schlub, R., and Husseneder, C. 2023. Taxonomic profiling of *Nasutitermes takasagoensis* microbiota to investigate the role of termites as vectors of bacteria linked to ironwood tree decline in Guam. *PLoS ONE*, 18(12), e0296081. <https://doi.org/10.1371/journal.pone.0296081>. Impact Factor: 3.7.
- Setia, G., Schlub R., and Husseneder, C. 2023. Next-generation sequencing dataset of bacterial communities of *Microcerotermes crassus* workers associated with Ironwood trees (*Casuarina equisetifolia*) in Guam. *Data in Brief*, 48, 109286. <https://doi.org/10.1016/j.dib.2023.109286>.
- Aker, B., Husseneder, C. and Foil, L. D. 2023. The Influence of Salinity and Vegetation Texture on the Ecological Roles of Insects in Tidal Marshes in Louisiana, *Ecosphere*. 2023;14:e4692. <https://doi.org/10.1002/ecs2.4692>. Impact Factor 3.17.
- Bueno, F., Fultz, L., Husseneder, C. Keenan, M., and Sathivel, S. 2023. Biodegradability of bacterial cellulose polymer below the soil and its effects on soil bacteria diversity, *Polymer Degradation and Stability*, 217. doi:10.1016/j.polymdegradstab.2023.110535. Impact Factor 5.9.
- Martin Ewert, A., Simone-Finstrom, M., Read, Q., Husseneder, C., Ricigliano, V. 2023. Effects of ingested essential oils and propolis extracts on honey bee (Hymenoptera: Apidae) health and gut microbiota, *Journal of Insect Science*, 23 (6), <https://doi.org/10.1093/jisesa/iead087>. Impact Factor: 2.2.

Other Publications

- Setia, G., Chen, J., Schlub, R. L., and Husseneder, C. (2023). The Mysterious Case of Ironwood Tree Decline: Are Termites to Blame? *Louisiana Agriculture Magazine*. Vol 66 (3) Summer 2023: 10-11.

Todd D. Johnson

Invited Presentations

- T.D. Johnson. 2023. Using behavioral and chemical ecology to build fundamental and applied knowledge

FACULTY ACTIVITIES

about forest arthropods in Louisiana. East Texas Forest Entomology Seminar, Lake Kurth, Texas. April 20, 2023.

- T.D. Johnson. 2023. Ongoing research in the forest entomology group: Optimizing the conservation and health of forests in the Southeastern United States. In: Forestry, wildlife, and natural resources session, Louisiana State University AgCenter Annual Conference. Baton Rouge, Louisiana. Dec. 14, 2023.

Other Presentations

- C. Kuetsinya, M. Pandey, J. McKenny, J.R. Meeker, T. Schowalter, T.D. Johnson. 2023. When does prescribed burn reduce Southern pine beetle (*Dendroctonus frontalis* Zimmerman) spot incidence? A case study from the Bienville and Homochitto National Forests in Mississippi. In: Characterizing ecological interactions in forests under global change, Annual Meeting of the Entomological Society of America, National Harbor, Maryland. Nov. 4-9, 2023.
- C. Kuetsinya, M. Pandey, J. McKenny, J.R. Meeker, T. Schowalter, T.D. Johnson. 2023. When does prescribed burn reduce Southern pine beetle (*Dendroctonus frontalis* Zimmerman) spot incidence? A case study from the Bienville and Homochitto National Forests in Mississippi. Southern Pine Beetle Working Group at Southern Forest Insect Work Conference, Raleigh, North Carolina. July 25, 2023.
- Sanford, A.P., C. Wood Johnson, T.D. Johnson. 2023. Generating baseline data on arthropod communities of three species of ash (*Fraxinus* spp.) ahead of the emerald ash borer invasion in southeastern Louisiana. Annual Meeting of the Entomological Society of America, National Harbor, Maryland. Nov. 4-9, 2023.
- Sanford, A.P., C. Wood Johnson, T.D. Johnson. 2023. Generating baseline data on arthropod communities of three species of ash (*Fraxinus* spp.) ahead of the emerald ash borer invasion in southeastern Louisiana. 13th Annual LSU Entomology Department Graduate Student Symposium, Baton Rouge, Louisiana. Oct. 20, 2023.
- Jindal, V., T.D. Johnson. 2023. Assessing response of two biological control agents of the emerald ash borer to five species of ash trees. 13th Annual LSU Entomology Department Graduate Student Symposium, Baton Rouge, Louisiana. Oct. 20, 2023.
- Sharma, C., T.D. Johnson. 2023. Impact of bottom-up effects on the reproductive ecology of two species of longhorned beetle. 13th Annual LSU Entomology

Department Graduate Student Symposium, Baton Rouge, Louisiana. Oct. 20, 2023.

- C. Kuetsinya*, M. Pandey, J. McKenny, J.R. Meeker, C.A. Steiner, T. Schowalter, M. Stout, T.D. Johnson. 2023. Environmental variables explain differences in the population dynamics of southern pine beetle (*Dendroctonus frontalis*) after prescribed burns in the Bienville and Homochitto National Forests in Mississippi. East Texas Forest Entomology Seminar, Lake Kurth, Texas. April 20, 2023.
- Veronica Manrique, Jose U. Toledo, Rodrigo Diaz, T.D. Johnson. 2023. Building partnerships to enhance research and education in entomology and related fields. In: Basic animal and plant biology, Louisiana State University AgCenter Annual Conference. Baton Rouge, Louisiana. Dec. 14, 2023.

Awards

- Jindal, V. 2023. First place, 3-minute Oral Proposals: Assessing response of two biological control agents of the emerald ash borer to five species of ash trees. 13th Annual LSU Entomology Department Graduate Student Symposium, Baton Rouge, Louisiana. Oct. 20, 2023.

New Committees

- Program chair for 2024 Southern Forest Health Work Conference.
- Symposia organized: K. Perry, T.D. Johnson. 2023. Characterizing ecological interactions in forests under global change. Entomological Society of America National Meeting, National Harbor, Maryland. Speakers: Allison Gardiner (UMaine), Todd D. Johnson (Louisiana State), Angela Mech (UMaine), Holly Munro (National Council for Steam and Air Improvement), Celso Oliveira (Wisconsin-Madison), Kayla Perry (Ohio State), Katherine Turo (Rutgers), Samuel Ward (Ohio State).

New Grants and Contracts

- 2023-2025: Assessing the impact of emerald ash borer on the health of bottomland ash species and the abundance of their specialist arthropod associates in subtropical Louisiana, USDA Forest Service Emerging Pests Program (Agreement #: 23-DG-11083150-108; Louisiana State University) \$131,000.
- 2023-2024: Southern pine beetle counting (Contract No. 2000802432, Louisiana State University) \$50,000.

FACULTY ACTIVITIES

Publications

- Johnson, T.D., J.G. Whitehill. 2023. A phoenix glimmers within the ashes: generalized defensive traits suggest hope for plants under attack by invasive pests. Invited commentary on Gossner et. al. New Phytologist. <https://doi.org/10.1111/nph.19230>

James Ottea

Graduated Students

- Erin Cloherty, Ph.D. (co-advised with Kristen Healy), fall 2023.

Publications

- Cloherty, E.R., McAllister, J.C., Ottea, J.A., Healy, K., Riegel, C. (2023). A Survey on Mosquito Control Knowledge and Insecticide Use in New Orleans, LA, 2020-2021. J Am Mosq Control Assoc 23, 7123.
- Vivek Pokhrel, James A Ottea, 2023. Impact of Nonconventional Selection by Insecticides on Susceptibility of the Southern House Mosquito, *Culex quinquefasciatus* J Am Mosq Control Assoc, 39(1):31-39.

Michael Stout

Invited Presentations

- Stout, M. 2023. Moving through the ranks at LSU: Lessons learned. 95th Annual Meeting of the Southeastern Branch of the Entomological Society of America, Little Rock, Arkansas. March 12-15, 2023 (oral).
- Stout, M. 2023. Plant resistance to herbivores and pathogens: Similarities, differences, and opportunities for collaboration. Department of Plant Pathology and Crop Physiology, Louisiana State University. Baton Rouge, Louisiana. Aug. 30, 2023.
- Stout, M. 2023. Advances and challenges in the development of 'greener' pest management: examples from U.S. rice. Annual Meeting of Entomological Society of America, National Harbor, Maryland. Nov 4-9, 2023 (oral).
- Stout, M. 2023. Opportunities and Challenges Related to the Use of Plant Resistance in IPM. 75th Annual Symposium ICAR-Central Tobacco Research Institute, Frontiers in Tobacco and Commercial Agriculture towards Preparedness for Future Farming. Rajahmundry, India. Nov. 15, 2023 (oral).

Awards and Honors

- Southeastern Branch Award, Entomological Society of America, Excellence in Integrated Pest Management, March 2023.

New Grants and Contracts

- USDA-NIFA, Crop Protection and Pest Management, 09/01/23-8/31/26. Development of decision tools and cultural practices for mitigating the impact of the Mexican rice borer (*Eoreuma loftini*) in Gulf Coast rice. Lina Bernaola (Texas A&M), lead PI; Stout, Wilson, and Setiyono (LSU AgCenter), co-PIs. LSU portion, \$89,800.
- USDA-AFRI, Sustainable Agricultural Systems, 04/01/2023-03/30/27. Proposal Number 2022-07538. Climate-resilient innovations for sustainable production of RICE (CRISP-RICE). P. Subudhi (LSU AgCenter), lead PI; M.J. Stout, B. Wilson (LSU AgCenter), and others, co-PIs, \$10 million. (Entomology portion, \$871,440).

Visiting Scientists/Students

- Dr. Panna Ali, post-doctoral scientist, Bangladesh.

Qian "Karen" Sun

Invited Presentations

- Sun Q., Richardson S., Khadka A., Rougeau J., and McCarthy J. 2023. Phenotypic plasticity of cuticular hydrocarbons and desiccation resistance in subterranean termites. Annual Meeting of the Entomological Society of America, National Harbor, Maryland, Nov. 4-9, 2023 (oral).
- Sun Q. 2023. Behavior, ecology and management of termites. Louisiana Department of Agriculture and Forestry, Structural Pest Control Commission Research Committee Meeting, Baton Rouge, Louisiana
- Sun Q. 2023. Social behavior in subterranean termites. Termite Academy, City of New Orleans and Greater New Orleans Pest Control Association, New Orleans, Louisiana.

Other Presentations

- Floyed P., McCarthy J., and Sun Q. Influence of environmental conditions on shelter tube construction in the Formosan subterranean termite. Annual Meeting of Entomological Society of America, National Harbor, Maryland, Nov. 4-9, 2023 (oral).

FACULTY ACTIVITIES

- Khadka A. and Sun Q. Molecular characterization of foraging gene in the Formosan subterranean termite, *Coptotermes formosanus* (Blattodea: Rhinotermitidae). Annual Meeting of Entomological Society of America, National Harbor, Maryland. Nov. 4-9, 2023 (oral).
- Castillo P. and Sun Q. Morphological analysis of the antennal lobes in the brain of the Formosan subterranean termite. Annual Meeting of Entomological Society of America, National Harbor, Maryland, Nov. 4-9, 2023 (virtual).
- Hakanoglu H., Ihle K., Sun Q. 2023. Lifespan and behavioral maturation of honey bee (*Apis mellifera*) workers expressing *Varroa* sensitive hygiene. Annual Meeting of Entomological Society of America, National Harbor, Maryland. Nov. 4-9, 2023 (poster).
- Green M., Khadka A., Sun Q. 2023. Effects of menadione on food consumption and survival of the Formosan subterranean termite, *Coptotermes formosanus* (poster). 13th Annual LSU Entomology Department Graduate Student Symposium, Baton Rouge, Louisiana. Oct. 20, 2023.
- DeQueiroz A., McCarthy J., Sun Q. 2023. Effect of defensive secretion on soldier behavior in the Formosan subterranean termite, *Coptotermes formosanus* (poster). LSU AgCenter ASPIRE Symposium, Baton Rouge, Louisiana. July 26, 2023.

Awards and Honors

- Hakanoglu, H. 2023. First place, Poster Presentation: Lifespan and behavioral maturation of honey bee (*Apis mellifera*) workers expressing *Varroa* sensitive hygiene. Annual Meeting of Entomological Society of America, National Harbor, Maryland. Nov. 4-9, 2023.
- Castillo, P. 2023. Second place, 10-minute On-Demand Oral Presentation: Morphological analysis of the antennal lobes in the brain of the Formosan subterranean termite. Annual Meeting of Entomological Society of America, National Harbor, Maryland. Nov. 4-9, 2023.
- Floyed, Payton. 2023. Third place, Masters 10-minute Oral Presentation: Influence of environmental conditions on shelter tube construction in the Formosan subterranean termite. 13th Annual LSU Entomology Department Graduate Student Symposium, Baton Rouge, Louisiana. Oct. 20, 2023.
- Khadka, A. 2023. Third place, Ph.D. 10-minute Oral Presentation: Molecular characterization of foraging gene in the Formosan subterranean termite, *Coptotermes formosanus*. 13th Annual

- LSU Entomology Department Graduate Student Symposium, Baton Rouge, Louisiana. Oct. 20, 2023.
- Hakanoglu, H. 2023. First place, Poster and Infographic Session: Lifespan and behavioral maturation of honey bee (*Apis mellifera*) workers expressing *Varroa* sensitive hygiene (VSH). 13th Annual LSU Entomology Department Graduate Student Symposium, Baton Rouge, Louisiana. Oct. 20, 2023.
- Green, M. 2023. Second place, Poster and Infographic Session: Effects of Menadione on Food Consumption and Survival of the Formosan Subterranean Termite, *Coptotermes formosanus*. 13th Annual LSU Entomology Department Graduate Student Symposium, Baton Rouge, Louisiana. Oct. 20, 2023.

New Grants and Contracts

- Louisiana Department of Agriculture and Forestry, Structural Pest Research, July 2023 - June 2024, \$50,000 (contract).

Graduated Students

- Paula Castillo, Ph.D., summer 2023.
- Ethan Doherty, Ph.D. (co-advised with Blake Wilson), fall 2023.

Publications

- Sun Q. 2023. Chemical ecology, in Biology and Management of the Formosan Subterranean Termite and Related Species (Su N-Y and Lee C-Y eds.), CABI Publishing, Wallingford, Oxfordshire, United Kingdom.
- Chen J., Setia G., Lin L.-H., Sun Q., and Husseneder C. 2023. Weight and protozoa number but not bacteria diversity are associated with successful pair formation of dealates in the Formosan subterranean termite, *Coptotermes formosanus*. PLoS ONE, 18(11): e0293813.
- Doherty E., Sun Q., and Wilson B.E. 2023. Efficacy of stored grain insecticides against two pest beetles in rough rice. Journal of Economic Entomology, 116(5): 1922–1933.
- Richardson S. and Sun Q. 2023. Effects of soil moisture on tunneling, survivorship, and food consumption of the Formosan and eastern subterranean termites (Blattodea: Rhinotermitidae). Environmental Entomology, 52(4): 539–545.
- Sun J., Liu W.-K. Ellsworth C., Sun Q., Pan Y.-F., Huang Y.-C., and Deng W.-M.. 2023. Integrating lipid metabolism, pheromone production and perception by Fruitless and Hepatocyte nuclear factor 4. Science Advances, 9(26): eadf6254.

FACULTY ACTIVITIES

- McCarthy J., Khadka A., Hakanoglu H., and Sun Q. 2023. Influence of soldiers on exploratory foraging behavior in the Formosan subterranean termite, *Coptotermes formosanus* (Blattodea: Rhinotermitidae). *Insects*, 14(2): 198.
- Doherty E., Sun Q., and Wilson B. 2023. Stored rice varietal resistance towards *Sitophilus oryzae*. *Crop Protection*, 165: 106162.

James Villegas

Invited Presentations

- Villegas, J. 2023. Navigating the application process for academic position. Entomological Society of America Annual Meeting. National Harbor, Maryland. Nov. 4-8 (invited talk).
- Ranabhat, S. and J. Villegas. 2023. Role of sprayer drones in IPM. Entomological Society of America Annual Meeting. National Harbor, Maryland. Nov. 4-8 (submitted poster).
- Bruno, J. and J. Villegas. 2023. How silicon soil amendments help the fight against insect pests? Entomological Society of America Annual Meeting. National Harbor, Maryland. Nov. 4-8 (submitted poster).
- Musgrove, T., K. Landry, M. Stout, J. Villegas, B. Wilson. 2023. Enhancing the sustainability of insect pest management in furrow-irrigated rice, *Oryza sativa* L. Entomological Society of America Annual Meeting. National Harbor, Maryland. Nov. 4-8 (submitted talk).
- Patla, B., G. Head, G. Sword, A. Miller, J. Qureshi, J. Villegas, X. Ni, D. Carrillo, F. Reay-Jones, F. Huang. 2023. An extended investigation of the susceptibility of *Spodoptera frugiperda* in the United States southern region to seven common chemical insecticides. Entomological Society of America Annual Meeting. National Harbor, Maryland. Nov. 4-8 (submitted talk).
- Huang, F. T. Silva, G. Sword, A. Miller, J. Qureshi, G. Head, D. Kerns, J. Jurat-Fuentes, J. Villegas, X. Ni. 2023. No resistance to Cry1F detected in fall armyworm from the southeastern U.S. after a decade since practical resistance to Cry1F corn was documented. Entomological Society of America Annual Meeting. National Harbor, Maryland. Nov. 4-8 (submitted talk).
- Musgrove, T., J. Villegas, B. Wilson, K. Landry. 2023. Effects of planting date and rice cultivar on rice water weevil density and stem borer injury. Southeastern Branch Entomological Society of America Meeting. Little Rock, Arkansas. March 12-15, 2023.
- Silva, T., G. Sword, A. Miller, J. Qureshi. P. G. Head, D. Kerns, J. Fuentes, J. Villegas, T. Towles, X. Ni, D. Carrillo, D. Cook, C. Davis, F. Reay-Jones, M. Stout, B. Thrash, S. Moraes, S. Lin, B. Patla, Y. Niu, C. Sakuno, F. Huang. 2023. Fall armyworm susceptibilities to four proteins commonly used protein in pyramid Bt corn in the southern United States. Southeastern Branch Entomological Society of America Meeting. Little Rock, Arkansas. March 12-15, 2023.
- Villegas, J. 2023. Insect monitoring in cover crops. Southern Cover Crops Council Conference. Baton Rouge, Louisiana. Feb. 14-15 (invited talk).
- Villegas, J. 2023. Bt corn performance against corn earworm. Louisiana Agricultural Technology and Management Conference. Marksville, Louisiana. Feb. 9-11 (invited talk).
- Villegas, J. 2023. A university perspective on new products for managing pests in Louisiana field crops—entomology section. Louisiana Agricultural Technology and Management Conference. Marksville, Louisiana. Feb. 9-11 (invited talk).
- Villegas, J. 2023. Performance of Bt corn against corn earworm in Louisiana. National Conservation Systems Cotton and Rice Conferences. Baton Rouge, Louisiana. Jan. 30-Feb. 1 (invited talk).

Clientele Targeted Presentations (Invited Speaker)

- Villegas, J. 2023. Entomology program update. Dean Lee Research and Extension Center Field Day. Alexandria, Louisiana. Aug. 3.
- Villegas, J. 2023. Insect management in soybean, corn, and cotton. Soil Fertility and Nutrient Management Field Day. Macon Ridge Research Station. Winnsboro, Louisiana. July 27.
- Villegas, J. 2023. Insect control strategies on field crops. Northeast Research Station Field Day. St. Joseph, Louisiana. July 25.
- Villegas, J. 2023. Basics of IPM. LSU AgCenter Field Crops Insect Scout School. Alexandria, Louisiana. June 2.
- Villegas, J. 2023. Rice insect identification and damage. LSU AgCenter Field Crops Insect Scout School. Winnsboro, Louisiana. May 25.
- Villegas, J. 2023. Basics of IPM. LSU AgCenter Field Crops Insect Scout School. Winnsboro, Louisiana. May 25.
- Villegas, J. 2023. Hessian fly infestations in wheat. Wheat, Oat, and Cover Crop Field Day. Macon Ridge Research Station. Winnsboro Louisiana. April 20.

FACULTY ACTIVITIES

- Villegas, J. 2023. Entomology program update. Retired County Agents Association Meeting. Dean Lee Research Station, Alexandria, Louisiana. April 19.
- Villegas, J. and B. Wilson. 2023. Insect pest management in sugarcane. Iberville Sugarcane Meeting. White Castle, Louisiana. Feb. 23.
- Villegas, J. 2023. Insect pest management on row crops. Richland Row Crops Meeting. Delhi, Louisiana. Feb. 22.
- Villegas, J. 2023. Insect management updates on row crops. Pointe Coupe Soybean Feed and Grain Meeting. New Roads, Louisiana. Feb. 6.
- Villegas, J. 2023. Insect control strategies. Avoyelles Parish Soybean, Cotton, and Feed Grain Meeting. Mansura, Louisiana. Jan. 17.
- Villegas, J. 2023. CenLa Row Crops. Rapides Soybean, Feed Grain and Cotton Meeting. Alexandria, Louisiana. Jan. 5.

Pesticide Recertification (Invited Speaker)

- Villegas, J. 2023. Integrated pest management for agronomic crops. Recertification for RUP Salespersons/Cat. 1 AgPest. Alexandria, Louisiana. Nov. 2.
- Villegas, J. 2023. Seed treatment on field crops. Recertification for Categories 4, 7C(1-3) Seed Treatment/Stored Grain. Alexandria, Louisiana. May 4.
- Villegas, J. 2023. IPM strategies for field crops – soybean, rice, and sugarcane. Recertification for Cat. 1 (AgPest Control) and 10 (Demonstration and Research). Alexandria, Louisiana. Jan. 26.

New Committees

- Entomological Society of America, Southeastern Branch Student Awards Committee, 2022 to present.
- Louisiana Agricultural Consultants Association, Program Planning Committee, 2023 to present.

New Grants and Contracts

- PI: Villegas, J. Enhancing Soybean Insect Pest Management Strategies for Central and South Louisiana. 2023. Louisiana Soybean and Grain Research Promotion Board. Funding: \$50,950.
- PI: Villegas, J. Enhancing Field Corn Insect Pest Management Strategies for Central Louisiana. 2023. Louisiana Soybean and Grain Research Promotion Board. Funding: \$11,150.
- PI: Villegas, J. Enhancing Grain Sorghum Insect Pest Management Strategies for Central Louisiana. 2023.

Louisiana Soybean and Grain Research Promotion Board. Funding: \$1,000.

- PI: Villegas, J. Enhancing Management Strategies for Important Arthropod Pests of Louisiana Cotton. 2023. Cotton Incorporated. Funding: \$5,000.
- PI: Fultz, L. and Tubana, B.; co-PIs: Adusumilli, N., Blanchard, T., Burns, D., Cater, M., Gentry, D., Gould, F., Gravois, K., Hebert, J., Hendrix, J., Moseley, D., Orgeron, A., Setiyono, T., Villegas, J. Improving Sustainable Agricultural Production Using Model Farms. 2023–2027. Taylor Foundation. Funding: \$1,700,000.
- Industry Support: \$45,000+

Visiting Scientists/Students

- Saurav Ranabhat, Agriculture and Forestry University, Chitwan, Nepal.
- Jayvee Bruno, Central Luzon State University, Philippines.

Extension Publications

- Villegas, J., T. Towles, A. Ashbrook, J. Davis, R. Diaz, B. Fitzpatrick, B. Gueltig, K. Healy, F. Huang, T. Johnson, N. Lord, T. Reagan, M. Stout, T. Smith, M. Stout, Q. Sun, B. Wilson. 2023 Louisiana Insect Pest Management Guide. Louisiana State University Agricultural Center Publication 1838: 1–232.
- Moseley, D., B. Padgett, T. Price, M. Kongchum, D. Stephenson, B. Buckley, R. Parvej, J. Villegas, T. Towles, A. Reis, J. Davis, T. Watson, S. Thomas-Sharma, D. Burns, C. Roider, G. Williams, R. Anderson, B. Woolam, T. Monaghan, L. Lee, and F. Collins. 2023 Soybean variety yields and production practices. Louisiana State University Agricultural Center Publication 2269: 1–28.
- Moseley, D., D. Stephenson, B. Padgett, T. Price, J. Villegas, R. Parvej, S. Conger, and T. Watson. 2023. Soybean growth stages and management tips. Louisiana State University Agricultural Center Publication 3888: 1–11.
- Moseley, D., D. Stephenson, D. Miller, and J. Villegas. 2023. Desiccating soybean for harvest in Louisiana. Louisiana State University Agricultural Center Publication 3885: 1–4.
- Villegas, J. 2023. Managing stink bugs in Louisiana soybean fields. Louisiana Newsletter Volume 13, Issue 6.
- Villegas, J. 2023. Corn earworm in cotton and soybean. Louisiana Crops Newsletter Volume 13, Issue 5.

FACULTY ACTIVITIES

- Villegas, J. 2023. Scouting and control for tarnished plant bugs and redbanded stinkbugs. Louisiana Crops Newsletter Volume 13, Issue 4.
- Villegas, J. 2023. Strategies for managing thrips in Louisiana cotton. Louisiana Crops Newsletter Volume 13, Issue 3.
- Villegas, J. 2023. Stink bugs in wheat and corn. Louisiana Crops Newsletter Volume 13, Issue 2.
- Villegas, J. 2023. Stink bug control in Louisiana soybean fields. LSU AgCenter Website: <https://www.lsuagcenter.com/articles/page1692973844001>.
- Villegas, J. 2023. Fall armyworm control on turf and grass pastures. LSU AgCenter Website: <https://www.lsuagcenter.com/articles/page1691160188683>.
- Villegas, J. 2023. Managing corn earworm infestations in Louisiana soybean fields. LSU AgCenter Website: <https://www.lsuagcenter.com/articles/page1689620052910>.
- Villegas, J. 2023. Monitoring and Management of redbanded stinkbugs in soybean. LSU AgCenter Website: <https://www.lsuagcenter.com/articles/page1689197638552>.
- Villegas, J. 2023. Scouting and control for tarnished plant bugs in cotton. LSU AgCenter Website: <https://www.lsuagcenter.com/articles/page1689175359185>.
- Villegas, J. 2023. Managing thrips in Louisiana cotton. LSU AgCenter Website: <https://www.lsuagcenter.com/articles/page1685384894615>.
- Villegas, J. 2023. When cold springs bring hot problems: wireworm infestation in corn prevalent this year. LSU AgCenter Website: <https://www.lsuagcenter.com/articles/page1682707600937>.
- Villegas, J. 2023. Managing stink bugs in wheat and corn. LSU AgCenter Website: <https://www.lsuagcenter.com/articles/page1681930876017>.
- Wilson, B.E. 2023. Sugarcane Entomology update. St. Martin/Lafayette/St. Landry sugarcane growers meeting. St. Martinville, Louisiana. July 21, 2023.
- Wilson, B.E. 2023. Sugarcane Entomology Research. Sugar Research Station Field Day. St. Gabriel, Louisiana. July 19, 2023.
- Wilson, B.E. 2023. Sugarcane Entomology update. Bayou Teche sugarcane growers meeting. Franklin, Louisiana. July 12, 2023.
- Wilson, B.E. 2023. Sugarcane insects update. Assumption Sugarcane Field Day. Napoleonville, Louisiana. July 11, 2023.
- Wilson, B.E. 2023. Rice Entomology Research. H. Rouse Caffey Rice Research Station field day, Crowley, Louisiana. June 28, 2023.
- Wilson, B.E. 2023. Rice Entomology Research. Extension agent training. Crowley, Louisiana. June 27, 2023.
- Wilson, B.E. and T.R.T. Musgrove 2023. Rice pest management. South farm field day, Crowley, Louisiana. June 14, 2023.
- Wilson, B.E. 2023. Emerging pests of sugarcane and rice in Louisiana. IPM Scout School, Alexandria, Louisiana. June 2, 2023.
- Wilson, B.E. 2023. Rice insect update. Evangeline/Allen/Beauregard rice field day. Mamou, Louisiana. May 25, 2023.
- Wilson, B.E. 2023. Sugarcane insects update. Sugarcane research/extension training, St. Gabriel, Louisiana. May 17, 2023.
- Wilson, B.E. 2023. Managing stored grain pests. Seed treatment applicator recertification meeting, Alexandria, Louisiana. May 4, 2023.
- Wilson, B.E. 2023. Rice seed treatments. Seed treatment applicator recertification meeting, Alexandria, Louisiana. May 4, 2023.
- Wilson, B.E. 2023. Population genetics and adaptive change in gradual and rapid range expansion of an invasive insect herbivore. NIFA Director's Meeting, Baton Rouge, Louisiana. March 27, 2023.
- Wilson, B.E. and J.M. Villegas. 2023. Sugarcane insect update. Iberville Sugarcane Growers Meeting, White Castle, Louisiana. Feb. 23, 2023.
- Wilson, B.E. 2023. Sugarcane insect update. Rapides/Avoyelles Sugarcane Growers Meeting, Bunkie, Louisiana. Feb. 15, 2023.
- Wilson, B.E. 2023. Invasive apple snails in U.S. rice and crawfish production systems. Apple Snail Workshop, Virtual, Feb. 7, 2023.

Blake Wilson

Invited Presentations

- Wilson, B.E. 2023. Rice insect update. Acadia Parish Rice Advisory Meeting. Crowley, Louisiana. Nov. 30, 2023.
- Wilson, B.E. 2023. Rice insect update. Southwest Louisiana Rice Advisory Meeting. Jennings, Louisiana. Nov. 29, 2023.
- Wilson, B.E. 2023. Sugarcane insects update. Rapides/Avoyelles sugarcane meeting. Alexandria, Louisiana. July 25, 2023.

FACULTY ACTIVITIES

- Wilson, B.E. 2023. Sugarcane insect update. Pointe Coupee Sugarcane Growers Meeting, New Roads, Louisiana Feb. 6, 2023.
- Wilson, B.E. 2023. Sugarcane insect update. Upper Bayou Teche Sugarcane Growers Meeting, Breaux Bridge, Louisiana. Feb. 3, 2023.
- Wilson, B.E. 2023. Rice insect update. Rapides/Avoyelles Rice Growers Meeting, Mansura, Louisiana. Feb. 2, 2023.
- Wilson, B.E. 2023. Sugarcane insect update. Lower Bayou Teche Sugarcane Growers Meeting, Jeanerette, Louisiana. Feb. 1, 2023.
- Wilson, B.E. 2023. Sugarcane insect update. Assumption Sugarcane Growers Meeting, Napoleonville, Louisiana. Jan. 26, 2023.
- Wilson, B.E. 2023. Sugarcane IPM update. Lafourche Sugarcane Production Meeting, Raceland, Louisiana. Jan. 25, 2023.
- Wilson, B.E. 2023. Sugarcane IPM update. Sugarcane Extension/Research Training Meeting, Napoleonville, Louisiana. Jan. 17, 2023.
- Wilson, B.E. 2023. Rice insect management update. Vermilion Parish Rice Meeting, Abbeville, Louisiana. Jan. 10, 2023.
- Wilson, B.E. 2023. Rice insect management update. Acadia Parish Rice Meeting, Crowley, Louisiana. Jan. 5, 2023.
- Wilson, B.E. 2023. Rice insect management update. Evangeline Parish Rice School, Vidrine, Louisiana. Jan. 4, 2023.
- Wilson, B.E. 2023. Rice insect management update. Southwest Louisiana Rice School, Welsh, Louisiana. Jan. 3, 2023.

Professional Society Presentations

- Wilson, B.E. 2023. Affecting change through key stone stakeholders- Lessons from Louisiana sugarcane. Annual Meeting of Entomological Society of America, National Harbor, Maryland. Nov. 4-9, 2023 (oral).
- Doherty, E.M., A. Ashbrook, V. Doyle, Q. Sun, & B.E. Wilson. 2023. Fungal entomopathogens as biological control agents of stored grain beetles. Annual Meeting of Entomological Society of America, National Harbor, Maryland. Nov. 4-9, 2023 (oral).
- Musgrove, T.R., K.J. Landry, and B.E. Wilson. 2023. Enhancing the sustainability of insect pest management in furrow-irrigated rice, *Oryza sativa* L. 2023. Annual Meeting of Entomological Society of America, National Harbor, Maryland. Nov. 4-9, 2023 (oral) *Winner Student Paper Competition.
- Musgrove, T.R. and B.E. Wilson. 2023. Managing insect pests of furrow irrigated rice. 13th Annual Graduate Student Symposium, Baton Rouge, Louisiana. Oct. 20, 2023.
- Doherty, E.M., Q. Sun, and B.E. Wilson. 2023. Managing insect pests of stored rice. 13th Annual Graduate Student Symposium, Baton Rouge, Louisiana. Oct. 20, 2023.
- Musgrove, T.R., J.M. Villegas, B.E. Wilson, K.J. Landry, and M.J. Stout. 2023. Effects of planting date and rice cultivar on rice water weevil density and stem borer injury. LSU Graduate Research Conference, Baton Rouge, Louisiana. April 26, 2023. *Winner Student Paper Competition.
- Doherty, E.M., N. Flores, Q. Sun, and B.E. Wilson. 2023. Stored rice varietal resistance towards insects and the mechanisms at work. LSU Graduate Student Research Conference, Baton Rouge, Louisiana. April 26, 2023.
- Wilson, B.E. and J.M. Villegas. 2023. Optimizing chemical control strategies for sugarcane stem borers in Louisiana. Amer. Soc. Sugar Cane Tech. Joint Annual Meeting, Savannah, Georgia. June 14, 2023.
- Wilson, B.E. 2023. Integrated pest management in rice production. 95th Annual Meeting of the Southeastern Branch of the Entomological Society of America, Little Rock, Arkansas. March 12-15, 2023 (oral).
- Doherty, E., Q. Sun, and B.E. Wilson. 2023. Host preferences of *Sitophilus oryzae* in stored rice. 95th Annual Meeting of the Southeastern Branch of the Entomological Society of America, Little Rock, Arkansas. March 12-15, 2023.
- Musgrove, T.R.T., J.M. Villegas, B.E. Wilson, K.J. Landry, and M.J. Stout. 2023. Effects of planting date and rice cultivar on rice water weevil density and stem borer management. ESA Southeastern Branch Meeting. Little Rock, Arkansas. March 12-15, 2023. *Winner Student Paper Competition.
- Doherty, E.M., Q. Sun, and B.E. Wilson. 2023. Control of *Rhyzopertha dominica* through stored grain protectants. Rice Tech. Working Group Annual Meeting, Hot Springs, Arkansas. Feb. 22, 2023.
- Landry, K.J., T.R. Musgrove, and B.E. Wilson. 2023. Water management to control rice water weevil (*Lissorhoptrus oryzophilus*). Rice Tech. Working Group Annual Meeting, Hot Springs, Arkansas. Feb. 22, 2023.

FACULTY ACTIVITIES

- Musgrove, T.R., K.J. Landry, and B.E. Wilson. 2023. Impact of insecticide seed treatments on management of selected insect pests of furrow-irrigated rice (*Oryza sativa* L.). Rice Tech. Working Group. Annual Meeting, Hot Springs, Arkansas. Feb. 21, 2023. *Winner 20-Minute Paper Competition.
- Wilson, B.E. 2023. Advances in the management of sugarcane stem borers in Louisiana. XXXI Congress of the Internat. Soc. Sugar Cane Tech., Hyderabad, India. Feb. 21, 2023 (virtual).
- Lucero, J.M. and B.E. Wilson. 2023. Apple snail expansion in Louisiana. Interagency Apple Snail Workshop. Feb. 21, 2023 (virtual).
- Wilson, B.E. 2023. Apple snails impacts to Louisiana rice and crawfish production systems. Interagency Apple Snail Workshop. Feb. 14, 2023 (virtual).
- Wilson, B.E. 2023. Re-examining wireworm pest status in Louisiana sugarcane. Louisiana Agricultural Technology and Management Conference, Marksville, Louisiana. Feb. 10, 2023.
- Wilson, B.E. 2023. Factors influencing insecticide seed treatment efficacy in rice. Louisiana Agricultural Technology and Management Conference, Marksville, Louisiana. Feb. 10, 2023.
- Musgrove, T.R.T. and B.E. Wilson. 2023. Insect management in furrow-irrigated rice. Louisiana Agricultural Technology and Management Conference, Marksville, Louisiana. Feb. 10, 2023.

Awards and Honors

- Tipton Team Research Award, Roseau Cane Team.
- Tyler Musgrove Student paper competition winner at ESA Branch, RTWG, and ESA National.

New Grants and Contracts

- Louisiana Sea Grant, 2024-2026, Population dynamics and trophic interactions of invasive apples snails (*Pomacea maculata*) in crawfish production systems. Wilson – Lead PI and M. Polito (Co-PI, LSU Coastal Sciences). Funded, \$200,000.
- USDA NIFA, Crop Protection and Pest Management, 2024-2027, Development of decision tools and cultural practices for mitigating the impact of the Mexican rice borer (*Eoreuma loftini*) in Gulf Coast rice. Bernaola (Texas A&M) – Lead PI. Wilson Co-PI. Funded, \$300,000 (\$89,880 to LSU AgCenter).
- USDA AFRI SAS, Sustainable and environmentally conscious undertaking to revitalize the rice industry using climate-resilient enhancements (SECURE RICE).

Subudhi lead-PI (Wilson Co-PI), Funded, \$10,000,000. (\$880,000 to PI Wilson).

- USDA APHIS, Congressional Order Interagency Agreement, 2023-2025. Apple snail (*Pomacea maculata*) integrated pest management tactics for crawfish and rice crop production. B.E. Wilson, Lead-PI and B. Richardson (Co-PI). Funded, \$423,000 (\$340,000 to PI-Wilson).

Visiting Scientists/Students

- Carlos Rivera, Universidad Nacional de Agricultura/ National University of Agriculture Catacamas, Olancho, Honduras.

New Collaborations (University, Industry, Other)

- Michael Polito, LSU Coastal Sciences.
- USDA ARS Stoneville, Bradly Richardson.

Graduated Students

- Ethan Doherty, Ph.D. (co-advised with Qian Sun), fall 2023.

Publications

- Todd, J.R., A.L. Hale, Y.-B. Pan, T.L. Tew, W.H. White, E.O. Dufrene, M.P. Grisham, J.W. Hoy, H. Penn, B.E. Wilson, A. Orgeron, H. Waguespack, M. Pontif, K.A. Gravois, W. Jackson, M.J. Duet, C. Landry, and D.L. Verdun. 2023. Registration 'Ho 13-739' sugarcane. J. Plant Reg. (submitted, in review).
- *Doherty, E.M., Q. Sun, and B.E. Wilson. 2023. Efficacy of stored grain insecticides against two pest beetles in rough rice. J. Economic Entomol. 116: 1922–1933.
- Penn, H.J., P.M. White, B.E. Wilson, and R.T. Richard. 2023. Non-target potential of neonicotinoid and fungicide seed cane treatments on *Solenopsis invicta*. Crop Prot. 106278.
- Pontif, M., C. Kimbeng, K. Gravois, Z. Taylor, D. Sexton, B. Blanchard, M. Daigle, D. Fontenot, G. Hawkins, J. Hoy, N. Baisakh, B.E. Wilson, A. Orgeron, J. Todd, A. Hale, and H. Waguespack. 2023. Registration of 'L 14-267' sugarcane. J. Plant Reg. plr2.20267.
- *Doherty, E.M., Q. Sun, and B.E. Wilson. 2023. Stored rice varietal resistance and associational susceptibility towards *Sitophilus oryzae*. Crop Prot. 165: 106162.
- *Lucero, J.M. and B.E. Wilson. 2023. Regional expansion and chemical control for invasive apple snails (*Pomacea maculata*) in Louisiana rice and crawfish production systems. Crop Prot. Crop Prot. 164: 106127. ■



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